For the reasons set out in the preamble, title 40, chapter I, parts 9, 86, and 89 of the Code of Federal Regulations are proposed to be amended as set forth below.

PART 9—[AMENDED]

1. The authority citation for part 9 continues to read as follows:

Authority: 7 U.S.C. 135 *et seq*., 136-136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601-2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 *et seq.*, 1311, 1313d, 1314, 1321, 1326, 1330, 1344, 1345 (d) and (e), 1361; E.O. 11735, 38 FR 21243, 3 CFR, 1971-1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-1, 300j-2, 300j-3, 300j-4, 300j-9, 1857 *et seq.*, 6901-6992k, 7401-7671q, 7542, 9601-9657, 11023, 11048.

2. Section 9.1 is amended in the table by removing the center heading "Control of Emissions From New and In-Use Nonroad Engines " and the entries under that center heading and adding a new center heading and entries in numerical order to read as follows:

§9.1 OMB approvals under the Paperwork Reduction Act.

* * * * *

40 CFR citation	OMB control No.
* * * * *	
Control of Emissions From New and In-Use Compression-Ignition Nonroad Engines	
89.1	2060-0124
89.2	2060-0124
89.114 - 89.120	2060-0104
89.122 - 89.127	2060-0104
89.129	2060-0104
89.203 - 89.207	2060-0104
89.209 - 89.211	2060-0104
89.304 - 89.331	2060-0104
89.404 - 89.424	2060-0104
89.505 - 89.510	2060-0064
89.511 - 89.512	2060-0064
89.603 - 89.605	2060-0095
89.607 - 89.610	2060-0095
89.611	2060-0007
	2060-0095
89.612	2060-0095
89.801 - 89.803	2060-0048
89.903	2060-0124
89.905 - 89.911	2060-0007

* * * * *

PART 86—CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

3. The heading of part 86 is revised as set forth above.

4. The authority citation for part 86 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

5. Section 86.884-8 as amended at 62 FR 47122 effective January 5, 1998, is amended by revising the table in paragraph (c)(4) to read as follows:

§86.884-8 Dynamometer and engine equipment.

* * * * *

(c) * * *

(4) * * *

Maximum rated horsepower	Exhaust pipe diameter (inches)
HP<50	1.5
50≤HP<100	2.0
100≤HP<200	3.0
200≤HP<300	4.0
300≤HP<500	5.0
HP≥500	6.0

* * * * *

Part 89—CONTROL OF EMISSIONS FROM NEW AND IN-USE COMPRESSION-IGNITION NONROAD ENGINES

6. The heading of part 89 is revised as set forth above.

7. The authority citation for part 89 continues to read as follows:

Authority: Sections 202, 203, 204, 205, 206, 207, 208, 209, 213, 215, 216, and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7547, 7549, 7550, and 7601(a)).

8. The following sections are redesignated as set forth in the following table:

Old Designation	New Designation
89.101-96	89.101
89.102-96	89.102
89.103-96	89.103
89.104-96	89.104
89.105-96	89.105
89.106-96	89.106
89.107-96	89.107
89.108-96	89.108
89.109-96	89.109
89.110-96	89.110
89.111-96	89.111
89.112-96	89.112
89.113-96	89.113
89.114-96	89.114
89.115-96	89.115
89.116-96	89.116
89.117-96	89.117
89.118-96	89.118
89.119-96	89.119
89.120-96	89.120
89.121-96	89.121
89.122-96	89.122
89.123-96	89.123
89.124-96	89.124
89.125-96	89.125
89.126-96	89.126
89.127-96	89.127
89.128-96	89.128
89.129-96	89.129
89.201-96	89.201
89.202-96	89.202
89.203-96	89.203
89.204-96	89.204
89.205-96	89.205
89.206-96	89.206
89.207-96	89.207
89.208-96	89.208
89.209-96	89.209
89.210-96	89.210
89.211-96	89.211
89.212-96	89.212

89.301-96	89.301
89.302-96	89.302
89.303-96	89.303
89.304-96	89.304
89.305-96	89.305
89.306-96	89.306
89.307-96	89.307
89.308-96	89.308
89.309-96	89.309
89.310-96	89.310
89.311-96	89.311
89.312-96	89.312
89.313-96	89.313
89.314-96	89.314
89.315-96	89.315
89.316-96	89.316
89.317-96	89.317
89.318-96	89.318
89.319-96	89.319
89.320-96	89.320
89.321-96	89.321
89.322-96	89.322
89.323-96	89.323
89.324-96	89.324
89.325-96	89.325
89.326-96	89.326
89.327-96	89.327
89.328-96	89.328
89.329-96	89.329
89.330-96	89.330
89.331-96	89.331
89.401-96	89.401
89.402-96	89.402
89.403-96	89.403
89.404-96	89.404
89.405-96	89.405
89.406-96	89.406
89.407-96	89.407
89.408-96	89.408
89.409-96	89.409
89.410-96	89.410
89.411-96	89.411
89.412-96	89.412
89.413-96	89.413
89.414-96	89.414
89.415-96	89.415
89.416-96	89.416
89.417-96	89.417
89.418-96	89.418
89.419-96	89.419
89.420-96	89.420
89.421-96	89.421
89.422-96	89.422
89.423-96	89.423
89.424-96	89.424
89.425-96	89.425

89.501-96	89.501
89.502-96	89.502
89.503-96	89.503
89.504-96	89.504
89.505-96	89.505
89.506-96	89.506
89.507-96	89.507
89.508-96	89.508
89.509-96	89.509
89.510-96	89.510
89.511-96	89.511
89.512-96	89.512
89.513-96	89.513
89.514-96	89.514
89.515-96	89.515
89.516-96	89.516
89.601-96	89.601
89.602-96	89.602
89.603-96	89.603
89.604-96	89.604
89.605-96	89.605
89.606-96	89.606
89.607-96	89.607
89.608-96	89.608
89.609-96	89.609
89.610-96	89.610
89.611-96	89.611
89.612-96	89.612
89.613-96	89.613

9. In part 89, all internal section references are revised as indicated in the above redesignation table.

Subpart A—[Amended]

10. Section 89.1 is amended by revising paragraphs (a) and (b)(4) to read as follows:

§89.1 Applicability.

(a) This part applies to nonroad compression-ignition engines.

(b) * * *

(4) Engines used in marine vessels as defined in the General Provisions of the United States Code, 1 U.S.C. 3 , if those engines have a rated power at or above 37 kW.

11. Section 89.2 is amended by adding new definitions in alphabetical order to read as follows:

§89.2 Definitions.

* * * * *

Auxiliary marine diesel engine means a marine diesel engine that is not a propulsion marine diesel engine.

Blue Sky Series engine means a low-emitting nonroad engine meeting the requirements of §89.112(f).

* * * * *

Compression-ignition engine means an engine with operating characteristics significantly similar to the theoretical Diesel combustion cycle. The non-use of a throttle during normal operation is indicative of a compression-ignition engine.

Constant-speed engine means an engine that is governed to operate only at rated speed.

Crankcase emissions means airborne substances emitted to the atmosphere from any portion of the engine crankcase ventilation or lubrication systems.

* * * * *

Farm equipment or vehicle has the meaning contained in 40 CFR part 85, subpart Q.

Full load governed speed is the maximum full load speed as specified by the manufacturer in the sales and service literature and certification application. This speed is the highest engine speed with an advertised power greater than zero.

* * * * *

Intermediate speed means peak torque speed if peak torque speed occurs from 60 to 75 percent of rated speed. If peak torque speed is less than 60 percent of rated speed, intermediate speed means 60 percent of rated speed. If peak torque speed is greater than 75 percent of rated speed, intermediate speed means 75 percent of rated speed.

* * * * *

Marine diesel engine means a compression-ignition engine that is intended to be installed on a vessel.

* * * * *

Post-manufacture marinizer means a person who produces a marine diesel engine by substantially modifying a certified or uncertified complete or partially complete engine, and is not controlled by the manufacturer of the base engine or by an entity that also controls the manufacturer of the base engine. For the purpose of this definition, "substantially modify" means changing an engine in a way that could change engine emission characteristics.

* * * * *

Propulsion marine diesel engine means a marine diesel engine that is intended to move a vessel through the water or direct the movement of a vessel.

Rated speed is the maximum full load governed speed for governed engines and the speed of maximum horsepower for ungoverned engines.

* * * * *

Specific emissions means emissions expressed on the basis of observed brake power, using units of g/kW-hr. Observed brake power measurement includes accessories on the engine if these accessories are required for running an emission test (except for the cooling fan). When it is not possible to test the engine in the gross conditions, for example, if the engine and transmission form a single integral unit, the engine may be tested in the net condition. Power corrections from net to gross conditions will be allowed with prior approval of the Administrator.

* * * * *

Tier 1 engine means an engine subject to the Tier 1 emission standards listed in §89.112(a).

Tier 2 engine means an engine subject to the Tier 2 emission standards listed in §89.112(a).
Tier 3 engine means an engine subject to the Tier 3 emission standards listed in §89.112(a).
* * * * *
U.S.-directed production volume means the number of nonroad equipment or vehicles units produced by a manufacturer for which the manufacturer has reasonable assurance that sale was or will be made to ultimate purchasers in the United States.
* * * * *
Vessel has the meaning given to it in 1 U.S.C. 3.

12. Section 89.3 is amended by adding new acronyms in alphabetical order to read as follows:

§89.3 Acronyms and abbreviations.

*** * * * ***

EGR Exhaust gas recirculation
* * * * *
NMHC Nonmethane hydrocarbon
* * * * *
PM Particulate matter
* * * * *

13. Remove and reserve section 89.4.

14. Section 89.6 is amended in paragraph (b)(1) by removing the last entry in the table and adding a new entry in its place and in paragraph (b)(2) by adding in alpha-numeric order a new entry to the table to read as follows:

§89.6 Reference materials.

* * * * *

(b) * * *

(1) * * *

Document number and name	40 CFR part 89 reference
* * * * * * * ASTM E29-93a: "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications"	89.120; 89.207; 89.509.

(2) * * *

Document number and name	40 CFR part 89 reference

* * * * * * * SAE J1151 December 1991: "Methane Measurement Using Gas Chromatography" * * * * * * *	89.309

* * * * *

Subpart B—[Amended]

15. The newly designated section 89.102 is amended by revising paragraph (a) and adding new paragraphs (c), (d), (e), (f), and (g) to read as follows:

§89.102 Effective dates, optional inclusion.

(a) This subpart applies to all engines described in §89.101 with the following power rating and manufactured after the following dates:

(1) Less than 19 kW and manufactured on or after January 1, 2000;

(2) Greater than or equal to 19 kW but less than 37 kW and manufactured on or after January 1, 1999;

(3) Greater than or equal to 37 kW but less than 75 kW and manufactured on or after January 1, 1998;

(4) Greater than or equal to 75 kW but less than 130 kW and manufactured on or after January 1, 1997;

(5) Greater than or equal to 130 kW but less than 560 kW and manufactured on or after January 1, 1996;

(6) Greater than or equal to 560 kW and manufactured on or after January 1, 2000.

* * * * *

(c) Engines meeting the voluntary standards described in §89.112(f) may be designated as Blue Sky Series engines through the 2004 model year.

(d) *Implementation flexibility for equipment and vehicle manufacturers.* Nonroad equipment and vehicle manufacturers and may take any of the otherwise prohibited actions identified in §89.1003(a)(1) with respect to the following nonroad equipment and vehicles, subject to the requirements of paragraph (e) of this section. The following allowances apply separately to each engine power category subject to standards under §89.112:

(1) *Percent-of-production allowances.* (i) *Farm equipment or vehicles at or above 37 kW.* For farm equipment or vehicles with engines rated at or above 37 kW, a manufacturer may take any of the actions identified in §89.1003(a)(1) [Alternative 1: for up to 30 percent of its U.S.-directed production volume of such equipment and vehicles in the first year that Tier 2 engine standards apply to such engines, and for up to 15 percent of its U.S.-directed production volume in each of the seven years following the first year,] [Alternative 2: for a portion of its U.S.-directed production volume of such equipment and vehicles during the eight years immediately following the date on which Tier 2 engine standards first apply to engines used in such equipment and vehicles, provided that the eight-year sum of these portions in each year, as expressed as a percentage for each year, does not exceed 135, and] provided that all such equipment and vehicles or equipment must contain Tier 1 engines;

(ii) *Farm equipment or vehicles rated under 37 kW.* For farm equipment or vehicles with

engines rated under 37 kW, a manufacturer may take any of the actions identified in §89.1003(a)(1) [Alternative 1: for up to 30 percent of its U.S.-directed production volume of such equipment and vehicles in the first year that Tier 1 engine standards apply to such engines, and for up to 15 percent of its U.S.-directed production volume in each of the three [seven] years following the first year][Alternative 2: for a portion of its U.S.-directed production volume of such equipment and vehicles during the four [eight] years immediately following the date on which Tier 1 engine standards first apply to engines used in such equipment and vehicles, provided that the four[eight]-year sum of these portions in each year, as expressed as a percentage for each year, does not exceed 75 [135]];

(iii) *Other equipment rated at or above 37 kW.* For all other nonroad equipment and vehicles with engines rated at or above 37 kW, a manufacturer may take any of the actions identified in §89.1003(a)(1) [Alternative 1: for up to 15 percent of its U.S.-directed production volume of such equipment and vehicles in the first year that Tier 2 engine standards apply to such engines, and for up to 5 percent of its U.S.-directed production volume in each of the six years following the first year,][Alternative 2: for a portion of its U.S.-directed production volume of such equipment and vehicles during the seven years immediately following the date on which Tier 2 engine standards first apply to engines used in such equipment and vehicles, provided that the seven-year sum of these portions in each year, as expressed as a percentage for each year, does not exceed 45, and] provided that all such equipment and vehicles or equipment must contain Tier 1 engines;

(iv) *Other equipment rated under 37 kW.* For all other nonroad equipment and vehicles with engines rated under 37 kW, a manufacturer may take any of the actions identified in §89.1003(a)(1) [Alternative 1: for up to 15 percent of its U.S.-directed production volume of such equipment and vehicles in the first year that Tier 1 engine standards apply to such engines, and for up to 5 percent of its U.S.-directed production volume in each of the three [six] years following the first year][Alternative 2: for a portion of its U.S.-directed production volume of such equipment and vehicles during the four [seven] years immediately following the date on which Tier 1 engine standards first apply to engines used in such equipment and vehicles, provided that the four[seven]-year sum of these portions in each year, as expressed as a percentage for each year, does not exceed 30 [45]].

(2) *Small volume allowances.* A nonroad equipment or vehicle manufacturer may exceed the production percentages in paragraph (d)(1) of this section in any of the years for which these percentages apply, provided that in each regulated power category, the manufacturer's excepted equipment and vehicles in that year does not exceed 100 units[, and is limited to a single equipment or vehicle model].

POTENTIAL ALTERNATIVE

(d)(2) *Small volume allowances.* A nonroad equipment or vehicle manufacturer may exceed the production percentages in paragraph (d)(1) of this section, provided that in each regulated power category, the manufacturer's total of excepted equipment and vehicles over the years in which the percent-of-production allowance applies does not exceed 100 units times the number of years in which the percent-of-production allowance applies[, and is limited to a single equipment or vehicle model].

(3) *Emission credit-derived allowances.* A nonroad equipment or vehicle manufacturer may exceed the allowances in paragraphs (d)(1) and (d)(2) of this section in any of the years for which these allowances apply, by retiring sufficient NMHC + NOx and PM emission credits obtained under the provisions of Subpart C of this Part. Equipment or vehicles for which these emission credit-derived allowances are used shall be excluded from the determinations required

in paragraph (e) of this section.

