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Se incorpora al expediente CD que contiene los **Informes Técnicos Definitivos de Fijación de Precios de Nudo de Octubre de 2010, del Sistema Interconectado Central y del Sistema Interconectado del Norte Grande** (Comisión Nacional de Energía).

Informes Técnicos Definitivos  
Fijación de Precio Nudo Sistema  
Interconectado Central y Sistema  
Interconectado del Norte Grande  
Octubre 2010 Comisión Nacional de Energía

Informes Técnicos Definitivos  
Fijación Precio Nudo SIC y SIN  
Octubre 2010 CNE

  
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Jefe División Jurídica  
Ministerio del Medio Ambiente

## CUADRO N° 4: PROGRAMA DE OBRAS DEL SIC (CONSTRUCCIÓN)

Fecha de entrada		Obras en Construcción de Generación	Potencia
Mes	Año		MW
Oct	2010	Central Hidroeléctrica Confluencia	159
Nov	2010	Mariposas	6
Dic	2010	Central Hidroeléctrica Licán	17
Feb	2011	Turbina Diesel Campanario IV CC	60
Feb	2011	Biomasa Lautaro	25
Feb	2011	Central Eólica Punta Colorada	20
Jul	2011	Los Colorados 2	9
Ago	2011	Central Carbón Santa María	343
Oct	2011	Chacayes	106
Oct	2011	Masisa	11.1
Oct	2011	Central Carbón Bocamina 02	342
Nov	2011	Viñales	32
Mar	2012	Rucatayo	60
Abr	2012	Central Hidroeléctrica Laja I	36.8
May	2012	Pulelfu	9.4
Jul	2012	Central Carbón Campiche	242
Mar	2013	Angostura	316
Abr	2013	Central Hidroeléctrica San Pedro	144
Fecha de entrada		Obras de Transmisión en Construcción (**)	Potencia
Mes	Año		MVA
Febrero	2011	Línea Nogales - Polpaico 2x220 kV	2x1500
Octubre	2010	Cambio de conductor línea A. Jahuel - Chena 220 kV (Circuito 1)	400
Febrero	2011	Subestación Polpaico: Instalación segundo autotransformador 500/220 kV	750
Abril	2011	Cambio de conductor línea A. Jahuel - Chena 220 kV (Circuito 2)	400
Octubre	2011	Tramo de línea Chena - Cerro Navia 2x220 kV: cambio de conductor	2x400
Enero	2012	Línea Ancoa - Polpaico 1x500 kV: seccionamiento	
Enero	2012	Línea de entrada a A. Jahuel 2x500 kV	2x1800
Abril	2012	Subestación Cerro Navia: Instalación equipos de control de flujos	2x350
Febrero	2013	Línea Tinguiririca-Punta de Cortés 154 kV: Cambio de Conductor	2x198
Julio	2013	Línea Ancoa - A. Jahuel 2x500 kV: primer circuito	1400

(\*) En consideración del retraso en el proceso de construcción de la Central Campiche, se ha considerado que ésta comienza su operación en Julio de 2012.

(\*\*) Incluye también las obras de transmisión troncal cuya construcción ha sido adjudicada.

En el CUADRO N°5 se indica el Programa de Obras elaborado por la CNE, de acuerdo a lo estipulado en el artículo N° 162 del DFL N° 4/2006 (M).



Las bases y antecedentes que fundamentan la anterior previsión de demanda, se encuentran contenidos en el informe “ESTUDIO DE PROYECCIÓN DE DEMANDAS DE ENERGÍA Y POTENCIA 2010-2020” del Sistema Interconectado del Norte Grande, fijación de precios de Nudo Abril 2010<sup>1</sup>, de la Comisión Nacional de Energía, conforme al artículo 272 del Reglamento Eléctrico<sup>2</sup>.

#### 4.- PROGRAMA DE OBRAS EN EL SING

En virtud de las restricciones de Gas Natural impuestas por la autoridad Argentina, y del desarrollo de la planta regasificadora de gas natural licuado, GNL, en el SING es posible la operación de las unidades de ciclo combinado existentes con uso de GNL y desarrollar la expansión del sistema de acuerdo a los siguientes proyectos.

**Cuadro N° 2 : Proyectos de Generación en Construcción y Recomendados.**

Central	Tipo	Potencia	Tipo de Unidad	Conexión SING	Fecha Puesta En Servicio	Costo Unitario de Inversión [US\$/kW]
		Neta [MW]	Generadora			
CT ANDINA	En construcción	150	Carbón	Chacaya 220	dic-10	-
HORNITOS	En construcción	150	Carbón	Chacaya 220	mar-11	-
ANGAMOS I	En construcción	230	Carbón	Laberinto 220	abr-11	-
ANGAMOS II	En construcción	230	Carbón	Laberinto 220	oct-11	-
EOLICO SING I	Recomendadas	40	Eólica	Laberinto 220	mar-12	2.300
Geotermica Irruputunco	Recomendadas	40	Geotermia	Collahuasi 220	ene-16	3.550
EOLICO SING II	Recomendadas	100	Eólica	Crucero 220	ene-16	2.300
Geotermica Apacheta 01	Recomendadas	40	Geotermia	Calama 110	ene-16	3.550
TARAPACA I	Recomendadas	200	Carbón	Tarapaca 220	oct-16	2.350
Geotermica Apacheta 02	Recomendadas	40	Geotermia	Calama 110	abr-17	3.550
Geotermica Polloquere 01	Recomendadas	40	Geotermia	Chapiquiña 066	may-17	3.550
TARAPACA II	Recomendadas	200	Carbón	Tarapaca 220	jun-17	2.350
EOLICO SING III	Recomendadas	50	Eólica	Laberinto 220	jul-17	2.300
Geotermica Pampa Lirima 01	Recomendadas	40	Geotermia	Cerro Colorado 110	ene-18	3.550
Geotermica Puchuldiza 01	Recomendadas	40	Geotermia	Cerro Colorado 110	ene-18	3.550
Geotermica Polloquere 02	Recomendadas	40	Geotermia	Chapiquiña 066	ene-18	3.550
MEJILLONES I	Recomendadas	200	Carbón	Chacaya 220	abr-18	2.350
Geotermica Pampa Lirima 02	Recomendadas	40	Geotermia	Cerro Colorado 110	ene-19	3.550
Geotermica Puchuldiza 02	Recomendadas	40	Geotermia	Cerro Colorado 110	ene-19	3.550
Geotermica Puchuldiza 03	Recomendadas	40	Geotermia	Cerro Colorado 110	ene-19	3.550
MEJILLONES II	Recomendadas	200	Carbón	Chacaya 220	feb-19	2.350
MEJILLONES III	Recomendadas	200	Carbón	Chacaya 220	ene-20	2.350
MEJILLONES IV	Recomendadas	200	Carbón	Chacaya 220	may-20	2.350

<sup>1</sup> Modificada de acuerdo a la evolución observada durante el presente año.

<sup>2</sup> Modificado según Decreto Supremo N°158, publicado en el Diario Oficial el día 5 de Septiembre de 2003.

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# code of federal regulations

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Protection of  
Environment

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PARTS 72 TO 80

Revised as of July 1, 1996

CONTAINING  
A CODIFICATION OF DOCUMENTS  
OF GENERAL APPLICABILITY  
AND FUTURE EFFECT

AS OF JULY 1, 1996  
*With Ancillaries*

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Administration

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the Federal Register





## § 74.61

monitoring system, an approved alternative monitoring system in accordance with part 75 of this chapter.

## § 74.61 Monitoring plan.

(a) *Monitoring plan.* The designated representative of a combustion source shall meet all of the requirements specified under part 75 of this chapter for a designated representative of an affected unit to submit to the Administrator a monitoring plan that includes the information required in a monitoring plan under § 75.53 of this chapter. This monitoring plan shall be submitted as part of the combustion source's opt-in permit application under § 74.14 of this part.

(b) [Reserved]

## Subpart G—Monitoring Emissions: Process Sources [Reserved]

## PART 75—CONTINUOUS EMISSION MONITORING

## Subpart A—General

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APPENDIX A TO PART 75—SPECIFICATIONS AND TEST PROCEDURES  
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 APPENDIX G TO PART 75—DETERMINATION OF CO<sub>2</sub> EMISSIONS  
 APPENDIX H TO PART 75—REVISED TRACEABILITY PROTOCOL NO. 1  
 APPENDIX I TO PART 75—OPTIONAL F—FACTOR/FUEL FLOW METHOD [RESERVED]  
 APPENDIX J TO PART 75—COMPLIANCE DATES FOR REVISED RECORDKEEPING REQUIREMENTS AND MISSING DATA PROCEDURES

AUTHORITY: 42 U.S.C. 7601 and 7651k.

SOURCE: 58 FR 3701, Jan. 11, 1993, unless otherwise noted.

## Subpart A—General

## § 75.1 Purpose and scope.

(a) *Purpose.* The purpose of this part is to establish requirements for the monitoring, recordkeeping, and reporting of sulfur dioxide, nitrogen oxides, and carbon dioxide emissions, volumetric flow, and opacity data from affected units under the Acid Rain Program pursuant to sections 412 and 821 of the Clean Air Act, 42 U.S.C. 7401-7671q as amended by Public Law 101-549 (November 15, 1990) (the Act).

(b) *Scope.* (1) The regulations established under this part include general requirements for the installation, certification, operation, and maintenance of continuous emission or opacity monitoring systems and specific requirements for the monitoring of SO<sub>2</sub> emissions, volumetric flow, NO<sub>x</sub> emissions, opacity, CO<sub>2</sub> emissions and SO<sub>2</sub> emissions removal by qualifying Phase I technologies. Specifications for the installation and performance of continuous emission monitoring systems, certification tests and procedures, and quality assurance tests and procedures are included in appendices A and B to this part. Criteria for alternative monitoring systems and provisions to account for missing data from certified

continuous emission monitoring systems or approved alternative monitoring systems are also included in the regulation.

(2) Statistical estimation procedures for missing data are included in appendix C to this part. Optional protocols for estimating SO<sub>2</sub> mass emissions from gas-fired or oil-fired units and NO<sub>x</sub> emissions from gas-fired peaking or oil-fired peaking units are included in appendices D and E, respectively, to this part. Requirements for recording and recordkeeping of monitoring data and for quarterly electronic reporting also are specified. Procedures for conversion of monitoring data into units of the standard are included in appendix F to this part. Procedures for the monitoring and calculation of CO<sub>2</sub> emissions are included in appendix G of this part.

[58 FR 3701, Jan. 11, 1993; 58 FR 34126, June 23, 1993; 58 FR 40747, July 30, 1993]

## § 75.2 Applicability.

(a) Except as provided in paragraph (b) of this section, the provisions of this part apply to each affected unit subject to Acid Rain emission limitations or reduction requirements for SO<sub>2</sub> or NO<sub>x</sub>.

(b) The provisions of this part do not apply to:

(1) A new unit for which a written exemption has been issued under § 72.7 of this chapter (any new unit that serves one or more generators with total nameplate capacity of 25 MWe or less and burns only fuels with a sulfur content of 0.05 percent or less by weight may apply to the Administrator for an exemption); or

(2) Any unit not subject to the requirements of the Acid Rain Program due to operation of any paragraph of § 72.6(b) of this chapter; or

(3) An affected unit for which a written exemption has been issued under § 72.8 of this chapter and an exception granted under § 75.67 of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 58 FR 15716, Mar. 23, 1993; 60 FR 26516, May 17, 1995]

## § 75.3 General Acid Rain Program provisions.

The provisions of part 72, including the following, shall apply to this part:



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- (a) § 72.2 (Definitions);
- (b) § 72.3 (Measurements, Abbreviations, and Acronyms);
- (c) § 72.4 (Federal Authority);
- (d) § 72.5 (State Authority);
- (e) § 72.6 (Applicability);
- (f) § 72.7 (New Unit Exemption);
- (g) § 72.8 (Retired Units Exemption);
- (h) § 72.9 (Standard Requirements);
- (i) § 72.10 (Availability of Information); and
- (j) § 72.11 (Computation of Time).

In addition, the procedures for appeals of decisions of the Administrator under this part are contained in part 78 of this chapter.

#### § 75.4 Compliance dates.

(a) The provisions of this part apply to each existing Phase I and Phase II unit on February 10, 1993. For substitution or compensating units that are so designated under the acid rain permit which governs the unit and contains the approved substitution or reduced utilization plan, pursuant to § 72.41 or § 72.43 of this chapter, the provisions of this part become applicable upon the issuance date of the acid rain permit. For combustion sources seeking to enter the Opt-in Program in accordance with part 74 of this chapter, the provisions of this part become applicable upon the submission of an opt-in permit application in accordance with § 74.14 of this chapter. In accordance with § 75.20, the owner or operator of each existing affected unit shall ensure that all monitoring systems required by this part for monitoring SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, opacity, and volumetric flow are installed and all certification tests are completed not later than the following dates (except as provided in paragraphs (d) through (h) of this section):

(1) For a unit listed in Table 1 of § 73.10(a) of this chapter, November 15, 1993.

(2) For a substitution or a compensating unit that is designated under an approved substitution plan or reduced utilization plan pursuant to § 72.41 or § 72.43 of this chapter, or for a unit that is designated an early election unit under an approved NO<sub>x</sub> compliance plan pursuant to part 76 of this chapter, that is not conditionally ap-

proved and that is effective for 1995, the earlier of the following dates:

(i) January 1, 1995; or

(ii) 90 days after the issuance date of the Acid Rain permit (or date of approval of permit revision) that governs the unit and contains the approved substitution plan, reduced utilization plan, or NO<sub>x</sub> compliance plan.

(3) For either a Phase II unit, other than a gas-fired unit or an oil-fired unit, or a substitution or compensating unit that is not a substitution or compensating unit under paragraph (a)(2) of this section: January 1, 1995.

(4) For a gas-fired Phase II unit or an oil-fired Phase II unit, January 1, 1995, except that installation and certification tests for continuous emission monitoring systems for NO<sub>x</sub> and CO<sub>2</sub> or excepted monitoring systems for NO<sub>x</sub> under appendix E or CO<sub>2</sub> estimation under appendix G of this part shall be completed as follows:

(i) For an oil-fired Phase II unit or a gas-fired Phase II unit located in an ozone nonattainment area or the ozone transport region, not later than July 1, 1995; or

(ii) For an oil-fired Phase II unit or a gas-fired Phase II unit not located in an ozone nonattainment area or the ozone transport region, not later than January 1, 1996.

(5) For combustion sources seeking to enter the Opt-in Program in accordance with part 74 of this chapter, the expiration date of a combustion source's opt-in permit under § 74.14(e) of this chapter.

(b) In accordance with § 75.20, the owner or operator of each new affected unit shall ensure that all monitoring systems required under this part for monitoring of SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, opacity, and volumetric flow are installed and all certification tests are completed on or before the later of the following dates:

(1) January 1, 1995, except that for a gas-fired unit or oil-fired unit located in an ozone nonattainment area or the ozone transport region, the date for installation and completion of all certification tests for NO<sub>x</sub> and CO<sub>2</sub> monitoring systems shall be July 1, 1995 and for a gas-fired unit or an oil-fired unit not located in an ozone nonattainment area or the ozone transport region, the



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date for installation and completion of all certification tests for NO<sub>x</sub> and CO<sub>2</sub> monitoring systems shall be January 1, 1996; or

(2) Not later than 90 days after the date the unit commences commercial operation, notice of which date shall be provided under subpart G of this part.

(c) In accordance with § 75.20, the owner or operator of any unit affected under any paragraph of § 72.6(a)(3) (ii) through (vii) of this chapter shall ensure that all monitoring systems required under this part for monitoring of SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, opacity, and volumetric flow are installed and all certification tests are completed on or before the later of the following dates:

(1) January 1, 1995, except that for a gas-fired unit or oil-fired unit located in an ozone nonattainment area or the ozone transport region, the date for installation and completion of all certification tests for NO<sub>x</sub> and CO<sub>2</sub> monitoring systems shall be July 1, 1995 and for a gas-fired unit or an oil-fired unit not located in an ozone nonattainment area or the ozone transport region, the date for installation and completion of all certification tests for NO<sub>x</sub> and CO<sub>2</sub> monitoring systems shall be January 1, 1996; or

(2) Not later than 90 days after the date the unit becomes subject to the requirements of the Acid Rain Program, notice of which date shall be provided under subpart G of this part.

(d) In accordance with § 75.20, the owner or operator of an existing unit that is shutdown and is not yet operating by the applicable dates listed in paragraph (a) of this section, shall ensure that all monitoring systems required under this part for monitoring of SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, opacity, and volumetric flow are installed and all certification tests are completed not later than the earlier of 45 unit operating days or 180 calendar days after the date that the unit recommences commercial operation of the affected unit, notice of which date shall be provided under subpart G of this part. The owner or operator shall determine and report SO<sub>2</sub> concentration, NO<sub>x</sub> emission rate, CO<sub>2</sub> concentration, and flow data for all unit operating hours after the applicable compliance date in paragraph (a) of this section until all required certifi-

cation tests are successfully completed using either:

(1) The maximum potential concentration of SO<sub>2</sub>, the maximum potential NO<sub>x</sub> emission rate, the maximum potential flow rate, as defined in section 2.1 of appendix A of this part, or the maximum CO<sub>2</sub> concentration used to determine the maximum potential concentration of SO<sub>2</sub> in section 2.1.1.1 of appendix A of this part; or

(2) Reference methods under § 75.22(b); or

(3) Another procedure approved by the Administrator pursuant to a petition under § 75.66.

(e) In accordance with § 75.20, if the owner or operator of an existing unit completes construction of a new stack, flue, or flue gas desulfurization system after the applicable deadline in paragraph (a) of this section, then the owner or operator shall ensure that all monitoring systems required under this part for monitoring SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, opacity, and volumetric flow are installed on the new stack or duct and all certification tests are completed not later than 90 calendar days after the date that emissions first exit to the atmosphere through the new stack, flue, or flue gas desulfurization system, notice of which date shall be provided under subpart G of this part. Until emissions first pass through the new stack, flue or flue gas desulfurization system, the unit is subject to the appropriate deadline in paragraph (a) of this section. The owner or operator shall determine and report SO<sub>2</sub> concentration, NO<sub>x</sub> emission rate, CO<sub>2</sub> concentration, and flow data for all unit operating hours after emissions first pass through the new stack, flue, or flue gas desulfurization system until all required certification tests are successfully completed using either:

(1) The appropriate value for substitution of missing data upon recertification pursuant to § 75.20(b)(3); or

(2) Reference methods under § 75.22(b) of this part; or

(3) Another procedure approved by the Administrator pursuant to a petition under § 75.66.

(f) In accordance with § 75.20, the owner or operator of a gas-fired or oil-fired peaking unit, if planning to use appendix E of this part, shall ensure



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that the required certification tests for excepted monitoring systems under appendix E are completed for backup fuel as defined in § 72.2 of this chapter by no later than the later of: 30 unit operating days after the date that the unit first combusted that backup fuel after the certification testing of the primary fuel; or The deadline in paragraph (a) of this section. The owner or operator shall determine and report NO<sub>x</sub> emission rate data for all unit operating hours that the backup fuel is combusted after the applicable compliance date in paragraph (a) of this section until all required certification tests are successfully completed using either:

- (1) The maximum potential NO<sub>x</sub> emission rate; or
- (2) Reference methods under § 75.22(b) of this part; or
- (3) Another procedure approved by the Administrator pursuant to a petition under § 75.66.

