

## Environmental Protection Agency

## § 86.1542-84

conditions specified in paragraph (e)(4) of this section.

(2) Follow the sampling and exhaust measurement requirements of § 86.340-79(e). The idle sample shall be taken for 60 seconds minimum, and no more than 64 seconds. The chart reading procedures of § 86.343-79 shall be used to determine the analyzer response.

(g) If the engine or vehicle stalls at any time during the test run, the test is void.

[48 FR 52252, Nov. 16, 1983, as amended at 60 FR 34377, June 30, 1995]

### § 86.1540-84 Idle exhaust sample analysis.

(a) Record the CO idle concentrations in percent.

(b) If the CVS sampling system is used, the analysis procedures for dilute CO and CO<sub>2</sub> specified in § 86.1340-84 apply. Follow the raw CO<sub>2</sub> analysis procedure specified in § 86.343-79 for the raw CO<sub>2</sub> analyzer.

(c) If the continuous raw exhaust sampling technique (§ 86.309-79) is used, the analysis procedures for CO specified in § 86.343-79 apply.

### § 86.1542-84 Information required.

(a) *General data—heavy-duty engines.* Information shall be recorded for each idle emission test as specified in § 86.1344-84 (b), (c), and (d). The following test data is required:

- (1) Date and time of day.
- (2) Test number.
- (3) Engine intake air or test cell temperature.
- (4) Barometric pressure.

NOTE: A central laboratory barometer may be used: *Provided*, That individual test cell barometric pressures are shown to be within  $\pm 0.1$  percent of the barometric pressure at the central barometer location.

(5) Engine intake or test cell and CVS dilution air humidity.

(6) Curb idle speed during the test.

(7) Idle exhaust CO concentration (dry basis).

(8) Idle exhaust raw CO<sub>2</sub> concentration (if applicable).

(9) Dilute bag sample CO and CO<sub>2</sub> concentrations (if applicable).

(10) Total CVS flow rate with calculated dilution factor for the idle mode (if applicable).

(b) *General data—light-duty trucks.* The following information shall be recorded with respect to each test:

- (1) Test number.
- (2) System or device tested (brief description).
- (3) Date and time of day for the test.
- (4) Instrument operated.
- (5) Vehicle: ID number, manufacturer, model year, standards, engine family, evaporative emissions family, basic engine description (including displacement, number of cylinders, turbocharger used and catalyst usage), fuel system (including number of carburetors, number of carburetor barrels, fuel injection type and fuel tank(s) capacity and location), engine code, gross vehicle weight rating, inertia weight class and transmission configuration, as applicable.

(6) All pertinent instrument information such as tuning, gain, serial number, detector number and range. As an alternative a reference to a vehicle test cell number may be used, with the advance approval of the Administrator, provided test cell calibration records show the pertinent instrument information.

(7) Recorder charts or computer printouts: Identify zero, span, exhaust gas and dilution air sample traces or computer readings (if applicable).

(8) Test cell ambient temperature and, if applicable, barometric pressure and humidity.

NOTE: A central laboratory barometer may be used: *Provided*, That individual test cell barometric pressures are shown to be within + 0.1 percent of the barometric pressure at the central barometer location.

(9) Pressure of the mixture of exhaust and dilution air entering the CVS metering device (or pressure drop across the CFV), the pressure increase across the device, and the temperature at the inlet (if applicable). The temperature may be recorded continuously or digitally to determine temperature variations (if applicable).

(10) The number of revolutions of the positive displacement pump accumulated while exhaust samples are being collected (if applicable). The number of standard cubic feet metered by a critical flow venturi would be the equivalent record for a CFV (if applicable).

(11) The humidity of the dilution air.

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NOTE: If conditioning columns are not used (see §§86.122 and 86.144) this measurement can be deleted. If the conditioning columns are used and the dilution air is taken from the test cell, the ambient humidity can be used for this measurement.

(12) Curb idle engine speed during the test.