(i) The amount of emission credits, in megagrams, to be retired for each additional allowance shall be determined separately for NMHC + NOx and for PM as follows:
Emission credits = [(Previous level) - (New level)] x (Category PR) x (UL) x (10^{-6})
Where:

Previous level = 10.5 g/kW-hr NMHC + NOx and 0.54 g/kW-hr PM if the equipment for which the allowance is being used has an engine rated at or above 37 kW, or 16.0 g/kW-hr NMHC + NOx and 1.2 g/kW-hr for PM if the equipment for which the allowance is being used has an engine rated under 37 kW.

New level = The emission standard that would apply to the engine used in the equipment if no allowance were to be used.

Category PR = The midpoint of the power range in §89.112 applying to the engine used in the equipment for which the allowance is being used.

UL = The useful life for the engine family, in hours.

(ii) A nonroad equipment or vehicle manufacturer choosing to retire emission credits must submit an end-of-the-year report in accordance with the requirements of §89.211 in each year that credits are retired.

(4) *Inclusion of previous-tier engines.* Equipment and vehicles built with previous tier or noncertified engines under the existing inventory provisions of §89.1003(b)(4) need not be included in determining compliance with paragraphs (d)(1), (d)(2), and (d)(3) of this section, at the manufacturer's option.

(e) *Determination of compliance and recordkeeping.* The following shall apply to nonroad equipment or vehicle manufacturers who produce excepted equipment or vehicles under the provisions of paragraph (d) of this section:

(1) After each year in which excepted equipment or vehicles are produced, a determination of compliance with the requirements of paragraph (d) of this section shall be made. This determination shall be based on actual production information from the subject year and shall be made within 3 months after the availability of such information. Should any such determination reveal that a production percentage allowance (or small volume allowance where applied) for a power category has been exceeded for the subject year, the nonroad equipment or vehicle manufacturer shall adjust that category's percentage allowance and small volume allowance for the year after the subject year. The percentage allowance shall be recalculated by subtracting the excess percentage of excepted machines from the percentage allowance that would otherwise apply in the year after the subject year (from zero in the year after the final year of the allowance). The small volume allowance shall be recalculated by subtracting the excess number of excepted machines in the subject year from 100 (from zero in the year after the final year of the allowance). If both the recalculated percentage allowance and the recalculated small volume allowance for the year after the subject year is less than zero in any power category, then the manufacturer is in violation of section 203 of the Act and §89.1003.

POTENTIAL ALTERNATIVE

(e)(1) For each power category in which excepted equipment or vehicles are produced, a determination of compliance with the requirements of paragraph (d) of this section shall be made. This determination shall be made no later than December 31 of the year following the last year in which allowances apply, and shall be based on actual production information from the subject years. Should any such determination reveal that both the percentage allowance and the small volume allowance have been exceeded, then the manufacturer is in violation of section 203 of the Act and §89.1003.

(2) A nonroad equipment or vehicle manufacturer shall keep records of all equipment and vehicles excepted under the provisions of paragraph (d) of this section, for each power category in which exceptions are taken. These records shall include equipment and engine model numbers, serial numbers, and dates of manufacture, and engine rated power. In addition, the manufacturer shall keep records sufficient to demonstrate the determinations of compliance required in paragraph (e)(1) of this section. All such records shall be kept until at least two full years after the final year in which exceptions are available for each power category.

(f) *Hardship relief.* Nonroad equipment and vehicle manufacturers, and post-manufacture marinizers, that qualify as small entities under 13 CFR part 121 may take any of the otherwise prohibited actions identified in §89.1003(a)(1) beyond those allowed under paragraph (d) of this section, subject to approval by the Administrator and the following requirements:

(1) Application for relief must be submitted to the Engine Programs and Compliance Division of the EPA in writing prior to the earliest date in which the applying manufacturer would be in violation of §89.1003.

(2) Evidence must be provided that the conditions causing the impending violation are not substantially the fault of the applying manufacturer.

(3) Evidence must be provided that the applying manufacturer may be forced to permanently close or sell its equipment-producing operation if relief is not granted.

(4) Any relief granted must begin within one year after the implementation date of the standard applying to engines being used in the equipment for which relief is requested, and may not exceed one year in duration.

(g) *Allowance for the production of engines.* Engine manufacturers may take any of the otherwise prohibited actions identified in §89.1003(a)(1) with regard to uncertified engines or Tier 1 engines, as appropriate, if the engine manufacturer has received written assurance that the engine is required to meet the demand for engines created under paragraph (d) and (f) of this section.

16. The newly designated section 89.104 is amended by revising paragraphs (a), (b), and (c) to read as follows:

§89.104 Useful life, recall, and warranty periods.

(a) The useful life is based on the rated power and rated speed of the engine.

(1) For all engines rated under 19 kW, and for constant speed engines rated under 37 kW rated speeds greater than or equal to 3,000 rpm, the useful life is a period of 3,000 hours or five years of use, whichever first occurs.

(2) For all other engines rated at or above 19 kW and under 37 kW, the useful life is a period of 5,000 hours or seven years of use, whichever first occurs.

(3) For all engines rated at or above 37 kW, the useful life is a period of 8,000 hours of operation or ten years of use, whichever first occurs.

(b) Engines are subject to recall testing for a period based on the rated power and rated speed of the engines. However, in a recall, engines in the subject class or category would be subject to recall regardless of actual years or hours of operation.

(1) For all engines rated under 19 kW and for constant speed engines rated under 37 kW with rated speeds greater than or equal to 3,000 rpm, the engines are subject to recall testing for a period of 2,250 hours or four years of use, whichever first occurs.

(2) For all other engines rated at or above 19 kW and under 37 kW, the engines are

subject to recall for a period of 3,750 hours or five years of use, whichever first occurs.

(3) For all engines rated at or above 37 kW, the engines are subject to recall for a period of 6,000 hours of operation or seven years of use, whichever first occurs.

(c) Warranties imposed by the Clean Air Act for engines rated under 19 kW are for 1,500 hours of operation or three years of use, whichever first occurs. For engines rated at or above 19 kW, warranties imposed by the Clean Air Act are for 3,000 hours of operation or five years of use, whichever first occurs.

* * * * *

17. The newly designated section 89.109 is revised to read as follows:

§89.109 Maintenance instructions and minimum allowable maintenance intervals.

(a) The manufacturer must furnish or cause to be furnished to the ultimate purchaser of each new nonroad engine written instructions for the maintenance needed to ensure proper functioning of the emission control system. Paragraphs (b) through (g) of this section do not apply to Tier 1 engines with rated power at or above 37 kW.

(b) Maintenance performed on equipment, engines, subsystems or components used to determine exhaust emission deterioration factors is classified as either emission-related or nonemission-related and each of these can be classified as either scheduled or unscheduled. Further, some emission-related maintenance is also classified as critical emission-related maintenance.

(c) This paragraph (c) specifies emission-related scheduled maintenance for purposes of obtaining durability data and for inclusion in maintenance instructions furnished to purchasers of new nonroad engines. The maintenance intervals specified below are minimum intervals:

(1) All emission-related scheduled maintenance for purposes of obtaining durability data must occur at the same hours of use intervals that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the engine under paragraph (a) of this section. This maintenance schedule may be updated as necessary throughout the testing of the engine, provided that no maintenance operation is deleted from the maintenance schedule after the operation has been performed on the test vehicle or engine.

(2) Any emission-related maintenance which is performed on vehicles, engines, subsystems, or components must be technologically necessary to assure in-use compliance with the emission standards. The manufacturer must submit data which demonstrate to the Administrator that all of the emission-related scheduled maintenance which is to be performed is technologically necessary. Scheduled maintenance must be approved by the Administrator prior to being performed or being included in the maintenance instructions provided to the purchasers under paragraph (a) of this section. The Administrator has determined that emission-related maintenance in addition to or at shorter intervals than those outlined in paragraphs (c)(3) and (c)(4) of this section is not technologically necessary to ensure in-use compliance and therefore will not be accepted. However, the Administrator may determine that maintenance even more restrictive (e.g., longer intervals) than that listed in paragraphs (c)(3) and (c)(4) of this section is also not technologically necessary.

(3) For nonroad compression-ignition engines, the adjustment, cleaning, repair, or replacement listed in paragraphs (c)(3)(i) through (c)(3)(iii) of this section shall occur at 1,500 hours of use and at 1,500-hour intervals thereafter.

(i) Exhaust gas recirculation system-related filters and coolers.

(ii) Positive crankcase ventilation valve.

(iii) Fuel injector tips (cleaning only).

(4) The adjustment, cleaning and repair in paragraphs(c)(4)(i) through (c)(4)(vii) of this section shall occur at 3,000 hours of use and at 3,000-hour intervals thereafter for nonroad compression-ignition engines rated under 130 kW, or at 4,500-hour intervals thereafter for nonroad compression-ignition engines rated at or above 130 kW.

(i) Fuel injectors.

(ii) Turbocharger.

(iii) Electronic engine control unit and its associated sensors and actuators.

(iv) Particulate trap or trap-oxidizer system (including related components).

(v) Exhaust gas recirculation system (including all related control valves and tubing) except as otherwise provided in paragraph (c)(3)(i) of this section.

(vi) Catalytic convertor.

(vii) Any other add-on emission-related component (i.e., a component whose sole or primary purpose is to reduce emissions or whose failure will significantly degrade emission control and whose function is not integral to the design and performance of the engine).

(5)(i) The components listed in paragraphs(c)(5)(i)(A) through (c)(5)(i)(F) of this section are currently defined as critical emission-related components.

(A) Catalytic convertor.

(B) Electronic engine control unit and its associated sensors and actuators.

(C) Exhaust gas recirculation system (including all related filters, coolers, control valves, and tubing).

(D) Positive crankcase ventilation valve.

(E) Particulate trap or trap-oxidizer system.

(F) Any other add-on emission-related component (i.e., a component whose sole or primary purpose is to reduce emissions or whose failure will significantly degrade emission control and whose function is not integral to the design and performance of the engine).

(ii) All critical emission-related scheduled maintenance must have a reasonable likelihood of being performed in-use. The manufacturer shall be required to show the reasonable likelihood of such maintenance being performed in-use. Critical emission-related scheduled maintenance items which satisfy one of the conditions defined in paragraphs (c)(5)(ii)(A) through (c)(5)(ii)(F) of this section will be accepted as having a reasonable likelihood of the maintenance item being performed in-use.

(A) Data are presented which establish for the Administrator a connection between emissions and vehicle performance such that as emissions increase due to lack of maintenance, vehicle performance will simultaneously deteriorate to a point unacceptable for typical driving.

(B) Survey data are submitted which adequately demonstrate to the Administrator that, at an 80 percent confidence level, 80 percent of such engines already have this critical maintenance item performed in-use at the recommended interval(s).

(C) A clearly displayed visible signal system approved by the Administrator is installed to alert the equipment operator that maintenance is due. A signal bearing the message “maintenance needed” or “check engine,” or a similar message approved by the Administrator, shall be actuated at the appropriate usage point or by component failure. This signal must be continuous while the engine is in operation and not be easily eliminated without performance of the required maintenance. Resetting the signal shall be a required step in the maintenance operation. The method for resetting the signal system shall be approved by the Administrator. The system must not be designed to deactivate upon the end of the useful life of the engine or

thereafter.

(D) A manufacturer may desire to demonstrate through a survey that a critical maintenance item is likely to be performed without a visible signal on a maintenance item for which there is no prior in-use experience without the signal. To that end, the manufacturer may in a given model year market up to 200 randomly selected vehicles per critical emission-related maintenance item without such visible signals, and monitor the performance of the critical maintenance item by the owners to show compliance with paragraph (c)(5)(ii)(B) of this section. This option is restricted to two consecutive model years and may not be repeated until any previous survey has been completed. If the critical maintenance involves more than one engine family, the sample will be sales weighted to ensure that it is representative of all the families in question.

(E) The manufacturer provides the maintenance free of charge, and clearly informs the customer that the maintenance is free in the instructions provided under paragraph (a) of this section.

(F) Any other method which the Administrator approves as establishing a reasonable likelihood that the critical maintenance will be performed in-use.

(iii) Visible signal systems used under paragraph (c)(5)(ii)(C) of this section are considered an element of design of the emission control system. Therefore, disabling, resetting, or otherwise rendering such signals inoperative without also performing the indicated maintenance procedure is a prohibited act.

(d) Nonemission-related scheduled maintenance which is reasonable and technologically necessary (e.g., oil change, oil filter change, fuel filter change, air filter change, cooling system maintenance, adjustment of idle speed, governor, engine bolt torque, valve lash, injector lash, timing, lubrication of the exhaust manifold heat control valve, etc.) may be performed on durability vehicles at the least frequent intervals recommended by the manufacturer to the ultimate purchaser, (e.g., not the intervals recommended for severe service).

(e) Adjustment of engine idle speed on emission data engines may be performed once before the low-hour emission test point. Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on emission data vehicles shall be performed only with advance approval of the Administrator.

(f) Equipment, instruments, or tools may not be used to identify malfunctioning, maladjusted, or defective engine components unless the same or equivalent equipment, instruments, or tools will be available to dealerships and other service outlets and:

(1) Are used in conjunction with scheduled maintenance on such components; or

(2) Are used subsequent to the identification of a vehicle or engine malfunction, as provided in paragraph (e) of this section for emission data engines; or

(3) Unless specifically authorized by the Administrator.

(g) All test data, maintenance reports, and required engineering reports shall be compiled and provided to the Administrator in accordance with §89.124.

18. The newly designated section 89.110 is amended by removing “and” at the end of paragraph (b)(9), by adding a semicolon at the end of paragraph (b)(10), and by adding new paragraphs (b)(11) and (b)(12) to read as follows:

§89.110 Emission control information label.

* * * * *

(b) * * *

(11) Engines belonging to an engine family that has been certified as a constant-speed engine using the test cycle specified in Table 2 of appendix B to subpart E of this part must contain the statement on the label: “constant-speed only”;

(12)(i) Engines meeting the voluntary standards described in §89.112(f)(1) to be designated as Blue Sky Series engines must contain the statement on the label: "Blue Sky—Class A".

(ii) Engines meeting the voluntary standards described in §89.112(f)(2) to be designated as Blue Sky Series engines must contain the statement on the label: "Blue Sky—Class AA".

(iii) Engines meeting the voluntary standards described in §89.112(f)(3) to be designated as Blue Sky Series engines must contain the statement on the label: "Blue Sky—Class AAA".

* * * * *

19. The newly designated section 89.112 is amended by revising paragraphs (a), (b), and (d), and adding new paragraphs (e) and (f) to read as follows:

§89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.

