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

1. The authority for part 89 continues to read as follows:
Authority: 42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7545, 7547, 7549, 7550, and 7601(a).

Subpart A—[Amended]

2. Section 89.2 is amended by revising the definition of "United States" to read as follows:
§89.2 Definitions.
* * * * *

United States means the States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, and the U.S. Virgin Islands.
* * * * *

Subpart B—[Amended]

3. Section 89.112 is amended by revising the text of paragraph (f)(1) to read as follows:
§89.112 Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards.
* * * * *
(f) * * *
(1) Voluntary standards. Engines may be designated "Blue Sky Series" engines by meeting the voluntary standards listed in Table 3, which apply to all certification and in-use testing, as follows:

Subpart D—[Amended]

4. Section 89.330 is amended by adding paragraph (e) to read as follows:
§89.330 Lubricating oil and test fuels.
* * * * *
(e) Low sulfur test fuel. Upon request, for model years 2006 and/or 2007, the diesel test fuel shall be the diesel test fuel specified in 40 CFR 1065.205, with the following exception: the sulfur content must be 300-500 ppm instead of 7-15 ppm, subject to the provisions of this paragraph (e).

(1) To use this option, the manufacturer must
  (i) Ensure that ultimate purchasers of equipment using these engines are informed that the use of fuel meeting the 500 ppm specification is recommended.
  (ii) Provide to equipment manufacturers labels to be applied at the fuel inlet recommending 500 ppm fuel.

(2) None of the engines in the engine family may employ sulfur-sensitive technologies.

(3) For engines at or above 130 kW, this option may be used in 2006 and 2007. For engines at or above 75 kW but less than 130 kW, this option may only be used in 2007.

5. A new part 1039 is added to subchapter U of chapter I, to read as follows:

SUBCHAPTER U—AIR POLLUTION CONTROLS

PART 1039—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES

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

Subpart A—Overview and Applicability

§1039.1 Does this part apply for my engines?

(a) The regulations in this part 1039 apply for all new, compression-ignition nonroad engines (defined in §1039.801), except as provided in §1039.5.

(b) In certain cases, the regulations in this part 1039 apply to engines with maximum brake power at or above 250 kW that would otherwise be covered by 40 CFR part 1048. See 40 CFR 1048.620 for provisions related to this allowance.

(c) The definition of nonroad engine in 40 CFR 1068.30 excludes certain engines used in stationary applications. These engines are not required to comply with this part, but 40 CFR 1068.101 restricts the use of stationary engines for non-stationary purposes and 40 CFR 1068.320 requires that you label imported engines that will be used in stationary applications.

(d)(1) This part 1039 applies for all engines subject to the emissions standards specified in subpart B of this part. See 40 CFR part 89 for earlier model years.

(2) For the other compression-ignition engines that do not become subject to the standards specified in subpart B of this part, this part applies as follows:

(i) The provisions of §1039.1(c) and §1039.801 apply for stationary engines beginning January 1, 2006.

(ii) The provisions of §1039.620 and §1039.801 apply for engines used solely for competition beginning January 1, 2006.

§1039.5 Which engines are excluded from this part's requirements?

(a) This part does not apply to the following nonroad engines:

(1) Locomotive engines. Locomotive engines subject to the standards of 40 CFR part 92 are not subject to the provisions of this part 1039. Locomotive engines that are not subject to the standards of 40 CFR part 92 because they have been exempted by provisions of 40 CFR part 92, other than those contained in 40 CFR 92.907, are also not subject to the provisions of this part 1039. See the provisions of 40 CFR part 92 to determine which engines are subject to the standards of that part 92.

(2) Marine engines. Marine engines subject to the standards of 40 CFR part 94 are not subject to the provisions of this part 1039. Marine engines that are not subject to the standards of 40 CFR part 94 because they have been exempted by provisions of 40 CFR part 94, other than those contained in 40 CFR 94.907, are also not subject to the provisions of this part 1039. See the provisions of 40 CFR part 94 to determine which engines are subject to the standards of that part 94.

(3) Mining engines. Engines used in underground mining or in underground mining equipment and regulated by the Mining Safety and Health Administration (MSHA) in 30 CFR parts 7, 31, 32, 36, 56, 57, 70, and 75 are not subject to the provisions of this part 1039.

(4) Hobby engines. Engines with per-cylinder displacement of less than 50 cc are not subject to the provisions of this part 1039.

(b) Aircraft engines are not subject to the provisions of this part 1039. See 40 CFR part 87 for engines used in aircraft.

§1039.10 How is this part organized?

The regulations in this part 1039 contain provisions that affect both engine manufacturers and others. However, the requirements of this part are generally addressed to the engine manufacturer. Unless we specifically state otherwise, the term "you" means the engine manufacturer, as defined in §89.801. This part 1039 is divided into the following subparts:

(a) Subpart B of this part describes the emission standards and other requirements that must be met to certify engines under this part. Note that §1039.104 discusses certain interim requirements and compliance provisions that apply only for a limited time.

(b) Subpart C of this part describes how to apply for a certificate of conformity.

(c) Subpart F of this part describes how to test your engines (including references to other parts of the Code of Federal Regulations).

(d) Subpart G of this part and 40 CFR part 1068 describe requirements, prohibitions, and other provisions that apply to engine manufacturers, equipment manufacturers, owners, operators, rebuilders, and all others.
(e) Subpart H of this part describes how engine manufacturers may generate and use emission credits to certify their engines.