(g) In accordance with § 75.20, whenever the owner or operator of a gas-fired or oil-fired unit uses an excepted monitoring system under appendix D or E of this part and combusts emergency fuel as defined in § 72.2 of this chapter, then the owner or operator shall ensure that a fuel flowmeter measuring emergency fuel is installed and the required certification tests for excepted monitoring systems are completed by no later than 30 unit operating days after the first date after January 1, 1995 that the unit combusts emergency fuel. For all unit operating hours that the unit combusts emergency fuel after January 1, 1995 until the owner or operator installs a flowmeter for emergency fuel and successfully completes all required certification tests, the owner or operator shall determine and report SO<sub>2</sub> mass emission data using either:

- (1) The maximum potential fuel flow rate, as described in appendix D of this part, and the maximum sulfur content of the fuel, as described in section 2.1.1.1 of appendix A of this part;
- (2) Reference methods under § 75.22(b) of this part; or
- (3) Another procedure approved by the Administrator pursuant to a petition under § 75.66.

(h) In accordance with § 75.20, the owner or operator of a unit with a qualifying Phase I technology shall ensure that all certification tests for the inlet and outlet SO<sub>2</sub>-diluent continuous emission monitoring systems are completed no later than January 1, 1997 if the unit with a qualifying Phase I technology requires the use of an inlet SO<sub>2</sub>-diluent continuous emission monitoring system for the purpose of monitoring SO<sub>2</sub> emissions removal from January 1, 1997 through December 31, 1999.

[60 FR 17131, Apr. 4, 1995, as amended at 60 FR 26516, May 17, 1995]

## § 75.5 Prohibitions.

(a) A violation of any applicable regulation in this part by the owners or operators or the designated representative of an affected source or an affected unit is a violation of the Act.

(b) No owner or operator of an affected unit shall operate the unit without complying with the requirements of §§ 75.2 through 75.67 and appendices A through I of this part.

(c) No owner or operator of an affected unit shall use any alternative monitoring system, alternative reference method, or any other alternative for the required continuous emission monitoring system without having obtained the Administrator's prior written approval in accordance with §§ 75.23, 75.48 and 75.66.

(d) No owner or operator of an affected unit shall operate the unit so as to discharge, or allow to be discharged, emissions of SO<sub>2</sub>, NO<sub>x</sub>, or CO<sub>2</sub> to the atmosphere without accounting for all such emissions in accordance with the provisions of §§ 75.10 through 75.18.

(e) No owner or operator of an affected unit shall disrupt the continuous emission monitoring system, any portion thereof, or any other approved emission monitoring method, and thereby avoid monitoring and recording SO<sub>2</sub>, NO<sub>x</sub>, or CO<sub>2</sub> emissions discharged to the atmosphere, except for periods of recertification, or periods when calibration, quality assurance, or maintenance is performed pursuant to § 75.21 and appendix B of this part.

(f) No owner or operator of an affected unit shall retire or permanently



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discontinue use of the continuous emission monitoring system, any component thereof, the continuous opacity monitoring system, or any other approved emission monitoring system under this part, except under any one of the following circumstances:

(1) During the period that the unit is covered by an approved retired unit exemption under §72.8 of this chapter that is in effect; or

(2) The owner or operator is monitoring emissions from the unit with another certified monitoring system that provides emission data for the same pollutant or parameter as the retired or discontinued monitoring system; or

(3) The designated representative submits notification of the date of recertification testing of a replacement monitoring system in accordance with §§75.20 and 75.61, and the owner or operator recertifies thereafter a replacement monitoring system in accordance with §75.20.

[58 FR 3701, Jan. 11, 1993, as amended at 58 FR 40747, July 30, 1993; 60 FR 26517, May 17, 1995]

#### § 75.6 Incorporation by reference.

The materials listed in this section are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they existed on the date of approval, and a notice of any change in these materials will be published in the FEDERAL REGISTER. The materials are available for purchase at the corresponding address noted below and are available for inspection at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC, at the Public Information Reference Unit of the U.S. EPA, 401 M Street, SW, Washington, DC and at the Library (MD-35), U.S. EPA, Research Triangle Park, North Carolina.

(a) The following materials are available for purchase from the following addresses: American Society for Testing and Material (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; and the University Microfilms

International 300 North Zeeb Road, Ann Arbor, Michigan 48106.

(1) ASTM D129-91, Standard Test Method for Sulfur in Petroleum Products (General Bomb Method), for appendices A and D of this part.

(2) ASTM D240-87 (Reapproved 1991), Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, for appendices A, D and F of this part.

(3) ASTM D287-82 (Reapproved 1987), Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method), for appendix D of this part.

(4) ASTM D388-92, Standard Classification of Coals by Rank, incorporation by reference for appendix F of this part.

(5) ASTM D941-88, Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Lipkin Bicapillary Pycnometer, for appendix D of this part.

(6) ASTM D1072-90, Standard Test Method for Total Sulfur in Fuel Gases, for appendix D of this part.

(7) ASTM D1217-91, Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer, for appendix D of this part.

(8) ASTM D1250-80 (Reapproved 1990), Standard Guide for Petroleum Measurement Tables, for appendix D of this part.

(9) ASTM D1298-85 (Reapproved 1990), Standard Practice for Density, Relative Density (Specific Gravity) or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, for appendix D of this part.

(10) ASTM D1480-91, Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer, for appendix D of this part.

(11) ASTM D1481-91, Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary Pycnometer, for appendix D of this part.

(12) ASTM D1552-90, Standard Test Method for Sulfur in Petroleum Products (High Temperature Method), for appendices A and D of the part.

(13) ASTM D1826-88, Standard Test Method for Calorific (Heating) Value of



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Gases in Natural Gas Range by Continuous Recording Calorimeter, for appendix F of this part.

(14) ASTM D1945-91, Standard Test Method for Analysis of Natural Gas by Gas Chromatography, for appendices F and G of this part.

(15) ASTM D1946-90, Standard Practice for Analysis of Reformed Gas by Gas Chromatography, for appendices F and G of this part.

(16) ASTM D1989-92, Standard Test Method for Gross Calorific Value of Coal and Coke by Microprocessor Controlled Isoperibol Calorimeters, for appendix F of this part.

(17) ASTM D2013-86, Standard Method of Preparing Coal Samples for Analysis, for §75.15 and appendix F of this part.

(18) ASTM D2015-91, Standard Test Method for Gross Calorific Value of Coal and Coke by the Adiabatic Bomb Calorimeter, for §75.15 and appendices A, D and F of this part.

(19) ASTM D2234-89, Standard Test Methods for Collection of a Gross Sample of Coal, for §75.15 and appendix F of this part.

(20) ASTM D2382-88, Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), for appendices D and F of this part.

(21) ASTM D2502-87, Standard Test Method for Estimation of Molecular Weight (Relative Molecular Mass) of Petroleum Oils from Viscosity Measurements, for appendix G of this part.

(22) ASTM D2503-82 (Reapproved 1987), Standard Test Method for Molecular Weight (Relative Molecular Mass) of Hydrocarbons by Thermoelectric Measurement of Vapor Pressure, for appendix G of this part.

(23) ASTM D2622-92, Standard Test Method for Sulfur in Petroleum Products by X-Ray Spectrometry, for appendices A and D of this part.

(24) ASTM D3174-89, Standard Test Method for Ash in the Analysis Sample of Coal and Coke From Coal, for appendix G of this part.

(25) ASTM D3176-89, Standard Practice for Ultimate Analysis of Coal and Coke, for appendices A and F of this part.

(26) ASTM D3177-89, Standard Test Methods for Total Sulfur in the Analy-

sis Sample of Coal and Coke, for §75.15 and appendix A of this part.

(27) ASTM D3178-89, Standard Test Methods for Carbon and Hydrogen in the Analysis Sample of Coal and Coke, for appendix G of this part.

(28) ASTM D3238-90, Standard Test Method for Calculation of Carbon Distribution and Structural Group Analysis of Petroleum Oils by the n-d-M Method, for appendix G of this part.

(29) ASTM D3246-81 (Reapproved 1987), Standard Test Method for Sulfur in Petroleum Gas By Oxidative Microcoulometry, for appendix D of this part.

(30) ASTM D3286-91a, Standard Test Method for Gross Calorific Value of Coal and Coke by the Isoperibol Bomb Calorimeter, for appendix F of this part.

(31) ASTM D3588-91, Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels, for appendix F of this part.

(32) ASTM D4052-91, Standard Test Method for Density and Relative Density of Liquids by Digital Density Meter, for appendix D of this part.

(33) ASTM D4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, for appendix D of this part.

(34) ASTM D4177-82 (Reapproved 1990), Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, for appendix D of this part.

(35) ASTM D4239-85, Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods, for §75.15 and appendix A of this part.

(36) ASTM D4294-90, Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectroscopy, for appendices A and D of this part.

(37) ASTM D4468-85 (Reapproved 1989), Standard Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry, for appendix D of this part.

(38) ASTM D4891-89, Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion, for appendix F of this part.



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(39) ASTM D5291-92, Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants, for appendix G of this part.

(40) ASTM D5504-94, Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence, for appendix D of this part.

(b) The following materials are available for purchase from the American Society of Mechanical Engineers (ASME), 22 Law Drive, Box 2350, Fairfield, NJ 07007-2350.

(1) ASME MFC-3M-1989 with September 1990 Errata, Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi, for § 75.20 and appendix D of this part.

(2) ASME MFC-4M-1986 (Reaffirmed 1990), Measurement of Gas Flow by Turbine Meters, for § 75.20 and appendix D of this part.

(3) ASME-MFC-5M-1985, Measurement of Liquid Flow in Closed Conduits Using Transit-Time Ultrasonic Flowmeters, for § 75.20 and appendix D of this part.

(4) ASME MFC-6M-1987 with June 1987 Errata, Measurement of Fluid Flow in Pipes Using Vortex Flow Meters, for § 75.20 and appendix D of this part.

(5) ASME MFC-7M-1987 (Reaffirmed 1992), Measurement of Gas Flow by Means of Critical Flow Venturi Nozzles, for § 75.20 and appendix D of this part.

(6) ASME MFC-9M-1988 with December 1989 Errata, Measurement of Liquid Flow in Closed Conduits by Weighing Method, for § 75.20 and appendix D of this part.

(c) The following materials are available for purchase from the American National Standards Institute (ANSI), 11 W. 42nd Street, New York NY 10036: ISO 8316: 1987(E) Measurement of Liquid Flow in Closed Conduits—Method by Collection of the Liquid in a Volumetric Tank, for § 75.20 and appendices D and E of this part.

(d) The following materials are available for purchase from the following address: Gas Processors Association (GPA), 6526 East 60th Street, Tulsa, Oklahoma 74145:

(1) GPA Standard 2172-86, Calculation of Gross Heating Value, Relative Density and Compressibility Factor for Natural Gas Mixtures from Compositional Analysis, for appendices D, E, and F of this part.

(2) GPA Standard 2261-90, Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography, for appendices D, F, and G of this part.

(e) The following materials are available for purchase from the following address: American Gas Association, 1515 Wilson Boulevard, Arlington VA 22209: American Gas Association Report No. 3: Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids, Part 1: General Equations and Uncertainty Guidelines (October 1990 Edition), Part 2: Specification and Installation Requirements (February 1991 Edition) and Part 3: Natural Gas Applications (August 1992 Edition), for § 75.20 and appendices D and E of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26517, May 17, 1995]

#### § 75.7 EPA Study.

The Agency will initiate rulemaking to adjust the equations in the bias test by an amount sufficient to compensate for reference method variance based on a study, which EPA shall complete by October 31, 1993, unless the Administrator determines that adjustments are technically unnecessary or infeasible to properly determine bias.

[58 FR 3701, Jan. 11, 1993; 58 FR 40747, July 30, 1993]

#### § 75.8 Relative accuracy and availability analysis.

(a) The Agency will conduct an analysis of monitoring data submitted to EPA under this part between November 15, 1993 and December 31, 1996 to evaluate the appropriateness of the current performance specifications for relative accuracy and availability trigger conditions for missing data substitution for SO<sub>2</sub> and CO<sub>2</sub> pollutant concentration monitors, flow monitors, and NO<sub>x</sub> continuous emission monitoring systems.

(b) Prior to July 1, 1997, the Agency will prepare a report evaluating quarterly report data for the period between January 1, 1994 and December 31,



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1996 and initial certification test data. Based upon this evaluation, the Administrator will sign for publication in the FEDERAL REGISTER, either:

(1) A notice that the Agency has completed its analysis and has determined that retaining the current performance specifications for relative accuracy and availability trigger conditions are appropriate; or

(2) A notice that the Agency will develop a proposed rule, based on the results of the study, proposing alternatives to the current performance specifications for relative accuracy and availability trigger conditions.

(c) If the Administrator signs a notice that the Agency will develop a proposed rule, the Administrator will:

(1) Sign a notice of proposed rulemaking by October 31, 1997; and

(2) Sign a notice of final rulemaking by October 31, 1998.

[60 FR 26519, May 17, 1995]

### Subpart B—Monitoring Provisions

#### § 75.10 General operating requirements.

(a) *Primary Measurement Requirement.* The owner or operator shall measure opacity, and all SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> emissions for each affected unit as follows:

(1) The owner or operator shall install, certify, operate, and maintain, in accordance with all the requirements of this part, a SO<sub>2</sub> continuous emission monitoring system and a flow monitoring system with the automated data acquisition and handling system for measuring and recording SO<sub>2</sub> concentration (in ppm), volumetric gas flow (in scfh), and SO<sub>2</sub> mass emissions (in lb/hr) discharged to the atmosphere, except as provided in §§ 75.11 and 75.16 and subpart E of this part;

(2) The owner or operator shall install, certify, operate, and maintain, in accordance with all the requirements of this part, a NO<sub>x</sub> continuous emission monitoring system (consisting of a NO<sub>x</sub> pollutant concentration monitor and an O<sub>2</sub> or CO<sub>2</sub> diluent gas monitor) with the automated data acquisition and handling system for measuring and recording NO<sub>x</sub> concentration (in ppm), O<sub>2</sub> or CO<sub>2</sub> concentration (in percent O<sub>2</sub> or CO<sub>2</sub>) and NO<sub>x</sub> emission rate (in lb/

mmBtu) discharged to the atmosphere, except as provided in §§ 75.12 and 75.17 and subpart E of this part. The owner or operator shall account for total NO<sub>x</sub> emissions, both NO and NO<sub>2</sub>, either by monitoring for both NO and NO<sub>2</sub> or by monitoring for NO only and adjusting the emissions data to account for NO<sub>2</sub>;

(3) The owner or operator shall determine CO<sub>2</sub> emissions by using one of the following options, except as provided in § 75.13 and subpart E of this part:

(i) The owner or operator shall install, certify, operate, and maintain, in accordance with all the requirements of this part, a CO<sub>2</sub> continuous emission monitoring system and a flow monitoring system with the automated data acquisition and handling system for measuring and recording CO<sub>2</sub> concentration (in ppm or percent), volumetric gas flow (in scfh), and CO<sub>2</sub> mass emissions (in tons/hr) discharged to the atmosphere;

(ii) The owner or operator shall determine CO<sub>2</sub> emissions based on the measured carbon content of the fuel and the procedures in appendix G of this part to estimate CO<sub>2</sub> emissions (in ton/day) discharged to the atmosphere; or

(iii) The owner or operator shall install, certify, operate, and maintain, in accordance with all the requirements of this part, a flow monitoring system and a CO<sub>2</sub> continuous emission monitoring system using an O<sub>2</sub> concentration monitor in order to determine CO<sub>2</sub> emissions using the procedures in appendix F of this part with the automated data acquisition and handling system for measuring and recording O<sub>2</sub> concentration (in percent), CO<sub>2</sub> concentration (in percent), volumetric gas flow (in scfh), and CO<sub>2</sub> mass emissions (in tons/hr) discharged to the atmosphere; and

(4) The owner or operator shall install, certify, operate, and maintain, in accordance with all the requirements in this part, a continuous opacity monitoring system with the automated data acquisition and handling system for measuring and recording the opacity of emissions (in percent opacity) discharged to the atmosphere, except as provided in §§ 75.14 and 75.18.

(b) *Primary Equipment Performance Requirements.* The owner or operator shall



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ensure that each continuous emission monitoring system required by this part meets the equipment, installation, and performance specifications in Appendix A to this part; and is maintained according to the quality assurance and quality control procedures in Appendix B to this part; and shall record SO<sub>2</sub> and NO<sub>x</sub> emissions in the appropriate units of measurement (i.e., lb/hr for SO<sub>2</sub> and lb/mmBtu for NO<sub>x</sub>).

(c) *Heat Input Measurement Requirement.* The owner or operator shall determine and record the heat input to each affected unit for every hour or part of an hour any fuel is combusted following the procedures in Appendix F to this part.

(d) *Primary equipment hourly operating requirements.* The owner or operator shall ensure that all continuous emission and opacity monitoring systems required by this part are in operation and monitoring unit emissions or opacity at all times that the affected unit combusts any fuel except as provided in §75.11(e) and during periods of calibration, quality assurance, or preventive maintenance, performed pursuant to §75.21 and appendix B of this part, periods of repair, periods of backups of data from the data acquisition and handling system, or recertification performed pursuant to §75.20. The owner or operator shall also ensure, subject to the exceptions above in this paragraph, that all continuous opacity monitoring systems required by this part are in operation and monitoring opacity during the time following combustion when fans are still operating, unless fan operation is not required to be included under any other applicable Federal, State, or local regulation, or permit. The owner or operator shall ensure that the following requirements are met:

(1) The owner or operator shall ensure that each continuous emission monitoring system and component thereof is capable of completing a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-min interval. The owner or operator shall reduce all SO<sub>2</sub> concentrations, volumetric flow, SO<sub>2</sub> mass emissions, SO<sub>2</sub> emission rate in lb/mmBtu (if applicable), CO<sub>2</sub> concentration, O<sub>2</sub> concentration, CO<sub>2</sub> mass

emissions (if applicable), NO<sub>x</sub> concentration, and NO<sub>x</sub> emission rate data collected by the monitors to hourly averages. Hourly averages shall be computed using at least one data point in each fifteen minute quadrant of an hour, where the unit combusted fuel during that quadrant of an hour. Notwithstanding this requirement, an hourly average may be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour) if data are unavailable as a result of the performance of calibration, quality assurance, or preventive maintenance activities pursuant to §75.21 and appendix B of this part, backups of data from the data acquisition and handling system, or recertification, pursuant to §75.20. The owner or operator shall use all valid measurements or data points collected during an hour to calculate the hourly averages. All data points collected during an hour shall be, to the extent practicable, evenly spaced over the hour.

(2) The owner or operator shall ensure that each continuous opacity monitoring system is capable of completing a minimum of one cycle of sampling and analyzing for each successive 10-sec period and one cycle of data recording for each successive 6-min period. The owner or operator shall reduce all opacity data to 6-min averages calculated in accordance with the provisions of part 51, appendix M of this chapter, except where the applicable State implementation plan or operating permit requires a different averaging period, in which case the State requirement shall satisfy this Acid Rain Program requirement.

