

§92.118 Analyzer checks and calibrations.

(a)(1) Prior to initial use and after major repairs, bench check each analyzer for compliance with the specifications of §92.109.

(2) The periodic calibrations are required:

(i) Leak check of the pressure side of the system (see paragraph (b) of this section). If the option described in paragraph (b)(2) of this section is used, a pressure leak check is not required.

(ii) Calibration of all analyzers (see §§92.119 through 92.122).

(iii) Check of the analysis system response time (see paragraph (c) of this section). If the option described in paragraph (c)(2) of this section is used, a response time check is not required.

(b) *Leak checks*—(1) *Vacuum side leak check.* (i) Any location within the analysis system where a vacuum leak could affect the test results must be checked.

(ii) The maximum allowable leakage rate on the vacuum side is 0.5 percent of the in-use flow rate for the portion of the system being checked, the analyzer flows and bypass flows may be used to estimate the in-use flow rates.

(iii) The sample probe and the connection between the sample probe and valve V2 may be excluded from the leak check.

(2) *Pressure side leak check.* (i) The maximum allowable leakage rate on the pressure side is 5 percent of the in-use flow rate.

(ii) Option: If the flow rate for each flow meter is equal to or greater than the flow rate recorded in paragraph (c)(2)(i) of this section, then a pressure side leak check is not required.

(c) *System response time; check procedure.* (1) After any major change in the system, check the system response time by the following procedure:

(i) Stabilize the operating temperature of the sample line, sample pump, and heated filters.

(ii) Introduce an HC span gas into the sampling system at the sample probe or valve V2 at atmospheric pressure. Simultaneously, start the time measurement.

(iii) When the HC instrument response is 95 percent of the span gas

concentration used, stop the time measurement.

(iv) If the elapsed time is more than 20.0 seconds, make necessary adjustments.

(v) Repeat with the CO, CO₂, and NO_x instruments and span gases.

(2) *Option.* If the following parameters are determined, the initial system response time may be generally applied to future checks:

(i) *Analyzer and bypass flow rates.* (A) Determine by experimentation the minimum analyzer and bypass flow rates individually and in combination that will produce a response time as close as possible to 20.0 seconds per paragraph (c)(1) of this section.

(B) Record the highest minimum flow rate for each flow meter as determined in paragraph (c)(2)(i)(A) of this section.

(ii) *Capillary flow analyzers.* This procedure is applicable only to analyzers that have sample capillaries such as the HFID and CL analyzers. It is also assumed that the system has sample/span valves that perform the function of valves V9 and V13 in.

(A) Operate the analyzer(s) at the in-use capillary pressure.

(B) Adjust the bypass flow rate to the flow rate recorded in paragraph (c)(2)(i)(B) of this section.

(C) Measure and record the response time from the sample/span valve(s) per paragraph (c)(1) of this section.

(D) The response time required by paragraph (c)(2)(ii)(C) of this section can be determined by switching from the "sample" position to the "span" position of the sample/span valve and observing the analyzer response on a chart recorder. Normally, the "sample" position would select a "room air" sample and the "span" position would select a span gas.

(E) Adjust the bypass flow rate to the normal in-use value.

(F) Measure and record the response time from the sample/span valve(s) per paragraph (c)(1) of this section.

(G) Determine the slowest response time (step in paragraph (c)(2)(ii)(C) of this section or step in paragraph (c)(2)(ii)(D) of this section) and add 2 seconds to it.