Addendum: Alternative Diagnostic Tests

Introduction

For certain component repairs, replacements or other changes made to a monitoring system, EPA will conditionally allow alternative diagnostic tests to be performed, in lieu of a full Part 75 quality-assurance test. The conditions are that if the alternative test is failed, the monitoring system will be considered out-of-control until corrective actions are taken and a full Part 75 QA test of the same type has been passed, "hands-off." The results of successful alternative diagnostic tests need only be kept on-site (e.g., recorded in maintenance logs) and do not have to be reported to EPA.

Abbreviated Linearity Check

For gas monitors, an abbreviated linearity check is allowed in place of a full linearity check, wherever "(5)" is indicated in the "Linearity Check" column in the Tables above. The monitor must be "in-control" with respect to its RATA requirement before beginning this check (see Appendix B, Section 2.2.3 (a)). The abbreviated linearity check procedure is as follows:

(1) Perform a "hands-off" calibration error test of the monitor. The calibration error for both the zero and upscale gases must be within the performance specifications in Section 3.1 of Appendix A. That is:

- For SO_2 and NO_x monitors, the calibration error (CE) must not exceed 2.5% of the span value. Alternatively, for SO_2 or NO_x span values < 200 ppm, the results are acceptable if the absolute difference between the tag value of the reference gas and the analyzer response, i.e., $|R - A|$, does not exceed five ppm; or

- For CO_2 and O_2 monitors, the CE, expressed as $|R - A|$, must not exceed 0.5% CO_2 or O_2.

You may perform routine or non-routine calibration adjustments prior to the hands-off calibration error test, as described in Sections 2.1.3 (b) and (c) of Appendix B.

(2) Following the hands-off daily calibration error test, check the linearity of the monitor (also "hands-off"), by performing three sequential calibration gas injections, i.e., one injection of a low-level gas (20 – 30% of span value), one mid-level gas injection (50 – 60% of span value) and one high-level injection (80 – 100% of span value). These three calibration gases are the same ones used for a full Part 75 linearity check. You may use the conditional data validation procedures in § 75.20 (b)(3) for the abbreviated linearity check. If you elect to use this option, the calibration error test in (1), above, may serve as the probationary calibration error test, and the abbreviated linearity check must be completed within 168 unit operating hours of the probationary calibration error test.

(3) The results of the abbreviated linearity check are acceptable if the Part 75 linearity specification is met for each gas injection. That is:

- For SO_2 and NO_x monitors, the linearity error (LE) must not exceed 5.0% of the tag value of the reference gas. Alternatively, the results are acceptable if |R - A| does not exceed five ppm; or

- For CO_2 and O_2 monitors, the LE must not exceed 5.0% of the reference gas tag value. Alternatively, the results are acceptable if |R - A| does not exceed 0.5% CO_2 or O_2.

(4) If the abbreviated linearity check is passed, keep the results on-site for inspection and audit purposes. Do not report the results to EPA. Report only the results of the hands-off calibration error test in <DailyCalibrationData>.

(5) If the abbreviated linearity check is failed, treat it as an aborted linearity check (see Section 2.2.3 (b)(2) of Appendix B) and follow it up with a full linearity check. Use the data validation rules in Section 2.2.3 (e) of Appendix B pertaining to aborted linearity checks. Since an aborted linearity check affects data validation, it must be reported to EPA in the electronic quarterly report as an aborted Linearity attempt (see Section 2.3.1 in the Quality Assurance and Certification Reporting Instructions for reporting the "Test Result Code").

Alternative System Response Test

For gas monitors, an alternative system response test is allowed in place of a full cycle time test, wherever "(6)" is indicated in the "Cycle Time Test" column in the Tables above. The alternative system response test procedure is as follows:

(1) Initiate a daily calibration error check of the monitor.

(2) Wait until a stable reading with the zero-level calibration gas has been attained. Start a timer (e.g., a stopwatch) when injection of the upscale calibration gas begins.

(3) Stop the timer when the analyzer reading reaches the 95% response level (i.e., when the measured gas concentration has risen to a level that is within five percent of the tag value of the upscale calibration gas).

(4) The results of the alternative system response test are acceptable if the measured response time is $\leq$ 15 minutes.

(5) If the alternative system response time is failed, declare the monitor out-of-control. Follow up with a full cycle time test after corrective actions are taken.