(3) Failure of an SO<sub>2</sub>, CO<sub>2</sub> or O<sub>2</sub> pollutant concentration monitor, flow monitor, or NO<sub>x</sub> continuous emission monitoring system, to acquire the minimum number of data points for calculation of an hourly average in paragraph (d)(1) of this section, shall result in the failure to obtain a valid hour of data and the loss of such component data for the entire hour. An hourly average NO<sub>x</sub> or SO<sub>2</sub> emission rate in lb/mmBtu is valid only if the minimum number of data points are acquired by



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both the pollutant concentration monitor (NO<sub>x</sub> or SO<sub>2</sub>) and the diluent monitor (CO<sub>2</sub> or O<sub>2</sub>). Except for SO<sub>2</sub> emission rate data in lb/mmBtu, if a valid hour of data is not obtained, the owner or operator shall estimate and record emission or flow data for the missing hour by means of the automated data acquisition and handling system, in accordance with the applicable procedure for missing data substitution in subpart D of this part.

(e) *Optional backup monitor requirements.* If the owner or operator chooses to use two or more continuous emission monitoring systems, each of which is capable of monitoring the same stack or duct at a specific affected unit, or group of units using a common stack, then the owner or operator shall designate one monitoring system as the primary monitoring system, and shall record this information in the monitoring plan, as provided for in § 75.53. The owner or operator shall designate the other monitoring system(s) as backup monitoring system(s) in the monitoring plan. The backup monitoring system(s) shall be designated as redundant backup monitoring system(s), non-redundant backup monitoring system(s), or reference method backup system(s), as described in § 75.20(d). When the certified primary monitoring system is operating and not out-of-control as defined in § 75.24, only data from the certified primary monitoring system shall be reported as valid, quality-assured data. Thus, data from the backup monitoring system may be reported as valid, quality-assured data only when the backup is operating and not out-of-control as defined in § 75.24 (or in the applicable reference method in appendix A of part 60 of this chapter) and when the certified primary monitoring system is not operating (or is operating but out-of-control). A particular monitor may be designated both as a certified primary monitor for one unit and as a certified redundant backup monitor for another unit.

(f) *Minimum measurement capability requirement.* The owner or operator shall ensure that each continuous emission monitoring system and component thereof is capable of accurately measuring, recording, and reporting data, and shall not incur a full scale

exceedance, except as provided in sections 2.1.1.4, 2.1.2.4, and 2.1.4 of appendix A of this part.

(g) *Minimum Recording and Reporting Requirements.* The owner or operator shall record and the designated representative shall report the hourly, daily, quarterly, and annual information collected under the requirements of this part as specified in subparts F and G of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26519, May 17, 1995]

**§ 75.11 Specific provisions for monitoring SO<sub>2</sub> emissions (SO<sub>2</sub> and flow monitors).**

(a) *Coal-fired units.* The owner or operator shall meet the general operating requirements in § 75.10 for an SO<sub>2</sub> continuous emission monitoring system for each affected coal-fired unit, except as provided in § 75.16 and in subpart E of this part. The provisions in this paragraph are suspended from July 17, 1995, through December 31, 1996.

(b) *Moisture correction.* Where SO<sub>2</sub> concentration is measured on a dry basis, the owner or operator shall either:

(1) Install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the flue gases; or

(2) Determine the moisture content of the flue gases continuously (or on an hourly basis) and correct the measured hourly volumetric flow rates for moisture when calculating SO<sub>2</sub> mass emissions (in lb/hr) using the procedures in appendix F of this part.

(c) *Unit with no location for a flow monitor meeting siting requirements.* Where no location exists that satisfies the minimum physical siting criteria in appendix A to this part for installation of a flow monitor in either the stack or the ducts serving an affected unit or installation of a flow monitor in either the stack or ducts is demonstrated to the satisfaction of the Administrator to be technically infeasible, either:

(1) The designated representative shall petition the Administrator for an alternative method for monitoring volumetric flow in accordance with § 75.66; or



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(2) The owner or operator shall construct a new stack or modify existing ductwork to accommodate the installation of a flow monitor, and the designated representative shall petition the Administrator for an extension of the required certification date given in § 75.4 and approval of an interim alternative flow monitoring methodology in accordance with § 75.66. The Administrator may grant existing Phase I affected units an extension to January 1, 1995, and existing Phase II affected units an extension to January 1, 1996 for the submission of the certification application for the purpose of constructing a new stack or making substantial modifications to ductwork for installation of a flow monitor; or

(3) The owner or operator shall install a flow monitor in any existing location in the stack or ducts serving the affected unit at which the monitor can achieve the performance specifications of this part.

(d) *Gas-fired units and oil-fired units.* The owner or operator of an affected unit that qualifies as a gas-fired or oil-fired unit, as defined in § 72.2 of this chapter, based on information submitted by the designated representative in the monitoring plan, shall measure and record SO<sub>2</sub> emissions using one of the following methods:

(1) Meet the general operating requirements in § 75.10 for an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system except as provided in paragraph (e) of this section. When the owner or operator uses an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system to monitor SO<sub>2</sub> mass emissions from an affected unit, the owner or operator shall comply with applicable monitoring provisions in paragraph (a) of this section; or

(2) Provide other information satisfactory to the Administrator using the procedure specified in appendix D to this part for estimating hourly SO<sub>2</sub> mass emissions.

(e) *Units with SO<sub>2</sub> continuous emission monitoring systems during the combustion of gaseous fuel.* On or after January 1, 1997, the owner or operator of a unit with an SO<sub>2</sub> continuous emission monitoring system shall, during any hours in which the unit combusts only pipe-

line natural gas or gaseous fuel with a sulfur content no greater than natural gas, calculate SO<sub>2</sub> emissions in accordance with the following procedures. Prior to January 1, 1997, the owner or operator of such a unit may calculate SO<sub>2</sub> emissions in accordance with the following procedures.

(1) The owner or operator of a unit with an SO<sub>2</sub> continuous emission monitoring system shall, during any hours in which the unit combusts only pipeline natural gas, calculate SO<sub>2</sub> emissions using one of the following two methods in lieu of operating and recording data from the SO<sub>2</sub> continuous emission monitoring system:

(i) By using the heat input calculated using a certified flow monitoring system and a certified diluent monitor, the default SO<sub>2</sub> emission rate for pipeline natural gas from appendix D of this part, and Equation F-23 in appendix F of this part and by certifying this as a system for monitoring SO<sub>2</sub> mass emissions by identification in the monitoring plan, by tests for the data acquisition and handling system under § 75.20(c), and by meeting all quality control and quality assurance requirements in appendix B of this part for a flow monitor and a diluent monitor; or

(ii) By certifying an excepted monitoring system under appendix D of this part under § 75.20, by following the procedures for determining SO<sub>2</sub> emissions from combustion of gaseous fuels under appendix D of this part, by meeting the recordkeeping requirements of § 75.55, and by meeting all quality control and quality assurance requirements for fuel flowmeters in appendix D of this part.

(2) During any hours in which the unit combusts only gaseous fuel with a sulfur content no greater than natural gas other than pipeline natural gas, the owner or operator shall calculate SO<sub>2</sub> mass emissions by certifying an excepted monitoring system under appendix D of this part under § 75.20, by using the gas sampling and analysis and fuel flow procedures of appendix D of this part, by meeting the recordkeeping requirements of § 75.55, and by meeting all quality control and quality assurance requirements for fuel flowmeters in appendix D of this part.



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(f) *Other units.* The owner or operator of an affected unit that combusts wood, refuse, or other material in addition to oil or gas shall comply with the monitoring provisions for coal-fired units specified in paragraph (a) of this section.

(g) *Coal-fired units.* The owner or operator shall meet the general operating requirements in § 75.10 for an SO<sub>2</sub> continuous emission monitoring system and a flow monitoring system for each affected coal-fired unit while the unit is combusting coal or any fuel other than natural gas or a gaseous fuel with a sulfur content no greater than natural gas, except as provided in § 75.16 and in subpart E of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26520, 26566, May 17, 1995]

EFFECTIVE DATE NOTES: 1. At 60 FR 26560, 26566, May 17, 1995, § 75.11(a) was temporarily suspended, effective July 17, 1995 through December 31, 1996.

2. At 60 FR 26560, 26566, May 17, 1995, § 75.11(e) and (g) were temporarily added and are effective from July 17, 1995 through December 31, 1996.

**§ 75.12 Specific provisions for monitoring NO<sub>x</sub> emissions (NO<sub>x</sub> and diluent gas monitors).**

(a) *Coal-fired units, gas-fired nonpeaking units or oil-fired nonpeaking units.* The owner or operator shall meet the general operating requirements in § 75.10 of this part for a NO<sub>x</sub> continuous emission monitoring system for each affected coal-fired unit, gas-fired nonpeaking unit, or oil-fired nonpeaking unit, except as provided in paragraph (c) of this section, § 75.17, and subpart E of this part. The diluent gas monitor in the NO<sub>x</sub> continuous emission monitoring system may measure either O<sub>2</sub> or CO<sub>2</sub> concentration in the flue gases.

(b) *Determination of NO<sub>x</sub> emission rate.* The owner or operator shall calculate hourly, quarterly, and annual NO<sub>x</sub> emission rates (in lb/mmBtu) by combining the NO<sub>x</sub> concentration (in ppm) and diluent concentration (in percent O<sub>2</sub> or CO<sub>2</sub>) measurements according to the procedures in appendix F of this part.

(c) *Gas-fired peaking units or oil-fired peaking units.* The owner or operator of an affected unit that qualifies as a gas-fired peaking unit or oil-fired peaking

unit, as defined in § 72.2 of this chapter, based on information submitted by the designated representative in the monitoring plan shall comply with one of the following:

(1) Meet the general operating requirements in § 75.10 for a NO<sub>x</sub> continuous emission monitoring system; or

(2) Provide information satisfactory to the Administrator using the procedure specified in appendix E of this part for estimating hourly NO<sub>x</sub> emission rate. However, if in the years after certification of an excepted monitoring system under appendix E of this part, a unit's operations exceed a capacity factor of 20 percent in any calendar year or exceed a capacity factor of 10.0 percent averaged over three years, the owner or operator shall install, certify, and operate a NO<sub>x</sub> continuous emission monitoring system no later than December 31 of the following calendar year.

(d) *Other units.* The owner or operator of an affected unit that combusts wood, refuse, or other material in addition to oil or gas shall comply with the monitoring provisions specified in paragraph (a) of this section.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26520, May 17, 1995]

**§ 75.13 Specific provisions for monitoring CO<sub>2</sub> emissions.**

(a) *CO<sub>2</sub> continuous emission monitoring system.* If the owner or operator chooses to use the continuous emission monitoring method, then the owner or operator shall meet the general operating requirements in § 75.10 for a CO<sub>2</sub> continuous emission monitoring system and flow monitoring system for each affected unit. The owner or operator shall comply with the applicable provisions specified in § 75.11 (a) through (e) or § 75.16, except that the phrase "SO<sub>2</sub> continuous emission monitoring system" is replaced with "CO<sub>2</sub> continuous emission monitoring system," the term "maximum potential concentration for SO<sub>2</sub>" is replaced with "maximum CO<sub>2</sub> concentration," and the phrase "SO<sub>2</sub> mass emissions" is replaced with "CO<sub>2</sub> mass emissions."

(b) *Determination of CO<sub>2</sub> emissions using Appendix G of this part.* If the owner or operator chooses to use the appendix G method, then the owner or



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operator may provide information satisfactory to the Administrator for estimating daily CO<sub>2</sub> mass emissions based on the measured carbon content of the fuel and the amount of fuel combusted. For units with wet flue gas desulfurization systems or other add-on emissions controls generating CO<sub>2</sub>, the owner or operator shall use the procedures in appendix G to this part to estimate both combustion-related emissions based on the measured carbon content of the fuel and the amount of fuel combusted and sorbent-related emissions based on the amount of sorbent injected. The owner or operator shall calculate daily, quarterly, and annual CO<sub>2</sub> mass emissions (in tons) in accordance with the procedures in appendix G to this part.

(c) *Determination of CO<sub>2</sub> mass emissions using an O<sub>2</sub> monitor according to appendix F.* If the owner or operator chooses to use the appendix F method, then the owner or operator may determine hourly CO<sub>2</sub> concentration and mass emissions with a flow monitoring system, a continuous O<sub>2</sub> concentration monitor, fuel F and F<sub>c</sub> factors, and where O<sub>2</sub> concentration is measured on a dry basis, hourly corrections for the moisture content of the flue gases, using the methods and procedures specified in appendix F to this part. For units using a common stack, multiple stack, or bypass stack, the owner or operator may use the provisions of § 75.16, except that the phrase "SO<sub>2</sub> continuous emission monitoring system" is replaced with "CO<sub>2</sub> continuous emission monitoring system," the term "maximum potential concentration of SO" is replaced with "maximum CO<sub>2</sub> concentration," and the phrase "SO<sub>2</sub> mass emissions" is replaced with "CO<sub>2</sub> mass emissions."

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26521, May 17, 1995]

**§ 75.14 Specific provisions for monitoring opacity.**

(a) *Coal-fired units and oil-fired units.* The owner or operator shall meet the general operating provisions in § 75.10 of this part for a continuous opacity monitoring system for each affected coal-fired or oil-fired unit, except as provided in paragraphs (b), (c), and (d) of this section and in § 75.18. Each continuous opacity monitoring system

shall meet the design, installation, equipment, and performance specifications in Performance Specification 1 in appendix B to part 60 of this chapter. Any continuous opacity monitoring system previously certified to meet Performance Specification 1 shall be deemed certified for the purposes of this part.

(b) *Unit with wet flue gas pollution control system.* If the owner or operator can demonstrate that condensed water is present in the exhaust flue gas stream and would impede the accuracy of opacity measurements, then the owner or operator of an affected unit equipped with a wet flue gas pollution control system for SO<sub>2</sub> emissions or particulates is exempt from the opacity monitoring requirements of this part.

(c) *Gas-fired units.* The owner or operator of an affected unit that qualifies as gas-fired, as defined in § 72.2 of this chapter, based on information submitted by the designated representative in the monitoring plan is exempt from the opacity monitoring requirements of this part. Whenever a unit previously categorized as a gas-fired unit is recategorized as another type of unit by changing its fuel mix, the owner or operator shall install, operate, and certify a continuous opacity monitoring system as required by paragraph (a) of this section by December 31 of the following calendar year.

(d) *Diesel-fired units and dual-fuel reciprocating engine units.* The owner or operator of an affected diesel-fired unit or a dual-fuel reciprocating engine unit is exempt from the opacity monitoring requirements of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 61 FR 25581, May 22, 1996]

**§ 75.15 Specific provisions for monitoring SO<sub>2</sub> emissions removal by qualifying Phase I technology.**

(a) *Additional monitoring provisions.* In addition to the SO<sub>2</sub> monitoring requirements in § 75.11 or § 75.16, for the purposes of adequately monitoring SO<sub>2</sub> emissions removal by qualifying Phase I technology operated pursuant to § 72.42 of this chapter, the owner or operator shall, except where specified below, use both an inlet SO<sub>2</sub>-diluent



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continuous emission monitoring system and an outlet SO<sub>2</sub>-diluent continuous emission monitoring system, consisting of an SO<sub>2</sub> pollutant concentration monitor and a diluent CO<sub>2</sub> or O<sub>2</sub> monitor. (The outlet SO<sub>2</sub>-diluent continuous emission monitoring system may consist of the same SO<sub>2</sub> pollutant concentration monitor that is required under § 75.11 or § 75.16 for the measurement of SO<sub>2</sub> emissions discharged to the atmosphere and the diluent monitor used as part of the NO<sub>x</sub> continuous emission monitoring system that is required under § 75.12 or § 75.17 for the measurement of NO<sub>x</sub> emissions discharged into the atmosphere.) During the period when required to measure emissions removal efficiency, from January 1, 1997 through December 31, 1999, the owner or operator shall meet the general operating requirements in § 75.10 for both the inlet and the outlet SO<sub>2</sub>-diluent continuous emission monitoring systems, and in addition, the owner or operator shall comply with the monitoring provisions in this section. On January 1, 2000, the owner or operator may cease operating and/or reporting on the inlet SO<sub>2</sub>-diluent continuous emission monitoring system results for the purposes of the Acid Rain Program.

(1) *Pre-combustion technology.* The owner or operator of an affected unit for which a precombustion technology has been employed for the purpose of meeting qualifying Phase I technology requirements shall use sections 4 and 5 of Method 19 in appendix A of part 60 of this chapter to estimate, daily, for the purposes of this part, the percentage SO<sub>2</sub> removal efficiency from such technology, and shall substitute the following ASTM methods for sampling, preparation, and analysis of coal for those cited in Method 19: ASTM D2234-89, Standard Test Method for Collection of a Gross Sample of Coal (Type I, Conditions A, B, or C and systematic spacing), ASTM D2013-86, Standard Method of Preparing Coal Samples for Analysis, ASTM D2015-91, Standard Test Method for Gross Calorific Value of Coal and Coke by the Adiabatic Calorimeter, and ASTM D3177-89, Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke, or ASTM D4239-85, Standard Test Method

for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods. Each of the preceding ASTM methods is incorporated by reference in § 75.6.

(2) *Combustion technology.* The owner or operator of an affected unit for which a combustion technology has been installed and operated for the purpose of meeting qualifying Phase I technology requirements shall use the coal sampling and analysis procedures in paragraph (a)(1) of this section and Equation 5 in paragraph (b) of this section to estimate the percentage SO<sub>2</sub> removal efficiency from such technology.

(3) *Post-combustion technology.* The owner or operator of an affected unit for which a post-combustion technology has been installed and operated for the purpose of meeting qualifying Phase I technology requirements shall install, certify, operate, and maintain both an inlet and an outlet SO<sub>2</sub>-diluent continuous emission monitoring system.

(i) Both inlet and outlet SO<sub>2</sub>-diluent continuous emission monitoring systems shall consist of an SO<sub>2</sub> pollutant concentration monitor and a diluent gas monitor for measuring the O<sub>2</sub> or CO<sub>2</sub> concentrations in the flue gas and shall measure and record average hourly SO<sub>2</sub> emission rates (in lb/mmBtu).

(ii) The SO<sub>2</sub>-diluent continuous emission monitoring systems for measuring and recording the SO<sub>2</sub> emissions removal by a qualifying Phase I technology shall meet all the requirements of this part during the period when required to measure emissions removal, from January 1, 1997 through December 31, 1999, and shall meet the certification deadline specified in § 75.4.

(iii) The SO<sub>2</sub> pollutant concentration monitors and the diluent gas monitors at the inlet and outlet of the SO<sub>2</sub> emission controls shall meet all requirements specified in appendices A and B to this part.

(b) *Demonstration of SO<sub>2</sub> emissions removal efficiency.* The owner or operator shall demonstrate the average annual percentage SO<sub>2</sub> emissions removal efficiency of the installed technology or combination of technologies during the period when required to measure emissions removal, from January 1, 1997

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through December 31, 1999, according to the following procedures:

(1) Calculate the average annual SO<sub>2</sub> emissions removal efficiency using Equations 1-7 as follows:

$$\%R_g = \frac{100[1.0 - (1.0 - \%R_f/100)(1.0 - \%R_c/100)]}{(1.0 - \%R_c/100)} \quad (\text{Eq. 1})$$

where,

%R = Overall percentage SO<sub>2</sub> emissions removal efficiency.