(a) Nonroad engines to which this subpart is applicable must meet the exhaust emission standards contained in Table 1 as follows:

Table 1.—Emission Standards (g/kW-hr)

Rated Brake Power (kW)	Tier	Model Year	NOx	HC	NMHC + NOx	CO	PM
kW<8	Tier 1	2000	—	—	10.5	8.0	1.0
	Tier 2	2005	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000	—	—	9.5	6.6	0.80
	Tier 2	2005	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	1999	—	—	9.5	5.5	0.80
	Tier 2	2004	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	1998	9.2	—	—	—	—
	Tier 2	2004	—	—	7.5	5.0	0.40
	Tier 3	2008	—	—	4.7	5.0	
75≤kW<130	Tier 1	1997	9.2	—	—	—	—
	Tier 2	2003	—	—	6.6	5.0	0.30
	Tier 3	2007	—	—	4.0	5.0	
130≤kW<225	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2003	—	—	6.6	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
225≤kW<450	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2001	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
450≤kW<560	Tier 1	1996	9.2	1.3	—	11.4	0.54
	Tier 2	2002	—	—	6.4	3.5	0.20
	Tier 3	2006	—	—	4.0	3.5	
kW≥560	Tier 1	2000	9.2	1.3	—	11.4	0.54
	Tier 2	2006	—	—	6.4	3.5	0.20

(b) Exhaust emissions of oxides of nitrogen, carbon monoxide, hydrocarbon, and nonmethane hydrocarbon are measured using the procedures set forth in subpart E of this part.
* * * * *

(d) In lieu of the NOx standards, NMHC + NOx standards, and PM standards specified in paragraph (a) of this section, manufacturers may elect to include engine families in the averaging, banking, and trading program, the provisions of which are specified in subpart C of this part. The manufacturer must set a family emission limit (FEL) not to exceed the levels contained in Table 2. The FEL established by the manufacturer serves as the standard for that engine family. Table 2 follows:

Table 2.—Upper Limit for Family Emission Limits (g/kW-hr)

Rated Brake Power (kW)	Tier	Model Year	NOx FEL	NMHC+ NOx FEL	PM FEL
kW<8	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	10.5	1.0
8≤kW<19	Tier 1	2000	—	16.0	1.2
	Tier 2	2005	—	9.5	0.80
19≤kW<37	Tier 1	1999	—	16.0	1.2
	Tier 2	2004	—	9.5	0.80
37≤kW<75	Tier 1	1998	14.6	—	—
	Tier 2	2004	—	10.5	1.2
	Tier 3	2008	—	7.5	
75≤kW<130	Tier 1	1997	14.6	—	—
	Tier 2	2003	—	10.5	1.2
	Tier 3	2007	—	6.6	
130≤kW<225	Tier 1	1996	14.6	—	—
	Tier 2	2003	—	10.5	0.54
	Tier 3	2006	—	6.6	
225≤kW<450	Tier 1	1996	14.6	—	—
	Tier 2	2001	—	10.5	0.54
	Tier 3	2006	—	6.4	
450≤kW<560	Tier 1	1996	14.6	—	—
	Tier 2	2002	—	10.5	0.54
	Tier 3	2006	—	6.4	
kW≥560	Tier 1	2000	14.6	—	—
	Tier 2	2006	—	10.5	0.54

(e) Naturally aspirated nonroad engines to which this subpart is applicable shall not discharge crankcase emissions into the ambient atmosphere. For engines rated under 37 kW, this provision applies to all 2001 model year engines and later models. For engines rated at or above 37 kW, this provision applies to all Tier 2 engines and later models. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(f) Engines may be designated "Blue Sky Series" engines through the 2004 model year by meeting the following voluntary standards, which apply to all certification and in-use testing. Emissions are measured using the procedures set forth in 40 CFR part 86, subpart N. Manufacturers may use an alternate procedure to demonstrate the desired level of emission control if approved in advance by the Administrator. Engines meeting the requirements to qualify as Blue Sky Series engines must be capable of maintaining a comparable level of emission control when tested using the procedures set forth in paragraph (c) of this section and subpart E of this part. The numerical emission levels measured using the procedures from this part may be up to 20 percent higher than those measured using the procedures from 40 CFR part 86, subpart N, and still be considered comparable. Engines designated as Blue Sky Series engines must meet the requirements related to in-use durability detailed in §§89.104, 89.109, 89.118, and 89.130; alternatively, manufacturers may fulfull these requirements with the comparable provisions from 40 CFR part 86.

(1) Engines certified to voluntary standards at least 35 percent below the numerical level established for Tier 2 engines, for both particulate matter and NMHC + NOx, may be designated as a "Blue Sky Series engine—Class A". Manufacturers must also demonstrate compliance with the numerical level established for CO emissions from the applicable tier of engines, as described in paragraph (a) of this section, and with the smoke emission standards described in 40 CFR 86.113. This designation will no longer be available beginning in the year for which Tier 2 standards apply to an engine's power category.

(2) Engines certified to voluntary standards at least 50 percent below the numerical level established for Tier 2 engines, for both particulate matter and NMHC + NOx, may be designated as a "Blue Sky Series engine—Class AA". Manufacturers must also demonstrate compliance with the numerical level established for CO emissions from the applicable tier of engines, as described in paragraph (a) of this section, and with the smoke emission standards described in 40 CFR 86.113.

(3) Engines certified to voluntary standards at least 65 percent below the numerical level established for Tier 2 engines, for both particulate matter and NMHC + NOx, may be designated as a "Blue Sky Series engine—Class AAA". Manufacturers must also demonstrate compliance with the numerical level established for CO emissions from the applicable tier of engines, as described in paragraph (a) of this section, and with the smoke emission standards described in 40 CFR 86.113.

20. The newly designated section 89.117 is amended by revising paragraph (a) and adding a new paragraph (d) to read as follows:

§89.117 Test fleet selection.

(a) The manufacturer must select for testing, from each engine family, the engine with the most fuel injected per stroke of an injector, primarily at the speed of maximum torque and secondarily at rated speed.

* * * * *

(d) For establishing deterioration factors, the manufacturer shall select the engines, subsystems, or components to be used to determine exhaust emission deterioration factors for each engine-family control system combination. Whether engines, subsystems, or components are used, they shall be selected so that their emission deterioration characteristics may be expected to represent those of in-use engines, based on good engineering judgment.

21. The newly designated section 89.118 is amended by adding a new paragraph (e) to read as follows:

§89.118 Service accumulation.

* * * * *

(e) This paragraph (e) describes service accumulation requirements for the purpose of deterioration factor development. Paragraphs (b) through (d) of this section also apply here.

(1) *Service accumulation on engines, subsystems, or components selected by the manufacturer under §89.117(d).* The manufacturer determines the form and extent of this service accumulation, consistent with good engineering practice, and describes it in the application for certification.

(2) *Determination of exhaust emission deterioration factors*. The manufacturer determines the deterioration factors based on the service accumulation in paragraph (e)(1) of this section and related testing, according to the manufacturer's procedures.

(3) *Alternatives to service accumulation and testing for the determination of a deterioration factor*. A written explanation of the appropriateness of using an alternative must be included in the application for certification.

(i) *Carryover and carryacross of durability emission data*. In lieu of testing an emission data or durability data engine selected under §89.117(d), and submitting data therefore, a manufacturer may, with Administrator approval, use exhaust emission deterioration data on a similar engine for which certification to the same standard has previously been obtained or for which all applicable data required under §89.124 has previously been submitted. This data must be submitted in the application for certification.

(ii) *Use of on-highway deterioration data*. In the case where a manufacturer produces a certified on-highway engine that is similar to the nonroad engine to be certified, deterioration data from the on-highway engine may be applied to the nonroad engine. This application of deterioration data from an on-highway engine to a nonroad engine is subject to Administrator approval, and the determination of whether the engines are similar must be based on good engineering judgment.

(iii) *Engineering analysis for established technologies*. (A) In the case where an engine family uses technology which is well established, an analysis based on good engineering practices may be used in lieu of testing to determine a deterioration factor for that engine family.

(B) Engines using exhaust gas recirculation or aftertreatment are excluded from the provision set forth in paragraph (e)(3)(iii)(A) of this section.

(C) Engines for which the certification levels are not at or below the Tier 3 NMHC+NOx or PM standards described in §89.112 are considered established technology.

(D) Manufacturers may petition the Administrator to consider an engine with a certification level below the Tier 3 NMHC+NOx and PM standards as established technology. This petition must be based on proof that the technology used is not significantly different than that used on engines that have certification levels that are not below the Tier 3 NMHC+NOx and

PM levels.

(E) The manufacturer shall provide a written statement to the Administrator that all data, analyses, test procedures, evaluations, and other documents, on which the deterioration factor is based, are available to the Administrator upon request.

22. The newly designated section 89.119 is amended by revising paragraph (d) to read as follows:

§89.119 Emission tests.

* * * * *

(d) Test fuels. EPA may use the fuel specified in either Table 4 or Table 5 of Appendix A to subpart D of this part in confirmatory testing or other testing on any test engine.

23. The newly designated section 89.120 is amended by revising paragraph (c) and adding paragraph (e) to read as follows:

§89.120 Compliance with emission standards.

* * * * *

(c) For each nonroad engine family, except Tier 1 engines with rated power at or above 37 kW that do not employ aftertreatment, a deterioration factor must be determined and applied.

(1) The applicable exhaust emission standards (or family emission limits, as appropriate) for nonroad compression-ignition engines apply to the emissions of engines for their useful life.

(2) Since emission control efficiency generally decreases with the accumulation of service on the engine, deterioration factors will be used in combination with emission data engine test results as the basis for determining compliance with the standards.

(3)(i) This paragraph (c)(3) describes the procedure for determining compliance of an engine with emission standards (or family emission limits, as appropriate), based on deterioration factors supplied by the manufacturer. Deterioration factors shall be established using applicable emission test procedures. NMHC + NOx deterioration factors shall be established based on the sum of the pollutants. When establishing deterioration factors for NMHC + NOx, a negative deterioration (emissions decrease from the official emissions test result) for one pollutant may not offset deterioration of the other pollutant. Where negative deterioration occurs for NOx or NMHC, the official exhaust emission test result shall be used for purposes of determining the NMHC + NOx deterioration factor.

(ii) Separate exhaust emission deterioration factors, determined from tests of engines, subsystems, or components conducted by the manufacturer, shall be supplied for each engine-system combination. Separate factors shall be established for NMHC, CO, NOx, NMHC + NOx, and exhaust particulate. For smoke testing, separate factors shall also be established for the acceleration mode (designated as “A”), the lugging mode (designated as “B”), and peak opacity (designated as “C”).

(iii) *Compression-ignition nonroad engines not utilizing aftertreatment technology (e.g., particulate traps).* For NMHC, CO, NOx, NMHC + NOx, and exhaust particulate, the official exhaust emission results for each emission data engine at the selected test point shall be adjusted by addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph (c)(3)(iii).

(iv) *Compression-ignition nonroad engines utilizing aftertreatment technology (e.g., particulate traps).* For NMHC, CO, NOx, NMHC + NOx, and exhaust particulate, the official exhaust emission results for each emission data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph (c)(3)(iv).

(v) For acceleration smoke ("A"), lugging smoke ("B"), and peak opacity ("C"), the official exhaust emission results for each emission data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However if the deterioration supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph (c)(3)(v).

(vi) The emission values to compare with the standards (or family emission limits, as appropriate) shall be the adjusted emission values of paragraphs (c)(3)(iii) through (v) of this section, rounded to the same number of significant figures as contained in the applicable standard in accordance with ASTM E29-93a, for each emission data engine. This procedure has been incorporated by reference (see §89.6).

(4) Every test engine of an engine family must comply with all applicable standards (or family emission limits, as appropriate), as determined in paragraph (c)(3)(vi) of this section, before any engine in that family will be certified.

* * * * *

(e) For the purposes of setting an NMHC + NOx certification level or FEL, one of the following options shall be used for the determination of NMHC for an engine family. The manufacturer must declare which option is used in its application for certification of that engine family.

(1) THC may be used in lieu of NMHC for the standards set forth in §89.112.

(2) The manufacturer may choose its own method to analyze methane with prior approval of the Administrator.

(3) The manufacturer may assume that two percent of the measured THC is methane (NMHC = 0.98 × THC).

24. The newly designated section 89.126 is amended by revising paragraph (c) to read as follows:

§89.126 Denial, revocation of certificate of conformity.

* * * * *

(c) If a manufacturer knowingly commits an infraction specified in paragraph (b)(1) or (b)(4) of this section, knowingly commits any other fraudulent act which results in the issuance of a certificate of conformity, or fails to comply with the conditions specified in Secs. 89.203(d), 89.206(c), 89.209(c) or 89.210(g), the Administrator may deem such certificate void ab initio.

* * * * *

25. A new section 89.130 is added to subpart B to read as follows:

§89.130 Rebuild practices.

(a) The provisions of this section are applicable to engines subject to the standards

prescribed in section §89.112 and are applicable to the process of engine rebuilding (or rebuilding a portion of an engine or engine system). This section does not apply to Tier 1 engines rated at or above 37 kW. The process of engine rebuilding generally includes disassembly, replacement of multiple parts due to wear, and reassembly, and also may include the removal of the engine from the vehicle and other acts associated with rebuilding an engine. Any deviation from the provisions contained in this section is a prohibited act.

(b) When rebuilding an engine, portions of an engine, or an engine system, there must be a reasonable technical basis for knowing that the resultant engine is equivalent, from an emissions standpoint, to a certified configuration (i.e., tolerances, calibrations, specifications) of the same or newer model year as the original engine. A reasonable basis would exist if:

(1) Parts installed, whether the parts are new, used, or rebuilt, are such that a person familiar with the design and function of motor vehicle engines would reasonably believe that the parts perform the same function with respect to emission control as the original parts; and

(2) Any parameter adjustment or design element change is made only:

(i) In accordance with the original engine manufacturer's instructions; or

(ii) Where data or other reasonable technical basis exists that such parameter adjustment or design element change, when performed on the engine or similar engines, is not expected to adversely affect in-use emissions.

(c) When an engine is being rebuilt and remains installed or is reinstalled in the same equipment, it must be rebuilt to a configuration of the same or later model year as the original engine. When an engine is being replaced, the replacement engine must be an engine of (or rebuilt to) a configuration of the same or later model year as the original engine.

(d) At time of rebuild, emission-related codes or signals from on-board monitoring systems may not be erased or reset without diagnosing and responding appropriately to the diagnostic codes, regardless of whether the systems are installed to satisfy requirements in §89.109 or for other reasons and regardless of form or interface. Diagnostic systems must be free of all such codes when the rebuilt engine is returned to service. Such signals may not be rendered inoperative during the rebuilding process.

(e) When conducting a rebuild without removing the engine from the equipment, or during the installation of a rebuilt engine, all critical emission-related components listed in 40 CFR 86.109-99(d) not otherwise addressed by paragraphs (b) through (d) of this section must be checked and cleaned, adjusted, repaired, or replaced as necessary, following manufacturer recommended practices.

(f) Records shall be kept by parties conducting activities included in paragraphs (b) through (e) of this section. The records shall include at minimum the hours of operation at time of rebuild, a listing of work performed on the engine, and emission-related control components including a listing of parts and components used, engine parameter adjustments, emission-related codes or signals responded to and reset, and work performed under paragraph (e) of this section.

(1) Parties may keep records in whatever format or system they choose as long as the records are understandable to an EPA enforcement officer or can be otherwise provided to an EPA enforcement officer in an understandable format when requested.

(2) Parties are not required to keep records of information that is not reasonably available through normal business practices including information on activities not conducted by themselves or information that they cannot reasonably access.

(3) Parties may keep records of their rebuilding practices for an engine family rather than on each individual engine rebuilt in cases where those rebuild practices are followed routinely.

(4) Records must be kept for a minimum of two years after the engine is rebuilt.

Subpart C—[Amended]

26. The newly designated section 89.203 is revised to read as follows:

§89.203 General provisions.

(a) The averaging, banking, and trading programs for NOx, NMHC + NOx, and PM emissions from eligible nonroad engines are described in this subpart. Participation in these programs is voluntary.

(b) *Tier 1 engines rated at or above 37 kW.* (1) A nonroad engine family is eligible to participate in the averaging, banking, and trading program for NOx emissions and the banking and trading program for PM emissions if it is subject to regulation under subpart B of this part with certain exceptions specified in paragraph (b)(2) of this section. No averaging, banking, and trading program is available for meeting the Tier 1 HC, CO, or smoke emission standards specified in subpart B of this part. No averaging program is available for meeting the Tier 1 PM emission standards specified in subpart B of this part.

(2) Nonroad engines may not participate in the averaging, banking, and trading programs if they are subject to state engine emission standards, are exported, or use an alternate or special test procedure under §89.114. Meeting the voluntary standards described in §89.112(f) for Blue Sky Series engines does not preclude participation in the averaging, banking, and trading programs; however, participation in the averaging, banking, and trading programs depends on manufacturers developing test data on a steady-state test cycle, as specified in §89.410(a), for credit computation purposes.