§1039.15 Do any other regulation parts apply to me?
(a) Part 1065 of this chapter describes procedures and equipment specifications for testing engines. Subpart F of this part describes how to apply the provisions of part 1065 of this chapter to show your engines meet the emission standards in this part.
(b) The requirements and prohibitions of part 1068 of this chapter apply to everyone, including anyone who manufactures, imports, installs, owns, operates, or rebuilds any of the engines subject to this part 1039, or equipment containing these engines. Part 1068 of this chapter describes general provisions, including these seven areas:
(1) Prohibited acts and penalties for engine manufacturers, equipment manufacturers, and others.
(2) Rebuilding and other aftermarket changes.
(3) Exclusions and exemption for certain engines.
(4) Importing engines.
(5) Selective enforcement audits of your production.
(6) Defect reporting and recall.
(7) Procedures for hearings.
(c) Other parts of this chapter apply if referenced in this part.

Subpart B—Emission Standards and Related Requirements

§1039.101 What exhaust emission standards must my engines meet?

The exhaust emission standards of this section apply for the model years noted and later. See §1039.102 and 40 CFR 89.112 for exhaust emission standards that apply to earlier model years.

(a) Emission standards for transient testing. Transient exhaust emissions from your engines may not exceed the applicable emission standards listed in Table 1 of this section. Measure emissions using the applicable transient test procedures described in subpart F of this part.

(b) Emission standards for steady-state testing. Steady-state exhaust emissions from your engines may not exceed the applicable emission standards listed in Table 1 of this section. Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

Table 1 of §1039.101
Tier 4 Exhaust Emissions Standards

Engine Power	Model Year	Emissions Standard g/kW-hr				
		PM	NOx	NMHC	NOx+NMHC	CO
kW < 19[1]	2008	0.40[2]	-	-	7.5	6.6
19 ≤ kW < 56	2013	0.03	-	-	4.7	5.0
56 ≤ kW < 130	2014	0.02	0.40	0.19	-	5.0
130 ≤ kW ≤ 560	2014	0.02	0.40	0.19	-	3.5
kW > 560	2014	0.02	0.40	0.19	-	3.5

[1] Paragraph (a) of this section does not apply for engines under 19 kW until model year 2013.

[2] See paragraph (j) of this section for provisions related to an optional PM standard for engines under 8 kW.

(c) Averaging banking and trading. In lieu of the NOx, NOx+NMHC, or PM standards in Table 1 of this section, you may choose to include an engine family in the averaging, banking, and trading (ABT) program provided in subpart H of this part. This requires that you specify a single family emission limit (FEL) for each pollutant for each engine family included in the ABT program. These FELs are the applicable emission standards for the engine family with respect to both transient testing and steady-state testing under paragraphs (a) and (b) of this section. The FELs will also define the NTE standards for your engine family, as specified in paragraph (d) of this section. The FEL may not be higher than the limits in Table 2 of this section, except as allowed by paragraph (i) of this section.

Table 2 of §1039.101 Tier 4 FEL Caps			
Engine Power	Emission g/kW-hr		
	PM	NOx	NOx+NMHC
kW < 8	0.80	-	10.5
8 ≤ kW < 19	0.80	-	9.5
19 ≤ kW < 56	0.05	-	7.5
56 ≤ kW < 130	0.04	0.80	-
130 ≤ kW < 560	0.04	0.80	-
kW ≥ 560	0.04	0.80	-

(d) Not-to-exceed standards. (1) Exhaust emissions from the engine may not exceed the applicable NTE standards. Measure emissions according to the procedures specified §1039.515.

(2) The NTE standard, rounded to the same number of decimal places as the applicable standard in Table 1 of this section, is determined from the following equation:

NTE standard for each pollutant = (STD) × (M)

Where:

(i) STD = The standard specified for that pollutant in Table 1 of this section if you certify without using ABT for that pollutant, or the FEL for that pollutant if you certify using ABT.

(ii) M = The NTE multiplier for that pollutant, as defined in paragraph (d)(3) of this section.

(3) The NTE multiplier for each pollutant equals 1.25, except in the following cases:

Table 3 of §1039.101		
If . . .	or . . .	then . . .
(i) The engine family is certified to a NOx standard less than 2.00 g/kW-hr without using ABT	The engine family is certified to a NOx FEL less than 2.00 g/kW-hr (or an NOx+NMHC FEL less than 2.20 g/kW-hr)	The multipliers for NMHC, NOx, and/or NOx+NMHC are 1.50
(ii) The engine family is certified to a PM standard less than 0.07 g/kW-hr without using ABT	The engine family is certified to a PM FEL less than 0.07 g/kW-hr	The multiplier for PM is 1.50

(4) (i) There are two sets of specifications of ambient operating regions that apply for NTE testing. You must choose one set for each engine family. You may choose separately for each engine family. You must indicate your choice of ambient operating region in your application for certification. The region that you choose will apply for all NTE testing of engines in your engine family. You must choose one of the following two ambient operating regions:

(A) All altitudes less than or equal to 5,500 feet above sea-level, during all ambient conditions (temperature and humidity).

(B) All altitudes less than or equal to 5,500 feet above sea-level, for temperatures less than or equal to the temperature determined by the following equation at the specified altitude;

$$T = -0.00254 \times A + 100$$

Where:

T = ambient air temperature in degrees Fahrenheit.

A = altitude in feet above sea-level (A is negative for altitudes below sea-level).

(ii) Temperature and humidity ranges for which correction factors are allowed are specified in 40 CFR 86.1370-2007(e).

(A) If you choose the ambient operating region specified in paragraph (c)(4)(i)(A) of this section, then the temperature and humidity ranges for which correction factors are allowed are defined under 40 CFR 86.1370-2007(e)(1).