%R<sub>f</sub> = Percentage SO<sub>2</sub> emissions removal efficiency from fuel pretreatment, calculated from Equation 19-22 in Reference Method 19 in Appendix A to part 60 of this chapter.

%R<sub>c</sub> = Percentage SO<sub>2</sub> emissions removal of combustion emission controls, calculated from Equation 5.

%R<sub>g</sub> = Percentage SO<sub>2</sub> removal efficiency of post-combustion emission controls, calculated from Equation 2.

$$\%R_g = 100 \left[ 1.0 - \frac{E_o}{E_i} \right]$$

(Eq. 2)

where,

E<sub>o</sub> = Average hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured at the outlet of the post-combustion emission controls during the calendar year, calculated from Equation 3.

E<sub>i</sub> = Average hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured at the inlet to the post-combustion emission controls during the calendar year, calculated from Equation 4.

$$E_o = \frac{\sum_{j=1}^n E_{hoj}}{n}$$

(Eq. 3)

where,

E<sub>hoj</sub> = Each hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured by the continuous emission monitoring system at the outlet to the post-combustion emission controls.

n = Total unit operating hours during which the SO<sub>2</sub> continuous emission monitoring system at the outlet of the emission controls collected quality-assured data.

$$E_i = \frac{\sum_{j=1}^m E_{h1j}}{m}$$

(Eq. 4)

where,

E<sub>h1j</sub> = Each hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured by the continuous emission monitoring system at the inlet to the post-combustion emission controls.

m = Total unit operating hours during which the SO<sub>2</sub> continuous emission monitoring system at the inlet to the emission controls collected quality-assured data.

$$\%R_c = 100 \left[ 1.0 - \frac{E_{co}}{E_{ci}} \right] \quad (\text{Eq. 5})$$

where,

E<sub>co</sub> = Average hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured at the outlet of the combustion emission controls during the calendar year, calculated from Equation 6.

E<sub>ci</sub> = Average hourly SO<sub>2</sub> emission rate in lb/mmBtu, determined by coal sampling and analysis according to the methods and procedures in paragraph (a)(1) of this section, calculated from Equation 7.

$$E_{co} = \frac{\sum_{j=1}^q E_{ocj}}{q}$$

(Eq. 6)

where,

E<sub>ocj</sub> = Each hourly SO<sub>2</sub> emission rate in lb/mmBtu, measured by the continuous emission monitoring system at the outlet to the combustion controls.

q = Total unit operating hours for which the outlet SO<sub>2</sub> continuous emission monitoring system collected quality-assured data during the calendar year.

$$E_{ci} = \frac{\sum_{j=1}^p E_{icj}}{p} \quad (\text{Eq. 7})$$



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where,

$E_{icj}$  = Each average hourly SO<sub>2</sub> emission rate in lb/mmBtu, determined by the coal sampling and analysis methods and procedures in paragraph (a)(1) of this section and calculated using appendix A, Method 19 of part 60 of this chapter, performed once a day.

$p$  = Total unit operation hours during which coal sampling and analysis is performed to determine SO<sub>2</sub> emissions at the inlet to the combustion controls.

(2) The owner or operator shall include all periods when fuel is being combusted in determining total unit operating hours for the purpose of calculating the average SO<sub>2</sub> emissions removal efficiency during the calendar year.

(3) The owner or operator shall use only quality-assured SO<sub>2</sub> emissions data in the calculation of SO<sub>2</sub> emissions removal efficiency.

(4) Compliance with the 90-percent SO<sub>2</sub> emissions removal efficiency requirement under this part is determined annually beginning January 1, 1997 through December 31, 1999.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26521, May 17, 1995; 61 FR 25582, May 22, 1996]

**§ 75.16 Special provisions for monitoring emissions from common, bypass, and multiple stacks for SO<sub>2</sub> emissions and heat input determinations.**

(a) *Phase I common stack procedures.* Prior to January 1, 2000, the following procedures shall be used when more than one unit utilize a common stack:

(1) *Only Phase I units or only Phase II units using common stack.* When a Phase I unit uses a common stack with one or more other Phase I units, but no other units, or when a Phase II unit uses a common stack with one or more Phase I units, but no other units, the owner or operator shall either:

(i) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct to the common stack from each affected unit; or

(ii) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission

monitoring system and flow monitoring system in the common stack; and

(A) Combine emissions for the affected units for recordkeeping and compliance purposes; or

(B) Provide information satisfactory to the Administrator on methods for apportioning SO<sub>2</sub> mass emissions measured in the common stack to each of the affected units. The designated representative shall provide the information to the Administrator through a petition submitted under § 75.66. The Administrator may approve such substitute methods for apportioning SO<sub>2</sub> mass emissions measured in a common stack whenever the method ensures complete and accurate accounting of all emissions regulated under this part.

(2) *Phase I unit using common stack with non-Phase I unit(s).* When one or more Phase I units uses a common stack with one or more Phase II or nonaffected units, the owner or operator shall either:

(i) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct to the common stack from each affected unit; or

(ii) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the common stack; and

(A) Designate any Phase II unit(s) as a substitution or compensating unit(s) in accordance with part 72 of this chapter and any nonaffected unit(s) as opt-in units in accordance with part 74 of this chapter and combine emissions for recordkeeping and compliance purposes; or

(B) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct from each Phase II or nonaffected unit; calculate SO<sub>2</sub> mass emissions from the Phase I units as the difference between SO<sub>2</sub> mass emissions measured in the common stack and SO<sub>2</sub> mass emissions measured in the ducts of the Phase II and nonaffected units; record and report the calculated SO<sub>2</sub> mass emissions from the Phase I units; and combine emissions for the Phase I units for compliance purposes; or

(C) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission



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monitoring system and flow monitoring system in the duct from each Phase I or nonaffected unit; calculate SO<sub>2</sub> mass emissions from the Phase II units as the difference between SO<sub>2</sub> mass emissions measured in the common stack and SO<sub>2</sub> mass emissions measured in the ducts of the Phase I and nonaffected units; and combine emissions for the Phase II units for recordkeeping and compliance purposes; or

(D) Record the combined emissions from all units as the combined SO<sub>2</sub> mass emissions for the Phase I units for recordkeeping and compliance purposes; or

(E) Provide information satisfactory to the Administrator on methods for apportioning SO<sub>2</sub> mass emissions measured in the common stack to each of the units using the common stack. The designated representative shall provide the information to the Administrator through a petition submitted under § 75.66. The Administrator may approve such substitute methods for apportioning SO<sub>2</sub> mass emissions measured in a common stack whenever the method ensures complete and accurate accounting of all emissions regulated under this part.

(3) *Phase II unit using common stack with non-affected unit(s)*. When one or more Phase II units uses a common stack with one or more nonaffected units, the owner or operator shall follow the procedures in paragraph (b)(2) of this section.

(b) *Phase II common stack procedures*. On or after January 1, 2000, the following procedures shall be used when more than one unit uses a common stack:

(1) *Unit utilizing common stack with other affected unit(s)*. When a Phase I or Phase II affected unit utilizes a common stack with one or more other Phase I or Phase II affected units, but no nonaffected units, the owner or operator shall either:

(i) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct to the common stack from each affected unit; or

(ii) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the common stack; and

(A) Combine emissions for the affected units for recordkeeping and compliance purposes; or

(B) Provide information satisfactory to the Administrator on methods for apportioning SO<sub>2</sub> mass emissions measured in the common stack to each of the Phase I and Phase II affected units. The designated representative shall provide the information to the Administrator through a petition submitted under § 75.66. The Administrator may approve such substitute methods for apportioning SO<sub>2</sub> mass emissions measured in a common stack whenever the method ensures complete and accurate accounting of all emissions regulated under this part.

(2) *Unit utilizing common stack with nonaffected unit(s)*. When one or more Phase I or Phase II affected units utilizes a common stack with one or more nonaffected units, the owner or operator shall either:

(i) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct to the common stack from each Phase I and Phase II unit; or

(ii) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the common stack; and

(A) Designate the nonaffected units as opt-in units in accordance with part 74 of this chapter and combine emissions for recordkeeping and compliance purposes; or

(B) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in the duct from each nonaffected unit; determine SO<sub>2</sub> mass emissions from the affected units as the difference between SO<sub>2</sub> mass emissions measured in the common stack and SO<sub>2</sub> mass emissions measured in the ducts of the nonaffected units; and combine emissions for the Phase I and Phase II affected units for recordkeeping and compliance purposes; or

(C) Record the combined emissions from all units as the combined SO<sub>2</sub> mass emissions for the Phase I and Phase II affected units for recordkeeping and compliance purposes; or

(D) Petition through the designated representative and provide information



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satisfactory to the Administrator on methods for apportioning SO<sub>2</sub> mass emissions measured in the common stack to each of the units using the common stack. The Administrator may approve such demonstrated substitute methods for apportioning SO<sub>2</sub> mass emissions measured in a common stack whenever the demonstration ensures complete and accurate accounting of all emissions regulated under this part.

(c) *Unit with bypass stack.* Whenever any portion of the flue gases from an affected unit can be routed so as to avoid the installed SO<sub>2</sub> continuous emission monitoring system and flow monitoring system, the owner or operator shall either:

(1) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system or flow monitoring system on the bypass flue, duct, or stack gas stream and calculate SO<sub>2</sub> mass emissions for the unit as the sum of the emissions recorded by all required monitoring systems; or

(2) Monitor SO<sub>2</sub> mass emissions on the bypass flue, duct, or stack gas stream using the reference methods in § 75.22(b) for SO<sub>2</sub> and flow and calculate SO<sub>2</sub> mass emissions for the unit as the sum of the emissions recorded by the installed monitoring systems on the main stack and the emissions measured by the reference method monitoring systems; or

(3) Where a Federal, State, or local regulation or permit prohibits operation of the bypass stack or duct or limits operation of the bypass stack or duct to emergency situations resulting from the malfunction of a flue gas desulfurization system record the following values for each hour during which emissions pass through the bypass stack or duct: the maximum potential concentration for SO<sub>2</sub> as determined under section 2 of appendix A of this part, and the hourly volumetric flow value that would be substituted for the flow monitor installed on the main stack or flue under the missing data procedures in subpart D of this part if data from the flow monitor installed on the main stack or flue were missing for the hour. Calculate SO<sub>2</sub> mass emissions for the unit as the sum of the emissions calculated with the substitute values and the emissions re-

corded by the SO<sub>2</sub> and flow monitoring systems installed on the main stack.

(d) *Unit with multiple stacks or ducts.* When the flue gases from an affected unit utilize two or more ducts feeding into two or more stacks (that may include flue gases from other affected or nonaffected units), or when the flue gases utilize two or more ducts feeding into a single stack and the owner or operator chooses to monitor in the ducts rather than the stack, the owner or operator shall either:

(1) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in each duct feeding into the stack or stacks and determine SO<sub>2</sub> mass emissions from each affected unit as the sum of the SO<sub>2</sub> mass emissions recorded for each duct; or

(2) Install, certify, operate, and maintain an SO<sub>2</sub> continuous emission monitoring system and flow monitoring system in each stack. Determine SO<sub>2</sub> mass emissions from each affected unit as the sum of the SO<sub>2</sub> mass emissions recorded for each stack, except that where another unit also exhausts flue gases to one or more of the stacks, the owner or operator shall also comply with the applicable common stack requirements of this section to determine and record SO<sub>2</sub> mass emissions from the units using that stack.

(e) *Heat input.* The owner or operator of an affected unit using a common stack, bypass stack, or multiple stacks shall account for heat input according to the following:

(1) The owner or operator of an affected unit using a common stack, bypass stack, or multiple stack with a diluent monitor and a flow monitor on each stack may choose to determine the heat input for the affected unit, wherever flow and diluent monitor measurements are used to determine the heat input, using the procedures specified in paragraphs (a) through (d) of this section, except that the terms "SO<sub>2</sub> mass emissions" and "emissions" are replaced with the term "heat input" and the phrase "SO<sub>2</sub> continuous emission monitoring system and flow monitoring system" is replaced with the phrase "a diluent monitor and a flow monitor".



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(2) Notwithstanding paragraph (e)(1) of this section, for any common stack where any unit utilizing the common stack has a NO<sub>x</sub> emission limitation pursuant to Section 407(b) of the Act, the owner or operator shall not combine heat input for compliance purposes and shall determine heat input for that unit separately.

(3) Notwithstanding paragraph (e)(1) of this section, during the period prior to January 1, 2000, the owner or operator shall not combine heat input for units utilizing a common stack in order to determine heat input for each unit for purposes of § 75.10.

(4) In the event that an owner or operator of a unit with a bypass stack does not install and certify a diluent monitor and flow monitoring system in a bypass stack, the owner or operator shall determine total heat input to the unit for each unit operating hour during which the bypass stack is used according to the missing data provisions for heat input under § 75.36 or the procedures for calculating heat input from fuel sampling and analysis in section 5.5 of appendix F of this part.

[60 FR 26522, May 17, 1995, as amended at 61 FR 25582, May 22, 1996]

**§ 75.17 Specific provisions for monitoring emissions from common, bypass, and multiple stacks for NO<sub>x</sub> emission rate.**

(a) *Unit utilizing common stack with other affected unit(s).* When an affected unit utilizes a common stack with one or more affected units, but no non-affected units, the owner or operator shall either:

(1) Install, certify, operate, and maintain a NO<sub>x</sub> continuous emission monitoring system in the duct to the common stack from each affected unit; or

(2) Install, certify, operate, and maintain a NO<sub>x</sub> continuous emission monitoring system in the common stack and follow the appropriate procedure in paragraphs (a)(2) (i) through (iii) of this section, depending on whether or not the units are required to comply with a NO<sub>x</sub> emission limitation (in lb/mmBtu, annual average basis) pursuant to section 407(b) of the Act (referred to hereafter as "NO<sub>x</sub> emission limitation").

(i) When each of the affected units has a NO<sub>x</sub> emission limitation, the designated representative shall submit a compliance plan to the Administrator that indicates:

(A) Each unit will comply with the most stringent NO<sub>x</sub> emission limitation of any unit utilizing the common stack; or

(B) Each unit will comply with the applicable NO<sub>x</sub> emission limitation by averaging its emissions with the other unit(s) utilizing the common stack, pursuant to the emissions averaging plan submitted under part 76 of this chapter; or

(C) Each unit's compliance with the applicable NO<sub>x</sub> emission limit will be determined by a method satisfactory to the Administrator for apportioning to each of the units the combined NO<sub>x</sub> emission rate (in lb/mmBtu) measured in the common stack, as provided in a petition submitted by the designated representative. The Administrator may approve such demonstrated substitute methods for apportioning NO<sub>x</sub> emission rate measured in a common stack whenever the demonstration ensures complete and accurate estimation of all emissions regulated under this part.

(ii) When none of the affected units has a NO<sub>x</sub> emission limitation, the owner or operator and the designated representative have no additional obligations pursuant to section 407 of the Act and may record and report a combined NO<sub>x</sub> emission rate (in lb/mmBtu) for the affected units utilizing the common stack.

(iii) When at least one of the affected units has a NO<sub>x</sub> emission limitation and at least one of the affected units does not have a NO<sub>x</sub> emission limitation, the owner or operator shall either:

(A) Install, certify, operate, and maintain NO<sub>x</sub> and diluent monitors in the ducts from the affected units; or

(B) Develop, demonstrate, and provide information satisfactory to the Administrator on methods for apportioning the combined NO<sub>x</sub> emission rate (in lb/mmBtu) measured in the common stack on each of the units. The Administrator may approve such demonstrated substitute methods for apportioning the combined NO<sub>x</sub> emission rate measured in a common stack



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whenever the demonstration ensures complete and accurate estimation of all emissions regulated under this part.

(b) *Unit utilizing common stack with nonaffected unit(s).* When one or more affected units utilizes a common stack with one or more nonaffected units, the owner or operator shall either:

(1) Install, certify, operate, and maintain a NO<sub>x</sub> continuous emission monitoring system in the duct from each affected unit; or

(2) Develop, demonstrate, and provide information satisfactory to the Administrator on methods for apportioning the combined NO<sub>x</sub> emission rate (in lb/mmBtu) measured in the common stack for each of the units. The Administrator may approve such demonstrated substitute methods for apportioning the combined NO<sub>x</sub> emission rate measured in a common stack whenever the demonstration ensures complete and accurate estimation of all emissions regulated under this part.

(c) *Unit with multiple stacks or bypass stack.* When the flue gases from an affected unit utilize two or more ducts feeding into two or more stacks (that may include flue gases from other affected or nonaffected units), or when flue gases utilize two or more ducts feeding into a single stack and the owner or operator chooses to monitor in the ducts rather than the stack, the owner or operator shall monitor the NO<sub>x</sub> emission rate representative of each affected unit. Where another unit also exhausts flue gases to one or more of the stacks where monitoring systems are installed, the owner or operator shall also comply with the applicable common stack monitoring requirements of this section. The owner or operator shall either:

(1) Install, certify, operate, and maintain a NO<sub>x</sub> continuous emission monitoring system in each stack or duct and determine the NO<sub>x</sub> emission rate for the unit as the Btu-weighted sum of the NO<sub>x</sub> emission rates measured in the stacks or ducts using the heat input estimation procedures in appendix F of this part; or

(2) Install, certify, operate, and maintain a NO<sub>x</sub> continuous emission monitoring system in one stack or duct from each affected unit and record the monitored value as the NO<sub>x</sub> emission

rate for the unit. The owner or operator shall account for NO<sub>x</sub> emissions from the unit during all times when the unit combusts fuel.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26523, May 17, 1995]

**§ 75.18 Specific provisions for monitoring emissions from common and bypass stacks for opacity.**

(a) *Unit using common stack.* When an affected unit utilizes a common stack with other affected units or nonaffected units, the owner or operator shall comply with the applicable monitoring provision in this paragraph, as determined by existing Federal, State, or local opacity regulations.

(1) Where another regulation requires the installation of a continuous opacity monitoring system upon each affected unit, the owner or operator shall install, certify, operate, and maintain a continuous opacity monitoring system meeting Performance Specification 1 in appendix B to part 60 of this chapter (referred to hereafter as a "certified continuous opacity monitoring system") upon each unit.

(2) Where another regulation does not require the installation of a continuous opacity monitoring system upon each affected unit, and where the affected source is not subject to any existing Federal, State, or local opacity regulations, the owner or operator shall install, certify, operate, and maintain a certified continuous opacity monitoring system upon each common stack for the combined effluent.

