for the NO NDIR analyzer shall be 5,000:1 (see §86.321).

(6) The minimum CO₂ rejection ratio (maximum CO₂ interference) for the NO NDIR analyzer shall be 30,000:1 (see §86.322).

§86.319–79 Analyzer checks and calibrations; frequency and overview.

(a) Prior to initial use and after major repairs, bench check each analyzer (see §86.320).

(b) At least monthly during testing, check the NOₓ converter efficiency, as described in §86.332.

(c) At least once every 30 days during testing, perform the following:

(1) Leak check the pressure side of the system (see §86.328). If the option described in §86.328(b)(2) is used, a pressure leak check is not required.

(2) Calibrate all analyzers (see §§86.330 through 86.332).

(3) Check the analysis system response time (see §86.315(a)).

(4) Verify that the automatic data collection system (if used) meets the chart reading requirements found in §86.343.

(5) Check the fuel flow measurement instrument to insure that the specifications in §86.314 are met. Flow meters of the tapered tube and float design (rotometers) or the balance beam principle need be checked only every 90 days.

(d) At least once every 90 days during testing check the water rejection ratio and the CO₂ rejection ratio on all NDIR analyzers (see §§86.321 and 86.322).

(e) At least once every 180 days during testing check the dynamometer test stand and power output instrumentation (see §86.333).

§86.320–79 Analyzer bench check.

(a) Prior to initial use and after major repairs verify that each analyzer complies with the following specifications:

(1) Response time (see §86.315(a)).

(2) Precision (see §86.315(b)).

(3) Noise (see §86.315(c)).

(4) Zero drift (see §86.315(d)).

(5) Span drift (see §86.315(e)).

(6) Water rejection ratio, NDIR analyzers only (see §§86.316(c) and 86.318(b)(5).

(7) CO₂ rejection ratio, NDIR analyzers only (see §§86.316(d) and 86.318(b)(6)).

(8) Quench check, CL analyzers only (see §86.327).

(b) If a stainless steel NO₂ to NO converter is used, condition all new or replacement converters. The conditioning consists of either purging the converter with air for a minimum of 4 hours or until the converter efficiency is greater than 90 percent. The converter must be at operational temperature while purging. Do not use this procedure prior to checking converter efficiency on in-use converters.

§86.321–79 NDIR water rejection ratio check.

(a) Zero and span the analyzer on the lowest range that will be used.

(b) Introduce a saturated mixture of water and zero gas at room temperature directly to the analyzer.

(c) Determine and record the analyzer operating pressure (GP) in absolute units in pascals. Gauges G3 and G4 may be used if the values are converted to the correct units.

(d) Determine and record the temperature of the zero-gas mixture.

(e) Record the analyzers’ response (AR) in ppm to the saturated zero-gas mixture.

(f) For the temperature recorded in step (d), determine the saturation vapor pressure (PNW) from §86.344(d).

(g) Calculate the water concentration (Z) in the mixture from:

\[ Z = \left(\frac{P_{NW}}{GP}\right) \times 10^6 \]

(h) Calculate the water rejection ratio (WRR) from:

\[ WRR = \left(\frac{Z}{AR}\right) \]

§86.322–79 NDIR CO₂ rejection ratio check.

(a) Zero and span the analyzer on the lowest range that will be used.

(b) Introduce a CO₂ calibration gas of at least 10 percent CO₂ or greater to the analyzer.

(c) Record the CO₂ calibration gas concentration in ppm.

(d) Record the analyzers’ response (AR) in ppm to the CO₂ calibration gas.
(e) Calculate the CO$_2$ rejection ratio (CO$_2$RR) from:

$$CO_2RR = \frac{\text{ppm CO}_2}{AR}$$

§ 86.327–79 Quench checks; NOX analyzer.

(a) Perform the reaction chamber quench check for each model of high vacuum reaction chamber analyzer prior to initial use.

(b) Perform the reaction chamber quench check for each new analyzer that has an ambient pressure or “soft vacuum” reaction chamber prior to initial use. Additionally, perform this check prior to reusing an analyzer of this type any time any repairs could potentially alter any flow rate into the reaction chamber. This includes, but is not limited to, sample capillary, ozone capillary, and if used, dilution capillary.

(c) Quench check as follows:

(1) Calibrate the NOX analyzer on the lowest range that will be used for testing.

(2) Introduce a mixture of CO$_2$ calibration gas and NOX calibration gas to the CL analyzer. Dynamic blending may be used to provide this mixture. Dynamic blending may be accomplished by analyzing the CO$_2$ in the mixture. The change in the CO$_2$ value due to blending may then be used to determine the true concentration of the NOX in the mixture. The CO$_2$ concentration of the mixture shall be approximately equal to the highest concentration experienced during testing. Record the response.

(3) Recheck the calibration. If it has changed more than ±1 percent of full scale, recalibrate and repeat the quench check.

(4) Prior to testing, the difference between the calculated NOX response and the response of NOX in the presence of CO$_2$ (step 2) must not be greater than 3.0 percent of full-scale. The calculated NOX response is based on the calibration performed in step (1).

(Secs. 206, 301(a), Clean Air Act as amended (42 U.S.C. 7525, 7601(a)))

[42 FR 45154, Sept. 8, 1977, as amended at 44 FR 16917, Mar. 20, 1979]