Question 9.19

Topic: High Scale Range Exceedances

Question: Please clarify how data are to be reported when the full scale range of a monitor is exceeded and the exceedance is not caused by a monitor out-of-control period. Is an instantaneous reading or a one minute average or a 15-minute average above the range considered a full-scale exceedance?

Answer: Exceedances of the high range of a continuous monitor are addressed in Appendix A, Sections 2.1.1.5 (for SO_2), 2.1.2.5 (for NO_x), and 2.1.4.3 (for flow). During hours in which the NO_x concentration, SO_2 concentration, or flow rate is greater than the analyzer's capability to measure, the owner or operator is instructed to substitute 200% of the full scale range of the instrument for that hour. This is sufficiently clear for hours in which all data recorded by a monitor are off-scale. However, the rule does not give specific instructions on how to calculate emissions during an hour in which an exceedance of the high range occurs during only part of an hour.

There are two acceptable methods for reporting hourly data when a high scale range exceedance occurs only for part of an hour. Regardless of what method is used, the method must be implemented by the data acquisition and handling system in an automated fashion so that a value of 200% of the range is automatically substituted at the appropriate time. The two options are outlined below:

Option 1

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be five seconds, ten seconds, or sixty seconds, depending on the type of data collection used in the DAHS/CEMS).

(2) If *any* of the fundamental readings recorded during an hour exceeds the high range of the analyzer then report 200% of the range for that hour and report an MODC of 20 to indicate a full-scale range exceedance.

Option 2

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be five seconds, ten seconds, or sixty seconds, depending on the type of data collection used in the DAHS/CEMS).

(2) Calculate the hourly average pollutant concentration as the arithmetic average of all fundamental data values recorded during the hour, in the following manner:

(a) If the fundamental reading is lower than the analyzer range, use the reading directly in the calculation of the hourly average; or

(b) If the fundamental reading indicates a range exceedance, then substitute 200% of the range for that reading.

(3) Report the hourly average calculated in the manner described in step (2) above as an unadjusted concentration value and use MODC 20 to indicate that a range exceedance occurred for at least part of the hour.

References: Appendix A, Sections 2.1.1.5, 2.1.2.5, and 2.1.4.3

History: First published in October 1999 Revised Manual; revised in 2013 Manual