

## § 60.46

of emissions exceeds 35 percent opacity, except that one six-minute average per hour of up to 42 percent opacity need not be reported.

(ii) For sources subject to the opacity standard of § 60.42(b)(2), excess emissions are defined as any six-minute period during which the average opacity of emissions exceeds 32 percent opacity, except that one six-minute average per hour of up to 39 percent opacity need not be reported.

(2) *Sulfur dioxide*. Excess emissions for affected facilities are defined as:

(i) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) of SO<sub>2</sub> as measured by a CEMS exceed the applicable standard under § 60.43, or

(ii) Any 30 operating day period during which the average emissions (arithmetic average of all one-hour periods during the 30 operating days) of SO<sub>2</sub> as measured by a CEMS exceed the applicable standard under § 60.43. Facilities complying with the 30-day SO<sub>2</sub> standard shall use the most current associated SO<sub>2</sub> compliance and monitoring requirements in §§ 60.48Da and 60.49Da of subpart Da of this part.

(3) *Nitrogen oxides*. Excess emissions for affected facilities using a CEMS for measuring NO<sub>x</sub> are defined as:

(i) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) exceed the applicable standards under § 60.44, or

(ii) Any 30 operating day period during which the average emissions (arithmetic average of all one-hour periods during the 30 operating days) of NO<sub>x</sub> as measured by a CEMS exceed the applicable standard under § 60.43. Facilities complying with the 30-day NO<sub>x</sub> standard shall use the most current associated NO<sub>x</sub> compliance and monitoring requirements in §§ 60.48Da and 60.49Da of subpart Da of this part.

(4) *Particulate matter*. Excess emissions for affected facilities using a CEMS for measuring PM are defined as any boiler operating day period during which the average emissions (arithmetic average of all operating one-hour periods) exceed the applicable standards under § 60.43. Affected facilities using PM CEMS in lieu of a CEMS for

## 40 CFR Ch. I (7-1-07 Edition)

monitoring opacity emissions must follow the most current applicable compliance and monitoring provisions in §§ 60.48Da and 60.49Da of subpart Da of this part.

### § 60.46 Test methods and procedures.

(a) In conducting the performance tests required in § 60.8, and subsequent performance tests as requested by the EPA Administrator, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in § 60.8(b). Acceptable alternative methods and procedures are given in paragraph (d) of this section.

(b) The owner or operator shall determine compliance with the PM, SO<sub>2</sub>, and NO<sub>x</sub> standards in §§ 60.42, 60.43, and 60.44 as follows:

(1) The emission rate (E) of PM, SO<sub>2</sub>, or NO<sub>x</sub> shall be computed for each run using the following equation:

$$E = CF_d \left( \frac{20.9}{(20.9 - \%O_2)} \right)$$

Where:

E = Emission rate of pollutant, ng/J (1b/million Btu);

C = Concentration of pollutant, ng/dscm (1b/dscf);

%O<sub>2</sub> = O<sub>2</sub> concentration, percent dry basis; and

F<sub>d</sub> = Factor as determined from Method 19 of appendix A of this part.

(2) Method 5 of appendix A of this part shall be used to determine the PM concentration (C) at affected facilities without wet flue-gas-desulfurization (FGD) systems and Method 5B of appendix A of this part shall be used to determine the PM concentration (C) after FGD systems.

(i) The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). The probe and filter holder heating systems in the sampling train shall be set to provide an average gas temperature of 160±14 °C (320±25 °F).

(ii) The emission rate correction factor, integrated or grab sampling and analysis procedure of Method 3B of appendix A of this part shall be used to determine the O<sub>2</sub> concentration (%O<sub>2</sub>).

The O<sub>2</sub> sample shall be obtained simultaneously with, and at the same traverse points as, the particulate sample. If the grab sampling procedure is used, the O<sub>2</sub> concentration for the run shall be the arithmetic mean of the sample O<sub>2</sub> concentrations at all traverse points.