(13) Idle exhaust CO concentration (dry basis).

(14) Idle exhaust raw CO<sub>2</sub> concentration (if applicable).

(15) Dilute bag sample CO and CO<sub>2</sub> concentrations (if applicable).

(16) Total CVS flow rate with calculated dilution factor for the idle mode (if applicable).

[48 FR 52252, Nov. 16, 1983, as amended at 49 FR 48149, Dec. 10, 1984]

**§ 86.1544-84 Calculation; idle exhaust emissions.**

(a) The final idle emission test results shall be reported as percent for carbon monoxide on a dry basis.

(b) If a CVS sampling system is used, the following procedure shall apply:

(1) Use the procedures, as applicable, in §86.1342-84 to determine the dilute wet-basis CO and CO<sub>2</sub> in percent.

(2) Use the procedure, as applicable, in §86.345-79 to determine the raw dry-basis CO<sub>2</sub> in percent.

(3) Convert the raw dry-basis CO<sub>2</sub> to raw wet-basis. An assumption that the percent of water by volume in the raw sample is equal to the percent of raw dry-basis CO<sub>2</sub> minus 0.5 percent is acceptable. For example:

$$10.0\% \text{ dry CO}_2 - 0.5\% = 9.5\% \text{ water} \\ (1.00 - 0.095) (10.0\% \text{ dry CO}_2) = 9.05\% \text{ wet CO}_2$$

(4) Calculate the CVS dilution factor (DF) by:

$$DF = \frac{\text{Raw wet CO}_2 - \text{background CO}_2}{\text{Dilute wet CO}_2 - \text{background CO}_2}$$

(5) Convert the dilute wet-basis CO to dilute dry-basis values. An assumption that the percent of water by volume in the sample bag is 2 percent is acceptable. For example:

$$\text{Dilute dry CO} = (\text{dilute wet CO}) / (1.00 - 0.02)$$

(6) Calculate the raw dry-basis CO values by:

$$\text{Raw dry CO} = (DF) (\text{dilute dry CO})$$

(c) If the raw exhaust sampling and analysis system specified in §86.309-79

is used, the percent for carbon monoxide on a dry basis shall be calculated using the procedure, as applicable, in §86.345-79.

(Secs. 202, 203, 206, 207, 208, 301a, Clean Air Act, as amended; 42 U.S.C. 7521, 7522, 7525, 7541, 7542, 7601a)

[48 FR 52252, Nov. 16, 1983, as amended at 49 FR 48149, Dec. 10, 1984; 50 FR 10708, Mar. 15, 1985; 51 FR 24613, July 7, 1986]

**Subpart Q—Regulations for Altitude Performance Adjustments for New and In-Use Motor Vehicles and Engines**

AUTHORITY: Secs. 215 and 301, Clean Air Act, as amended (42 U.S.C. 7550 and 7601).

SOURCE: 45 FR 66956, Oct. 8, 1980, unless otherwise noted.

**§ 86.1601 General applicability.**

This subpart applies to manufacturers of motor vehicles and motor vehicle engines (hereafter referred to as vehicles) which are subject to the requirements of title II of the Clean Air Act. This subpart applies to the following vehicles:

(a) 1968 and later model year light-duty vehicles and light-duty trucks.

(b) 1970 and later model year heavy-duty engines built after December 31, 1969.

(c) 1978 and later model year motorcycles built after December 31, 1977.

(d) References in this subpart to engine families and emission control systems shall be deemed to refer to durability groups and test groups as applicable for manufacturers certifying new light-duty vehicles and light-duty trucks under the provisions of subpart S of this part.

[45 FR 66956, Oct. 8, 1980, as amended at 64 FR 23923, May 4, 1999]

**§ 86.1602 Definitions.**

The definitions provided in subpart A also apply in this subpart. Additional definitions that apply in this subpart are as follow:

*Altitude performance adjustments* are adjustments or modifications made to vehicle, engine, or emission control functions in order to improve emission control performance at altitudes other