(B) If you choose the ambient operating region specified in paragraph (c)(4)(i)(B) of this section, then the temperature and humidity ranges for which correction factors are allowed are defined under 40 CFR 86.1370-2007(e)(2).

(5) For engines equipped with exhaust-gas recirculation, the NTE emission limits of this section do not apply during cold operating conditions as specified in 40 CFR 86.1370-2007(f).

(6) For engines certified to an FEL less than 0.01 g/kW-hr PM, the PM NTE is 0.02 g/kW-hr.

(e)[Reserved]

(f) Fuel types. The exhaust emission standards in this section apply for engines using each type of fuel on which the engines in the engine family are designed to operate. You must meet the numerical emission standards for NMHC in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(1) Diesel-fueled engines: NMHC emissions.

(2) Natural gas-fueled engines: NMHC emissions.

(3) Alcohol-fueled engines: THCE emissions.

(g) Useful life. (1) Your engines must meet the exhaust emission standards in paragraphs (a) through (d) of this section over their full useful life. The useful life values are shown in the following table:

Table 4 of §1039.101

If your engine is certified as . . .	And its maximum power is . . .	And its rated speed is . . .	Then its useful life is . . .
Variable speed or constant speed	Less than 19 kW	Any speed	3,000 hours or five years, whichever comes first
Constant speed	At least 19 kW, but less than 37 kW	3,000 rpm or higher	3,000 hours or five years, whichever comes first
Constant speed	At least 19 kW, but less than 37 kW	Less than 3,000 rpm	5,000 hours or seven years, whichever comes first
Variable speed	At least 19 kW, but less than 37 kW	Any speed	5,000 hours or seven years, whichever comes first
Variable speed or constant speed	37kW or higher	Any speed	8,000 hours or ten years, whichever comes first

(2) You may request in your application for certification that we approve a shorter useful life for an engine family. We may approve a shorter useful life if we determine that these engines will rarely operate longer than the alternate useful life. Your demonstration must include documentation from in-use engines. Your demonstration must also include any overhaul interval that you recommend and any mechanical warranty that you offer for the engine.

(h) Applicability for testing. The emission standards in this subpart apply to all testing, including certification, selective enforcement audits and in-use testing.

(i) Alternate FEL caps. You are allowed to certify a limited number of engines to FELs higher than the caps listed in Table 2 of this section. The FEL caps shown in Table 5 of this section apply instead of the otherwise applicable FEL caps, subject to the sales limits listed in the table.

Table 5 of §1039.101
Alternate FEL Caps

Power Category	Model Years	Maximum percentage of production that may be certified to using these alternate FEL caps	NOx FEL Cap (g/kW-hr)	PM FEL Cap (g/kW-hr)
19 ≤ kW < 56	2013-2016	10%	Not applicable	0.30
	2017+	5%		
56 ≤ kW <130	2012-2013	10%	Not applicable	0.40 for hp <75 0.30 for hp ≥ 75
	2014-2015	10%	4.4 for kW <75 3.8 for kW ≥ 75	
	2016+	5%		
130 ≤ kW ≤ 560	2011-2013	10%	Not applicable	0.20
	2014	10%	3.8	
	2015+	5%		
kW >560	2014-2017	10%	6.2	0.20
	2018+	5%		

(j) Optional PM standard for engines under 8 kW. You may certify certain engines under 8 kW to the optional Tier 4 PM standard of 0.60 g/kW-hr, instead of the PM standard listed in Table 1 of this section, as described in this paragraph.

(1) The provisions of this paragraph (j) are available only for engines with maximum engine power under 8 kW that are hand-startable, air-cooled, and direct injection. The term hand-startable generally refers to engines that are started using a hand crank or pull cord, and excludes engines with electrical starters.

(2) Engines certified under this paragraph (j) may not be used to generate positive emission credits under the ABT provisions of subpart H of this part.

(3) Compliance with the 0.60 g/kW-hr standard specified in this paragraph (j) is not required until model year 2010. The applicable standard for model years 2008 and 2009 is 0.80 g/kW-hr.

§1039.102 What exhaust emission standards must my engines meet before model year 2014?

The exhaust emission standards of this section apply for the model years specified in Tables 1 through 6 of this section. See §1039.101 for exhaust emission standards that apply to later model years. See 40 CFR 89.112 for exhaust emission standards that apply to model years before those listed in the tables.

(a) Emission standards for transient testing. Transient exhaust emissions from your engines may not exceed the applicable emission standards in Tables 1 through 6 of this section. Measure emissions using the applicable transient test procedures described in subpart F of this part. The transient standards do not apply for the following cases:

(1) Engines less than or equal to 37 kW in model years before 2013.

(2) All emissions for phase-out engines over 560 kW.

(3) Phase-out engines less than or equal to 560 kW, but only for NOx+NMHC emissions.

(b) Emission standards for steady-state testing. Steady-state exhaust emissions from your engines may not exceed the applicable emission standards listed in Tables 1 through 6 of this section. Measure emissions using the applicable steady-state test procedures described in subpart F of this part.