(iii) If the particulate run has more than 12 traverse points, the O<sub>2</sub> traverse points may be reduced to 12 provided that Method 1 of appendix A of this part is used to locate the 12 O<sub>2</sub> traverse points.

(3) Method 9 of appendix A of this part and the procedures in §60.11 shall be used to determine opacity.

(4) Method 6 of appendix A of this part shall be used to determine the SO<sub>2</sub> concentration.

(i) The sampling site shall be the same as that selected for the particulate sample. The sampling location in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft). The sampling time and sample volume for each sample run shall be at least 20 minutes and 0.020 dscm (0.71 dscf). Two samples shall be taken during a 1-hour period, with each sample taken within a 30-minute interval.

(ii) The emission rate correction factor, integrated sampling and analysis procedure of Method 3B of appendix A of this part shall be used to determine the O<sub>2</sub> concentration (%O<sub>2</sub>). The O<sub>2</sub> sample shall be taken simultaneously with, and at the same point as, the SO<sub>2</sub> sample. The SO<sub>2</sub> emission rate shall be computed for each pair of SO<sub>2</sub> and O<sub>2</sub> samples. The SO<sub>2</sub> emission rate (E) for each run shall be the arithmetic mean of the results of the two pairs of samples.

(5) Method 7 of appendix A of this part shall be used to determine the NO<sub>x</sub> concentration.

(i) The sampling site and location shall be the same as for the SO<sub>2</sub> sample. Each run shall consist of four grab samples, with each sample taken at about 15-minute intervals.

(ii) For each NO<sub>x</sub> sample, the emission rate correction factor, grab sampling and analysis procedure of Method 3B of appendix A of this part shall be used to determine the O<sub>2</sub> concentration (%O<sub>2</sub>). The sample shall be taken si-

multaneously with, and at the same point as, the NO<sub>x</sub> sample.

(iii) The NO<sub>x</sub> emission rate shall be computed for each pair of NO<sub>x</sub> and O<sub>2</sub> samples. The NO<sub>x</sub> emission rate (E) for each run shall be the arithmetic mean of the results of the four pairs of samples.

(c) When combinations of fossil fuels or fossil fuel and wood residue are fired, the owner or operator (in order to compute the prorated standard as shown in §§60.43(b) and 60.44(b)) shall determine the percentage (w, x, y, or z) of the total heat input derived from each type of fuel as follows:

(1) The heat input rate of each fuel shall be determined by multiplying the gross calorific value of each fuel fired by the rate of each fuel burned.

(2) ASTM Methods D2015, or D5865 (solid fuels), D240 (liquid fuels), or D1826 (gaseous fuels) (all of these methods are incorporated by reference, see §60.17) shall be used to determine the gross calorific values of the fuels. The method used to determine the calorific value of wood residue must be approved by the Administrator.

(3) Suitable methods shall be used to determine the rate of each fuel burned during each test period, and a material balance over the steam generating system shall be used to confirm the rate.

(d) The owner or operator may use the following as alternatives to the reference methods and procedures in this section or in other sections as specified:

(1) The emission rate (E) of PM, SO<sub>2</sub> and NO<sub>x</sub> may be determined by using the F<sub>c</sub> factor, provided that the following procedure is used:

(i) The emission rate (E) shall be computed using the following equation:

$$E = CF_c \left( \frac{100}{\%CO_2} \right)$$

Where:

E = Emission rate of pollutant, ng/J (lb/MMBtu);

C = Concentration of pollutant, ng/dscm (lb/dscf);

%CO<sub>2</sub> = CO<sub>2</sub> concentration, percent dry basis;

and  
F<sub>c</sub> = Factor as determined in appropriate sections of Method 19 of appendix A of this part.