(b) *Unit using bypass stack.* Where any portion of the flue gases from an affected unit can be routed so as to bypass the installed continuous opacity monitoring system, the owner or operator shall install, certify, operate, and maintain a certified continuous opacity monitoring system on each bypass stack flue, duct, or stack gas stream unless either:

(1) An applicable Federal, State, or local opacity regulation or permit exempts the unit from a requirement to install a continuous opacity monitoring system in the bypass stack; or



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(2) A continuous opacity monitoring system is already installed and certified at the inlet of the add-on emissions controls.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26524, May 17, 1995; 60 FR 40296, Aug. 8, 1995]

### Subpart C—Operation and Maintenance Requirements

#### § 75.20 Certification and recertification procedures.

(a) *Initial certification approval process.* The owner or operator shall ensure that each continuous emission or opacity monitoring system required by this part, which includes the automated data acquisition and handling system, and, where applicable, the CO<sub>2</sub> continuous emission monitoring system, meets the initial certification requirements of this section and shall ensure that all applicable certification tests under paragraph (c) of this section are completed by the deadlines specified in § 75.4 and prior to use in the Acid Rain Program. In addition, whenever the owner or operator installs a continuous emission or opacity monitoring system in order to meet the requirements of §§ 75.13 through 75.18 where no continuous emission or opacity monitoring system was previously installed, initial certification is required.

(1) *Notification of initial certification test dates.* The owner or operator or designated representative shall submit a written notice of the dates of initial certification testing at the unit as specified in § 75.60 and § 75.61(a)(1)(i).

(2) *Certification application.* The owner or operator shall apply for certification of each continuous emission or opacity monitoring system used under the Acid Rain Program. The owner or operator shall submit the certification application in accordance with § 75.60 and each complete certification application shall include the information specified in § 75.63.

(3) *Provisional approval of certification applications.* Upon the successful completion of the required certification procedures of this section for each continuous emission or opacity monitoring system or component thereof, each continuous emission or opacity monitoring system or component thereof

shall be deemed provisionally certified for use under the Acid Rain Program for a period not to exceed 120 days following receipt by the Administrator of the complete certification application under paragraph (a)(4) of this section; provided that no continuous emission or opacity monitor systems for a combustion source seeking to enter the Opt-in Program in accordance with part 74 of this chapter shall be deemed provisionally certified for use under the Acid Rain Program. Data measured and recorded by a provisionally certified continuous emission or opacity monitoring system or component thereof, in accordance with the requirements of appendix B of this part, will be considered valid quality-assured data (retroactive to the date and time of successful completion of all certification tests), provided that the Administrator does not invalidate the provisional certification by issuing a notice of disapproval within 120 days of receipt of the complete certification application.

(4) *Certification application formal approval process.* The Administrator will issue a written notice of approval or disapproval of the certification application to the owner or operator within 120 days of receipt of the complete certification application. In the event the Administrator does not issue such a written notice within 120 days of receipt, each continuous emission or opacity monitoring system which meets the performance requirements of this part and is included in the certification application will be deemed certified for use under the Acid Rain Program.

(i) *Approval notice.* If the certification application is complete and shows that each continuous emission or opacity monitoring system meets the performance requirements of this part, then the Administrator will issue a written notice of approval of the certification application within 120 days of receipt.

(ii) *Incomplete application notice.* If the certification application is not complete, then the Administrator will issue a written notice of insufficiency. The 120-day review period shall not begin prior to receipt of a complete application.



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(iii) *Disapproval notice.* If the certification application is complete but shows that any continuous emission or opacity monitoring system or component thereof does not meet the performance requirements of this part, the Administrator shall issue a written notice of disapproval of the certification application within 120 days of receipt. By issuing the notice of disapproval, the provisional certification is invalidated by the Administrator, and the data measured and recorded by each uncertified continuous emission or opacity monitoring system or component thereof shall not be considered valid quality-assured data from the date and time of completion of the invalid certification tests until the date and time that the owner or operator completes subsequently approved initial certification tests. The owner or operator shall follow the procedures for loss of certification in paragraph (a)(5) of this section for each continuous emission or opacity monitoring system or component thereof which was disapproved.

(iv) *Audit decertification.* The Administrator may issue a notice of disapproval of the certification status of a continuous emission or opacity monitoring system or component thereof, in accordance with § 75.21.

(5) *Procedures for loss of certification.* When the Administrator issues a notice of disapproval of a certification application or a notice of disapproval of certification status (as specified in paragraph (a)(4) of this section), then:

(i) The owner or operator shall substitute the following values, as applicable, for each hour of unit operation during the period of invalid data specified in paragraph (a)(4)(iii) of this section or in § 75.21: the maximum potential concentration of SO<sub>2</sub> as defined in section 2.1 of appendix A of this part to report SO<sub>2</sub> concentration; the maximum potential NO<sub>x</sub> emission rate, as defined in § 72.2 of this chapter to report NO<sub>x</sub> emissions, the maximum potential flow rate, as defined in section 2.1 of appendix A of this part to report volumetric flow, or the maximum CO<sub>2</sub> concentration used to determine the maximum potential concentration of SO<sub>2</sub> in section 2.1.1.1 of appendix A of this part to report CO<sub>2</sub> concentration

data until such time, date, and hour as the continuous emission monitoring system or component thereof can be adjusted, repaired, or replaced and certification tests successfully completed; and

(ii) The designated representative shall submit a notification of certification retest dates as specified in § 75.61(a)(1)(ii) and a new certification application according to the procedures in paragraph (a)(2) of this section; and

(iii) The owner or operator shall repeat all certification tests or other requirements that were failed by the continuous emission or opacity monitoring system, as indicated in the Administrator's notice of disapproval, no later than 30 unit operating days after the date of issuance of the notice of disapproval.

(b) *Recertification approval process.* Whenever the owner or operator makes a replacement, modification, or change in the certified continuous emission monitoring system or continuous opacity monitoring system (which includes the automated data acquisition and handling system, and, where applicable, the CO<sub>2</sub> continuous emission monitoring system), that significantly affects the ability of the system to measure or record the SO<sub>2</sub> concentration, volumetric gas flow, SO<sub>2</sub> mass emissions, NO<sub>x</sub> emission rate, CO<sub>2</sub> concentration, or opacity, or to meet the requirements of § 75.21 or appendix B of this part, the owner or operator shall recertify the continuous emission monitoring system, continuous opacity monitoring system, or component thereof according to the procedures in this paragraph. Examples of changes which require recertification include: replacement of the analytical method, including the analyzer; change in location or orientation of the sampling probe or site; rebuilding of the analyzer or all monitoring system equipment; and replacement of an existing continuous emission monitoring system or continuous opacity monitoring system. In addition, if a continuous emission monitoring system is not operating for more than two calendar years, then the owner or operator shall recertify the



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continuous emission monitoring system. The Administrator may determine whether a replacement, modification or change in a monitoring system significantly affects the ability of the monitoring system to measure or record the SO<sub>2</sub> concentration, volumetric gas flow, SO<sub>2</sub> mass emissions, NO<sub>x</sub> emission rate, CO<sub>2</sub> concentration, or opacity. Furthermore, whenever the owner or operator makes a replacement, modification, or change to the flue gas handling system or the unit operation that significantly changes the flow or concentration profile or opacity of monitored emissions, the owner or operator shall recertify the continuous emission or opacity monitoring system or component thereof according to the procedures in this paragraph. Recertification is not required prior to use of a non-redundant backup continuous emission monitoring system in cases where all of the following conditions have been met: the non-redundant backup continuous emission monitoring system has previously been certified at the same sampling location; all components of the non-redundant backup continuous emission monitoring system have previously been certified; and component monitors of the non-redundant backup continuous emission monitoring system pass a linearity check (for pollutant concentration monitors) or a calibration error test (for flow monitors) prior to their use for monitoring of emissions or flow. In addition, changes resulting from routine or normal corrective maintenance and/or quality assurance activities do not require recertification, nor do software modifications in the automated data acquisition and handling system, where the modification is only for the purpose of generating additional or modified reports for the State Implementation Plan or for reporting requirements under subpart G of this part.

(1) *Tests required.* For recertification testing, the owner or operator shall complete all certification tests in paragraph (c) of this section applicable to the monitoring system, except as approved by the Administrator. Such approval may be obtained by petition under § 75.66 or may be provided in

written guidance from the Administrator.

(2) *Notification of recertification test dates.* The owner or operator or designated representative shall submit notice of testing dates for recertification under this paragraph as specified in § 75.61(a)(1)(ii), unless such testing is required as a result of a change in the flue gas handling system, a change in location or orientation of the sampling probe or site, or the planned replacement of a continuous emission or opacity monitoring system or component thereof. In such cases, the owner or operator shall provide notice in accordance with the notice provisions for initial certification testing in § 75.61(a)(1)(i).

(3) *Substitution of missing data.* (i) The owner or operator shall substitute for missing data during the period following the replacement, modification, or change to the monitoring system up to the time of successful completion of all recertification testing according to the standard missing data procedures in §§ 75.33 through 75.36, and shall use the standard missing data substitution procedures for all missing data periods following the recertification, except as provided below.

(ii) If the replacement, modification, or change is such that the data collected by the prior certified monitoring system are no longer representative, such as after a change to the flue gas handling system or unit operation that requires changing the span value to be consistent with Section 2.1 of appendix A of this part, the owner or operator must also substitute the appropriate one of the following values: for a change that results in a significantly higher concentration or flow rate, substitute maximum potential values according to the procedures in paragraph (a)(5) of this section during the period following the replacement, modification, or change up to the time of the successful completion of all recertification testing; or for a change that results in a significantly lower concentration or flow rate, substitute data using the standard missing data procedures during the period following the replacement, modification, or change up to the time of the successful completion of all recertification testing.



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The owner or operator shall then use the initial missing data procedures in § 75.31 following provisional certification, unless otherwise provided by § 75.34 for units with add-on emission controls.

(4) *Recertification application.* The designated representative shall apply for recertification of a continuous emission or opacity monitoring system used under the Acid Rain Program according to the procedures in paragraph (a)(2) of this section. Each complete recertification application shall include the information specified in § 75.63 of this part.

(5) *Approval/disapproval of request for recertification.* The procedures for provisional certification in paragraph (a)(3) of this section shall apply. The Administrator will issue a written notice of approval or disapproval according to the procedures in paragraph (a)(4) of this section, except that the period for the Administrator's review provided under paragraph (a)(4) of this section shall not exceed 60 days following receipt of the complete recertification application by the Administrator. The missing data substitution procedures under paragraph (b)(3) of this section shall apply in the event of a loss of recertification.

(c) *Certification procedures.* Prior to the deadline in § 75.4 of this part, the owner or operator shall conduct certification tests and in accordance with § 75.63, the designated representative shall submit an application to demonstrate that the continuous emission or opacity monitoring system and components thereof meet the specifications in appendix A to this part. The owner or operator shall compare reference method values with output from the automated data acquisition and handling system that is part of the continuous emission monitoring system being tested. Except as specified in paragraphs (b)(1), (d) and (e) of this section, the owner or operator shall perform the following tests for initial certification or recertification of continuous emission or opacity monitoring systems or components according to the requirements of appendix A of this part:

(1) For each SO<sub>2</sub> pollutant concentration monitor and NO<sub>x</sub> continuous emission monitoring system:

(i) A 7-day calibration error test, where, for the NO<sub>x</sub> continuous emission monitoring system, this test is performed separately on the NO<sub>x</sub> pollutant concentration monitor and the diluent gas monitor;

(ii) A linearity check, where, for the NO<sub>x</sub> continuous emission monitoring system, this check is performed separately on the NO<sub>x</sub> pollutant concentration monitor and the diluent gas monitor;

(iii) A relative accuracy test audit;

(iv) A bias test; and

(v) A cycle time test.

(v) A cycle time/response time test.

(2) For each flow monitor:

(i) A 7-day calibration error test;

(ii) Relative accuracy test audits at three flue gas velocities; and

(iii) A bias test (at normal operating load).

(3) The relative accuracy test audits for the SO<sub>2</sub> pollution concentration monitor and the flow monitor shall be performed contemporaneously.

(4) The certification test data from an O<sub>2</sub> or a CO<sub>2</sub> diluent gas monitor certified for use in a NO<sub>x</sub> continuous emission monitoring system may be submitted to meet the requirements of § 75.20(c)(5).

(5) For each CO<sub>2</sub> pollutant concentration monitor or O<sub>2</sub> monitor which is part of a CO<sub>2</sub> continuous emission monitoring system or is used to monitor heat input and for each SO<sub>2</sub>-diluent continuous emission monitoring system:

(i) A 7-day calibration error test, where, for the SO<sub>2</sub>-diluent system, this test is performed separately on each component monitor;

(ii) A linearity check, where, for the SO<sub>2</sub> diluent system, this check is performed separately on each component monitor;

(iii) A relatively accuracy test audit; and

(iv) A cycle-time test.

(6) The owner or operator shall ensure that certification or recertification of a continuous opacity monitor for use under the Acid Rain Program is conducted according to one of the following procedures:



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(i) Performance of the tests for certification or recertification, according to the requirements of Performance Specification 1 in appendix B to part 60 of this chapter.

(ii) A continuous opacity monitoring system tested and certified previously under State or other Federal requirements to meet the requirements of Performance Specification 1 shall be deemed certified for the purposes of this part.

(7) For the automated data acquisition and handling system, tests designed to verify:

(i) Proper computation of hourly averages for pollutant concentrations, flow rate, pollutant emission rates, and pollutant mass emissions; and

(ii) Proper computation and application of the missing data substitution procedures in subpart D of this part and the bias adjustment factors in Section 7 of appendix A to this part.

(8) The owner or operator shall provide, or cause to be provided, adequate facilities for certification or recertification testing that include:

(i) Sampling ports adequate for test methods applicable to such facility, such that:

(A) Volumetric flow rate, pollutant concentration, and pollutant emission rates can be accurately determined by applicable test methods and procedures; and

(B) A stack or duct free of cyclonic flow during performance tests is available, as demonstrated by applicable test methods and procedures.

(ii) Basic facilities (e.g., electricity) for sampling and testing equipment.

(d) *Certification/recertification procedures for optional backup continuous emission monitoring systems*—(1) *Redundant backups*. The owner or operator of an optional redundant backup continuous emission monitoring system shall comply with all the requirements for initial certification and recertification according to the procedures specified in paragraphs (a), (b), and (c) of this section. The owner or operator shall operate the redundant backup continuous emission monitoring system during all periods of unit operation, except for periods of calibration, quality assurance, maintenance, or repair. The owner or operator shall perform upon

the redundant backup continuous emission monitoring system all quality assurance and quality control procedures specified in appendix B of this part.

(2) *Non-redundant backups*. The owner or operator of an optional non-redundant backup continuous emission monitoring system shall comply with all the requirements for initial certification and recertification according to the procedures specified in paragraphs (a), (b) and (c) of this section for each non-redundant backup continuous emission monitoring system, except that: the owner or operator of a non-redundant backup continuous emission monitoring system may omit the 7-day calibration error test for certification or recertification of an SO<sub>2</sub> pollutant concentration monitor, flow monitor, NO<sub>x</sub> pollutant concentration monitor, or diluent gas monitor, provided the non-redundant backup system is not used for reporting on any affected unit for more than 720 hours in any calendar year. In addition, the owner or operator shall ensure that the certified non-redundant backup continuous emission monitoring system passes a linearity check (for pollutant concentration monitors) or a calibration error test (for flow monitors) prior to each use for recording and reporting emissions and complies with the daily and quarterly quality assurance and quality control requirements in appendix B of this part for each day and quarter that the non-redundant backup monitoring system is used to report data. If the owner or operator does not perform semi-annual or annual relative accuracy test audits upon the non-redundant backup continuous emission monitoring system, then the owner or operator shall recertify the non-redundant continuous emission monitoring system once every two calendar years, performing all certification tests applicable under this paragraph. However, if a non-redundant backup system is used for reporting data from any affected unit or common stack for more than 720 hours in any one calendar year, then reported data after the first 720 hours is not valid, quality-assured data unless the owner or operator has ensured that the non-redundant backup monitoring system has also passed the 7-day calibration error test, before data



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is recorded for any period in excess of 720 hours for that calendar year for that monitoring system.

(3) *Reference method backups.* A monitoring system that is operated as a reference method backup system pursuant to the reference method requirements of Methods 2, 6C, 7E, or 3A in appendix A of part 60 of this chapter need not perform and pass the certification tests required by paragraph (c) of this section prior to its use pursuant to this paragraph.

(e) *Certification/recertification procedures for either peaking unit or by-pass stack/duct continuous emission monitoring systems.* The owner or operator of either a peaking unit or by-pass stack/duct continuous emission monitoring system shall comply with all the requirements for certification or recertification according to the procedures specified in paragraphs (a), (b), and (c) of this section, except as follows: the owner or operator need only perform one nine-run relative accuracy test audit for certification or recertification of a flow monitor installed on the by-pass stack/duct or on the stack/duct used only by affected peaking unit(s). The relative accuracy test audit shall be performed during normal operation of the peaking unit(s) or the by-pass stack/duct.

(f) *Certification/recertification procedures for alternative monitoring systems.* The designated representative representing the owner or operator of each alternative monitoring system approved by the Administrator as equivalent to or better than a continuous emission monitoring system according to the criteria in subpart E of this part shall apply for certification to the Administrator prior to use of the system under the Acid Rain Program, and shall apply for recertification to the Administrator following a replacement, modification, or change according to the procedures in paragraph (c) of this section. The owner or operator of an alternative monitoring system shall comply with the notification and application requirements for certification or recertification according to the procedures specified in paragraphs (a) and (b) of this section.

(1) The Administrator will publish each request for initial certification of

an alternative monitoring system in the FEDERAL REGISTER and, following a public comment period of 60 days, will issue a notice of approval or disapproval.

(2) No alternative monitoring system shall be authorized by the Administrator in a permit issued pursuant to part 72 of this chapter unless approved by the Administrator in accordance with this part.

(g) *Certification procedures for excepted monitoring systems under appendices D and E.* The owner or operator of a gas-fired unit, oil-fired unit, or diesel-fired unit using the optional protocol under appendix D or E of this part shall ensure that an excepted monitoring system under appendix D or E of this part meets the applicable general operating requirements of § 75.10, the applicable requirements of appendices D and E to this part, and the certification requirements of this paragraph.

(1) *Certification testing.* The owner or operator shall use the following procedures for certification of an excepted monitoring system under appendix D or E of this part.

(i) When the optional SO<sub>2</sub> mass emissions estimation procedure in appendix D of this part or the optional NO<sub>x</sub> emissions estimation protocol in appendix E of this part is used, the owner or operator shall provide data from a calibration test for each fuel flowmeter according to the appropriate calibration procedures using one of the following standard methods: ASME MFC-3M-1989 with September 1990 Errata, "Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi", ASME MFC-4M-1986 (Reaffirmed 1990) "Measurement of Gas Flow by Turbine Meters", ASME MFC-5M-1985 "Measurement of Liquid Flow in Closed Conduits Using Transit-Time Ultrasonic Flowmeters", ASME MFC-6M-1987 with June 1987 Errata, "Measurement of Fluid Flow in Pipes Using Vortex Flow Meters", ASME MFC-7M-1987 (Reaffirmed 1992), "Measurement of Gas Flow by Means of Critical Flow Venturi Nozzles", ASME MFC-9M-1988 with December 1989 Errata, "Measurement of Liquid Flow in Closed Conduits by Weighing Method", ISO 8316: 1987(E) "Measurement of Liquid Flow in Closed Conduits—Method by Collection



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of the Liquid in a Volumetric Tank", or American Gas Association Report No. 3: Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids Part 1: General Equations and Uncertainty Guidelines (October 1990 Edition), Part 2: Specification and Installation Requirements (February 1991 Edition) and Part 3: Natural Gas Applications (August 1992 Edition), excluding the modified calculation procedures of Part 3, as required by appendices D and E of this part (all methods incorporated by reference under § 75.6). The Administrator may also approve other procedures that use equipment traceable to National Institute of Standards of Technology (NIST) standards. The designated representative shall document the procedure and the equipment used in the monitoring plan for the unit and in a petition submitted in accordance with § 75.66(c).