(3) A manufacturer may certify one or more nonroad engine families at NOx family emission limits (FELs) above or below the Tier 1 NOx emission standard, provided the summation of the manufacturer's projected balance of all NOx credit transactions in a given model year is greater than or equal to zero, as determined under §89.207(a). A manufacturer may certify one or more nonroad engine families at PM FELs below the Tier 2 PM emission standard that will be applicable to those engine families.

(i) FELs for NOx may not exceed the Tier 1 upper limit specified in §89.112(d).

(ii) An engine family certified to an FEL is subject to all provisions specified in subparts B, D, E, F, G, H, I, J, and K of this part, except that the applicable FEL replaces the emission standard for the family participating in the averaging, banking, and trading program.

(iii) A manufacturer of an engine family with an NOx FEL exceeding the Tier 1 NOx emission standard must obtain NOx emission credits sufficient to address the associated credit shortfall via averaging, banking, or trading.

(iv) An engine family with a NOx FEL below the applicable Tier 1 standard may generate emission credits for averaging, banking, trading, or a combination thereof. An engine family with a PM FEL below the Tier 2 standard that will be applicable to that engine family may generate emission credits for banking, trading, or a combination thereof. Emission credits may not be used to offset an engine family's emissions that exceed its applicable FEL. Credits may not be used to remedy nonconformity determined by a Selective Enforcement Audit (SEA) or by recall (in-use) testing. However, in the case of an SEA failure, credits may be used to allow subsequent production of engines for the family in question if the manufacturer elects to recertify to a higher FEL.

(4) NOx credits generated in a given model year may be used to address credit shortfalls with other engines during that model year or in any subsequent model year except as noted under

paragraph (b)(5)(ii) of this section. PM credits may be used to address credit shortfalls with Tier 2 and later engines greater than or equal to 37 kW and Tier 1 and later engines less than 37 kW and greater than or equal to 19 kW. Credits generated in one model year may not be used for prior model years.

(5) Using Tier 1 NOx credits for showing compliance with Tier 2 NMHC + NOx credits.

(i) A manufacturer may use NOx credits from engines subject to the Tier 1 standards to address NMHC + NOx credit shortfall with engines in the same averaging set subject to Tier 2 NMHC + NOx emission standards.

(ii) NOx credits generated from Tier 1 engines may not be used to address credit shortfalls with engines subject to the Tier 3 NMHC + NOx standards.

(c) *Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.*

(1) A nonroad engine family is eligible to participate in the averaging, banking, and trading programs for NMHC + NOx emissions and PM emissions if it is subject to regulation under subpart B of this part with certain exceptions specified in subsection (c)(2) of this section. No averaging, banking, and trading program is available for meeting the CO or smoke emission standards specified in subpart B of this part.

(2) Nonroad engines may not participate in the averaging, banking, and trading programs if they are subject to state engine emission standards, are exported, or use an alternate or special test procedure under §89.114. Meeting the voluntary standards described in §89.112(f) for Blue Sky Series engines does not preclude participation in the averaging, banking, and trading programs; however, participation in the averaging, banking, and trading programs depends on manufacturers developing test data on a steady-state test cycle, as specified in §89.410(a), for credit computation purposes.

(3)(i) A manufacturer may certify one or more nonroad engine families at FELs above or below the applicable NMHC + NOx emission standard and PM emission standard, provided the summation of the manufacturer's projected balance of all NMHC + NOx credit transactions and the summation of the manufacturer’s projected balance of all PM credit transactions in a given model year in a given averaging set is greater than or equal to zero, as determined under §89.207(b).

(A) FELs for NMHC + NOx and FELs for PM may not exceed the upper limits specified in §89.112(d).

(B) An engine family certified to an FEL is subject to all provisions specified in subparts B, D, E, F, G, H, I, J, and K of this part, except that the applicable FEL replaces the emission standard for the family participating in the averaging, banking, and trading program.

(C) A manufacturer of an engine family with an FEL exceeding the applicable emission standard must obtain emission credits sufficient to address the associated credit shortfall via averaging, banking, or trading, within the restrictions described in §89.204(c) and §89.206(b)(4).

(D) An engine family with an FEL below the applicable standard may generate emission credits for averaging, banking, trading, or a combination thereof. Emission credits may not be used to offset an engine family's emissions that exceed its applicable FEL. Credits may not be used to remedy nonconformity determined by a Selective Enforcement Audit (SEA) or by recall (in-use) testing. However, in the case of an SEA failure, credits may be used to allow subsequent production of engines for the family in question if the manufacturer elects to recertify to a higher FEL.

(ii)(A) In lieu of generating credits under paragraph (c)(3)(i) of this section, a manufacturer may certify one or more nonroad engine families rated under 37 kW at family

emission limits (FELs) above or below the applicable NMHC + NOx emission standard and PM emission standard. The summation of the manufacturer's projected balance of all NMHC + NOx credit transactions and the summation of the manufacturer's projected balance of all PM credit transactions in a given model year, as determined under §89.207(b), is allowed to be less than zero. Separate calculations shall be required for the following two categories of engines: engines rated under 19 kW and engines rated at or above 19kW and under 37 kW.

(B) A penalty equal to ten percent of the year end negative credit balance shall be added to the negative credit balance. The resulting negative credit balance shall be carried into the next model year.

(C) For engines rated under 19 kW, a manufacturer will be allowed to carry over a negative credit balance until December 31, 2003. For engines rated at or above 19 kW and under 37 kW, a manufacturer will be allowed to carry over a negative credit balance until December 31, 2002. As of these dates, the summation of the manufacturer's projected balance of all NMHC + NOx credit transactions and the summation of the manufacturer's projected balance of all PM credit transactions must be greater than or equal to zero.

(D) FELs for NMHC + NOx and FELs for PM may not exceed the upper limits specified in §89.112(d).

(E) An engine family certified to an FEL is subject to all provisions specified in subparts B, D, E, F, G, H, I, J, and K of this part, except that the applicable NMHC + NOx FEL or PM FEL replaces the NMHC + NOx emission standard or PM emission standard for the family participating in the averaging and banking program.

(F) A manufacturer of an engine family with an FEL exceeding the applicable emission standard must obtain emission credits sufficient to address the associated credit shortfall via averaging or banking. The exchange of emission credits generated under this program with other nonroad engine manufacturers in trading is not allowed.

(G) An engine family with an FEL below the applicable standard may generate emission credits for averaging, banking, or a combination thereof. Emission credits may not be used to offset an engine family's emissions that exceed its applicable FEL. Credits may not be used to remedy nonconformity determined by a Selective Enforcement Audit (SEA) or by recall (in-use) testing. However, in the case of an SEA failure, credits may be used to allow subsequent production of engines for the family in question if the manufacturer elects to recertify to a higher FEL.

(4)(i) Except as noted in paragraphs (c)(4)(ii), (c)(4)(iii), and (c)(4)(iv) of this section, credits generated in a given model year may be used during that model year or used in any subsequent model year. Except as allowed under paragraph (c)(3)(ii) of this section, credits generated in one model year may not be used for prior model years.

(ii) Credits generated from engines rated under 19 kW prior to the implementation date of the applicable Tier 2 standards, shall expire on December 31, 2007.

(iii) Credits generated from engines rated under 19 kW under the provisions of paragraph (c)(3)(ii) shall expire on December 31, 2003.

(iv) Credits generated from engines rated at or above 19 kW and under 37 kW under the provisions of paragraph (c)(3)(ii) shall expire on December 31, 2002.

(d) Manufacturers must demonstrate compliance under the averaging, banking, and trading programs for a particular model year by 270 days after the model year. Engine families without an adequate amount of emission credits, except as allowed under paragraph (c)(3)(ii) of this section, will violate the conditions of the certificates of conformity. The certificates of conformity may be voided ab initio under §89.126(c) for those engine families.

(e) Engine families may not generate credits for one pollutant while also using credits for another pollutant in the same model year.

(f) An engine manufacturer may exchange NOx emission credits, NMHC + NOx emission credits, and PM emission credits to equipment or vehicle manufacturers in trading. Such credits may be used within the provisions specified in §89.102(d)(3).

27. The newly designated section 89.204 is revised to read as follows:

§89.204 Averaging.

(a) *Tier 1 engines rated at or above 37 kW.* (1) A manufacturer may use averaging to offset an emission exceedance of a nonroad engine family caused by a NOx FEL above the applicable emission standard. NOx credits used in averaging may be obtained from credits generated by another engine family in the same model year, credits banked in a previous model year, or credits obtained through trading.

(2) Credits scheduled to expire in the earliest model year must be used first, before using other available credits.

(b) *Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.* (1) A manufacturer may use averaging to offset an emission exceedance of a nonroad engine family caused by an NMHC + NOx FEL or a PM FEL above the applicable emission standard. Credits used in averaging may be obtained from credits generated by another engine family in the same model year, credits banked in previous model years that have not expired, or credits obtained through trading. The use of credits shall be within the restrictions described in paragraph (c) of this section and §89.206(b)(4).

(2) Credits scheduled to expire in the earliest model year must be used first, before using other available credits.

(c) *Averaging sets for emission credits*. The averaging and trading of NOx emission credits, NMHC + NOx emission credits, and PM emissions credits will only be allowed between engine families in the same averaging set. The averaging sets for the averaging and trading of NOx emission credits, NMHC + NOx emission credits, and PM emission credits for nonroad engines are defined as follows:

(1) Eligible engines, other than marine diesel engines rated at or above 19 kW, constitute an averaging set.

(2) Marine diesel engines rated at or above 19 kW constitute an averaging set. Emission credits generated from marine diesel engines rated at or above 19 kW may be used to address credit shortfalls for eligible engines other than marine diesel engines rated at or above 19 kW.

(3) Eligible engines, other than marine diesel engines rated under 19 kW, constitute an averaging set.

(4) Marine diesel engines rated under 19 kW constitute an averaging set. Emission credits generated from marine diesel engines rated under 19 kW may be used to address credit shortfalls for eligible engines other than marine diesel engines rated under 19 kW.

28. The newly designated section 89.205 is revised to read as follows:

§89.205 Banking.

(a) *Tier 1 engines rated at or above 37 kW.* (1) A manufacturer of a nonroad engine

family with a NOx FEL below the applicable standard for a given model year may bank credits in that model year for use in averaging and trading in any subsequent model year.

(2) A manufacturer of a nonroad engine family may bank NOx credits up to one calendar year prior to the effective date of mandatory certification. Such engines must meet the requirements of subparts A, B, D, E, F, G, H, I, J, and K of this part.

(3)(i) A manufacturer of a nonroad engine family may bank PM credits from Tier 1 engines under the provisions specified in §89.207(b) for use in averaging and trading in the Tier 2 or later timeframe provided the engine family is certified without an FEL above the Tier 1 NOx standard.

(ii) Such engine families are subject to all provisions specified in subparts B, D, E, F, G, H, I, J, and K of this part, except that the applicable PM FEL replaces the PM emission standard for the family participating in the banking and trading program.

(b) *Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.* (1) A manufacturer of a nonroad engine family with an NMHC + NOx FEL or a PM FEL below the applicable standard for a given model year may bank credits in that model year for use in averaging and trading in any following model year.

(2) For engine rated under 37 kW, a manufacturer of a nonroad engine family may bank credits prior to the effective date of mandatory certification. Such engines must meet the requirements of subparts A, B, D, E, F, G, H, I, J, and K of this part.

(c) A manufacturer may bank actual credits only after the end of the model year and after EPA has reviewed the manufacturer's end-of-year reports. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging in the end-of-year report and final report.

(d) Credits declared for banking from the previous model year that have not been reviewed by EPA may be used in averaging or trading transactions. However, such credits may be revoked at a later time following EPA review of the end-of-year report or any subsequent audit actions.

29. The newly designated section 89.206 is revised to read as follows:

§89.206 Trading.

(a) *Tier 1 engines rated at or above 37 kW.* (1) A nonroad engine manufacturer may exchange emission credits with other nonroad engine manufacturers within the same averaging set in trading.

(2) Credits for trading can be obtained from credits banked in a previous model year or credits generated during the model year of the trading transaction.

(3) Traded credits can be used for averaging, banking, or further trading transactions within the restrictions described in §89.204(c).

(b) *Tier 2 and later engines rated at or above 37 kW and Tier 1 and later engines rated under 37 kW.* (1) A nonroad engine manufacturer may exchange emission credits with other nonroad engine manufacturers within the same averaging set in trading.

(2) Credits for trading can be obtained from credits banked in previous model years that have not expired or credits generated during the model year of the trading transaction.

(3) Traded credits can be used for averaging, banking, or further trading transactions within the restrictions described in §89.204(c) and paragraph (b)(4) of this section.

(4) Emission credits generated from engines rated at or above 19 kW utilizing indirect fuel injection may not be traded to other manufacturers.

(c) In the event of a negative credit balance resulting from a transaction, both the buyer and the seller are liable, except in cases involving fraud. Certificates of all engine families participating in a negative trade may be voided ab initio under §89.126(c).

30. The newly designated section 89.207 is revised to read as follows:

§89.207 Credit calculation.

(a) *NOx credits from Tier 1 engines rated at or above 37 kW.* (1) For each participating engine family, emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-93a, to the nearest one-tenth of a megagram (Mg). This procedure has been incorporated by reference (see §89.6). Consistent units are to be used throughout the equation.

(i) For determining credit availability from all engine families generating credits:

Emission credits = (Std - FEL) x (Volume) x (AvgPR) x (UL) x (Adjustment) x (10^{-6})

(ii) For determining credit usage for all engine families requiring credits to offset emissions in excess of the standard:

Emission credits = (Std - FEL) x (Volume) x (AvgPR) x (UL) x (10^{-6})

Where:

Std = the applicable Tier 1 NOx nonroad engine emission standard, in grams per brake horsepower hour.

FEL = the NOx family emission limit for the engine family in grams per brake horsepower hour.

Volume =the number of nonroad engines eligible to participate in the averaging, banking, and trading program within the given engine family during the model year. Engines sold to equipment or vehicle manufacturers under the provisions of §89.102(g) shall not be included in this number. Quarterly production projections are used for initial certification. Actual applicable production/sales volumes is used for end-of-year compliance determination.

AvgPR = the average power rating of all of the configurations within an engine family, calculated on a sales-weighted basis.

UL= the useful life for the engine family, in hours.

Adjustment = a one-time adjustment, as specified in paragraph (a)(2) of this section, to be applied to Tier 1 NOx credits to be banked or traded for determining compliance with the Tier 1 NOx standards or Tier 2 NOx+NMHC standards specified in subpart B of this part. Banked credits traded in a subsequent model year will not be subject to an additional adjustment. Banked credits used in a subsequent model year's averaging program will not have the adjustment restored.

(2) If an engine family is certified to a NOx FEL of 8.0 g/kW-hr or less, an Adjustment value of 1.0 shall be used in the credit generation calculation described in paragraph (a)(1)(i) of this section. If an engine family is certified to a NOx FEL above 8.0 g/kW-hr, an Adjustment value of 0.65 shall be used in the credit generation calculation described in paragraph (a)(1)(i) of this section. If the credits are to be used by the credit-generating manufacturer for averaging purposes in the same model year in which they are generated, an Adjustment value of 1.0 shall be used for all engines regardless of the level of the NOx FEL.

(b) *NMHC + NOx Credits from Tier 2 and later engines rated at or above 37 kW and*

Tier 1 and later engines rated under 37 kW and PM credits from all engines. (1) For each participating engine family, NOx + NMHC emission credits and PM emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-93a, to the nearest one-tenth of a megagram (Mg). This procedure has been incorporated by reference (see §89.6). Consistent units are to be used throughout the equation.

(i) For determining credit availability from all engine families generating credits:

Emission credits = (Std - FEL) x (Volume) x (AvgPR) x (UL) x (10^{-6})

(ii) For determining credit usage for all engine families requiring credits to offset emissions in excess of the standard:

Emission credits = (Std - FEL) x (Volume) x (AvgPR) x (UL) x (10^{-6})

Where:

Std = the current and applicable nonroad engine emission standard, in grams per brake horsepower hour, except for PM calculations where it is the applicable nonroad engine Tier 2 PM emission standard, and except for engines rated under 19 kW where it is the applicable nonroad engine Tier 2 emission standard, in grams per brake horsepower hour. (Engines rated under 19 kW participating in the averaging and banking program provisions of §89.203(c)(3)(ii) shall use the Tier 1 standard for credit calculations.)

FEL = the family emission limit for the engine family in grams per brake horsepower hour.

Volume =the number of nonroad engines eligible to participate in the averaging, banking, and trading program within the given engine family during the model year. Engines sold to equipment or vehicle manufacturers under the provisions of §89.102(g) shall not be included in this number. Quarterly production projections are used for initial certification. Actual applicable production/sales volumes is used for end-of-year compliance determination.

AvgPR = the average power rating of all of the configurations within an engine family, calculated on a sales-weighted basis.

UL = the useful life for the given engine family, in hours.

31. The newly designated section 89.208 is revised to read as follows:

§89.208 Labeling.

For all nonroad engines included in the averaging, banking, and trading programs, the family emission limits to which the engine is certified must be included on the label required in §89.110.

32. The newly designated section 89.209 is amended by revising paragraph (a) to read as follows:

§89.209 Certification.

(a) In the application for certification a manufacturer must:

(1) Declare its intent to include specific engine families in the averaging, banking, and trading programs.

(2) Submit a statement that the engines for which certification is requested will not, to the best of the manufacturer's belief, cause the manufacturer to have a negative credit balance

when all credits are calculated for all the manufacturer's engine families participating in the averaging, banking, and trading programs, except as allowed under §89.203(c)(3)(ii).

(3) Declare the applicable FELs for each engine family participating in averaging, banking, and trading.

(i) The FELs must be to the same number of significant digits as the emission standard for the applicable pollutant.

(ii) In no case may the FEL exceed the upper limits prescribed in §89.112(d).

(4) Indicate the projected number of credits generated/needed for this family; the projected applicable production/sales volume, by quarter; and the values required to calculate credits as given in §89.207.

(5) Submit calculations in accordance with §89.207 of projected emission credits (positive or negative) based on quarterly production projections for each participating family.

(6)(i) If the engine family is projected to have negative emission credits, state specifically the source (manufacturer/engine family or reserved) of the credits necessary to offset the credit deficit according to quarterly projected production, or, if the engine family is to be included in the provisions of §89.203(c)(3)(ii), state that the engine family will be included in those provisions.

(ii) If the engine family is projected to generate credits, state specifically (manufacturer/engine family or reserved) where the quarterly projected credits will be applied.

* * * * *

33. The newly designated section 89.210 is amended by revising paragraphs (b) and (c) to read as follows:

§89.210 Maintenance of records.

* * * * *

(b) The manufacturer of any nonroad engine family that is certified under the averaging, banking, and trading programs must establish, maintain, and retain the following adequately organized and indexed records for each such family:

(1) EPA engine family;

(2) Family emission limits (FEL);

(3) Power rating for each configuration tested;

(4) Projected applicable production/sales volume for the model year; and

(5) Actual applicable production/sales volume for the model year.

(c) Any manufacturer producing an engine family participating in trading reserved credits must maintain the following records on a quarterly basis for each engine family in the trading program:

(1) The engine family;

(2) The actual quarterly and cumulative applicable production/sales volume;

(3) The values required to calculate credits as given in §89.207;

(4) The resulting type and number of credits generated/required;

(5) How and where credit surpluses are dispersed; and

(6) How and through what means credit deficits are met.

* * * * *

34. The newly designated section 89.211 is amended by revising paragraphs (a) and (c) to read as follows:

§89.211 End-of-year and final reports.

(a) End-of-year and final reports must indicate the engine family, the actual applicable production/sales volume, the values required to calculate credits as given in §89.207, and the number of credits generated/ required. Manufacturers must also submit how and where credit surpluses were dispersed (or are to be banked) and/or how and through what means credit deficits were met. Copies of contracts related to credit trading must be included or supplied by the broker, if applicable. The report shall include a calculation of credit balances to show that the summation of the manufacturer's use of credits results in a credit balance equal to or greater than zero, except as allowed under §89.203(c)(3)(ii).

* * * * *

(c)(1) End-of-year reports must be submitted within 90 days of the end of the model year to: Director, Engine Programs and Compliance Division (6405-J), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

(2) Final reports must be submitted within 270 days of the end of the model year to: Director, Engine Programs and Compliance Division (6405-J), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

* * * * *

35. The newly designated section 89.212 is revised to read as follows:

§89.212 Notice of opportunity for hearing.

Any voiding of the certificate under §§ 89.203(d), 89.206(c), 89.209(c) and 89.210(g) will be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with §§ 89.512 and 89.513 and, if a manufacturer requests such a hearing, will be made only after an initial decision by the Presiding Officer.

Subpart D—[Amended]

36. The newly designated section 89.302 is revised to read as follows:

§89.302 Definitions.

The definitions in subpart A of this part apply to this subpart. For terms not defined in this part, the definitions in 40 CFR part 86, subparts A, D, I, and N, apply to this subpart.

37. The newly designated section 89.304 is amended by revising paragraph (c) to read as follows:

§89.304 Equipment required for gaseous emissions; overview.

* * * * *

(c) Analyzers used are a non-dispersive infrared (NDIR) absorption type for carbon monoxide and carbon dioxide analysis; a heated flame ionization (HFID) type for hydrocarbon analysis; and a chemiluminescent detector (CLD) or heated chemiluminescent detector (HCLD) for oxides of nitrogen analysis. A gas chromatoghraph (GC) may also be required for methane

analysis. Sections 89.309 through 89.324 set forth a full description of analyzer requirements and specifications.

38. The newly designated section 89.307 is amended by revising paragraphs (b)(7) and (b)(8) to read as follows:

§89.307 Dynamometer calibration.

* * * * *

(b) * * *

(7) The measured torque must be within either 2 percent of point or 1 percent of the engine maximum torque of the calculated torque.

(8) If the measured torque is not within the above requirements adjust or repair the system. Repeat steps in paragraphs (b)(1) through (b)(6) of this section with the adjusted or repaired system.

* * * * *

39. The newly designated section 89.308 is amended by revising paragraph (b) to read as follows:

§89.308 Sampling system requirements for gaseous emissions.

* * * * *

(b) If water is removed by condensation, the sample gas temperature shall be monitored within the water trap or the sample dewpoint shall be monitored downstream. In either case, the indicated temperature shall not exceed 7 °C.

40. The newly designated section 89.309 is amended by removing and reserving paragraph (a)(3) and revising paragraphs (a)(4)(iii), (a)(5)(i)(C), and (a)(5)(i)(D) and adding paragraph (a)(6) to read as follows:

§89.309 Analyzers required for gaseous emissions.

(a) * * *

(3) [Reserved]

(4) * * *

(iii) The FID oven must be capable of maintaining temperature within 5.5 °C of the set point.

* * * * *

(5) * * * (i) * * *

(C) For raw analysis, an ice bath or other cooling device located after the NOx converter (optional for dilute analysis).

(D) A chemiluminescent detector (CLD or HCLD).

* * * * *

(6) Methane analysis. (i) Using a methane analyzer consisting of a gas chromatograph combined with a FID , the measurement of methane shall be in accordance with SAE Recommended Practice J1151, “Methane Measurement Using Gas Chromatography.”

(Incorporated by reference pursuant to 40 CFR 86.1(b)(2)).

(ii) As an option, the manufacturer may choose the analyzer to be used for methane measurement with the prior approval of the Administrator.

* * * * *

41. The newly designated section 89.310 is amended by revising paragraphs (a)(1) and (c) to read as follows:

§89.310 Analyzer accuracy and specifications.

(a) * * *

(1) Response time. As necessary, measure and account for the response time of the analyzer.

* * * * *

(c) Emission measurement accuracy--Bagged sampling. (1) Good engineering practice dictates that exhaust emission sample analyzer readings below 15 percent of full-scale chart deflection should generally not be used.

(2) Some high resolution read-out systems, such as computers, data loggers, and so forth, can provide sufficient accuracy and resolution below 15 percent of full scale. Such systems may be used provided that additional calibrations of at least 4 non-zero nominally equally spaced points, using good engineering judgement, below 15 percent of full scale are made to ensure the accuracy of the calibration curves. If a gas divider is used, the gas divider must conform to the accuracy requirements specified in §89.312(c). The procedure in paragraph (c)(3) of this section may be used for calibration below 15 percent of full scale.

(3) The following procedure shall be followed:

(i) Span the l analyzer using a calibration gas meeting the accuracy requirements of §89.312(c), within the operating range of the analyzer, and at least 90% of full scale.

(ii) Generate a calibration over the full concentration range at a minimum of 6, approximately equally spaced, points (e.g. 15, 30, 45, 60, 75, and 90 percent of the range of concetrations provided by the gas divider). If a gas divider or blender is being used to calibrate the analyzer and the requirements of paragraph (c)(2) of this section are met, verify that a second calibration gas between 10 and 20 percent of full scale can be named within 2 percent of its certified concentration.

(iii) If a gas divider or blender is being used to calibrate the analyzer, input the value of a second calibration gas (a span gas may be used for the CO2 analyzer) having a named concentration between 10 and 20 percent of full scale. This gas shall be included on the calibration curve. Continue adding calibration points by dividing this gas until the requirements of paragraph (c)(2) of this section are met.

(iv) Fit a calibration curve per §89.319 through §89.322 for the full scale range of the analyzer using the calibration data obtained with both calibration gases.

* * * * *

42. The newly designated section 89.312 is amended by revising paragraphs (c)(2), (d), and (f) and adding a new paragraph (g) to read as follows:

§89.312 Analytical gases.

* * * * *

(c) * * *

(2) Mixtures of gases having the following chemical compositions shall be available:

C_3H_8 and purified synthetic air ;

C_3H_8 and purified nitrogen (optional for raw measurements);

CO and purified nitrogen;

NOx and purified nitrogen (the amount of NO_2 contained in this calibration gas must not exceed 5 percent of the NO content);

CO_2 and purified nitrogen.

* * * * *

(d) Oxygen interference check gases shall contain propane with 350 ppmC ±75 ppmC hydrocarbon. The three oxygen interference gases shall contain 21% ± 1% O_2,10% ± 1% O_2, and 5% ± 1% O_2. The concentration value shall be determined to calibration gas tolerances by chromatographic analysis of total hydrocarbons plus impurities or by dynamic blending. Nitrogen shall be the predominant diluent with the balance oxygen.

* * * * *

(f) Hydrocarbon analyzer burner air. The concentration of oxygen for raw sampling must be within 1 mole percent of the oxygen concentration of the burner air used in the latest oxygen interference check (%O_2I). If the difference in oxygen concentration is greater than 1 mole percent, then the oxygen interference must be checked and, if necessary, the analyzer adjusted to meet the %O_2I requirements. The burner air must contain less than 2 ppmC hydrocarbon.

(g) Gases for the methane analyzer shall be single blends of methane using air as the diluent.

43. The newly designated section 89.314 is amended by revising paragraphs (a) and (b) to read as follows:

§89.314 Pre- and post-test calibration of analyzers.

* * * * *

(a) The calibration is checked by using a zero gas and a span gas whose nominal value is between 75 percent and 100 percent of full-scale, inclusive, of the measuring range.

(b) After the end of the final mode, a zero gas and the same span gas will be used for rechecking. As an option,the zero and span may be rechecked at the end of each mode or each test segment. The analysis will be considered acceptable if the difference between the two measuring results is less than 2 percent of full scale.

44. The newly designated section 89.316 is amended by removing and reserving paragraph (b).

45. The newly designated section 89.317 is amended by revising paragraphs (g), (h), and (k) to read as follows:

§89.317 NOx converter check.

* * * * *

(g) Turn on the NOx generator O_2 (or air) supply and adjust the O_2 (or air) flow rate so that the NO indicated by the analyzer is about 10 percent less than indicated in paragraph (f) of this section. Record the concentration of NO in this NO+O_2 mixture.

(h) Switch the NOx generator to the generation mode and adjust the generation rate so that the NO measured on the analyzer is 20 percent of that measured in paragraph (f) of this section. There must be at least 10 percent unreacted NO at this point. Record the concentration of residual NO.

* * * * *

(k) Turn off the NOx generator O_2 (or air) supply. The analyzer will now indicate the NOx in the original NO-in-N_2 mixture. This value should be no more than 5 percent above the value indicated in paragraph (f) of this section.

* * * * *

46. The newly designated section 89.318 is amended by revising paragraphs (c)(2)(i) and (c)(2)(iv) to read as follows:

§89.318 Analyzer interference checks.

* * * * *

(c) * * *

(2) NOx analyzer water quench check. (i) This check applies to wet measurements only. An NO span gas having a concentration of 80 to 100 percent of full scale of a normal operating range shall be passed through the CLD (or HCLD) and the response recorded as D. The NO span gas shall then be bubbled through water at room temperature and passed through the CLD (or HCLD) and the analyzer response recorded as AR. Determine and record the bubbler absolute operating pressure and the bubbler water temperature. (It is important that the NO span gas contains minimal NO_2 concentration for this check. No allowance for absorption of NO_2 in water has been made in the following quench calculations. This test may be optionally run in the NO mode to minimize the effect of any NO_2 in the NO span gas.)

* * * * *

(iv)(A) The maximum raw or dilute exhaust water vapor concentration expected during testing (designated as Wm) can be estimated from the CO_2 span gas (or as defined in the equation in this paragraph and designated as A) criteria in paragraph (c)(1) of this section and the assumption of a fuel atom H/C ratio of 1.8:1 as:

$$Wm(\%) = 0.9 \times A(\%)$$

Where:

A = maximum CO2 concentration expected in the sample system during testing.

(B) Percent water quench shall not exceed 3 percent and shall be calculated by:

$$\%Water\ \ Quench = 100 \times \frac{D1 - AR}{D1} \times \frac{Wm}{Z1}$$

47. The newly designated section 89.319 is amended by revising paragraphs (b)(1), (b)(2), (c), (d) introductory text, (d)(2), and (d)(6) to read as follows:

§89.319 Hydrocarbon analyzer calibration.

* * * * *

(b) Initial and periodic optimization of detector response. * * *

(1) Follow good engineering practices for initial instrument start-up and basic operating adjustment using the appropriate fuel (see §89.312(e)) and zero-grade air.

(2) Optimize the FID's response on the most common operating range. The response is to be optimized with respect to fuel pressure or flow. Efforts shall be made to minimize response variations to different hydrocarbon species that are expected to be in the exhaust. Good engineering judgement is to be used to trade off optimal FID response to propane-in-air against reductions in relative responses to other hydrocarbons. A good example of trading off response on propane for relative responses to other hydrocarbon species is given in Society of Automotive Engineers (SAE) Paper No. 770141, "Optimization of Flame Ionization Detector for Determination of Hydrocarbon in Diluted Automotive Exhausts"; author Glenn D. Reschke. It is also required that the response be set to optimum condition with respect to air flow and sample flow. Heated Flame Ionization Detectors (HFIDs) must be at their specified operating temperature. One of the following procedures is required for FID or HFID optimization:

(i) The procedure outlined in Society of Automotive Engineers (SAE) paper No. 770141, "Optimization of a Flame Ionization Detector for Determination of Hydrocarbon in Diluted Automotive Exhausts"; author, Glenn D. Reschke. This procedure has been incorporated by reference. See §89.6.