(ii) If and only if the average  $F_c$  factor in Method 19 of appendix A of this part is used to calculate  $E$  and either  $E$  is from 0.97 to 1.00 of the emission standard or the relative accuracy of a continuous emission monitoring system is from 17 to 20 percent, then three runs of Method 3B of appendix A of this part shall be used to determine the  $O_2$  and  $CO_2$  concentration according to the procedures in paragraph (b)(2)(ii), (4)(ii), or (5)(ii) of this section. Then if  $F_o$  (average of three runs), as calculated from the equation in Method 3B of appendix A of this part, is more than  $\pm 3$  percent than the average  $F_o$  value, as determined from the average values of  $F_d$  and  $F_c$  in Method 19 of appendix A of this part, *i.e.*,  $F_{oa} = 0.209 (F_{da}/F_{ca})$ , then the following procedure shall be followed:

(A) When  $F_o$  is less than  $0.97 F_{oa}$ , then  $E$  shall be increased by that proportion under  $0.97 F_{oa}$ , *e.g.*, if  $F_o$  is  $0.95 F_{oa}$ ,  $E$  shall be increased by 2 percent. This recalculated value shall be used to determine compliance with the emission standard.

(B) When  $F_o$  is less than  $0.97 F_{oa}$  and when the average difference (d) between the continuous monitor minus the reference methods is negative, then  $E$  shall be increased by that proportion under  $0.97 F_{oa}$ , *e.g.*, if  $F_o$  is  $0.95 F_{oa}$ ,  $E$  shall be increased by 2 percent. This recalculated value shall be used to determine compliance with the relative accuracy specification.

(C) When  $F_o$  is greater than  $1.03 F_{oa}$  and when the average difference  $d$  is positive, then  $E$  shall be decreased by that proportion over  $1.03 F_{oa}$ , *e.g.*, if  $F_o$  is  $1.05 F_{oa}$ ,  $E$  shall be decreased by 2 percent. This recalculated value shall be used to determine compliance with the relative accuracy specification.

(2) For Method 5 or 5B of appendix A of this part, Method 17 of appendix A of this part may be used at facilities with or without wet FGD systems if the stack gas temperature at the sampling location does not exceed an average temperature of  $160^\circ C$  ( $320^\circ F$ ). The procedures of sections 2.1 and 2.3 of Method 5B of appendix A of this part may be used with Method 17 of appendix A of this part only if it is used after wet FGD systems. Method 17 of appendix A of this part shall not be used after wet

FGD systems if the effluent gas is saturated or laden with water droplets.

(3) Particulate matter and  $SO_2$  may be determined simultaneously with the Method 5 of appendix A of this part train provided that the following changes are made:

(i) The filter and impinger apparatus in sections 2.1.5 and 2.1.6 of Method 8 of appendix A of this part is used in place of the condenser (section 2.1.7) of Method 5 of appendix A of this part.

(ii) All applicable procedures in Method 8 of appendix A of this part for the determination of  $SO_2$  (including moisture) are used:

(4) For Method 6 of appendix A of this part, Method 6C of appendix A of this part may be used. Method 6A of appendix A of this part may also be used whenever Methods 6 and 3B of appendix A of this part data are specified to determine the  $SO_2$  emission rate, under the conditions in paragraph (d)(1) of this section.

(5) For Method 7 of appendix A of this part, Method 7A, 7C, 7D, or 7E of appendix A of this part may be used. If Method 7C, 7D, or 7E of appendix A of this part is used, the sampling time for each run shall be at least 1 hour and the integrated sampling approach shall be used to determine the  $O_2$  concentration (% $O_2$ ) for the emission rate correction factor.

(6) For Method 3 of appendix A of this part, Method 3A or 3B of appendix A of this part may be used.

(7) For Method 3B of appendix A of this part, Method 3A of appendix A of this part may be used.

#### **Subpart Da—Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978**

SOURCE: 72 FR 32722, June 13, 2007, unless otherwise noted.

#### **§ 60.40Da Applicability and designation of affected facility.**

(a) The affected facility to which this subpart applies is each electric utility steam generating unit: