

Environmental Protection Agency

§ 92.102

transferred to the owner or primary operator of the locomotives or locomotive engines generating credits may not be used for compliance with the Tier 0 standards for 2002 or later model years.

(3)(i) Prior to January 1, 2000, the provisions of this paragraph (d) apply to all locomotives and locomotive engines.

(ii) During the period January 1, 2000 through December 31, 2001, the provisions of this paragraph (d) apply only to engine families that include only locomotives and/or locomotive engines originally manufactured prior to January 1, 1990.

(iii) The provisions of this paragraph (d) other than the provisions of paragraph (d)(2) of this section do not apply to any locomotives and locomotive engines manufactured or remanufactured on or after January 1, 2002.

(4)(i) NO_x credits generated under this paragraph (d) shall be calculated as specified in §92.305, except that the applicable standard shall be replaced by:

(A) 10.5 g/bhp-hr for the line-haul cycle standards, and 14.0 g/bhp-hr for the switch standards; or

(B) For remanufactured locomotives, a measured baseline emission rate for the configuration with the lowest NO_x emission rate in the applicable engine family that is approved in advance by the Administrator.

(ii) PM credits generated under this paragraph (d) shall be calculated as specified in §92.305, except that the applicable standard shall be replaced by:

(A) 0.20 g/bhp-hr for the line-haul cycle standards, and 0.24 g/bhp-hr for the switch standards; or

(B) For remanufactured locomotives, a measured baseline emission rate for the configuration with the lowest NO_x emission rate in the applicable engine family that is approved in advance by the Administrator.

(iii) The proration factor for all credits generated under this paragraph (d) shall be 0.143.

(5) Locomotives and locomotive engines generating credits under this paragraph (d) must meet all applicable requirements of this part.

(e) *Particulate notch standards.* For model year 2006 and earlier loco-

motives, the particulate notch standard shall be calculated as:

Notch standard = $(E_x) \times (1.2 + (1 - E_{LHX} / \text{std}))$.

(f) *Passenger locomotives.* Passenger locomotives originally manufactured before January 1, 2002 are exempt from the requirements and prohibitions of this part for model years through 2006. New passenger locomotives and locomotive engines produced on or after January 1, 2007 shall comply with all applicable requirements of this part.

Subpart B—Test Procedures

§ 92.101 Applicability.

Provisions of this subpart apply to tests performed by the Administrator, certificate holders, other manufacturers and remanufacturers of locomotives or locomotive engines, railroads (and other owners and operators of locomotives), and their designated testing laboratories. This subpart contains gaseous emission test procedures, particulate emission test procedures, and smoke test procedures for locomotives and locomotive engines.

§ 92.102 Definitions and abbreviations.

The definitions and abbreviations of subpart A of this part apply to this subpart. The following definitions and abbreviations, as well as those found in §92.132 (Calculations), also apply:

Accuracy means the difference between the measured value and the true value, where the true value is determined from NIST traceable measurements where possible, or otherwise determined by good engineering practice.

Calibration means the act of calibrating an analytical instrument using known standards.

Calibration gas means a gas of known concentration which is used to establish the response curve of an analyzer.

Good engineering practice means those methods and practices which the Administrator determines to be consistent with scientific and engineering principles.

Hang-up refers to the process of hydrocarbon molecules being adsorbed, condensed, or by any other method removed from the sample flow prior to reaching the instrument detector. It also refers to any subsequent

§ 92.103

40 CFR Ch. I (7-1-03 Edition)

desorption of the molecules into the sample flow when they are assumed to be absent.

Parts per million, carbon or ppmC means the concentration of an organic compound in a gas expressed as parts per million (by volume or by moles) multiplied by the number of carbon atoms in a molecule of that compound.

Precision means the standard deviation of replicated measurements, or one-half of the readability, whichever is greater; except where explicitly noted otherwise.

Readability means the smallest difference in measured values that can be detected. For example, the readability for a digital display with two decimal places would be 0.01.

Span gas means a gas of known concentration which is used routinely to set the output level of an analyzer.

Standard conditions and standard temperature and pressure mean 68 °F (20 °C) and 29.92 in Hg. (101.3 kPa).

§ 92.103 Test procedures; overview.

(a) This subpart contains procedures for exhaust emission tests of locomotives and locomotive engines. The procedures specified here are intended to measure brake-specific mass emissions of organic compounds (hydrocarbons for locomotives using petroleum diesel fuel), oxides of nitrogen, particulates, carbon monoxide, carbon dioxide, and smoke in a manner representative of a typical operating cycle.

(b)(1) The sampling systems specified in this subpart are intended to collect representative samples for analysis, and minimize losses of all analytes.

(i) For gaseous emissions, a sample of the raw exhaust is collected directly from the exhaust stream and analyzed during each throttle setting.

(ii) Particulates are collected on filters following dilution with ambient air of a separate raw exhaust sample.

(2) Analytical equipment is identical for all fuel types, with the exception of the systems used to measure organics (*i.e.*, hydrocarbons, alcohols, and aldehydes); diesel-fueled and biodiesel-fueled locomotives *Parts per million* and locomotive engines require a heated, continuous hydrocarbon detector; natural gas-fueled locomotives and loco-

motive engines require a continuous hydrocarbon detector and a methane detector; alcohol-fueled locomotives and locomotive engines require a heated hydrocarbon detector, alcohol sampling and detection systems, and aldehyde sampling and detection systems. Necessary equipment and specifications appear in §§ 92.105 through 92.111.

(3) Fuel specifications for emission testing are specified in § 92.113. Analytical gases are specified in § 92.112.

(c) The power produced by the engine is measured at each throttle setting.

(d) The fuel flow rate for each throttle setting is measured in accordance with § 92.107.

(e) Locomotives and locomotive engines are tested using the test sequence as detailed in §§ 92.124 and 92.126.

(f) Alternate sampling and/or analytical systems may be used if shown to yield equivalent results, and if approved in advance by the Administrator. Guidelines for determining equivalency are found in Appendix IV of this part.

(g) At the time of the creation of this part, essentially all locomotives and locomotive engines subject to the standards of this part were designed to use diesel fuel. Therefore, the testing provisions of this subpart focus primarily on that fuel. Some provisions for fuels other than diesel are also included. If a manufacturer or remanufacturer of locomotives or locomotive engines, or a user of locomotives, or other party wishes or intends to use a fuel other than diesel in locomotives or locomotive engines, it shall notify the Administrator, who shall specify those changes to the test procedures that are necessary for the testing to be consistent with good engineering practice. The changes made under this paragraph (g) shall be limited to:

- (1) Exhaust gas sampling and analysis;
- (2) Test fuels; and
- (3) Calculations.

§ 92.104 Locomotive and engine testing; overview.

(a) The test procedures described here include specifications for both locomotive testing and engine testing.