(ii) The HFID optimization procedures outlined in 40 CFR 86.331-79.

(iii) Alternative procedures may be used if approved in advance by the Administrator.

(iv) The procedures specified by the manufacturer of the FID or HFID.

* * * * *

(c) Initial and periodic calibration. Prior to introduction into service, after any maintenance which could alter calibration, and monthly thereafter, the FID or HFID hydrocarbon analyzer shall be calibrated on all normally used instrument ranges using the steps in this paragraph (c). Use the same flow rate and pressures as when analyzing samples. Calibration gases shall be introduced directly at the analyzer, unless the "overflow" calibration option of 40 CFR 86.1310-90(b)(3)(i) for the HFID is taken. New calibration curves need not be generated each month if the existing curve can be verified as continuing to meet the requirements of paragraph (c)(3) of this section.

(1) Adjust analyzer to optimize performance.

(2) Zero the hydrocarbon analyzer with zero-grade air.

(3) Calibrate on each used operating range with propane-in-air (dilute or raw) or propane-in-nitrogen (raw) calibration gases having nominal concentrations starting between 10-15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent of that range) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit

straight line is 2 percent or less of the value at each data point, concentration values may be calculated by use of a single calibration factor for that range. If the deviation exceeds 2 percent at each non-zero data point and within ±0.3 percent of full scale on the zero, the best-fit non-linear equation which represents the data to within within these limits shall be used to determine concentration.

(d) Oxygen interference optimization (Required for raw). Choose a range where the oxygen interference check gases will fall in the upper 50 percent. Conduct the test, as outlined in this paragraph, with the oven temperature set as required by the instrument manufacturer. Oxygen interference check gas specifications are found in §89.312(d).

* * * * *

(2) Span the analyzer with the 21% oxygen interference gas specified in §89.312(d).

* * * * *

(6) Calculate the percent of oxygen interference (designated as percent O_2I) for each mixture in paragraph (d)(4) of this section.

$$\text{percent } O_2I = ((B - C) \times 100)/B$$

Where:

A = hydrocarbon concentration (ppmC) of the span gas used in paragraph (d)(2) of this section.

B = hydrocarbon concentration (ppmC) of the oxygen interference check gases used in paragraph (d)(4) of this section.

C = analyzer response (ppmC) = A/D.

Where:

D = (percent of full-scale analyzer response due to A) × (percent of full-scale analyzer response due to B).

* * * * *

48. The newly designated section 89.320 is amended by revising paragraph (c) to read as follows:

§89.320 Carbon monoxide analyzer calibration.

* * * * *

(c) Initial and periodic calibration. Prior to its introduction into service, after any maintenance which could alter calibration, and every two months thereafter, the NDIR carbon monoxide analyzer shall be calibrated. New calibration curves need not be generated every two months if the existing curve can be verified as continuing to meet the requirements of paragraph (c)(3) of this section.

(1) Adjust the analyzer to optimize performance.

(2) Zero the carbon monoxide analyzer with either zero-grade air or zero-grade nitrogen.

(3) Calibrate on each used operating range with carbon monoxide-in-N_2 calibration gases having nominal concentrations starting between 10 and 15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit straight line is 2 percent or less of the value at each non-zero data point and within ±0.3 percent of full scale on the zero, concentration values may be calculated by use of a single calibration factor for that range. If the deviation exceeds these limits, the best-fit non-linear equation which represents the data to within these

limits shall be used to determine concentration.
* * * * *

49. The newly designated section 89.321 is amended by revising paragraph (c) to read as follows:

§89.321 Oxides of nitrogen analyzer calibration.

* * * * *

(c) Initial and periodic calibration. Prior to its introduction into service, after any maintenance which could alter calibration, and monthly thereafter, the chemiluminescent oxides of nitrogen analyzer shall be calibrated on all normally used instrument ranges. New calibration curves need not be generated each month if the existing curve can be verified as continuing to meet the requirements of paragraph (c)(3) of this section. Use the same flow rate as when analyzing samples. Proceed as follows:

(1) Adjust analyzer to optimize performance.

(2) Zero the oxides of nitrogen analyzer with zero-grade air or zero-grade nitrogen.

(3) Calibrate on each normally used operating range with NO-in-N_2 calibration gases with nominal concentrations starting at between 10 and 15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit straight line is 2 percent or less of the value at each non-zero data point and within ±0.3 percent of full scale on the zero, concentration values may be calculated by use of a single calibration factor for that range. If the deviation exceeds these limits, the best-fit non-linear equation which represents the data to within these limits shall be used to determine concentration.

* * * * *

50. The newly designated section 89.322 is amended by revising paragraph (a) to read as follows:

§89.322 Carbon dioxide analyzer calibration.

(a) Prior to its introduction into service, after any maintenance which could alter calibration, and bi-monthly thereafter, the NDIR carbon dioxide analyzer shall be calibrated on all normally used instrument ranges. New calibration curves need not be generated each month if the existing curve can be verified as continuing to meet the requirements of paragraph (a)(3) of this section. Proceed as follows:

(1) Follow good engineering practices for instrument start-up and operation. Adjust the analyzer to optimize performance.

(2) Zero the carbon dioxide analyzer with either zero-grade air or zero-grade nitrogen.

(3) Calibrate on each normally used operating range with carbon dioxide-in-N_2 calibration or span gases having nominal concentrations starting between 10 and 15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit straight line is 2 percent or less of the value at each non-zero data point and within ±0.3 percent of full scale on the zero,

concentration values may be calculated by use of a single calibration factor for that range. If the deviation exceeds these limits, the best-fit non-linear equation which represents the data to within these limits shall be used to determine concentration.
* * * * *

51. The newly designated section 89.324 is revised to read as follows:

§89.324 Calibration of other equipment.

(a) Other test equipment used for testing shall be calibrated as often as required by the instrument manufacturer or necessary according to good practice.

(b) If a methane analyzer is used, the methane analyzer shall be calibrated prior to introduction into service and monthly thereafter:

(1) Follow the manufacturer's instructions for instrument startup and operation. Adjust the analyzer to optimize performance.

(2) Zero the methane analyzer with zero-grade air.

(3) Calibrate on each normally used operating range with CH_4 in air with nominal concentrations starting between 10 and 15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit straight line is 2 percent or less of the value at each non-zero data point and within ±0.3 percent of full scale on the zero, concentration values may be calculated by use of a single calibration factor for that range. If the deviation exceeds these limits, the best-fit non-linear equation which represents the data to within these limits shall be used to determine concentration.

52. The newly designated section 89.328 is amended by revising paragraphs (b)(1) and (b)(2) to read as follows:

§89.328 Inlet and exhaust restrictions.

* * * * *

(b) * * *

(1) Equip the test engine with an air inlet system presenting an air inlet restriction within 5 percent of the upper limit at maximum air flow, as specified by the engine manufacturer for a clean air cleaner. A system representative of the installed engine may be used. In other cases a test shop system may be used.

(2) The exhaust backpressure must be within 5 percent of the upper limit at maximum declared power, as specified by the engine manufacturer. A system representative of the installed engine may be used. In other cases a test shop system may be used.

53. The newly designated section 89.330 is amended by revising paragraph (b)(2) to read as follows:

§89.330 Lubricating oil and test fuels.

* * * * *

(b) Test fuels. * * *

(2) Use petroleum fuel meeting the specifications in Table 4 in Appendix A of this subpart, or substantially equivalent specifications approved by the Administrator, for exhaust emission testing. Alternatively, petroleum fuel meeting the specifications in Table 5 in Appendix A of this subpart may be used in exhaust emission testing. The grade of diesel fuel used must be commercially designated as "Type 2-D" grade diesel fuel and recommended by the engine manufacturer.

* * * * *

54 through 57. Tables 1 through 4 of Appendix A to subpart D are revised to read as follows:

APPENDIX A TO SUBPART D—TABLES

Table 1.—Abbreviations Used in Subpart D

CLD	Chemiluminescent detector
CO	Carbon monoxide
CO_2	Carbon dioxide
HC	Hydrocarbons
HCLD	Heated chemiluminescent detector
HFID	Heated flame ionization detector
GC	Gas chromatograph
NDIR	Non-dispersive infra-red analyzer
NIST	National Institute for Standards and Testing
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of nitrogen
O_2	Oxygen

Table 2.—Symbols used in Subparts D and E

Symbol	Term	Unit
conc	Concentration (ppm by volume)	ppm
f	Engine specific parameter considering atmospheric conditions	—
F_{FCB}	Fuel specific factor for the carbon balance calculation	—
F_{FD}	Fuel specific factor for exhaust flow calculation on dry basis	—
F_{FH}	Fuel specific factor representing the hydrogen to carbon ratio	—
F_{FW}	Fuel specific factor for exhaust flow calculation on wet basis	—
FR	Rate of fuel consumed	g/h
G_{AIRW}	Intake air mass flow rate on wet basis	kg/h
G_{AIRD}	Intake air mass flow rate on dry basis	kg/h
G_{EXHW}	Exhaust gas mass flow rate on wet basis	kg/h
G_{Fuel}	Fuel mass flow rate	kg/h
H	Absolute humidity (water content related to dry air)	g/kg
i	Subscript denoting an individual mode	—
K_H	Humidity correction factor	—
L	Percent torque related to maximum torque for the test mode	%
mass	Pollutant mass flow	g/h
$n_{d,i}$	Engine speed (average at the i'th mode during the cycle)	1/min
P_s	Dry atmospheric pressure	kPa
P_d	Test ambient saturation vapor pressure at ambient temperature	kPa
P	Observed brake power output uncorrected	kW

Table 2, continued

Symbol	Term	Unit
P_{AUX}	Declared total power absorbed by auxiliaries fitted for the test	kW
P_M	Maximum power measured at the test speed under test conditions	kW
P_i	$P_i = P_{M,i} + P_{AUX,i}$	—
P_B	Total barometric pressure (average of the pre-test and post-test values)	kPa
P_v	Saturation pressure at dew point temperature	kPa
R_a	Relative humidity of the ambient air	%
S	Dynamometer setting	kW
T	Absolute temperature at air inlet	K
T_{be}	Air temperature after the charge air cooler (if applicable) (average)	K
T_{clout}	Coolant temperature outlet (average)	K
T_{Dd}	Absolute dewpoint temperature	K
$T_{d,i}$	Torque (average at the i'th mode during the cycle)	N-m
T_{SC}	Temperature of the intercooled air	K
$T_{ref.}$	Reference temperature	K
V_{EXHD}	Exhaust gas volume flow rate on dry basis	m^3/h
V_{AIRW}	Intake air volume flow rate on wet basis	m^3/h
P_B	Total barometric pressure	kPa
V_{EXHW}	Exhaust gas volume flow rate on wet basis	m^3/h
WF	Weighing factor	—
WF_E	Effective weighing factor	—

Table 3.—Measurement Accuracy and Calibration Frequency

No.	Item	Calibration Accuracy[1]	Calibration frequency
1	Engine speed	± 2%	30 days
2	Torque	± 2%	30 days
3	Fuel consumption (raw measurement)	± 2% of engine maximum	30 days
4	Air consumption (raw measurement)	± 2% of engine maximum	As required
5	Coolant temperature	±2°K	As required
6	Lubricant temperature	±2°K	As required
7	Exhaust backpressure	± 0.5%	As required
8	Inlet depression	± 0.5%	As required
9	Exhaust gas temperature	±15°K	As required
10	Air inlet temperature (combustion air)	±2°K	As required
11	Atmospheric pressure	± 0.5%	As required
12	Humidity (combustion air) (relative)	± 3.0%	As required
13	Fuel temperature	±2°K	As required
14	Temperature with regard to dilution tunnel	±2°K	As required
15	Dilution air humidity (specific)	± 3%	As required
16	HC analyzer	± 2%	Monthly or as required
17	CO analyzer	± 2%	Bi-monthly or as required
18	NOx analyzer	± 2%	Monthly or as required
19	Methane analyzer	± 2%	Monthly or as required
20	NOx converter efficiency check	90%	Monthly
21	CO_2 analyzer	± 2%	monthly or as required

[1] All accuracy requirements pertain to the final recorded value which is inclusive of the data acquisition system.

Table 4.—Federal Test Fuel Specifications

Item	Procedure (ASTM)[1]	Value (Type 2-D)
Cetane	D613-86	42-48
Distillation Range:		
IBP, °C	D86-90	171-204
10% point, °C	D86-90	204-235
50% point, °C	D86-90	243-283
90% point, °C	D86-90	293-332
EP, °C	D86-90	321-366
Gravity, API	D287-92	33-37
Total Sulfur, %mass	D129-91 or D2622-92	>0.05 - 0.5
Hydrocarbon composition:		
Aromatics, %vol.	D1319-89	10[2]
Parafins	D1319-89	[3]
Napthenes		
Olefins		
Flashpoint, °C (minimum)	D93-90	54
Viscosity @ 38°C, Centistokes	D445-88	2.0-3.2

[1]All ASTM procedures in this table have been incorporated by reference. See §89.6.

[2]Minimum.

[3]Remainder.

* * * * *

58. Table 5 of Appendix A to subpart D is amended by revising the heading to read as follows:

* * * * *

Table 5.—California Test Fuel Specifications

* * * * *

Subpart E—[Amended]

59. The newly designated section 89.401 is amended by revising paragraph (b) to read as follows:

§89.401 Scope; applicability.

* * * * *

(b) Exhaust gases, either raw or dilute, are sampled while the test engine is operated using the appropriate test cycle on an engine dynamometer. The exhaust gases receive specific component analysis determining concentration of pollutant, exhaust volume, the fuel flow, and the power output during each mode. Emissions are reported as grams per kilowatt hour (g/kW-hr).

* * * * *

60. The newly designated section 89.402 is revised to read as follows:

§89.402 Definitions.

The definitions in subpart A of this part apply to this subpart. For terms not defined in this part, the definitions in 40 CFR part 86, subparts A, D, I, and N, apply to this subpart.

61. The newly designated section 89.404 is amended by revising paragraph (b) and removing and reserving paragraph (e) to read as follows:

§89.404 Test procedure overview.

* * * * *

(b) The test is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, and particulate matter. For more information on particulate matter sampling, see §89.112(c). The test cycles consist of various steady-state operating modes that include different combinations of engine speeds and loads. These procedures require the determination of the concentration of each pollutant, exhaust volume, the fuel flow, and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per kilowatt hour (g/kW-hr).

* * * * *

62. The newly designated section 89.405 is amended by revising paragraphs (d), (e), and (f) to read as follows:

§89.405 Recorded information.

* * * * *

(d) Test data; pre-test.

(1) Date and time of day.

(2) Test number.

(3) Intermediate speed and rated speed as defined in §89.2 and maximum observed torque for these speeds.

(4) Recorder chart or equivalent. Identify for each test segment zero traces for each range used, and span traces for each range used.

(5) Air temperature after and pressure drop across the charge air cooler (if applicable) at maximum observed torque and rated speed.

(e) Test data; modal.

(1) Recorder chart or equivalent. Identify for each test mode the emission concentration traces and the associated analyzer range(s). Identify the start and finish of each test.

(2) Observed engine torque.

(3) Observed engine rpm.

(4) Record engine torque and engine rpm continuously during each mode with a chart recorder or equivalent recording device.

(5) Intake air flow (for raw mass flow sampling method only) and depression for each mode.

(6) Engine intake air temperature at the engine intake or turbocharger inlet for each mode.

(7) Mass fuel flow (for raw sampling) for each mode.

(8) Engine intake humidity.

