

Environmental Protection Agency

§ 92.9

TABLE A8-2—TIER 1 STANDARDS—Continued
[g/bhp-hr]

	Line-haul cycle standard	Switch cycle standard
THCE	0.55	1.20

TABLE A8-3—TIER 2 STANDARDS
[g/bhp-hr]

	Line-haul cycle standard	Switch cycle standard
NO _x	5.5	8.1
PM	0.20	0.24
CO	1.5	2.4
THC	0.30	0.60
NMHC	0.30	0.60
THCE	0.30	0.60

TABLE A8-4—SMOKE STANDARDS FOR LOCOMOTIVES
[Percent Opacity]

	Steady-state	30-sec peak	3-sec peak
Tier 0	30	40	50
Tier 1	25	40	50
Tier 2	20	40	50

TABLE A8-5—ALTERNATE CO AND PM STANDARDS
[g/bhp-hr]

	Line-haul cycle		Switch cycle	
	CO	PM	CO	PM
Tier 0	10.0	0.30	12.0	0.36
Tier 1	10.0	0.22	12.0	0.27
Tier 2	10.0	0.10	12.0	0.12

(b) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new locomotive or new locomotive engine, except as allowed by paragraph (1) of this paragraph (b).

(1) Discharge of crankcase emissions into the engine exhaust complies with this prohibition, provided crankcase emissions are measured and included with exhaust emissions. Other discharge of crankcase emissions complies with this prohibition, provided crankcase emissions are measured in all certification, production-line, and in-use tests and the masses are added mathematically to the exhaust emissions.

(2) Compliance with this standard is required throughout the entire service

life of the locomotive or locomotive engine.

(c) *Notch standards.* (1) Exhaust emissions from locomotives and locomotive engines shall not exceed the notch standards set forth in paragraph (c)(2) of this section, except as allowed in paragraph (c)(3) of this section, when measured using any test procedures under any test conditions.

(2) Notch standards for each pollutant for each notch are calculated from the certified notch emission rate as follows:

$$\text{Notch standard} = (E_x) \times (1.1 + (1 - E_{LHX}/std))$$

Where:

E_x —The deteriorated brake-specific emission rate (for pollutant x) for the notch (i.e., the brake-specific emission rate calculated under subpart B of this part, multiplied by the deterioration factor in the application for certification expressed as a multiplicative deterioration factor); where x is NO_x, HC (or NMHC or THCE, as applicable), CO or PM.

E_{LHX} —The deteriorated line-haul duty-cycle weighted brake-specific emission rate for pollutant x, as reported in the application for certification.

std—The applicable line-haul duty-cycle standard, or the certified line-haul duty-cycle FEL for locomotives or locomotive engines participating in the averaging, banking and trading program for NO_x or PM.

(3) Where exhaust emissions exceed the notch standards set forth in paragraph (c)(2) of this section, the locomotive or locomotive engine is considered to be in compliance with such standards only if:

(i) The same emission controls are applied during the test conditions causing the noncompliance as were applied during certification test conditions (and to the same degree); or

(ii) The exceeding emissions result from a design feature that was described (including its effect on emissions) in the approved application for certification, and is necessary for safety or is otherwise allowed by this part.

[63 FR 18998, Apr. 16, 1998, as amended at 70 FR 40453, July 13, 2005]

§ 92.9 Compliance with emission standards.

(a) The general standards in § 92.7 and the emission standards in § 92.8 apply to the emissions from new locomotives

and new locomotive engines for their useful life. The useful life is specified as MW-hrs and years, and ends when either of the values (MW-hrs or years) is exceeded.

(1) The minimum useful life in terms of MW-hrs is equal to the product of the rated horsepower multiplied by 7.50. The minimum useful life in terms of years is ten years. For locomotives or locomotive engines originally manufactured before January 1, 2000 and not equipped with MW-hr meters, the minimum useful life is equal to 750,000 miles or ten years, whichever is reached first.

(2) The certifying manufacturer or remanufacturer shall specify a longer useful life if the locomotive or locomotive engine is designed to last longer than the applicable minimum useful life. A manufacturer's or remanufacturer's recommended time to remanufacture which is longer than the minimum useful life is one indicator of a longer design life.

(3) Manufacturers and remanufacturers of non-locomotive-specific engines (as defined in §92.2) may petition the Administrator prior to certification to allow a shorter useful life for an engine family containing only non-locomotive-specific engines. This petition must include the full rationale behind the request together with any other supporting evidence. Based on this or other information, the Administrator may allow a shorter useful life.

(4) Remanufacturers of locomotive or locomotive engine configurations that have been previously certified under paragraph (a)(3) of this section to a useful life that is shorter than the value specified in paragraph (a)(1) of this section may certify to that same useful life value without request.

(b) *Certification.* Certification is the process by which manufacturers and remanufacturers apply for and obtain certificates of conformity from EPA that allow the manufacturer or remanufacturer to introduce into commerce new locomotives and/or new locomotive engines for sale or use in the U.S.