Table 1 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines 19 ≤ kW <37

Model Years	Emissions Standard g/kW-hr		
	PM	NOx+NMHC	CO
2008-2012	0.30	7.5	5.0

Table 2 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines 37 ≤ kW <56

	Model Years	Emissions Standard g/kW-hr		
		PM	NOx+NMHC	CO
Option #1	2008-2012	0.30	4.7	5.0
Option #2	2012 (optional)	0.034	4.7	5.0

Table 3 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines 56 ≤ kW <75

Model years	Phase-in Option	Emissions Standard g/kW-hr				
		PM	NOx	NMHC	NOx+NMHC	CO
2012-2013	Phase-in	0.020	0.40	0.19	-	5.0
	Phase-out (No more than 50%)	0.020	-	-	4.7	5.0

Table 4 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines 75 ≤ kW <130

Model years	Phase-in Option	Emissions Standard g/kW-hr				
		PM	NOx	NMHC	NOx+NMHC	CO
2012-2013	Phase-in	0.020	0.40	0.19	-	5.0
	Phase-out (No more than 50%)	0.020	-	-	4.0	5.0

Table 5 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines 130 ≤ kW ≤560

Model years	Phase-in Option	Emissions Standard g/kW-hr				
		PM	NOx	NMHC	NOx+NMHC	CO
2011-2013	Phase-in	0.020	0.40	0.19	-	3.5
	Phase-out (No more than 50%)	0.020	-	-	4.0	3.5

Table 6 of §1039.102
Interim Tier 4 Exhaust Emissions Standards for Engines kW > 560

Model years	Phase-in Option	Emissions Standard g/kW-hr				
		PM	NOx	NMHC	NOx+NMHC	CO
2011-2013	Phase-in	0.020	0.40	0.19	-	3.5
	Phase-out (No more than 50%)	0.20	-	-	6.4	3.5

(c) Phase-in option. The following phase-in provisions apply for engines with maximum engine power of 56 kW or higher.

(1) For model years noted in Tables 3 through 6 of this section, you may certify some of your engine families to the combined NOx+NMHC standard specified in the phase-in option instead of to the separate NOx and NMHC standards otherwise specified in the applicable table.

(2) For engines with maximum engine power over 560 kW for the model years noted in Table 6 of this section, you may certify some of your engine families to the PM standard specified in the phase-in option instead of to the PM standard otherwise specified in the applicable table.

(3) Engines certified to the phase-out standards in Tables 3 through 5 must comply with all other requirements applicable to Tier 4 engines, except as specified in paragraph (d) of this section.

(4) The combined number of engines in the engine families certified to phase-out standards may not exceed 50 percent of your U.S.-directed production volume of nonroad CI engines for that power category for any model year, except as explicitly allowed by §1039.104(c).

(d) Other provisions. The provisions of §1039.101 (c) through (i) apply with respect to the standards of this section with the following exceptions:

(1) NTE standards. NTE standards are determined relative to the standards listed in Tables 1 through 7 of this section, instead of the standards listed in Table 1 of §1039.101. There are no NTE standards for the optional phase-out standards specified in Table 3 through 6 and paragraph (c) of this section. For example, a 200-kW engine certified to the NOx+NMHC standard in Table 5 of this section would not be subject to any NTE standard for NOx+NMHC, but would be subject to NTE standards for PM and CO.

(2) The FEL caps listed in Tables 7 and 8 of this section apply instead of the FEL caps in Table 2 of §1039.101.

Table 7 of §1039.102 Interim Tier 4 FEL Caps for Engines with Maximum Engine Power Less than 56 kW and Phase-in Engines with Maximum Engine Power Greater than or Equal to 56 kW			
Engine Power	Emission g/kW-hr		
	PM	NOx	NOx+NMHC
19 ≤ kW < 37	0.60	-	9.5
37 ≤ kW < 56	0.40	-	7.5
56 ≤ kW < 75	0.040	4.4	-
75 ≤ kW ≤ 560	0.040	3.7	-
kW > 560	0.20	6.1	-

Table 8 of §1039.102 Interim Tier 4 FEL Caps for Phase-Out Engines		
Engine Power	Emissions Standard g/kW-hr	
	PM	NOx+NMHC
56 ≤ kW < 75	0.040	7.5
75 ≤ kW < 225	0.040	6.6
225 ≤ kW < 560	0.040	6.4
kW ≥ 560	0.54	10.5

(e) Banked credits for 56<kW<130 engines. The provisions of this paragraph apply for model year 2012-2014 engines with maximum engine power at least 56 kW, but less than 130 kW.
(1) You may use under subpart H of this part banked Tier 2 NOx+NMHC credits generated from engines rated at least 37 kW.
(2) If you optionally forego during model years 2012-2014 the use banked Tier 2 credits allowed by paragraph (e)(1) of this section, you may certify your 56≤kW<130 engines according to the alternate phase-in schedule described in this paragraph (2). You may not bank or trade any credits generated from engines certified under this paragraph (2).

Table 9 of §1039.102 Alternate Phase-In Schedule for 56≤kW<130 Engines		
Model Year		Minimum phase-in percentage
2012		25%
2013		25%
2014	First nine months	25%
	Last three months	100%
2015 and later		100%

§1039.104 Are there interim provisions that apply only for a limited time?

The provisions in this section apply instead of other provisions in this part. This section describes the model years for these interim provisions apply.

(a) Split Families. For the purpose of using or generating credits during the phase-in of Tier 4 standards, you may choose to split an engine family into two subfamilies (for example, one that uses credits and one that generates credits).

(1) You must indicate in the application for certification that the engine family is to be split, and may assign the numbers and configurations of engines within the respective subfamilies at any time prior to the submission of the end-of-year report. This option is not available for engine families under 56 kW.

(2) You may exclude the engines within the split family from end-of-year NOx (or NOx+NMHC) ABT calculations, provided that the family meets the standards of this paragraph (2) and neither subfamily generates credits for use by other engine families, or uses banked credits, or uses averaging credits from other engine families. All the engines in the split family must be excluded from the phase-in calculations (both from the number of engines complying with the Tier 4 emission standards being phased-in and from the total number of engines in the U.S.-directed production volume). The engines must comply with all other applicable requirements of this part.

(i) Label all the engines within the family with a single NOx FEL, as listed in the following table:

If the engine family's maximum-power range is . . .	Then the NOx FEL for the entire family is . . .
(A) At least 56 kW, but less than 130 kW	2.3 g/kW-hr.
(B) At least 130 kW, but less than 560 kW	2.0 g/kW-hr.
(C) 560 kW or higher	3.1 g/kW-hr.

(ii) For split families with maximum engine power over 560 kW, your PM FEL is 0.10 g/kW-hr.

(iii) For engines certified under the alternate phase-in schedule of §1039.102(e)(2), the NOx FEL is 3.3 g/kW-hr.

(3) Your engines must comply with all other standards and requirements applicable to Tier 4 engines.

(b) Incentives for early introduction. You may reduce the number of engines that are required to meet the standards in §§1039.101or 1039.102 by certifying engines to the applicable standards in §1039.101 (without using the provisions of subpart H of this part) before the model year otherwise required (either by §§1039.101 or 1039.102. This option begins in model year 2008.

(1) For engines with maximum engine power at 56 kW or higher:

If you certify . . .	To the . . .	You may reduce the number of engines in the same power category that are required to meet the . . .	In later model years by . . .
Two engines	0.020 g/kW-hr PM standard	0.020 g/kW-hr PM standard	Three engines.
Two engines	0.020 g/kW-hr PM standard, the 0.40 g/kW-hr NOx standard, and the 0.19 g/kW-hr NMHC standard	0.020 g/kW-hr PM standard, the 0.40 g/kW-hr NOx standard, and the 0.19 g/kW-hr NMHC standard	Three engines.
One engine	0.020 g/kW-hr PM standard, a 0.20 g/kW-hr NOx standard, and the 0.19 g/kW-hr NMHC standard	0.020 g/kW-hr PM standard, the 0.40 g/kW-hr NOx standard, and the 0.19 g/kW-hr NMHC standard	Two engines.

(2) For engines with maximum power less than 56 kW:

If you certify . . .	To a . . .	You may reduce the number of engines in any family with maximum power between 19 and 56 kW that are required to meet the . . .	In later model years by . . .
Two engines	0.034 g/kW-hr PM standard	0.034 g/kW-hr PM standard	Three engines.

(3) Example: If you produce 100 56-130 kW engines in 2008 that meet all of the applicable the standards listed in §1039.101, and you produced 10,000 56-130 kW engines in 2012, then only 9,850 of the engines would need to comply with the standards listed in §1039.101 in 2012.

(c) Phase-in projections. You may initially base compliance with the phase-in requirements of §1039.102 on projected U.S.-directed production volumes. This is allowed for all phase-in model years, except the last year in which less than 100 percent compliance is required. However, if your actual U.S.-directed production volume of engines that comply with the Tier 4 standards is less than the required amount, you must make up the shortfall (in terms of number of engines) before the end of the phase-in period. For example, if you plan in good faith to produce 50 percent of your projected 10,000 56-130kW engines (i.e., 5,000 engines) in 2012 in compliance with the Tier 4 NOx and NMHC standards, but are only able to produce 4,500 such engines of an actual 10,000 engines, you would need to produce an extra 500 engines in 2013 in compliance with the Tier 4 NOx and NMHC standards.

(1) For phase-in schedules other than the alternate schedule described in Table 9 of §1039.102, the deficit allowed by this paragraph (f) may not exceed 25 percent of your U.S. directed production volume.

(2) For the phase-in schedule described in Table 9 of §1039.102, the deficit allowed by this paragraph (f) may not exceed 5 percent of your U.S. directed production volume.

(d) In-use compliance levels. (1) For purposes of determining compliance after title or custody has transferred to the ultimate purchaser, for model year 2015 or earlier engines having a NOx FEL no higher than 2.0 g/kW-hr, the applicable NOx compliance limit shall be determined by adding the following adjustment to the otherwise applicable standard or FEL for NOx.

In model years . . .	If your engine's maximum power is . . .	The NOx adjustment in g/kW-hr is . . .
2012-2015	$56 \leq$ kW < 130	0.13 for operating hours $\leq$ 4000 0.27 for operating hours > 4000
2011-2015	kW $\geq$ 130	0.13 for operating hours $\leq$ 4000 0.27 for operating hours > 4000

(2) For model years before 2014 for engines with maximum power less than 56 kW, and model years before 2015 for engines with maximum power at 56 kW or higher, for purposes of determining compliance after title or custody has transferred to the ultimate purchaser, the applicable PM compliance limit shall be determined by adding 0.01 g/kW-hr to the otherwise applicable standard or FEL for PM.

(e) Provisions for small-volume manufacturers. Special provisions apply to you if you are a small-volume engine manufacturer subject to the requirements of this part. You must contact us before 2008 if you intend to use these provisions.

(1) You may delay complying with the following otherwise applicable Tier 4 emission standards for three model years:

(i) PM standard for engines with maximum power less than 19 kW.

(ii) NMHC+NOx standard for engines with maximum power at least 19 kW but less than 37 kW.

(ii) NMHC+NOx and PM standards for engines with maximum power at least 56 kW but less than 130 kW.

(2) For engines with maximum power at least 19 kW but less than 56 kW, if you choose to meet the interim PM standard in §1039.102 by model year 2011 (without using PM credits), you may delay complying with the Tier 4 PM standard in §1039.101 for engines with maximum power at least 19 kW but less than 56 kW for three model years.

(f) Deficiencies for NTE emission standards. (1) For the first three model years during which Tier 4 standards apply for your engines, you may ask us to accept an engine as compliant with the NTE standards even though specific requirements are not fully met. We will grant such deficiencies (i.e., compliance without meeting specific requirements) only if compliance would be infeasible or unreasonable considering such factors as, but not limited to: technical feasibility of the given hardware and lead time and production cycles, including phase-in or phase-out of engines or vehicle designs and programmed upgrades of computers. We will approve deficiencies on an engine-model and/or horsepower-rating basis within an engine family, and each approval is applicable for a single model year. Your request must include a description of the auxiliary emission control device(s) which will be used to maintain emissions to the lowest practical level, considering the deficiency being requested, if applicable. An application for a deficiency must be made during the certification process; no deficiency will be granted to retroactively cover engines already certified.

(2) For the next four model years after the period covered by paragraph (f)(1) of this section, we may allow up to three deficiencies per engine family. The provisions of paragraphs (f)(1) of this section apply for deficiencies allowed by this paragraph (2). In determining whether to allow the additional deficiencies, we may consider any relevant factors, including the factors identified in paragraph (f)(1) of this section. If we approve additional deficiencies, we may set any additional conditions that we determine to be appropriate.

(3) Unmet requirements should not be carried over from the previous model year, except where unreasonable hardware or software modifications would be necessary to correct the deficiency, and we determine that you have demonstrated an acceptable level of effort toward compliance. The NTE deficiency should only be seen as an allowance for minor deviations from the NTE requirements. The NTE deficiency provisions allow you to apply for relief from the NTE emission requirements under limited conditions. We expect that you should have the necessary functioning emission-control hardware in place to comply with the NTE standards.

(g) Test fuels. The diesel test fuel for model years 2008 through 2010 is the diesel test fuel specified in 40 CFR 1065.205, with the following exception: the sulfur content must be 300-500 ppm instead of 7-15 ppm. This paragraph (g) also allows the early use of 7-15 ppm sulfur test fuels in certain cases.

(1) For model years 2008 through 2010, you may use the 7-15 ppm sulfur test fuel for any engine family where you can demonstrate that the engines in the family will operate only on fuel with less than 15 ppm sulfur in-use.

(2) For model years 2008 through 2010, you may use the 7-15 ppm sulfur test fuel for any engine family containing only engines with maximum engine power less than 56 kW, provided:

(i) You ensure that ultimate purchasers of equipment using these engines are informed that the use of fuel meeting the 15 ppm specification is recommended.

(ii) You provide along with your installation instructions to equipment manufacturers labels to be applied at the fuel inlet recommending 15 ppm fuel. This labeling requirement applies instead of the requirement in §1039.135(f).

(iii) None of the engines in your engine family employ sulfur-sensitive technologies.

(4) For engines certified under §1039.101(j) in model year 2010, the diesel test fuel is the diesel test fuel specified in 40 CFR 1065.205.

(h) Requirements for equipment manufacturers. The provisions of this paragraph (h) apply to equipment

manufacturers that use engines certified to the Tier 3 standards under Option #2 of Table 2 of §1039.102 in any model year from 2008 to 2011. For model year 2012, you must use engines certified under Option #2 of Table 2 of §1039.102 in any product for which you previously used an engine certified to the Tier 3 standards under Option #2 of Table 2 of §1039.102. Use of an engine in model year 2012 that was certified under Option #1 of Table 2 of §1039.102 in such equipment would be a violation of §1068.101(a)(1).

§1039.105 What smoke standards must my engines meet?

Your engines must have less than 22 percent opacity when measured with the smoke test procedure in §1039.501 throughout its useful life.

§1039.107 What evaporative emissions standards and requirements apply?

There are no evaporative emission standards for diesel-fueled engines, or engines using other nonvolatile or nonliquid fuels (for example, natural gas). If your engine uses a volatile liquid fuel, such as methanol, you must meet the evaporative emission requirements of 40 CFR part 1048 that apply to spark-ignition engines, as follows:

(a) Follow the steps in 40 CFR 1048.245 to show that you meet the requirements of 40 CFR 1048.105.

(b) Do the following things in your application for certification:

(1) Describe how your engines control evaporative emissions.

(2) Present test data to show your vehicles meet the evaporative emission standards we specify in subpart B of this part if you do not use design-based certification under 40 CFR 1048.245. Show these figures before and after applying deterioration factors, where applicable.

§1039.110 [Reserved]

§1039.115 What other requirements must my engines meet?

Your engines must meet the following requirements:

(a) Crankcase emissions. Crankcase emissions may not be discharged directly into the ambient atmosphere from any engine, except as follows:

(1) Engines equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing.

(2) If you take advantage of this exception, you must:

(i) Manufacture the engines so that all crankcase emission can be routed into the applicable sampling systems specified in 40 CFR part 1065.

(ii) Account for deterioration in crankcase emissions when determining exhaust deterioration factors.

(3) For the purpose of this paragraph (a), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be "discharged directly into the ambient atmosphere."

(b) [Reserved]

(c) [Reserved]

(d) [Reserved]

(e) Adjustable parameters. Engines that have adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range. An operating parameter is not considered adjustable if you permanently seal it or if it is not normally accessible using ordinary tools. We may require that you set adjustable parameters to any specification within the adjustable range during any testing, including certification testing, selective enforcement auditing, or in-use testing.