(9) Coolant temperature outlet.

(10) Engine fuel inlet temperature at the pump inlet.

(f) Test data; post-test.

(1) Recorder chart or equivalent. Identify the zero traces for each range used and the span traces for each range used. Identify hangup check, if performed.

(2) Total number of hours of operation accumulated on the engine.

63. The newly designated section 89.406 is amended by revising paragraphs (b) and (c)(1) to read as follows:

§89.406 Pre-test procedures.

* * * * *

(b) Replace or clean the filter elements and then vacuum leak check the system per §89.316(a). Allow the heated sample line, filters, and pumps to reach operating temperature.

(c) * * *

(1) Check the sample-line temperatures (see §89.309(a)(4)(ii) and (a)(5)(i)(A)).

* * * * *

64. The newly designated section 89.407 is amended by revising paragraphs (a), (c), and (d)(2) to read as follows:

§89.407 Engine dynamometer test run.

(a) Measure and record the temperature of the air supplied to the engine, the fuel temperature, the intake air humidity, and the observed barometric pressure during the sampling for each mode. The fuel temperature shall be less than or equal to 43 °C during the sampling for each mode.

* * * * *

(c) The following steps are taken for each test:

(1) Install instrumentation and sample probes as required.

(2) Perform the pre-test procedure as specified in § 89.406.

(3) Read and record the general test data as specified in § 89.405(c).

(4) Start cooling system.

(5) Precondition (warm up) the engine in the following manner:

(i) For variable-speed engines:

(A) Operate the engine at idle for 2 to 3 minutes;

(B) Operate the engine at approximately 50 percent power at the peak torque speed for 5 to 7 minutes;

(C) Operate the engine at rated speed and maximum horsepower for 25 to 30 minutes;

(ii) For constant-speed engines:

(A) Operate the engine at minimum load for 2 to 3 minutes;

(B) Operate the engine at 50 percent load for 5 to 7 minutes;

(C) Operate the engine at maximum load for 25 to 30 minutes;

(iii) Optional. It is permitted to precondition the engine at rated speed and maximum horsepower until the oil and water temperatures are stabilized. The temperatures are defined as stabilized if they are maintained within ±2 percent of point on an absolute basis for 2 minutes. The engine must be operated a minimum of 10 minutes for this option. This optional procedure may be substituted for the procedure in paragraph (c)(5)(i)or (c)(5)(ii) of this section;

(iv) Optional. If the engine has been operating on service accumulation for a minimum of 40 minutes, the service accumulation may be substituted for the procedure in paragraphs (c)(5)(i) through (iii) of this section.

(6) Read and record all pre-test data specified in §89.405(d).

(7) Start the test cycle (see §89.410) within 20 minutes of the end of the warmup. (See paragraph (c)(13) of this section.) A mode begins when the speed and load requirements are stabilized to within the requirements of §89.410(b). A mode ends when valid emission sampling for that mode ends. For a mode to be valid, the speed and load requirements must be maintained continuously during the mode. Sampling in the mode may be repeated until a valid sample is obtained as long the speed and torque requirements are met.

(8) Calculate the torque for any mode with operation at rated speed.

(9) During the first mode with intermediate speed operation, if applicable, calculate the torque corresponding to 75 and 50 percent of the maximum observed torque for the intermediate speed.

(10) Record all modal data specified in §89.405(e) during a minimum of the last 60 seconds of each mode.

(11) Record the analyzer(s) response to the exhaust gas during the a minimum of the last 60 seconds of each mode.

(12) Test modes may be repeated, as long as the engine is preconditioned by running the previous mode. In the case of the first mode of any cycle, precondition according to paragraph (c)(5) of this section.

(13) If a delay of more than 20 minutes, but less than 4 hours, occurs between the end of one mode and the beginning of another mode, precondition the engine by running the previous mode. If the delay exceeds 4 hours, the test shall include preconditioning (begin at paragraph (c)(2) of this section).

(14) The speed and load points for each mode are listed in Tables 1 through 4 of Appendix B of this subpart. The engine speed and load shall be maintained as specified in §89.410(b).

(15) If at any time during a test mode, the test equipment malfunctions or the specifications in paragraph (c)(14) of this section are not met, the test mode is void and may be aborted. The test mode may be restarted by preconditioning with the previous mode.

(16) Fuel flow and air flow during the idle load condition may be determined just prior to or immediately following the dynamometer sequence, if longer times are required for accurate measurements.

(d) * * *

(2) Each analyzer range that may be used during a test mode must have the zero and span responses recorded prior to the execution of the test . Only the zero and span for the range(s) used to measure the emissions during the test are required to be recorded after the completion of the test .

* * * * *

65. The newly designated section 89.408 is amended by revising paragraph (e) to read as follows:

§89.408 Post-test procedures.

* * * * *

(e) For a valid test, the zero and span checks performed before and after each test for each analyzer must meet the following requirements:

(1) The span drift (defined as the change in the difference between the zero response and the span response) must not exceed 3 percent of full-scale chart deflection for each range used.

(2) The zero response drift must not exceed 3 percent of full-scale chart deflection.

66. The newly designated section 89.410 is amended by revising paragraphs (a), (b), and (c) to read as follows:

§89.410 Engine test cycle.

(a) Test cycles. The manufacturer shall determine from of the following test cycles the most appropriate cycle for each engine family using the following guidelines. These cycles shall be used to test engines on a dynamometer.

(1) The 8-mode test cycle described in Table 1 of Appendix B of this subpart may be used for any land-based or auxiliary marine diesel engine.

(2) The 5-mode test cycle described in Table 2 of Appendix B of this subpart may be used for any constant-speed engine (see §89.2). Any engine certified under this test cycle must meet the labeling requirements of §89.110(b)(11).

(3) The 6-mode test cycle described in Table 3 of Appendix B of this subpart may be

used for any land-based or auxiliary marine diesel engine rated under 19 kW.

(4) The 4-mode test cycle described in Table 4 of Appendix B of this subpart is intended for all propulsion marine diesel engines. Manufacturers may measure emissions from propulsion marine diesel engines using the 8-mode test cycle described in Table 1 of Appendix B of this subpart if the engine has been derived from a model already certified with that cycle, if approved in advance by the Administrator.

(b) During each non-idle mode, hold the specified load to within 2 percent of the engine maximum value and speed to within ±2 percent of point. During each idle mode, speed must be held within the manufacturer's specifications for the engine, and the throttle must be in the fully closed position and torque must not exceed 5 percent of the peak torque value of mode 5.

(c) For any mode except those involving either idle or full-load operation, if the operating conditions specified in paragraph (b) of this section cannot be maintained, the Administrator may authorize deviations from the specified load conditions. Such deviations shall not exceed 10 percent of the maximum torque at the test speed. The minimum deviations above and below the specified load necessary for stable operation shall be determined by the manufacturer and approved by the Administrator prior to the test run.

* * * * *

67. The newly designated section 89.411 is amended by revising paragraph (e)(5) to read as follows:

§89.411 Exhaust sample procedure--gaseous components.

* * * * *

(e) * * *

(5) If the difference between the readings obtained is 2 percent of full scale deflection or more, clean the sample probe and the sample line.

* * * * *

68. The newly designated section 89.412 is amended by revising paragraph (c)(3) and removing and reserving paragraph (g)(1) to read as follows:

§89.412 Raw gaseous exhaust sampling and analytical system description.

* * * * *

(c) * * *

(3) The location of optional valve V16 may not be greater than 61 cm from the sample pump.

* * * * *

(g) * * *

(1) [Reserved].

* * * * *

69. The newly designated section 89.413 is amended by revising paragraph (d) and

removing paragraph (e) to read as follows:

§89.413 Raw sampling procedures.

* * * * *

(d) All heated sampling lines shall be fitted with a heated filter to extract solid particles from the flow of gas required for analysis. The sample line for CO and CO_2 analysis may be heated or unheated.

70. The newly designated section 89.414 is amended by revising paragraph (a) to read as follows:

§89.414 Air flow measurement specifications.

(a) The air flow measurement method used must have a range large enough to accurately measure the air flow over the engine operating range during the test. Overall measurement accuracy must be ±2 percent of the maximum engine value for all modes. The Administrator must be advised of the method used prior to testing.

* * * * *

71. The newly designated section 89.415 is amended to read as follows:

§89.415 Fuel flow measurement specifications.

The fuel flow rate measurement instrument must have a minimum accuracy of 2 percent of the engine maximum fuel flow rate.. The controlling parameters are the elapsed time measurement of the event and the weight or volume measurement.

72. The newly designated §89.418 is amended by revising paragraphs (c) and (d), the table in paragraph (e), paragraphs (f) introductory text and (f)(1), and the text of paragraph (g) preceding the equation to read as follows:

§89.418 Raw emission sampling calculations.

* * * * *

(c) When applying G_{EXHW} the measured "dry" concentration shall be corrected to a wet basis, if not already measured on a wet basis. This section is applicable only for measurements made on raw exhaust gas. Correction to a wet basis shall be according to the following formula:

$Conc_{WET} = K_W \times Conc_{"dry"}$

Where:

K_W is determined according to the equations in paragraphs (c)(1), (c)(2), and (c)(3) of this section.

(1) For measurements using the mass flow method (see §89.416(a)):

$$K_W = \left[1 - F_{FH} \times \frac{G_{fuel}}{G_{aird}}\right] - K_{W1} \quad \textit{only applicable for raw exhaust}$$

$$F_{FH} = ALF \times 0.1448 \times \frac{1}{1 + \left(\frac{G_{fuel}}{G_{airw}}\right)} \quad \textit{for diesel fuel only}$$

ALF = Hydrogen mass percentage of fuel = 13.12 for $CH_{1.8}$ fuel.

$$ALF = \frac{1.008 \times \alpha}{12.01 + 1.008 \times \alpha} \times 100$$

α = H/C mole ratio of the fuel.

(2) For measurements using the fuel consumption and exhaust gas concentrations method (see §89.416(b)):

$$K_W = \frac{1}{1 + 1.8 \times 0.005 \times \left[\frac{DCO}{10^4} + DCO_2\right]} - K_{W1}$$

$$\left(\frac{f}{a}\right) = \frac{4.77\ (1+\alpha/4)\ (f/a)\ stoich}{\frac{1}{X} - \left(\frac{DCO}{2\ X\ (10)^6}\right) - \left(\frac{DHC}{X\ (10)^6}\right) + \frac{\alpha}{4}\left(1 - \frac{DHC}{X\ (10)^6}\right) - \frac{.75\ \alpha}{\left(\frac{K}{\frac{DCO}{X\ (10)^6}}\right) + \left(\frac{(1-K)}{1 - \frac{DHC}{X\ (10)^6}}\right)}}$$

or

$$\left(\frac{f}{a}\right) = \frac{G_{fuel}}{G_{aird}} = \frac{Mass\ Fuel\ Measured}{G_{airw} \times \left(1 - \frac{H}{1000}\right)}$$

K = 3.5

$$X = \frac{DCO_2}{10^2} + \frac{DCO}{10^6} + \frac{DHC}{10^6}$$

$$(f/a)Stoich = \frac{M_c + \alpha M_H}{138.18(1+\alpha/4)}$$

(3) For both methods, H is calculated as specified in paragraph (d)(1) of this section:

$$K_{W1} = \frac{1.608 \times H}{1000 + 1.608 \times H}$$

(d) As the NOx emission depends on intake air conditions, the NOx concentration shall be corrected for intake air temperature and humidity with the factor K_H given in the following formula. For engines operating on alternative combustion cycles, other correction formulas may be used if they can be justified or validated. The formula follows:

$$K_H = \frac{1}{1 + A(H - 10.71) + B(T - 298)}$$

Where:

A = 0.309 (f/a) - 0.0266
B = -0.209 (f/a) + 0.00954
T = temperature of the air in K
H = humidity of the inlet air in grams of water per kilogram of dry air, in which:

$$H = \frac{6.22 \times R_a \times p_d}{p_B - (p_d \times R_a \times 10^{-2})}$$

or

$$H = \frac{622 \times P_v}{(P_B - P_v)}$$

(e) * * *

Gas	u	v	w	conc.
NOx	0.001587	0.00205	0.00205	ppm
CO	0.000966	0.00125	0.00125	ppm
HC	0.000478	—	0.000618	ppm
CO_2	15.19	19.64	19.64	percent

Note: The given coefficients u, v, and w are calculated for 273.15 °K (0 °C) and 101.3 kPa. In cases where the reference conditions vary from those stated, an error may occur in the calculations.

(f) The following equations may be used to calculate the coefficients u, v, and w in paragraph (e) of this section for other conditions of temperature and pressure:

(1) For the calculation of u, v, and w for NOx (as NO_2), CO, HC (in paragraph (e) of this section as $CH_{1.80}$), CO_2, and O_2:

Where:

w = $4.4615.10^{-5} \times M$ if conc. in ppm

w = $4.4615.10^{-1} \times M$ if conc. in percent

v = w

u = w/ρ_{Air}

M = Molecular weight

ρ_{Air} = Density of dry air at 273.15 °K (0 °C), 101.3 kPa = 1.293 kg/m^3

* * * * *

(g) The emission shall be calculated for all individual components in the following way where power at idle is equal to zero:

* * * * *

73. Remove and reserve the newly designated section 89.423.

74. The newly designated section 89.424 is amended by revising paragraphs (a), (d)(6), and (e) to read as follows:

§89.424 Dilute emission sampling calculations.

(a) The final reported emission test results are computed by use of the following formula:

$$A_{WM} = \frac{\sum_{i=1}^{i=n} (g_i \times WF_i)}{\sum_{i=1}^{i=n-1} (P_i \times WF_i)}$$

Where:

A_{wm} = Weighted mass emission level (HC, CO, CO_2, PM, or NOx) in g/kW-hr.

g_i = Mass flow in grams per hour, = grams measured during the mode divided by the sample time for the mode.

WF_i = Effective weighing factor.

P_i = Power measured during each mode (Power set = zero for the idle mode)

* * * * *

(d) Meaning of symbols: * * *

(6) Equations for H and K_H are found in §89.418.

Wet concentration = Kw X dry concentration

Where:

Kw =

$1 - (\alpha/200) \times CO_{2e}(') - ((1.608 \times H)/(7000 + 1.608 \times H))$, or

$1 - (\alpha/200) \times CO_{2e}(') - ((1.608 \times H)/(1000 + 1.608 \times H))$

for SI units.

$CO_{2e}(')$ = either CO_{2e} or CO_{2e}' as applicable.

$CO_{2e}(')$ = average intergrated carbon dioxide concetration (wet basis) in percent(for continuous measurement).

(e) The final modal reported brake-specific fuel consumption (bsfc) shall be computed by use of the following formula:

$$bsfc = \frac{M}{kW\text{-}hr}$$

Where:

bsfc = brake-specific fuel consumption for a mode in grams of fuel per kilowatt-hour (kW-hr).

M = mass of fuel in grams, used by the engine during a mode.

kW-hr = total kilowatts integrated with respect to time for a mode.

* * * * *

75. Remove and reserve the newly designated section 89.425.

Appendix B to Subpart E of Part 89

76 through 80. Appendix to Subpart E of this part is revised to read as follows:

APPENDIX B TO SUBPART E—TABLES

Table 1.—8-Mode Test Cycle For Variable-Speed Engines

Test Segment	Mode Number	Engine Speed[1]	Observed Torque[2] (percent of max. observed)	Minimum Time in mode (minutes)	Weighting Factors
1	1	Rated	100	5.0	0.15
1	2	Rated	75	5.0	0.15
1	3	Rated	50	5.0	0.15
1	4	Rated	10	5.0	0.10
2	5	Int.	100	5.0	0.10
2	6	Int.	75	5.0	0.10
2	7	Int.	50	5.0	0.10
2	8	Idle	0	5.0	0.15

(1) Engine speed (non-idle): ± 2 percent of point
Engine speed (idle): Within manufacturer's specifications. Idle speed is specified by the manufacturer.