(1)(i) Compliance with the applicable emission standards by an engine family must be demonstrated by the certifying manufacturer or remanufacturer

before a certificate of conformity may be issued under §92.208.

(A) Manufacturers shall demonstrate compliance using emission data, measured using the procedures specified in subpart B of this part, from a low mileage locomotive, or a development engine (that is equivalent in design to the locomotive engines being certified), or another low hour engine.

(B) Remanufacturers shall demonstrate compliance using emission data, measured using the procedures specified in subpart B of this part, from a low mileage remanufactured locomotive, or a development engine (that is equivalent in design to the locomotive engines being certified), or another low hour remanufactured engine that was remanufactured in the manner specified in the application for certification.

(ii) The emission values to compare with the standards shall be the emission values of a low mileage locomotive, or development engine, or low hour locomotive engine, adjusted by the deterioration factors developed in accordance with the provisions of paragraph (b)(2) of this section. Before any emission value is compared with the standard, it shall be rounded, in accordance with ASTM E 29-93a (incorporated by reference at §92.5), to the same number of significant figures as contained in the applicable standard.

(2) Exhaust emission deterioration factors shall be determined by the certifying manufacturer or remanufacturer for each engine family. The manufacturer's or remanufacturer's determination is subject to the requirements of paragraph (b)(2)(iv) of this section. The deterioration factor relates emissions from low mileage or low hour data to emissions at the end of useful life. If certification data is obtained from a development engine, and the emissions performance of that engine is significantly different from a typical low hour engine, then the deterioration factors may be adjusted for the purpose of certification.

(i) A separate exhaust emission deterioration factor shall be established, as required, for compliance with applicable emission standards for HC, THCE, NMHC, CO, NO_x, particulate and smoke for each engine family.

(ii)(A) For locomotives or locomotive engines not utilizing aftertreatment technology (e.g., catalyst). For HC, THCE, NMHC, CO, NO_x, and PM, additive deterioration factors shall be used; that is, a deterioration factor that when added to the low mileage emission rate equals the emission rate at the end of useful life. However, if the deterioration factor supplied by the manufacturer or remanufacturer is less than zero, it shall be zero for the purposes of this section.

(B) For locomotives or locomotive engines utilizing aftertreatment technology (e.g., catalyst). For HC, THCE, NMHC, CO, NO_x, and PM, Multiplicative deterioration factors shall be used; that is deterioration factors that when multiplied by the low mileage emission rate equal the emission rate at the end of useful life. However, if the deterioration factor supplied by the manufacturer or remanufacturer is less than one, it shall be one for the purposes of this paragraph (b).

(C) For all locomotives and locomotive engines. For smoke, additive deterioration factors shall be used. However, if the deterioration factor supplied by the manufacturer or remanufacturer is less than zero, it shall be zero for the purposes of this paragraph (b).

(iii) In the case of a multiplicative exhaust emission deterioration factor, the factor shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29-93a (incorporated by reference at § 92.5). In the case of an additive exhaust emission deterioration factor, the factor shall be established to a minimum of two places to the right of the decimal in accordance with ASTM E 29-93a (incorporated by reference at § 92.5).

(iv) Every deterioration factor must be, in the Administrator's judgement, consistent with emissions increases observed in-use based on emission testing of similar locomotives or locomotive engines. Deterioration factors that predict emission increases over the useful life of a locomotive or locomotive engine that are significantly less than the emission increases over the useful life observed from in-use testing of similar locomotives or locomotive engines shall not be used.

§ 92.10 Warranty period.

Warranties imposed by § 92.1107 shall apply for at least the first third of the full useful life of the locomotive or locomotive engine, or for the same period during which the manufacturer or remanufacturer provides any other mechanical warranty, whichever is longer. A copy of the manufacturer's or remanufacturer's warranty shall be submitted with the application for certification.

§ 92.11 Compliance with emission standards in extraordinary circumstances.

The provisions of this section are intended to address problems that could occur near the date on which more stringent emission standards become effective, such as the transition from the Tier 1 standards to the Tier 2 standards on January 1, 2005.

(a) In appropriate extreme and unusual circumstances which are clearly outside the control of the manufacturer and which could not have been avoided by the exercise of prudence, diligence, and due care, the Administrator may permit a manufacturer, for a brief period, to introduce into commerce locomotives which do not comply with the applicable emission standards if:

(1) The locomotives cannot reasonably be manufactured in such a manner that they would be able to comply with the applicable standards;

(2) The manufacture of the locomotives was substantially completed prior to the applicability date of the standards from which the manufacturer seeks relief;

(3) Manufacture of the locomotives was previously scheduled to be completed at such a point in time that locomotives would have been included in the previous model year, such that they would have been subject to less stringent standards, and that such schedule was feasible under normal conditions;

(4) The manufacturer demonstrates that the locomotives comply with the less stringent standards that applied to the previous model year's production described in paragraph (a)(3) of this section, as prescribed by subpart C of this part (i.e., that the locomotives are