implement an emission reduction plan as described in paragraph (b)(3) of this section.

5. Appendix Y is added to part 51 to read as follows:

Appendix Y to Part 51—Interpretation of the 5-Minute Trigger Level for Sulfur Dioxide

1.0 General

a. This appendix explains the computations necessary for analyzing sulfur dioxide data to determine whether the 5minute trigger level specified in § 51.400(a), subpart T, has been exceeded and whether the 5-minute trigger level has been violated. Sulfur dioxide is measured in the ambient air by the reference method specified in appendix A of this part or an equivalent method designated in accordance with part 53 of this chapter.

b. Several terms used in this appendix must be defined. A "5-minute hourly maximum" for SO2 refers to the highest of the 12 possible nonoverlapping 5-minute SO₂ averages calculated or measured during a clock hour. The term "exceedance" of the 5minute trigger level concentration means a 5minute hourly maximum value that is greater than the 5-minute trigger level after rounding to the nearest hundredth ppm (i.e., values ending in or greater than 0.005 ppm are rounded up; e.g., a value of 0.605 would be rounded to 0.61, which is the smallest value for an exceedance). The term "year" refers to a calendar year. The term "quarter" refers to a calendar quarter. The 5-minute SO₂ trigger level is expressed in terms of the number of expected exceedances per year by adjusting for missing data (if required) and by averaging over a 2-year period.

2.0 Trigger Level Determination

a. The 5-minute trigger level is not violated when the number of expected exceedances per year is less than or equal to one. In general, this determination is to be made by recording the number of 5-minute hourly maximum exceedances at a monitoring site for each year, using the calculations in section 3.2 to compensate for missing data (if required), averaging the number of exceedances over a 2-year period, and comparing the number of exceedances (rounded to the nearest integer) to the number of allowable exceedances.

b. Although it is necessary to meet the minimum data completeness requirements to use the computational formula described in section 3.2, this criterion does not apply when there are obvious exceedance situations which contribute to a violation. For example, when a site fails to meet the completeness criteria, violation of the 5minute trigger level can still be established on the basis of the observed number of exceedances in a year (e.g., three observed exceedances in a single year).

3.0 Calculations for the 5-Minute Trigger Level

3.1 Calculating a 5-Minute Hourly Maximum

A 5-minute hourly maximum value for SO_2 is the highest of the 5-minute averages from

the 12 possible nonoverlapping periods during a clock hour. These 5-minute values shall be rounded to the nearest hundredth ppm (fractional values equal to or greater than 0.005 ppm are rounded up). A 5-minute maximum shall be considered valid if: (1) 5minute averages were available for at least 9 of the 12 5-minute periods during the clock hour, or (2) the value of the 5-minute average exceeds the level of the 5-minute trigger level.

3.2 Calculating Expected Exceedances for a Year

a. Because of practical considerations, a 5minute maximum SO_2 value may not be available for each hour of the year. To account for the possible effect of incomplete data, an adjustment must be made to the data collected at a particular monitoring location to estimate the number of exceedances in a year. The adjustment is made on a quarterly basis to ensure that the entire year is adequately represented. In this adjustment, the assumption is made that the fraction of missing values that would have exceeded the trigger level is identical to the fraction of measured values above this level.

b. For all NAMS and SLAMS sites that report 5-minute SO_2 data, the computation for incomplete data is to be made for all sites with 50 to 90 percent complete data in each quarter. If a site has more than 90 percent complete data in a quarter, no adjustment for missing data is required. If a site has less than 50 percent complete data in a quarter, no adjustment for missing data is required and the observed exceedances are used.

c. The estimate of the expected number of exceedances for the quarter is equal to the observed number of exceedances plus an increment associated with the missing data. 1. The following formula must be used for

these computations:

 $\begin{array}{ll} e_q = \! v_q \! + \! [(v_q/n_q) \! \times \! (N_q - n_q] \! = \! v_q \! \times \! N_q/n_q \quad [1] \\ & \text{Where:} \end{array}$

e_q=the expected number of exceedances for quarter q,

v_q=the observed number of exceedances for quarter q,

 N_q =the number of hours in quarter q, and n_q =the number of hours in the quarter with valid 5-minute hourly SO₂ maximums

q=the index for each quarter, q=1, 2, 3 or 4.

2. The expected number of exceedances for the quarter must be rounded to the nearest hundredth (fractional values equal to or greater than 0.005 are rounded up).

d.1. The expected number of exceedances for the year, e, is the sum of the estimates for each quarter.

$$e = \sum_{q=1}^{4} e_q$$

2. The expected number of exceedances for a single year must be rounded to one decimal place (fractional values equal to or greater than 0.05 are rounded up).

e. The number of exceedances is then estimated by averaging the individual annual estimates over a 2-year period, rounding to the nearest integer, and comparing with the allowable exceedance rate of one per year (fractional values equal to or greater than 0.5 are rounded up; e.g., an expected number of exceedances of 1.5 would be rounded to 2, which is the lowest value for violating the trigger level.

f. Example.

1. During the most recent quarter, 1210 out of a possible 2208 5-minute hourly maximums were recorded, with one observed exceedance of the 5minute trigger level. Using formula [1], the expected number of exceedances for the quarter is:

 $e_q = 1 \ge 2208/1210 = 1.825$ or 1.83

2. If the expected exceedances for the other 4 quarters were 0.0, then using formula [2], the expected number of exceedances for the year is:

1.83 + 0.0 + 0.0 + 0.0 = 1.83 or 1.8

3. If the expected number of exceedances for the previous year was 0.0, then the expected number of exceedances is estimated by:

(1.8 + 0.0)/2 = 0.9 or 1

4. Since 1 is not greater than the allowable number of exceedances, this monitoring site would not violate the trigger level.

PART 58—AMBIENT AIR QUALITY SURVEILLANCE

1. The authority citation for part 58 continues to read as follows:

Authority: Secs 110, 301(a), and 319 of the Clean Air Act as amended, (42 U.S.C. 7410, 7601(a), and 7619).

2. Section 58.1 is amended by adding and reserving paragraphs (aa) through (hh) and by adding paragraphs (ii) and (jj) to read as follows:

§58.1 Definitions.

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(ii) "Metropolitan Statistical Area" means the most recent area as designated by the U.S. Office of Management and Budget and population figures from the U.S. Bureau of the Census. The Department of Commerce defines a metropolitan area as "one of a large population nucleus, together with adjacent communities which have a high degree of economic and social integration with that nucleus." ¹

(jj) "Consolidated Metropolitan Statistical Area" means the most recent area as designated by the U.S. Office of Management and Budget and population figures from the Bureau of

¹U.S. Bureau of the Census, "Statistical Abstract of the United States: 1993", (113th Edition), Washington, DC (1993).