(2) Torque (non-idle): Throttle fully open for 100 percent points.
Other non-idle points: ±2 percent of engine maximum value.
Torque (idle): Throttle fully closed. Load less than 5 percent of peak torque.

Table 2.—5-Mode Test Cycle For Constant-Speed Engines

Mode Number	Engine Speed[1]	Observed Torque[2] (percent of max. observed)	Minimum Time in mode (minutes)	Weighting Factors
1	Rated	100	5.0	0.05
2	Rated	75	5.0	0.25
3	Rated	50	5.0	0.30
4	Rated	25	5.0	0.30
5	Rated	10	5.0	0.10

(1) Engine speed: ± 2 percent of point.
(2) Torque: Throttle fully open for 100 percent point. Other points: ±2 percent of engine maximum value.

Table 3.—6-Mode Test Cycle For Engines Rated under 19 kW

Mode Number	Engine Speed[1]	Observed Torque[2] (percent of max. observed)	Minimum Time in mode (minutes)	Weighting Factors
1	Rated	100	5.0	0.09
2	Rated	75	5.0	0.20
3	Rated	50	5.0	0.29
4	Rated	25	5.0	0.30
5	Rated	10	5.0	0.07
6	Idle	0	5.0	0.05

(1) Engine speed (non-idle): ± 2 percent of point. Engine speed (idle): Within manufacturer's specifications. Idle speed is specified by the manufacturer.
(2) Torque (non-idle): Throttle fully open for operation at 100 percent point. Other nonidle points: ±2 percent of engine maximum value. Torque (idle): Throttle fully closed. Load less than 5 percent of peak torque.

Table 4.—4-Mode Test Cycle for Propulsion Marine Diesel Engines

Mode Number	Engine Speed[1] (percent of max. observed)	Observed Power[2] (percent of max. observed)	Minimum Time in mode (minutes)	Weighting Factors
1	100	100	5.0	020
2	91	75	5.0	0.50
3	80	50	5.0	0.15
4	63	25	5.0	0.15

(1) Engine speed: ± 2 percent of point.
(2) Power: Throttle fully open for operation at 100 percent point. Other points: ±2 percent of engine maximum value.

Subpart F—[Amended]

81. The newly designated section 89.505 is amended by revising paragraph (e) to read as follows:

§89.505 Maintenance of records; submittal of information.

* * * * *

(e) All reports, submissions, notifications, and requests for approvals made under this subpart are addressed to: Director, Engine Programs and Compliance Division (6405-J), U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

82. The newly designated section 89.506 is amended by revising paragraph (g) to read as follows:

§89.506 Right of entry and access.

* * * * *

(g) A manufacturer is responsible for locating its foreign testing and manufacturing facilities in jurisdictions where local law does not prohibit an EPA enforcement officer(s) or EPA authorized representative(s) from conducting the entry and access activities specified in this section. EPA will not attempt to make any inspections which it has been informed that local foreign law prohibits.

83. The newly designated section 89.509 is amended by revising paragraphs (a) and (b) to read as follows.

§89.509 Calculation and reporting of test results.

(a) Initial test results are calculated following the applicable test procedure specified in §89.508(a). The manufacturer rounds these results, in accordance with ASTM E29-93a, to the number of decimal places contained in the applicable emission standard expressed to one additional significant figure. This procedure has been incorporated by reference. See §89.6.

(b) Final test results are calculated by summing the initial test results derived in paragraph (a) of this section for each test engine, dividing by the number of tests conducted on the engine, and rounding in accordance with the procedure specified in paragraph (a) of this section to the same number of decimal places contained in the applicable standard expressed to one additional significant figure.

* * * * *

84. The newly designated section 89.512 is amended by revising paragraph (b) to read as follows.

89.512 Request for public hearing.

* * * * *

(b) The manufacturer's request must be filed with the Administrator not later than 15 days after the Administrator's notification of the decision to suspend or revoke, unless otherwise specified by the Administrator. The manufacturer must simultaneously serve two copies of this request upon the Director of the Engine Programs and Compliance Division and file two copies with the Hearing Clerk of the Agency. Failure of the manufacturer to request a hearing within the time provided constitutes a waiver of the right to a hearing. Subsequent to the expiration of the period for requesting a hearing as of right, the Administrator may, at her or his discretion and for good cause shown, grant the manufacturer a hearing to contest the suspension or revocation.

* * * * *

85. The newly designated section 89.513 is amended by revising paragraph (e)(2) to read as follows.

§89.513 Administrative procedures for public hearing.

* * * * *

(e) Filing and service. * * *

(2) To the maximum extent possible, testimony will be presented in written form. Copies of written testimony will be served upon all parties as soon as practicable prior to the start of the hearing. A certificate of service will be provided on or accompany each document or paper filed with the Hearing Clerk. Documents to be served upon the Director of the Engine Programs and Compliance Division must be sent by registered mail to: Director, Engine Programs and Compliance Division (6405-J), U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460. Service by registered mail is complete upon mailing.

* * * * *

Subpart G—[Amended]

86. The newly designated section 89.602 is amended by revising the definition for "Fifteen working day hold period" to read as follows:

§89.602 Definitions.

* * * * *

Fifteen working day hold period. The period of time between a request for final admission and the automatic granting of final admission (unless EPA intervenes) for a nonconforming nonroad engine conditionally imported pursuant to §89.605 or §89.609. Day one of the hold period is the first working day (see definition for "working day" in this section) after the Engine Programs and Compliance Division of EPA receives a complete and valid application for final admission.

* * * * *

87. The newly designated section 89.603 is amended by revising paragraph (d) to read as follows:

§89.603 General requirements for importation of nonconforming nonroad engines.

* * * * *

(d) The ICI must submit to the Engine Programs and Compliance Division of EPA a copy of all approved applications for certification used to obtain certificates of conformity for the purpose of importing nonconforming nonroad engines pursuant to §89.605 or §89.609. In addition, the ICI must submit to the Engine Programs and Compliance Division a copy of all approved production changes implemented pursuant to Sec. 89.605 or subpart B of this part. Documentation submitted pursuant to this paragraph must be provided to the Engine Programs and Compliance Division within 10 working days of approval of the certification application (or production change) by of EPA.

88. The newly designated section 89.604 is amended by revising paragraphs (c)(4) and (d) to read as follows:

§89.604 Conditional admission.

* * * * *

(c) * * *

(4) A copy of the written record is to be submitted to the Engine Programs and Compliance Division of EPA within five working days of the transfer date.

(d) Notwithstanding any other requirement of this subpart or U.S. Customs Service regulations, an ICI may also assume responsibility for the modification and testing of a nonconforming nonroad engine which was previously imported by another party. The ICI must be a holder of a currently valid certificate of conformity for that specific nonroad engine or authorized to import it pursuant to §89.609 at the time of assuming such responsibility. The ICI must comply with all the requirements of §89.603, §89.604, and either §89.605 or §89.609, as applicable. For the purposes of this subpart, the ICI has "imported" the nonroad engine as of the date the ICI assumes responsibility for the modification and testing of the nonroad engine. The ICI must submit written notification to the Engine Programs and Compliance Division of EPA within 10 working days of the assumption of that responsibility.

89. The newly designated section 89.605 is amended by revising paragraphs (a)(2)(i), (a)(3)(vi), and (c) to read as follows:

§89.605 Final admission of certified nonroad engines.

(a) * * *

(2) * * *

(i) The ICI attests that the nonroad engine has been modified in accordance with the provisions of the ICI's certificate of conformity; presents to EPA a statement written by the applicable Original Engine Manufacturer (OEM) that the OEM must provide to the ICI, and to EPA, information concerning production changes to the class of nonroad engines described in the ICI's application for certification; delivers to the Engine Programs and Compliance Division of EPA notification by the ICI of any production changes already implemented by the OEM at the time of application and their effect on emissions; and obtains from EPA written approval to use this demonstration option; or

* * * * *

(a)(3) * * *

(vi) A report concerning these production changes is to be made to the Engine Programs and Compliance Division of EPA within ten working days of initiation of the production change. The cause of any failure of an emission test is to be identified, if known;

* * * * *

(c) Except as provided in paragraph (b) of this section, EPA approval for final admission of a nonroad engine under this section is presumed to have been granted if the ICI does not receive oral or written notice from EPA to the contrary within 15 working days of the date that the Engine Programs and Compliance Division of EPA receives the ICI's application under paragraph (a) of this section. EPA notice of nonapproval may be made to any employee of the ICI. It is the responsibility of the ICI to ensure that the Engine Programs and Compliance Division of EPA receives the application and to confirm the date of receipt. During this 15 working day hold period, the nonroad engine is to be stored at a location where the Administrator

has reasonable access to the nonroad engine for the Administrator's inspection. The storage is to be within 50 miles of the ICI's testing facility to allow the Administrator reasonable access for inspection and testing. A storage facility not meeting this criterion must be approved in writing by the Administrator prior to the submittal of the ICI's application under paragraph (a) of this section.

90. The newly designated section 89.609 is amended by revising paragraph (d) to read as follows:

§89.609 Final admission of modification nonroad engines and test nonroad engines.

* * * * *

(d) Except as provided in paragraph (c) of this section, EPA approval for final admission of a nonroad engine under this section is presumed to have been granted if the ICI does not receive oral or written notice from EPA to the contrary within 15 working days of the date that the Engine Programs and Compliance Division of EPA receives the ICI's application under paragraph (b) of this section. Such EPA notice of nonapproval may be made to any employee of the ICI. It is the responsibility of the ICI to ensure that the Engine Programs and Compliance Division of EPA receives the application and to confirm the date of receipt. During this 15 working day hold period, the nonroad engine is stored at a location where the Administrator has reasonable access to the nonroad engine for the Administrator's inspection. The storage is to be within 50 miles of the ICI's testing facility to allow the Administrator reasonable access for inspection and testing. A storage facility not meeting this criterion must be approved in writing by the Administrator prior to the submittal of the ICI's application under paragraph (b) of this section.

* * * * *

91. The newly designated section 89.610 is amended by revising paragraph (b)(1) to read as follows:

§89.610 Maintenance instructions, warranties, emission labeling.

* * * * *

(b) Warranties. (1) ICIs must submit to the Engine Programs and Compliance Division of EPA sample copies (including revisions) of any warranty documents required by this section prior to importing nonroad engines under this subpart.

* * * * *

92. The newly designated section 89.611 is amended by revising paragraph (g) to read as follows:

§89.611 Exemptions and exclusions.

* * * * *

(g) An application for exemption and exclusion provided for in paragraphs (b), (c), and (e) of this section is to be mailed to: U.S. Environmental Protection Agency, Office of Mobile Sources, Engine Programs and Compliance Division (6405-J), 401 M Street, SW, Washington,

DC 20460, Attention: Imports.

Subpart J—[Amended]

93. Section 89.903 is amended by revising paragraph (b) to read as follows:

§89.903 Application of section 216(10) of the Act.

* * * * *

(b) EPA will maintain a list of nonroad engines that have been determined to be excluded because they are used solely for competition. This list will be available to the public and may be obtained by writing to the following address: Chief, Selective Enforcement Auditing Section, Engine Programs and Compliance Division (6405-J), Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

* * * * *

94. Section 89.905 is amended by revising paragraph (f) to read as follows:

§89.905 Testing exemption.

* * * * *

(f) A manufacturer of new nonroad engines may request a testing exemption to cover nonroad engines intended for use in test programs planned or anticipated over the course of a subsequent one-year period. Unless otherwise required by the Director, Engine Programs and Compliance Division, a manufacturer requesting such an exemption need only furnish the information required by paragraphs (a)(1) and (d)(2) of this section along with a description of the record-keeping and control procedures that will be employed to assure that the engines are used for purposes consistent with paragraph (a) of this section.

95. Section 89.906 is amended by revising paragraphs (a)(3) introductory text, (a)(3)(iii)(D), and (b) to read as follows:

§89.906 Manufacturer-owned exemption and precertification exemption.

(a) * * *

(3) Unless the requirement is waived or an alternate procedure is approved by the Director, Engine Programs and Compliance Division, the manufacturer must permanently affix a label to each nonroad engine on exempt status. This label should:

* * * * *

(a)(3)(iii) * * *

(D) The statement "This nonroad engine is exempt from the prohibitions of 40 CFR 89.1003."

* * * * *

(b) Any independent commercial importer that desires a precertification exemption pursuant to §89.611(b)(3) and is in the business of importing, modifying, or testing uncertified nonroad engines for resale under the provisions of subpart G of this part, must apply to the

Director, Engine Programs and Compliance Division. The Director may require such independent commercial importer to submit information regarding the general nature of the fleet activities, the number of nonroad engines involved, and a demonstration that adequate record-keeping procedures for control purposes will be employed.

96. Section 89.911 is revised to read as follows:

§89.911 Submission of exemption requests.

Requests for exemption or further information concerning exemptions and/or the exemption request review procedure should be addressed to: Chief, Selective Enforcement Auditing Section, Engine Programs and Compliance Division (6405-J), Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

97. Section 89.1003 is amended by revising paragraphs (a)(3), (a)(5), (a)(6), and (b)(4) to read as follows:

§89.1003 Prohibited Acts.

(a) The following acts and the causing thereof are prohibited:* * *

(3)(i) For a person to remove or render inoperative a device or element of design installed on or in a nonroad engine, vehicle or equipment in compliance with regulations under this part prior to its sale and delivery to the ultimate purchaser, or for a person knowingly to remove or render inoperative such a device or element of design after the sale and delivery to the ultimate purchaser; or

(ii) For a person to manufacture, sell or offer to sell, or install, a part or component intended for use with, or as part of, a nonroad engine, vehicle or equipment, where a principal effect of the part or component is to bypass, defeat, or render inoperative a device or element of design installed on or in a nonroad engine in compliance with regulations issued under this part, and where the person knows or should know that the part or component is being offered for sale or installed for this use or put to such use; or

(iii) for a person to deviate from the provisions of §89.130 when rebuilding an engine (or rebuilding a portion of an engine or engine system).

* * * * *

(a)(5) For a person to circumvent or attempt to circumvent the residence time requirements of paragraph (2)(iii) of the nonroad engine definition in §89.2.

(6) For a manufacturer of nonroad vehicles or equipment to distribute in commerce, sell, offer for sale, or introduce into commerce a nonroad vehicle or piece of equipment, manufactured on or after the model year applicable to engines in such vehicle or equipment under §89.112, which contains an engine not covered by a certificate of conformity.

(b) * * *

(4) Certified nonroad engines shall be used in all vehicles and equipment manufactured on or after the applicable model years in §89.112 that are self-propelled, portable, transportable, or are intended to be propelled while performing their function, unless the manufacturer of the vehicle or equipment can prove that the vehicle or equipment will be used in a manner consistent with paragraph (2) of the definition of nonroad engine in §89.2. For any model year for which a new standard takes effect, nonroad vehicle and equipment manufacturers may continue to use

previous model year nonroad engines until inventories of those engines are depleted; however, stockpiling of noncertified nonroad engines will be considered a violation of this section.

98. Section 89.1007 is amended by revising paragraph (c) to read as follows:

§89.1007 Warranty provisions.

* * * * *

(c) For the purposes of this section, the owner of any nonroad engine warranted under this part is responsible for the proper maintenance of the engine. Proper maintenance includes replacement and service, at the owner's expense at a service establishment or facility of the owner's choosing, of all parts, items, or devices related to emission control (but not designed for emission control) under the terms of the last sentence of section 207(a)(3) of the Act, unless such part, item, or device is covered by any warranty not mandated by this Act.