(ii) For the automated data acquisition and handling system used under either the optional SO<sub>2</sub> mass emissions estimation procedure in appendix D of this part or the optional NO<sub>x</sub> emissions estimation protocol in appendix E of this part, the owner or operator shall perform tests designed to verify:

(A) The proper computation of hourly averages for pollutant concentrations, fuel flow rates, emission rates, heat input, and pollutant mass emissions; and

(B) Proper computation and application of the missing data substitution procedures in appendix D or E of this part.

(iii) When the optional NO<sub>x</sub> emissions protocol in appendix E is used, the owner or operator shall complete all initial performance testing under section 2.1 of appendix E.

(2) *Certification testing notification.* The designated representative shall provide initial certification testing notification and periodic retesting notification for an excepted monitoring system under appendix E of this part as specified in § 75.61. The designated representative shall submit recertification testing notification as specified in § 75.61 for quality assurance/quality control-related NO<sub>x</sub> emission rate testing under section 2.3 of appendix E of this part for an excepted monitoring system under appendix E of this part.

Certification testing notification or periodic retesting notification is not required for testing of a fuel flowmeter or testing for an excepted monitoring system under appendix D of this part.

(3) *Monitoring plan.* The designated representative shall submit an initial monitoring plan in accordance with § 75.62(a).

(4) *Certification application.* The designated representative shall submit a certification application in accordance with §§ 75.60 and 75.63.

(5) *Provisional approval of certification applications.* Upon the successful completion of the required certification procedures for each excepted monitoring system under appendix D or E of this part, each excepted monitoring system under appendix D or E of this part shall be deemed provisionally certified for use under the Acid Rain Program during the period for the Administrator's review. The provisions for the certification application formal approval process in paragraph (a)(4) of this section shall apply. Data measured and recorded by a provisionally certified excepted monitoring system under appendix D or E of this part, will be considered quality-assured data from the date and time of completion of the final certification test, provided that the Administrator does not revoke the provisional certification by issuing a notice of disapproval within 120 days of receipt of the complete certification application in accordance with the provisions in paragraph (a)(4) of this section.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26524, May 17, 1995; 60 FR 40296, Aug. 8, 1995]

#### § 75.21 Quality assurance and quality control requirements.

(a) *Continuous emission monitoring systems.* The owner or operator of an affected unit shall operate, calibrate, and maintain each continuous emission monitoring system used under the Acid Rain Program according to the quality assurance and quality control procedures in appendix B of this part. The provisions in this paragraph are suspended from July 17, 1995 through December 31, 1996.



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(b) *Continuous opacity monitoring systems.* The owner or operator of an affected unit shall operate, calibrate, and maintain each continuous opacity monitoring system used under the Acid Rain Program according to the procedures specified for State Implementation Plans, pursuant to part 51, appendix M of this chapter.

(c) *Calibration gases.* The owner or operator shall ensure that all calibration gases used to quality assure the operation of the instrumentation required by this part shall meet the definition in § 72.2 of this chapter.

(d) [Reserved]

(e) *Consequences of audits.* The owner or operator shall invalidate data from a continuous emission monitoring system or continuous opacity monitoring system upon failure of an audit under paragraph (a)(1)(iv) of § 75.20, under appendix B of this part, or any other audit, beginning with the unit operating hour of completion of a failed audit as determined by the Administrator. The owner or operator shall not use invalidated data for reporting emissions or heat input, nor for calculations of monitor data availability.

(1) *Audit decertification.* Whenever both: an audit (including audits required under appendix B of this part) of a continuous emission or opacity monitoring system or component thereof, including the data acquisition and handling system, and a review of the initial certification application or recertification application, reveal that any continuous emission or opacity monitoring system or component should not have been certified because it did not meet a particular performance specification or other requirement of this part both at the time of the certification application submission and at the time of the audit, the Administrator will issue a notice of disapproval of the certification status of such system or component. By issuing the notice of disapproval, the certification status is revoked, prospectively, by the Administrator. The data measured and recorded by each continuous emission or opacity monitoring system shall not be considered valid quality-assured data from the date of issuance of the notification of the revoked certification status until the date and time

that the owner or operator completes subsequently approved certification tests. The owner or operator shall follow the procedures for loss of certification in § 75.20(a)(5) for initial certification or § 75.20(b)(3) for recertification to replace, prospectively, all of the invalid, non-quality-assured data for each disapproved continuous emission or opacity monitoring system.

(2) *Out-of-control period.* Whenever a continuous emission monitoring system or continuous opacity monitoring system fails a periodic quality assurance audit, an audit under § 75.20(a)(1)(iv), a field audit from EPA personnel or other audit, the system is out-of-control. The owner or operator shall follow the procedures for out-of-control periods in § 75.24.

(f) *Continuous emission monitoring systems.* The owner or operator of an affected unit shall operate, calibrate, and maintain each primary and redundant backup continuous emission monitoring system used under the Acid Rain Program according to the quality assurance and quality control procedures in appendix B of this part. The owner or operator of an affected unit shall ensure that each non-redundant backup continuous emission monitoring system used under the Acid Rain Program complies with the daily and quarterly quality assurance and quality control procedures in appendix B of this part for each day and quarter that the system is used to report data. The owner or operator shall perform quality assurance upon a reference method backup monitoring system according to the requirements of Method 2, 6C, 7E, or 3A in appendix A of part 60 of this chapter, instead of the procedures specified in appendix B of this part. Notwithstanding the provisions of appendix B of this part, the owner or operator of a unit with an SO<sub>2</sub> continuous emission monitoring system is not required to perform daily or quarterly assessments under appendix B of this part on any day or in any calendar quarter during which the unit combusts only natural gas or a gaseous fuel with a sulfur content no greater than natural gas. In addition, any calendar quarter during which the unit combusts only natural gas or a gaseous fuel with a sulfur content no greater than



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natural gas shall be excluded in determining the calendar quarter, bypass operating quarter, or unit operating quarter when the next relative accuracy test audit must be performed for the SO<sub>2</sub> continuous emission monitoring system, provided that a relative accuracy test audit is performed on that system at least once every two calendar years. The owner or operator of a unit using a certified flow monitor and a certified diluent monitor and Equation F-23 to calculate SO<sub>2</sub> emissions shall meet all quality control and quality assurance requirements in appendix B of this part for the flow monitor and the diluent monitor.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26527, 26566, May 17, 1995; 61 FR 25582, May 22, 1996]

EFFECTIVE DATE NOTES: 1. At 60 FR 26560, 26566, May 17, 1995, § 75.21(a) was temporarily suspended, effective July 17, 1995 through December 31, 1996.

2. At 60 FR 26560, 26566, May 17, 1995, § 75.21(f) was temporarily added, effective July 17, 1995 through December 31, 1996.

#### § 75.22 Reference test methods.

(a) The owner or operator shall use the following methods included in appendix A to part 60 of this chapter to conduct monitoring system tests for certification or recertification of continuous emission monitoring systems and excepted monitoring systems under appendix E of this part and quality assurance and quality control procedures.

(1) Methods 1 or 1A are the reference methods for selection of sampling site and sample traverses.

(2) Methods 2, 2A, 2C, or 2D are the reference methods for determination of volumetric flow.

(3) Methods 3, 3A, or 3B are the reference methods for the determination of the dry molecular weight O<sub>2</sub> and CO<sub>2</sub> concentrations in the emissions.

(4) Method 4 is the reference method for the determination of moisture in the stack.

(5) Methods 6, 6A, 6B or 6C, and 7, 7A, 7C, 7D or 7E, as applicable, are the reference methods for determining SO<sub>2</sub> and NO<sub>x</sub> pollutant concentrations. (Methods 6A and 6B may also be used to determine SO<sub>2</sub> emission rate in lb/mmBtu. Methods 7, 7A, 7C, 7D, or 7E

must be used to measure total NO<sub>x</sub> emissions, both NO and NO<sub>2</sub>, for purposes of this part. The owner or operator shall not use the exception in section 5.1.2 of Method 7E.)

(6) Method 20 is the reference method for determining NO<sub>x</sub> and diluent emissions from stationary gas turbines for testing under appendix E of this part.

(b) The owner or operator may use the following methods in Appendix A of part 60 of this chapter as a reference method backup monitoring system to provide quality-assured monitor data:

(1) Method 3A for determining O<sub>2</sub> or CO<sub>2</sub> concentration;

(2) Method 6C for determining SO<sub>2</sub> concentration;

(3) Method 7E for determining total NO<sub>x</sub> concentration (both NO and NO<sub>2</sub>); and

(4) Method 2 for determining volumetric flow. The sample point(s) for reference methods shall be located according to the provisions of section 6.5.5 of appendix A of this part.

(c) (1) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures of this part unless the Administrator:

(i) Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;

(ii) Approves the use of an equivalent method; or

(iii) Approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors.

(2) Nothing in this paragraph shall be construed to abrogate the Administrator's authority to require testing under Section 114 of the Act.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26528, May 17, 1995]

#### § 75.23 Alternatives to standards incorporated by reference.

(a) The designated representative of a unit may petition the Administrator for an alternative to any standard incorporated by reference and prescribed in this part in accordance with § 75.66(c).

(b) [Reserved]

[60 FR 26528, May 17, 1995]



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**§ 75.24 Out-of-control periods.**

(a) If an out-of-control period occurs to a monitor or continuous emission monitoring system, the owner or operator shall take corrective action and repeat the tests applicable to the "out-of-control parameter" as described in appendix B of this part.

(1) For daily calibration error tests, an out-of-control period occurs when the calibration error of a pollutant concentration monitor exceeds 5.0 percent based upon the span value, the calibration error of a diluent gas monitor exceeds 1.0 percent O<sub>2</sub> or CO<sub>2</sub>, or the calibration error of a flow monitor exceeds 6.0 percent based upon the span value, which is twice the applicable specification in Appendix A to this part.

(2) For quarterly linearity checks, an out-of-control period occurs when the error in linearity at any of three gas concentrations (low, mid-range, and high) exceeds the applicable specification in appendix A to this part.

(3) For relative accuracy test audits, an out-of-control period occurs when the relative accuracy exceeds the applicable specification in Appendix A to this part.

(b) When a monitor or continuous emission monitoring system is out-of-control, any data recorded by the monitor or monitoring system are not quality-assured and shall not be used in calculating monitor data availabilities pursuant to § 75.32 of this part.

(c) When a monitor or continuous emission monitoring system is out-of-control, the owner or operator shall take one of the following actions until the monitor or monitoring system has successfully met the relevant criteria in appendices A and B of this part as demonstrated by subsequent tests:

(1) Apply the procedures for missing data substitution to emissions from affected unit(s); or

(2) Use a certified backup or certified portable monitor or monitoring system or a reference method for measuring and recording emissions from the affected unit(s); or

(3) Adjust the gas discharge paths from the affected unit(s) with emissions normally observed by the out-of-control monitor or monitoring system so that all exhaust gases are monitored

by a certified monitor or monitoring system meeting the requirements of appendices A and B of this part.

(d) When the bias test indicates that an SO<sub>2</sub> monitor, volumetric flow monitor, or NO<sub>x</sub> continuous emission monitoring system is biased low (i.e., the arithmetic mean of the differences between the reference method value and the monitor or monitoring system measurements in a relative accuracy test audit exceed the bias statistic in section 7 of appendix A to this part), the owner or operator shall adjust the monitor or continuous emission monitoring system to eliminate the cause of bias such that it passes the bias test or calculate and use the bias adjustment factor as specified in section 2.3.3 of appendix B to this part and in accordance with § 75.7.

(e) The owner or operator shall determine if a continuous opacity monitoring system is out-of-control and shall take appropriate corrective actions according to the procedures specified for State Implementation Plans, pursuant to appendix M of part 51 of this chapter. The owner or operator shall comply with the monitor data availability requirements of the State. If the State has no monitor data availability requirements for continuous opacity monitoring systems, then the owner or operator shall comply with the monitor data availability requirements as stated in the data capture provisions of appendix M, part 51 of this chapter.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26528, May 17, 1995]

### Subpart D—Missing Data Substitution Procedures

**§ 75.30 General provisions.**

(a) Except as provided in § 75.34, the owner or operator shall provide substitute data for each affected unit using a continuous emission monitoring system according to the missing data procedures in this subpart whenever the unit combusts any fuel and:

(1) A valid, quality-assured hour of SO<sub>2</sub> concentration data (in ppm) has not been measured and recorded for an affected unit by a certified SO<sub>2</sub> pollutant concentration monitor, or by an



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approved alternative monitoring method under subpart E of this part, except as provided in paragraph (d) of this section; or

(2) A valid, quality-assured hour of flow data (in scfh) has not been measured and recorded for an affected unit from a certified flow monitor, or by an approved alternative monitoring system under subpart E of this part; or

(3) A valid, quality-assured hour of NO<sub>x</sub> emission rate data (in lb/mmBtu) has not been measured and recorded for an affected unit by a certified NO<sub>x</sub> continuous emission monitoring system, or by an approved alternative monitoring system under subpart E of this part; or

(4) A valid, quality-assured hour of CO<sub>2</sub> concentration data (in percent CO<sub>2</sub>, or percent O<sub>2</sub> converted to percent CO<sub>2</sub> using the procedures in appendix F of this part) has not been measured and recorded for an affected unit by a certified CO<sub>2</sub> continuous emission monitoring system, or by an approved alternative monitoring method under subpart E of this part.

(b) However, the owner or operator shall have no need to provide substitute data according to the missing data procedures in this subpart if the owner or operator uses SO<sub>2</sub> or CO<sub>2</sub> (or O<sub>2</sub>) concentration, flow, or NO<sub>x</sub> emission rate data recorded from either a certified redundant or non-redundant backup continuous emission monitor or a backup reference method monitoring system when the certified primary monitor is not operating or out-of-control. A redundant or non-redundant backup continuous emission monitoring system must have been certified according to the procedures in § 75.20 prior to the missing data period. Non-redundant backup continuous emission monitoring system must pass a linearity check (for pollutant concentration monitors) or a calibration error test (for flow monitors) prior to each period of use of the certified backup monitor for recording and reporting emissions. Use of a certified backup monitoring system or backup reference method monitoring system is optional and at the discretion of the owner or operator.

(c) When the certified primary monitor is not operating or out-of-control, then data recorded for an affected unit

from a certified backup continuous emission monitor or backup reference method monitoring system are used, as if such data were from the certified primary monitor, to calculate monitor data availability in § 75.32, and to provide the quality-assured data used in the missing data procedures in §§ 75.31 and 75.33, such as the "hour after" value.

(d) On or after January 1, 1997, the owner or operator shall comply with the provisions of this paragraph. Prior to January 1, 1997, the owner or operator may comply with the provisions of this paragraph (d) if also complying with the provisions of § 75.11(e).

(1) Whenever a unit with an SO<sub>2</sub> continuous emission monitoring system combusts only pipeline natural gas and the owner or operator is using the procedures in section 7 of appendix F of this part to determine SO<sub>2</sub> mass emissions pursuant to § 75.11(e), the owner or operator shall substitute for missing data from a flow monitoring system, CO<sub>2</sub> diluent monitor or O<sub>2</sub> diluent monitor using the missing data substitution procedures in § 75.36.

(2) Whenever a unit with an SO<sub>2</sub> continuous emission monitoring system combusts gas with a sulfur content no greater than natural gas or pipeline natural gas and the owner or operator is using the gas sampling and analysis and fuel flow procedures in appendix D of this part, to determine SO<sub>2</sub> mass emissions pursuant to § 75.11(e), the owner or operator shall substitute for missing data using the missing data procedures in appendix D of this part.

(3) The owner or operator shall not use historical data from an SO<sub>2</sub> pollutant concentration monitor to account for SO<sub>2</sub> emissions due to combustion of gas during missing data periods. In addition, the owner or operator shall not include hours when the unit combusts only natural gas (or a gaseous fuel with sulfur content no greater than that of natural gas) in the availability calculations in § 75.32, nor in the calculations of substitute data using the procedures of either § 75.31 or § 75.33. For the purpose of the missing data and availability procedures for SO<sub>2</sub> pollutant concentration monitors in §§ 75.31 through 75.33 only, all hours during which the unit combusts only natural gas, or a



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gaseous fuel with a sulfur content no greater than natural gas, shall be excluded from the definition of "monitor operating hour," "quality-assured monitor operating hour," "unit operating hour," and "unit operating day."

(e) On or after January 1, 1997, the owner or operator shall comply with the provisions of this paragraph. Prior to January 1, 1997, the owner or operator may comply with the provisions of this paragraph.

(1) For monitoring of emissions at a unit with multiple stacks or a bypass stack, include only those hours when emissions are passing through the stack or duct in the definitions of "unit operating hour" and "quality-assured monitor operating hour" for purposes of applying the missing data and availability procedures in §§ 75.31 through 75.36 to the monitoring system on that stack or duct.

(2) If the proportion of flow going to each stack from a unit with multiple stacks or the proportion of flow going to a bypass stack has changed during the previous 2,160 hours when emissions passed through that stack, then record the maximum flow rate recorded by the flow monitoring system at the corresponding load range during the previous 2,160 hours of quality-assured monitor data when emissions passed through that stack, instead of the value calculated using the missing data substitution procedures in § 75.31 or § 75.33.

[60 FR 26528, 26566, May 17, 1995]

EFFECTIVE DATE NOTE: At 60 FR 26560, 26566, May 17, 1995, § 75.30(d) and (e) were temporarily added and are effective from July 17, 1995 through December 31, 1996.

**§ 75.31 Initial missing data procedures.**

(a) During the first 720 quality-assured monitor operating hours following initial certification (i.e., following the date and time of completion of successful certification tests), of the SO<sub>2</sub> and CO<sub>2</sub> (or O<sub>2</sub>) pollutant concentration monitor and during the first 2,160 quality-assured monitor operating hours following initial certification of the flow monitor and NO<sub>x</sub> continuous emission monitoring system(s), the owner or operator shall provide substitute data required under this subpart according to the procedures in para-

graphs (b) and (c) of this section. The owner or operator of a unit shall use these procedures for no longer than three years (26,280 clock hours) following initial certification.

(b) SO<sub>2</sub> or CO<sub>2</sub> (or O<sub>2</sub>) concentration data. For each hour of missing SO<sub>2</sub> or CO<sub>2</sub> concentration data (including CO<sub>2</sub> data converted from O<sub>2</sub> data using the procedures in appendix F of this part) or O<sub>2</sub> concentration data used to calculate heat input, the owner or operator shall calculate the substitute data as follows:

(1) Whenever prior quality-assured data exist, the owner or operator shall substitute, by means of the data acquisition and handling system, the average of the hourly SO<sub>2</sub> or CO<sub>2</sub> (or O<sub>2</sub>) concentrations recorded for an affected unit by a certified monitor for the unit operating hour immediately before and the unit operating hour immediately after the missing data period for each hour of missing data.