(f) Prohibited controls. You may not design your engines with emission-control devices, systems, or elements of design that cause or contribute to an unreasonable risk to public health, welfare, or safety while operating. For example, this would apply if the engine emits a noxious or toxic substance it would otherwise not emit that contributes to such an unreasonable risk.

(g) Defeat devices. You may not equip your engines with a defeat device. A defeat device is an auxiliary emission control device that reduces the effectiveness of emission controls under conditions that the engine may reasonably be expected to encounter during normal operation and use. This does not apply to auxiliary emission control devices you identify in your certification application if any of the following is true:

(1) The conditions of concern were substantially included in the applicable test procedures described in subpart F of this part.
(2) You show your design is necessary to prevent engine (or equipment) damage or accidents.
(3) The reduced effectiveness applies only to starting the engine.

§1039.120 What emission-related warranty requirements apply to me?
(a) General requirements. You must warrant to the ultimate purchaser and each subsequent purchaser that the new nonroad engine, including all parts of its emission-control system, meets two conditions:
(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part.
(2) It is free from defects in materials and workmanship that may keep it from meeting these requirements.
(b) Warranty period. Your emission-related warranty must be valid for at least as long as the minimum warranty periods listed in this paragraph (b) in hours of operation and years, whichever comes first. You may offer an emission-related warranty more generous than we require. The emission-related warranty for the engine may not be shorter than any published warranty you offer for the engine. If you provide a longer warranty (with or without charge) for any components covered in paragraph (c) of this section, you must also extend the emission-related warranty to the same degree for the same components. If an engine has no hour meter, we base the warranty periods in this paragraph (b) only on the engine's age (in years). The minimum warranty periods are shown in the following table:

If your engine is certified as . . .	And its maximum power is . . .	And its rated speed is . . .	Then its warranty period is . . .
Variable speed or constant speed	Less than 19 kW	Any speed	1,500 hours or two years, whichever comes first.
Constant speed	At least 19 kW, but less than 37 kW	3,000 rpm or higher	1,500 hours or two years, whichever comes first.
Constant speed	At least 19 kW, but less than 37 kW	Less than 3,000 rpm	3,000 hours or five years, whichever comes first.
Variable speed	At least 19 kW, but less than 37 kW	Any speed	3,000 hours or five years, whichever comes first.
Variable speed or constant speed	37kW or higher	Any speed	3,000 hours or five years, whichever comes first.

(c) Components covered. The emission-related warranty covers all components whose failure would increase an engine's emissions. This includes components listed in 40 CFR 1068, Appendix I, and components from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions.
(d) Limited applicability. You may deny warranty claims under this section if the operator caused the problem, as described in 40 CFR 1068.115.

§1039.125 What maintenance instructions must I give to buyers?
Give the ultimate purchaser of each new nonroad engine written instructions for properly maintaining and using the engine, including the emission-control system. The maintenance instructions also apply to service accumulation on your test engines, as described in 40 CFR part 1065, subpart E.
(a) Critical emission-related maintenance. Critical emission-related maintenance includes any adjustment, cleaning, repair, or replacement of air-induction, fuel-system, or ignition components, aftertreatment devices, exhaust-gas recirculation systems, crankcase ventilation valves, sensors, or electronic control units. This may also include any other component whose only purpose is to reduce emissions or whose failure will increase emissions without significantly degrading engine performance. You may schedule critical emission-related maintenance on these

components if you meet the following conditions:

(1) You may ask us to approve critical emission-related maintenance only if operators are reasonably likely to do the maintenance you call for.

(2) We will accept scheduled maintenance as reasonably likely to occur in use if you satisfy any of four conditions:

(i) You present data showing that, if a lack of maintenance increases emissions, it also unacceptably degrades the engine's performance.

(ii) You present survey data showing that 80 percent of engines in the field get the maintenance you specify at the recommended intervals.

(iii) You provide the maintenance free of charge and clearly say so in maintenance instructions for the customer.

(iv) You otherwise show us that the maintenance is reasonably likely to be done at the recommended intervals.

(3) You may not schedule emission-related maintenance on the following components more frequently than the minimum intervals specified in the following table, except as specified in paragraph (a)(5) of this section:

For the following components . . .	If your engine's maximum power is . . .	The minimum interval is . . .
EGR-related filters and coolers PCV valves Fuel injector tips (cleaning only)	Any power	1,500 hours.
Fuel injectors Turbochargers Electronic engine control units (and associated sensors and actuators) Particulate traps, trap oxidizers, and related components) (cleaning and repair only) EGR system (including related components, but excluding filters and coolers) Catalytic converters Other add-on emission-related components	Less than 130 kW	3,000 hours.
	130 kW or higher	4,500 hours.

(4) If your engine family has an alternate useful life shorter than the period specified in paragraph (a)(3) of this section, you may not schedule maintenance on those components more frequently than the alternate useful life (see §1039.101(g)).

(b) Recommended additional maintenance. You may recommend any additional amount of maintenance on the components listed in paragraph (a) of this section, as long as you make clear that these maintenance steps are not necessary to keep the emission-related warranty valid. If operators do the maintenance specified in paragraph (a) of this section, but not the recommended additional maintenance, this does not allow you to disqualify them from in-use testing or deny a warranty claim.

(c) Special maintenance. You may specify more frequent maintenance to address problems related to special situations, such as atypical engine operation.

(d) Noncritical emission-related maintenance. For engine parts not listed in paragraph (a) of this section, you may schedule any amount of emission-related inspection or maintenance. But you must state clearly that these steps are not necessary to keep the emission-related warranty valid. Also, do not take these inspection or maintenance steps during service accumulation on your test engines.