(2) Whenever no prior quality-assured SO<sub>2</sub> or CO<sub>2</sub> (or O<sub>2</sub>) concentration data exist, the owner or operator shall substitute the maximum potential concentration for SO<sub>2</sub> or CO<sub>2</sub> (or minimum O<sub>2</sub> concentration, for determination of heat input), as specified in section 2.1 of appendix A of this part, for each hour of missing data.

(c) *Volumetric flow and NO<sub>x</sub> emission rate data.* For each hour of missing volumetric flow or NO<sub>x</sub> emission rate data:

(1) Whenever prior quality-assured data exist in the load range corresponding to the operating load at the time the missing data period occurred, the owner or operator shall substitute, by means of the automated data acquisition and handling system, the average hourly flow rate (or NO<sub>x</sub> emission rate) recorded for the affected unit by a certified flow monitor (or a certified NO<sub>x</sub> continuous emission monitoring system). The flow rate (or NO<sub>x</sub> emission rate) shall be calculated from the corresponding load range as determined using the procedure in appendix C of this part.

(2) Whenever no prior quality-assured flow or NO<sub>x</sub> emission rate data exist for the corresponding load range, the owner or operator shall substitute the average hourly flow rate or the average



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hourly NO<sub>x</sub> emission rate at the next higher level load range for which quality-assured data is available, for each hour of missing data.

(3) Whenever no prior quality-assured flow or NO<sub>x</sub> emission rate data exist for the corresponding load range, or any higher load range, the owner or operator shall calculate and substitute the maximum potential flow rate or shall substitute the maximum potential NO<sub>x</sub> emission rate, as specified in § 72.2 of this chapter and section 2.1 of appendix A, for each hour of missing data.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26529, May 17, 1995]

**§ 75.32 Determination of monitor data availability for standard missing data procedures.**

(a) Following initial certification, upon completion of the first 720 qual-

ity-assured monitor operating hours of the SO<sub>2</sub> or CO<sub>2</sub> (or O<sub>2</sub>) pollutant concentration monitor or the first 2,160 quality-assured monitor operating hours of the flow monitor or NO<sub>x</sub> continuous emission monitoring system, the owner or operator shall calculate and record, by means of the automated data acquisition and handling system, the percent monitor data availability for the SO<sub>2</sub> and CO<sub>2</sub> (or O<sub>2</sub>) pollutant concentration monitor, the flow monitor, the NO<sub>x</sub> continuous emission monitoring system as follows:

(1) Prior to completion of 8,760 unit operating hours following initial certification, the owner or operator shall, for the purpose of applying the standard missing data procedures of § 75.33, use Equation 8 to calculate, hourly, percent monitor data availability.

$$\text{Percent monitor data availability} = \frac{\text{Total unit operating hours for which quality-assured data were recorded during previous 8,760 unit operating hours}}{8,760} \times 100 \quad (\text{Eq. 9})$$

(2) Upon completion of 8,760 unit operating hours following initial certification (or, for a unit with less than 8,760 unit operating hours three years (26,280 clock hours) after initial certification, upon completion of three years (26,280 clock hours) following initial

certification) and thereafter, the owner or operator shall, for the purpose of applying the standard missing data procedures of § 75.33, use Equation 9 to calculate, hourly, percent monitor data availability.

$$\text{Percent monitor data availability} = \frac{\text{Total unit operating hours for which quality-assured data were recorded during previous 8,760 unit operating hours}}{8,760} \times 100 \quad (\text{Eq. 9})$$

(3) The owner or operator shall include all unit operating hours and all monitor operating hours for which quality-assured data were recorded by a certified primary monitor, a certified backup monitor, a certified portable

monitor, and a reference method for that unit, and from an approved alternative monitoring system under subpart E of this part when calculating percent monitor data availability using Equation 8 or 9. The provisions in



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this paragraph (a)(3) are suspended from July 17, 1995, through December 31, 1996.

(4) The owner or operator shall include all unit operating hours, and all monitor operating hours for which quality-assured data were recorded by a certified primary monitor, a certified redundant or non-redundant backup monitor, a reference method for that unit, and from an approved alternative monitoring system under subpart E of this part when calculating percent monitor data availability using Equation 8 or 9. The owner or operator shall exclude hours when a unit combusted only natural gas (or gaseous fuel with the same sulfur content as natural gas) from calculations of percent monitor data availability for SO<sub>2</sub> pollutant concentration monitors, as provided in § 75.30(d). No hours from more than three years (26,280 clock hours) earlier shall be used in Equation 8 or 9. When three years from certification have elapsed, replace the words "since certification" or "during previous 8,760 unit operating hours" with "in the previous three years" and replace "8,760" with "total unit operating hours in the previous three years."

(b) The monitor data availability need not be calculated during the missing data period. The owner or operator shall record the percent monitor data

availability for the last hour of each missing data period as the monitor availability used to implement the missing data substitution procedures.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26529, 26567, May 17, 1995]

EFFECTIVE DATE NOTES: 1. At 60 FR 26560, May 17, 1995, § 75.32(a)(3) was temporarily suspended, effective July 17, 1995 through December 31, 1996.

2. At 60 FR 26560, May 17, 1995, § 75.32(a)(4) was temporarily added and is effective from July 17, 1995 through December 31, 1996.

§ 75.33 Standard missing data procedures.

(a) Following initial certification and upon completion of the first 720 quality-assured monitor operating hours of the SO<sub>2</sub> pollutant concentration monitor or the first 2,160 quality-assured monitor operating hours of the flow monitor or NO<sub>x</sub> continuous emission monitoring system, the owner or operator shall provide substitute data required under this subpart according to the procedures in paragraphs (b) and (c) of this section and depicted in Table 1 (SO<sub>x</sub>) and Table 2 (NO<sub>x</sub>, flow). The owner or operator of a unit shall substitute for missing data using only quality-assured monitor operating hours of data from the three years (26,280 clock hours) prior to the date and time of the missing data period.

TABLE 1.—MISSING DATA PROCEDURE FOR SO<sub>2</sub> CEMS

Trigger conditions		Calculation routines	
Availability (percent)	Duration (N) of outage (hours)	Method	Lookback period
95 or more .....	N ≤ 24 .....	Average .....	HB/HA.
	N > 24 .....	Max. of average .....	HB/HA.
90 or more, but below 95 .....	.....	Max. of 90th percentile .....	720 operating hours*.
	N ≤ 8 .....	Average .....	HB/HA.
	N > 8 .....	Max. of average .....	HB/HA.
Below 90 .....	.....	Max. of 95th percentile .....	720 operating hours*.
	N > 0 .....	Maximum value <sup>1</sup> .....	720 operating hours*.

HB/HA=hour before and hour after the outage.

\*=Quality-assured, monitor operating hours.

<sup>1</sup>Where unit with add-on emission controls can demonstrate that the controls are operating properly, as provided in § 75.34, the unit may, upon approval, use the maximum controlled emission rate from the previous 720 operating hours.

TABLE 2.—MISSING DATA PROCEDURE FOR NO<sub>x</sub> AND FLOW CEMS

Trigger conditions		Calculation routines		
Availability (percent)	Duration (N) of outage (hours)	Method	Lookback period	Load ranges
95 or more .....	N ≤ 24 .....	Average .....	2160 operating hours* .....	Yes.
	N > 24 .....	Max of average .....	HB/HA .....	No.
	.....	Max of 90th percentile .....	2160 operating hours* .....	Yes.



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TABLE 2.—MISSING DATA PROCEDURE FOR NO<sub>x</sub> AND FLOW CEMS—Continued

Trigger conditions		Calculation routines		
Availability (percent)	Duration (N) of outage (hours)	Method	Lookback period	Load ranges
90 or more, but below 95 .....	N ≤ 8 .....	Average .....	2160 operating hours* .....	Yes.
	N > 8 .....	Max of Average .....	HB/HA .....	No.
Below 90 .....	N > 0 .....	Max of 95th percentile .....	2160 operating hours* .....	Yes.
		Maximum Value <sup>1</sup> .....	2160 operating hours* .....	Yes.

HB/HA = hour before and hour after the outage.

\* = Quality-assured, monitor operating hours.

<sup>1</sup> Where unit with add-on emission controls can demonstrate that the controls are operating properly, as provided in § 75.34, the unit may, upon approval, use the maximum controlled emission rate from the previous 720 operating hours.

(b) *SO<sub>2</sub> concentration data.* For each hour of missing SO<sub>2</sub> concentration data,

(1) Whenever the monitor data availability is equal to or greater than 95.0 percent, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:

(i) For a missing data period less than or equal to 24 hours, substitute the average of the hourly SO<sub>2</sub> concentrations recorded by an SO<sub>2</sub> pollutant concentration monitor for the hour before and the hour after the missing data period.

(ii) For a missing data period greater than 24 hours, substitute the greater of:

(A) The 90th percentile hourly SO<sub>2</sub> concentration recorded by an SO<sub>2</sub> pollutant concentration monitor during the previous 720 quality-assured monitor operating hours; or

(B) The average of the hourly SO<sub>2</sub> concentrations recorded by an SO<sub>2</sub> pollutant concentration monitor for the hour before and the hour after the missing data period.

(2) Whenever the monitor data availability is at least 90.0 percent but less than 95.0 percent, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:

(i) For a missing data period of less than or equal to 8 hours, substitute the average of the hourly SO<sub>2</sub> concentrations recorded by an SO<sub>2</sub> pollutant concentration monitor for the hour before and the hour after the missing data period.

(ii) For a missing data period of more than 8 hours, substitute the greater of:

(A) the 95th percentile hourly SO<sub>2</sub> concentration recorded by an SO<sub>2</sub> pollutant concentration monitor during the previous 720 quality-assured monitor operating hours; or

(B) The average of the hourly SO<sub>2</sub> concentrations recorded by an SO<sub>2</sub> pollutant concentration monitor for the hour before and the hour after the missing data period.

(3) Whenever the monitor data availability is less than 90.0 percent, the owner or operator shall substitute for each hour of each missing data period the maximum hourly SO<sub>2</sub> concentration recorded by an SO<sub>2</sub> pollutant concentration monitor during the previous 720 quality-assured monitor operating hours.

(c) *Volumetric flow and NO<sub>x</sub> emission rate data.* For each hour of missing volumetric flow or NO<sub>x</sub> emission rate data:

(1) Whenever the monitor or continuous emission monitoring system data availability is equal to or greater than 95.0 percent, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:

(i) For a missing data period less than or equal to 24 hours, substitute the average hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system during the previous 2,160 quality-assured monitor operating hours at the corresponding unit load range recorded for each missing hour, as determined using the procedure in appendix C to this part.



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(ii) For a missing data period greater than 24 hours, substitute the greater of:

(A) The 90th percentile hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system at the corresponding unit load range recorded for each missing hour during the previous 2,160 quality-assured monitor operating hours, as determined using the procedure in appendix C to this part; or

(B) The average of the hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system for the hour before and the hour after the missing data period.

(2) Whenever the monitor or continuous emission monitoring system data availability is at least 90.0 percent but less than 95.0 percent, the owner or operator shall calculate substitute data by means of the automated data acquisition and handling system for each hour of each missing data period according to the following procedures:

(i) For a missing data period of less than or equal to 8 hours, substitute the average hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system at the corresponding unit load range recorded for the missing hour during the previous 2,160 quality-assured monitor operating hours, as determined using the procedure in appendix C to this part.

(ii) For a missing data period greater than 8 hours, substitute the greater of:

(A) The 95th percentile hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system at the corresponding unit load range recorded for the missing hour during the previous 2,160 quality-assured monitor operating hours, as determined using the procedure in appendix C to this part; or

(B) The average of the hourly flow or NO<sub>x</sub> emission rate recorded by a flow monitor or NO<sub>x</sub> continuous emission monitoring system for the hour before and the hour after the missing data period.

(3) Whenever the monitor data availability is less than 90.0 percent, the owner or operator shall calculate substitute data by means of the auto-

mated data acquisition and handling system for each hour of each missing data period by substituting the maximum hourly flow or NO<sub>x</sub> emission rate recorded by the flow monitor or NO<sub>x</sub> continuous emission monitoring system at the corresponding unit load range recorded for the missing hour during the previous 2,160 quality-assured monitor operating hours, as determined using the procedure in section 2 of appendix C to this part.

(4) Whenever no prior quality-assured flow or NO<sub>x</sub> emission rate data exist for the corresponding load range, the owner or operator shall substitute the maximum hourly flow rate or the maximum hourly NO<sub>x</sub> emission rate at the next higher level load range for which quality-assured data is available for each hour of missing data.

(5) Whenever no prior quality-assured flow or NO<sub>x</sub> emission rate data exist for either the corresponding load range or a higher load range, the owner or operator shall substitute the maximum potential NO<sub>x</sub> emission rate or the maximum potential flow rate, as defined in section 2.1 of appendix A of this part.

[58 FR 3701, Jan. 11, 1993, as amended at 60 FR 26529, May 17, 1995; 61 FR 25582, May 22, 1996]

#### § 75.34 Units with add-on emission controls.

(a) The owner or operator of an affected unit equipped with add-on SO<sub>2</sub> and/or NO<sub>x</sub> emission controls shall use at least one of the following options:

(1) The owner or operator may use the missing data substitution procedures as specified for all affected units in §§ 75.31 through 75.33 for substituting data for each hour where the add-on emission controls are operating within the proper operation range specified in the monitoring plan for the unit. The designated representative shall report the range of add-on emission control operating parameters that indicate proper operation in the unit's monitoring plan and the owner or operator shall record data to verify the proper operation of the SO<sub>2</sub> or NO<sub>x</sub> add-on emission controls during each hour, as described in paragraph (d) of this section. In addition, under § 75.64(c) the designated representative shall submit



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a certified verification of the proper operation of the SO<sub>2</sub> or NO<sub>x</sub> add-on emission control for each missing data period at the end of each quarter.

(2) In addition, the designated representative may petition the Administrator under § 75.66 to replace the maximum recorded value in the last 720 quality-assured monitor operating hours with a value corresponding to the maximum controlled emission rate (an emission rate recorded when the add-on emission controls were operating) recorded during the last 720 quality-assured monitor operating hours. For such a petition, the designated representative must demonstrate that the following conditions are met: the monitor data availability, calculated in accordance with § 75.32, for the affected unit is below 90.0 percent and parametric data establish that the add-on emission controls were operating properly (i.e., within the range of operating parameters provided in the monitoring plan) during the time period under petition.

(3) The designated representative may petition the Administrator under § 75.66 for approval of site-specific parametric monitoring procedure(s) for calculating substitute data for missing SO<sub>2</sub> pollutant concentration and NO<sub>x</sub> emission rate data in accordance with the requirements of paragraphs (b) and (c) of this section, and appendix C of this part. The owner or operator shall record the data required in appendix C of this part, pursuant to § 75.51(b) until January 1, 1996, or pursuant to § 75.55(b).

(b) For an affected unit equipped with add-on SO<sub>2</sub> emission controls, the designated representative may petition the Administrator to approve a parametric monitoring procedure, as described in appendix C of this part, for calculating substitute SO<sub>2</sub> concentration data for missing data periods. The owner or operator shall use the procedures in § 75.31, § 75.33, or § 75.34(a) for providing substitute data for missing SO<sub>2</sub> concentration data unless a parametric monitoring procedure has been approved by the Administrator.

(1) Where the monitoring data availability is 90.0 percent or more for an outlet SO<sub>2</sub> pollutant concentration monitor, the owner or operator may

calculate substitute data using an approved parametric monitoring procedure.

(2) Where the monitor data availability for an outlet SO<sub>2</sub> pollutant concentration monitor is less than 90.0 percent, the owner or operator shall calculate substitute data using the procedures in § 75.34(a) (1) or (2), even if the Administrator has approved a parametric monitoring procedure.

(c) For an affected unit with NO<sub>x</sub> add-on emission controls, the designated representative may petition the Administrator to approve a parametric monitoring procedure, as described in appendix C of this part, in order to calculate substitute NO<sub>x</sub> emission rate data for missing data periods. The owner or operator shall use the procedures in § 75.31 or § 75.33 for providing substitute data for missing NO<sub>x</sub> emission rate data prior to receiving the Administrator's approval for a parametric monitoring procedure.

(1) Where monitor data availability for a NO<sub>x</sub> continuous emission monitoring system is 90.0 percent or more, the owner or operator may calculate substitute data using an approved parametric monitoring procedure.

(2) Where monitor data availability for a NO<sub>x</sub> continuous emission monitoring system is less than 90.0 percent, the owner or operator shall calculate substitute data using the procedure in § 75.34(a) (1) or (2), even if the Administrator has approved a parametric monitoring procedure.

(d) The owner or operator shall keep records of information as described in subpart F of this part to verify the proper operation of the SO<sub>2</sub> or NO<sub>x</sub> emission controls during all periods of missing data. The owner or operator shall provide these records to the Administrator or to the EPA Regional Office upon request. Whenever such records are not provided or such records do not demonstrate that proper operation of the SO<sub>2</sub> or NO<sub>x</sub> add-on emission controls has been maintained in accordance with the range of add-on emission control operating parameters reported in the monitoring plan for the unit, the owner or operator shall substitute the maximum potential NO<sub>x</sub> emission rate, as defined in § 72.2 of this chapter, to report the NO<sub>x</sub> emission



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rate, and either the maximum hourly SO<sub>2</sub> concentration recorded by the inlet monitor during the previous 720 quality assured monitor operating hours, if available, or the maximum potential concentration for SO<sub>2</sub>, as defined by section 2.1.1.1 of appendix A of this part, to report SO<sub>2</sub> concentration for each hour of missing data until information demonstrating proper operation of the SO<sub>2</sub> or NO<sub>x</sub> emission controls is available.

[60 FR 26567, May 17, 1995]

**§ 75.35 Missing data procedures for CO<sub>2</sub> data.**

(a) On or after January 1, 1996, the owner or operator of a unit with a CO<sub>2</sub> continuous emission monitoring system shall substitute for missing CO<sub>2</sub> concentration data using the procedures of this section. Prior to January 1, 1996, the owner or operator of a unit with a CO<sub>2</sub> continuous emission monitoring system may substitute for missing CO<sub>2</sub> concentration data using the procedures of this section.

(b) During the first 720 quality-assured monitor operating hours following initial certification (i.e., following the date and time of completion of successful certification tests), of the CO<sub>2</sub> continuous emission monitoring system, the owner or operator shall provide substitute data required under this subpart according to the procedures in paragraph (b) of § 75.31.

(c) Upon completion of the first 720 quality-assured monitor operating hours following initial certification of the CO<sub>2</sub> continuous emission monitoring system, the owner or operator shall provide substitute data for CO<sub>2</sub> concentration or CO<sub>2</sub> mass emissions required under this subpart according to the procedures in paragraphs (c)(1), (c)(2), or (c)(3) of this section, including CO<sub>2</sub> data calculated from O<sub>2</sub> measurements using the procedures in appendix F of this part.

(1) Whenever a quality-assured monitoring operating hour of CO<sub>2</sub> concentration data has not been obtained and recorded for a period less than or equal to 72 hours or for a missing data period where the percent monitor data availability for the CO<sub>2</sub> continuous emission monitoring system as of the last unit operating hour of the previous

calendar quarter was greater than or equal to 90.0 percent, then the owner or operator shall substitute the average of the recorded CO<sub>2</sub> concentration for the hour before and the hour after the missing data period for each hour in each missing data period.

(2) Whenever no quality-assured CO<sub>2</sub> concentration data are available for a period of 72 consecutive unit operating hours or more, the owner or operator shall begin substituting CO<sub>2</sub> mass emissions calculated using the procedures in appendix G of this part beginning with the seventy-third hour of the missing data period until quality-assured CO<sub>2</sub> concentration data are again available. The owner or operator shall use the CO<sub>2</sub> concentration from the hour before the missing data period to substitute for hours 1 through 72 of the missing data period.

(3) Whenever no quality-assured CO<sub>2</sub> concentration data are available for a period where the percent monitor data availability for the CO<sub>2</sub> continuous emission monitoring system as of the last unit operating hour of the previous calendar quarter was less than 90.0 percent, the owner or operator shall substitute CO<sub>2</sub> mass emissions calculated using the procedures in appendix G of this part for each hour of the missing data period until quality-assured CO<sub>2</sub> concentration data are again available.

[60 FR 26529, May 17, 1995]

**§ 75.36 Missing data procedures for heat input.**

(a) On or after January 1, 1996, the owner or operator of a unit monitoring heat input with a CO<sub>2</sub> or O<sub>2</sub> pollutant concentration monitor and a flow monitoring system shall substitute for missing heat input data using the procedures of this section. Prior to January 1, 1996, the owner or operator of a unit monitoring heat input with a CO<sub>2</sub> or O<sub>2</sub> pollutant concentration monitor and a flow monitoring system may substitute for missing heat input data using the procedures of this section.

(b) During the first 720 quality-assured monitor operating hours following initial certification (i.e., following the date and time of completion of successful certification tests), of the CO<sub>2</sub> or O<sub>2</sub> pollutant concentration monitor



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and during the first 2,160 quality-assured monitoring operating hours following initial certification of the flow monitor, the owner or operator shall provide substitute data for heat input calculated under section 5.2 of appendix F of this part by substituting the CO<sub>2</sub> or O<sub>2</sub> concentration measured or substituted according to paragraph (b) of § 75.31, and by substituting the flow rate measured or substituted according to § 75.31.

(c) Upon completion of the first 720 quality-assured monitor operating hours following initial certification of the CO<sub>2</sub> (or O<sub>2</sub>) pollutant concentration monitor, the owner or operator shall provide substitute data for CO<sub>2</sub> or O<sub>2</sub> concentration to calculate heat input or shall substitute heat input determined under appendix F of this part according to the procedures in paragraphs (c)(1), (c)(2), or (c)(3) of this section. Upon completion of 2,160 quality-assured monitor operating hours following initial certification of the flow monitor, the owner or operator shall provide substitute data for volumetric flow according to the procedures in § 75.33 in order to calculate heat input, unless required to determine heat input using the fuel sampling procedures in appendix F of this part under paragraphs (c)(1), (c)(2) or (c)(3) of this section.

(1) Whenever a quality-assured monitor operating hour of CO<sub>2</sub> or O<sub>2</sub> concentration data has not been obtained and recorded for a period less than or equal to 72 hours or for a missing data period where the percent monitor data availability for the CO<sub>2</sub> or O<sub>2</sub> pollutant concentration monitor as of the last unit operating hour of the previous calendar quarter was greater than or equal to 90.0 percent, the owner or operator shall substitute the average of the recorded CO<sub>2</sub> or O<sub>2</sub> concentration for the hour before and the hour after the missing data period for each hour in each missing data period to calculate heat input.

(2) Whenever a quality-assured monitor operating hour of CO<sub>2</sub> or O<sub>2</sub> concentration data has not been obtained and recorded for a period of 72 consecutive unit operating hours or more, the owner or operator shall begin substituting heat input calculated using

the procedures in section 5.5 of appendix F of this part beginning with the seventy-third hour of the missing data period until quality-assured CO<sub>2</sub> or O<sub>2</sub> concentration data are again available. The owner or operator shall use the CO<sub>2</sub> or O<sub>2</sub> concentration from the hour before the missing data period to substitute for hours 1 through 72 of the missing data period.

(3) Whenever no quality-assured CO<sub>2</sub> or O<sub>2</sub> concentration data are available for a period where the percent monitor data availability for the CO<sub>2</sub> continuous emission monitoring system (or O<sub>2</sub> diluent monitor) as of the last unit operating hour of the previous calendar quarter was less than 90.0 percent, the owner or operator shall substitute heat input calculated using the procedures in section 5.5 of appendix F of this part for each hour of the missing data period until quality-assured CO<sub>2</sub> or O<sub>2</sub> concentration data are again available.

(d) For a unit that has no diluent monitor certified during the period between the certification deadline in § 75.4(a) for flow monitoring systems and the certification deadline in § 75.4(a) for NO<sub>x</sub> and CO<sub>2</sub> continuous emission monitoring systems, the owner or operator shall calculate heat input using the procedures in section 5.5 of appendix F of this part until quality-assured data are available from both a flow monitor and a diluent monitor.

[60 FR 26530, May 17, 1995]

### Subpart E—Alternative Monitoring Systems

#### § 75.40 General demonstration requirements.

(a) The owner or operator of an affected unit, or the owner or operator of an affected unit and representing a class of affected units which meet the criteria specified in § 75.47, required to install a continuous emission monitoring system may apply to the Administrator for approval of an alternative monitoring system (or system component) to determine average hourly emission data for SO<sub>2</sub>, NO<sub>x</sub>, and/or volumetric flow by demonstrating that the alternative monitoring system has



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the same or better precision, reliability, accessibility, and timeliness as that provided by the continuous emission monitoring system.

(b) The requirements of this subpart shall be met by the alternative monitoring system when compared to a contemporaneously operating, fully certified continuous emission monitoring system or a contemporaneously operating reference method, where the appropriate reference methods are listed in § 75.22.

**§ 75.41 Precision criteria.**

(a) *Data collection and analysis.* To demonstrate precision equal to or better than the continuous emission monitoring system, the owner or operator shall conduct an F-test, a correlation analysis, and a t-test for bias as described in this section. The t-test shall be performed only on sample data at the normal operating level and primary fuel supply, whereas the F-test and the correlation analysis must be performed on each of the data sets required under paragraphs (a)(4) and (a)(5) of this section. The owner or operator shall collect and analyze data according to the following requirements:

(1) Data from the alternative monitoring system and the continuous emission monitoring system shall be collected and paired in a manner that ensures each pair of values applies to hourly average emissions during the same hour.

(2) An alternative monitoring system that directly measures emissions shall have probes or other measuring devices in locations that are in proximity to the continuous emission monitoring system and shall provide data on the same parameters as those measured by the continuous emission monitoring system. Data from the alternative monitoring system shall meet the statistical tests for precision in paragraph (c) of this section and the t-test for bias in appendix A of this part.

(3) An alternative monitoring system that indirectly quantifies emission values by measuring inputs, operating characteristics, or outputs and then applying a regression or another quantitative technique to estimate emissions, shall meet the statistical tests for precision in paragraph (c) of this

section and the t-test for bias in Appendix A of this part.

(4) For flow monitor alternatives, the alternative monitoring system must provide sample data for each of three different exhaust gas velocities while the unit or units, if more than one unit exhausts into the stack or duct, is burning its primary fuel at:

(i) A frequently used low operating level, selected within the range between the minimum safe and stable operating level and 50 percent of the maximum operating level.

(ii) A frequently used high operating level, selected within the range between 80 percent of the maximum operating level and the maximum operating level, and

(iii) The normal operating level, or an evenly spaced intermediary level between low and high levels used if the normal operating level is within a specified range (10.0 percent of the maximum operating level), of either paragraphs (a)(4) (i) or (ii) of this section.

(5) For pollutant concentration monitor alternatives, the alternative monitoring system shall provide sample data for the primary fuel supply and for all alternative fuel supplies that have significantly different sulfur content.

(6) For the normal unit operating level and primary fuel supply, paired hourly sample data shall be provided for at least 90.0 percent of the hours during 720 unit operating hours. For each of the remaining two operating levels for flow monitor alternatives, and for each alternative fuel supply for pollutant concentration monitor alternatives, paired hourly sample data shall be provided for at least 24 successive unit operating hours.

(7) The owner or operator shall not use missing data substitution procedures to provide sample data.

(8) If the collected data meet the requirements of the F-test, the correlation test, and the t-test at one or more, but not all, of the operating levels or fuel supplies, the owner or operator may elect to continue collecting the paired data for up to 1,440 additional operating hours and repeat the statistical tests using the data for the entire 30- to 90-day period.



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(9) The owner or operator shall provide two separate time series data plots for the data at each operating level or fuel supply described in paragraphs (a)(4) and (a)(5) of this section. Each data plot shall have a horizontal axis that represents the clock hour and calendar date of the readings and shall contain a separate data point for every hour for the duration of the performance evaluation. The data plots shall show the following:

(i) Percentage difference versus time where the vertical axis represents the percentage difference between each paired hourly reading generated by the continuous emission monitoring system (or reference method) and the alternative emission monitoring system as calculated using the following equation:

$$\Delta e = \frac{e_p - e_v}{e_v} \times 100\%$$

(Eq. 10)

where,

$\Delta e$ =Percentage difference between the readings generated by the alternative monitoring system and the continuous emission monitoring system.

$e_p$ =Measured value from the alternative monitoring system.

$e_v$ =Measured value from the continuous emission monitoring system.

(ii) Alternative monitoring system readings and continuous emission monitoring system (or reference method) readings versus time where the vertical axis represents hourly pollutant concentrations or volumetric flow, as appropriate, and two different symbols are used to represent the readings from the alternative monitoring system and the continuous emission monitoring system (or reference method), respectively.

(b) *Data screening and calculation adjustments.* In preparation for conducting the statistical tests described in paragraph (c) of this section, the owner or operator may screen the data for

lognormality and time dependency autocorrelation. If either is detected, the owner or operator shall make the following calculation adjustments:

(1) *Lognormality.* The owner or operator shall conduct any screening and adjustment for lognormality according to the following procedures.

(i) Apply the log transformation to each measured value of either the certified continuous emissions monitoring system or certified flow monitor, using the following equation:

$$l_v = \ln e_v$$

(Eq. 11)

where,

$e_v$ =Hourly value generated by the certified continuous emissions monitoring system or certified flow monitoring system

$l_v$ =Hourly lognormalized data values for the certified monitoring system and to each measured value,  $e_p$ , of the proposed alternative monitoring system, using the following equation to obtain the lognormalized data values,  $l_p$ :

$$l_p = \ln e_p$$

(Eq. 12)

where,

$e_p$ =Hourly value generated by the proposed alternative monitoring system.

$l_p$ =Hourly lognormalized data values for the proposed alternative monitoring system.

(ii) Separately test each set of transformed data,  $l_v$  and  $l_p$ , for normality, using the following:

(A) Shapiro-Wilk test;

(B) Histogram of the transformed data; and

(C) Quantile-Quantile plot of the transformed data.

(iii) The transformed data in a data set will be considered normally distributed if all of the following conditions are satisfied:

(A) The Shapiro-Wilk test statistic,  $W$ , is greater than or equal to 0.75 or is not statistically significant at  $\alpha=0.05$ .

(B) The histogram of the data is unimodal and symmetric.

(C) The Quantile-Quantile plot is a diagonal straight line.

(iv) If both of the transformed data sets,  $l_v$  and  $l_p$ , meet the conditions for normality, specified in paragraphs



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(b)(1)(iii) (A) through (C) of this section, the owner or operator may use the transformed data,  $I_v$  and  $I_p$ , in place of the original measured data values in the statistical tests for alternative monitoring systems as described in paragraph (c) of this section and in appendix A of this part.

(v) If the transformed data are used in the statistical tests in paragraph (c) of this section and in appendix A of this part, the owner or operator shall provide the following:

(A) Copy of the original measured values and the corresponding transformed data in printed and electronic format.

(B) Printed copy of the test results and plots described in paragraphs (b)(1)(i) through (iii) of this section.

(2) *Time dependency (autocorrelation).* The screening and adjustment for time dependency are conducted according to the following procedures:

(i) Calculate the degree of autocorrelation of the data on their LAG1 values, where the degree of autocorrelation is represented by the Pearson autocorrelation coefficient,  $\rho$ , computed from an AR(1) autoregression model, such that:

$$\rho = \frac{\text{COV}(x'_i, x''_i)}{S_{x'_i} S_{x''_i}}$$

(Eq. 13)

where,

$x'_i$ =The original data value at hour  $i$ .

$x''_i$ =The LAG1 data value at hour  $i$ .

$\text{COV}(x'_i, x''_i)$ =The autocovariance of  $x'_i$  and defined by,

$$\text{COV}(x'_i, x''_i) = \frac{\sum_{i=1}^n (x'_i - \bar{x}') (x''_i - \bar{x}'')}{(n-1)}$$

(Eq. 14)

where,

$n$ =The total number of observations in which both the original value,  $x'_i$ , and

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the lagged value,  $x''_i$ , are available in the data set.

$S_{x'_i}$ =The standard deviation of the original data values,  $x'_i$  defined by,

$$S_{x'_i} = \sqrt{\frac{\sum_{i=1}^n (x'_i - \bar{x}')^2}{n-1}}$$

(Eq. 15)

where,

$S_{x''_i}$ =The standard deviation of the LAG1 data values,  $x''_i$ , defined by

$$S_{x''_i} = \sqrt{\frac{\sum_{i=1}^n (x''_i - \bar{x}'')^2}{n-1}}$$

(Eq. 16)

where,

$\bar{x}'$ =The mean of the original data values,  $x'_i$  defined by

$$\bar{x}' = \frac{\sum_{i=1}^n x'_i}{n}$$

(Eq. 17)

where,

$\bar{x}''$ =The mean of the LAG1 data values,  $x''_i$ , defined by

$$\bar{x}'' = \frac{\sum_{i=1}^n x''_i}{n}$$

(Eq. 18)

where,

(ii) The data in a data set will be considered autocorrelated if the autocorrelation coefficient,  $\rho$ , is significant at



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the 5 percent significance level. To determine if this condition is satisfied, calculate Z using the following equation:

$$Z = 0.5 \left[ \ln \left( \frac{1+\rho}{1-\rho} \right) \right] \sqrt{n-3}$$

(Eq. 19)

If  $Z > 1.96$ , then the autocorrelation coefficient,  $\rho$ , is significant at the 5 percent significance level ( $\alpha = 0.05$ ).

(iii) If the data in a data set satisfy the conditions for autocorrelation, specified in paragraph (b)(2)(ii) of this section, the variance of the data,  $S^2$ , may be adjusted using the following equation:

$$S_{adj}^2 = VIF \times S^2$$

(Eq. 20)

where,

$S^2$  = The original, unadjusted variance of the data set.

$VIF$  = The variance inflation factor, defined by

$$VIF = \frac{1}{\left[ 1 - \frac{2\rho}{(n-1)(1-\rho)} + \frac{2\rho(1-\rho^n)}{n(n-1)(1-\rho)^2} \right]}$$

(Eq. 21)

$S_{adj}^2$  = The autocorrelation-adjusted variance for the data set.

(iv) The procedures described in paragraphs (b)(2)(i)-(iii) of this section may be separately applied to the following data sets in order to derive distinct

autocorrelation coefficients and variance inflation factors for each data set:

(A) The set of measured hourly values,  $e_v$ , generated by the certified continuous emissions monitoring system or certified flow monitoring system.

(B) The set of hourly values,  $e_p$ , generated by the proposed alternative monitoring system.

(C) The set of hourly differences,  $e_v - e_p$ , between the hourly values,  $e_v$ , generated by the certified continuous emissions monitoring system or certified flow monitoring system and the hourly values,  $e_p$ , generated by the proposed alternative monitoring system.

(v) For any data set, listed in paragraph (b)(2)(iv) of this section, that satisfies the conditions for autocorrelation specified in paragraph (b)(2)(ii) of this section, the owner or operator may adjust the variance of that data set, using Equation 20 of this section.

(A) The adjusted variance may be used in place of the corresponding original variance, as calculated using Equation 23 of this section, in the F-test (Equation 24) of this section.

(B) In place of the standard error of the mean,

$$\frac{S_d}{\sqrt{n}}$$

in the bias test Equation A-9 of Appendix A of this part the following adjusted standard error of the mean may be used:

$$\left( \frac{S_d}{\sqrt{n}} \right)_{adj} = \left[ \sqrt{\left( \frac{1+\rho}{1-\rho} \right) - \left( \frac{2\rho(1-\rho^n)}{n(1-\rho)^2} \right)} \right] \times \sqrt{VIF} \times \left( \frac{S_d}{\sqrt{n}} \right)$$

where,



$\left(\frac{S_d}{\sqrt{n}}\right)_{adj}$  = The autocorrelation-adjusted standard error of the mean.

(vi) For each data set in which a variance adjustment is used, the owner or operator shall provide the following:

(A) All values in the data set in printed and electronic format.

(B) Values of the autocorrelation coefficient, its level of significance, the variance inflation factor, and the unadjusted original and adjusted values found in Equations 20 and 22 of this section.

(C) Equation and related statistics of the AR(1) autoregression model of the data set.

(D) Printed documentation of the intermediate calculations used to derive the autocorrelation coefficient and the Variance Inflation Factor.

(c) *Statistical Tests.* The owner or operator shall perform the F-test and correlation analysis as described in this paragraph and the t-test for bias described in Appendix A of this part to demonstrate the precision of the alternative monitoring system.

(1) *F-test.* The owner or operator shall conduct the F-test according to the following procedures.

(i) Calculate the variance of the certified continuous emission monitoring system or certified flow monitor as applicable,  $S_v^2$ , and the proposed method,  $S_p^2$ , using the following equation.

$$S^2 = \frac{\sum_{i=1}^n (e_i - e_m)^2}{n-1}$$

(Eq. 23)  
where,

$e_i$ =Measured values of either the certified continuous emission monitoring system or certified flow monitor, as applicable, or proposed method.

$e_m$ =Mean of either the certified continuous emission monitoring system or certified flow monitor, as applicable, or proposed method values.

$n$ =Total number of paired samples.

(ii) Determine if the variance of the proposed method is significantly different from that of the certified continuous emission monitoring system or certified flow monitor, as applicable, by calculating the F-value using the following equation.

$$F = \frac{S_p^2}{S_v^2}$$

(Eq. 24)

Compare the experimental F-value with the critical value of F at the 95-percent confidence level with  $n-1$  degrees of freedom. The critical value is obtained from a table for F-distribution. If the calculated F-value is greater than the critical value, the proposed method is unacceptable.

(2) *Correlation analysis.* The owner or operator shall conduct the correlation analysis according to the following procedures.

(i) Plot each of the paired emissions readings as a separate point on a graph where the vertical axis represents the value (pollutant concentration or volumetric flow, as appropriate) generated by the alternative monitoring system and the horizontal axis represents the value (pollutant concentration or volumetric flow, as appropriate) generated by the continuous emission monitoring system (or reference method). On the graph, draw a horizontal line representing the mean value,  $e_p$ , for the alternative monitoring system and a vertical line representing the mean value,  $e_v$ , for the continuous emission monitoring system where,

$$\bar{e}_p = \frac{\sum e_p}{n}$$

(Eq. 25)