(e) Maintenance that is not emission-related. For maintenance unrelated to emission controls, you may schedule any amount of inspection or maintenance. You may also take these inspection or maintenance steps during service accumulation on your test vehicles or engines. This might include adding engine oil, changing air, fuel, or oil filters, cooling system maintenance, adjustment of idle speed, governor, engine bolt torque, valve lash, injector lash, timing, or lubrication of the exhaust manifold heat control valve. This nonemission-related maintenance may be performed

on durability vehicles at the least frequent intervals that you recommend to the ultimate purchaser (not the intervals recommended for severe service).

(f) Source of parts and repairs. Print clearly on the first page of your written maintenance instructions that any repair shop or person may maintain, replace, or repair emission-control devices and systems. Your instructions may not require components or service identified by brand, trade, or corporate name. Also, do not directly or indirectly condition your warranty on a requirement that the vehicle be serviced by your franchised dealers or any other service establishments with which you have a commercial relationship.

You may disregard the requirements in this paragraph (f) if you do one of two things:

(1) Provide a component or service without charge under the purchase agreement.

(2) Get us to waive this prohibition in the public's interest by convincing us the engine will work properly only with the identified component or service.

(g) Owner's responsibility for maintenance. The owner is responsible for proper maintenance of the engine. This includes a component related to emission control but not designed for emission control, if it meets either of the following criteria:

(1) The component was in general use on similar engines before January 1, 1990.

(2) Failure of the component would clearly degrade the engine's performance enough that the operator would need to repair or replace it.

§1039.130 What installation instructions must I give to equipment manufacturers?

(a) If you sell an engine for someone else to install in a piece of nonroad equipment, give the buyer of the engine written instructions for installing it consistent with the requirements of this part. Include all information necessary to ensure that an engine installed this way will be in its certified configuration.

(b) Make sure these instructions have the following information:

(1) Include the heading: "Emission-related installation instructions".

(2) State: "Failing to follow these instructions when installing a certified engine in a piece of nonroad equipment violates federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.".

(3) Describe the instructions needed to install the exhaust system consistent with the requirements of §1039.205(s).

(4) [Reserved]

(5) Describe any limits on the range of applications needed to ensure that the engine operates consistently with your application for certification. For example, if your engines are certified only for constant-speed operation under §1039.510(a)(1), tell equipment manufacturers not to install the engines in variable-speed applications.

(6) Describe any other instructions to make sure the installed engine will operate according to design specifications in your application for certification. This may include, for example, instructions for installing aftertreatment devices when installing the engines.

(7) State: "If you install the engine in a way that makes the engine's emission control information label hard to read during normal engine maintenance, you must place a duplicate label on the vehicle, as described in 40 CFR 1068.105.".

(c) You do not need installation instructions for engines you install in your own equipment.

§1039.135 How must I label and identify the engines I produce?

(a) Assign each engine a legible unique identification number and permanently and affix or engrave it (including stamping) on the engine.

(b) At the time of manufacture, affix a permanent and legible label identifying each engine. The label must be:

(1) Attached in one piece so it is not removable without being destroyed or defaced.

(2) Durable and readable for the engine's entire life.

(3) Secured to a part of the engine needed for normal operation and not normally requiring replacement.

(4) Written in block letters in English.

(c) The label must:

(1) Include the heading "EMISSION CONTROL INFORMATION".

(2) Include your full corporate name and trademark.

(3) Identify the emission-control system; your identifiers must use names and abbreviations consistent with SAE J1930 (incorporated by reference in §1039.810).

(4) List all requirements for fuel and lubricants.

(5) State the date of manufacture [MONTH and YEAR]; you may omit the date of manufacture from the emission control information label if you maintain a record of the engine manufacture dates and provide them to us upon request.

(6) State: "THIS ENGINE MEETS U.S. ENVIRONMENTAL PROTECTION AGENCY REGULATIONS FOR [MODEL YEAR] NONROAD COMPRESSION-IGNITION ENGINES.".

(7) State the emission standards to which the engines are certified, or the FELs if you certify the engine using the ABT provisions of subpart H of this part.

(8) Include EPA's standardized designation for the engine family (and subfamily, where applicable).

(9) State the engine's displacement (in liters) and maximum engine power for the family. You may use the advertised power for the engine instead of the maximum engine power for the family, as long as the advertised power is within the power category for which the engine family is certified.

(10) State the engine's useful life (see §1039.101(g)).

(11) List specifications and adjustments for engine tuneups; show the proper position for the transmission during tuneup and state which accessories should be operating.

(12) Describe other information on proper maintenance and use.

(13) If your engines are certified only for constant-speed operation under §1039.510(a)(1), add to the engine label "CONSTANT-SPEED ONLY".

(14) You may add information to identify other emission standards that the engine meets or does not meet (such as European standards).

(e) If there is not enough space for an emission control information label with all the required information, you may omit the information required in paragraphs (c)(3), (c)(4), and (c)(12) of this section if you print it in the owner's manual instead.

(f) For diesel-fueled engines, label both the engine and equipment to indicate the maximum allowable sulfur level of the fuel, as described in your application for certification.

(1) The label should state either:

(i) "ULTRA LOW-SULFUR NONROAD DIESEL FUEL OR ON-HIGHWAY DIESEL FUEL ONLY (15 parts per million)"; or

(ii) "LOW-SULFUR NONROAD DIESEL FUEL, ULTRA LOW-SULFUR NONROAD DIESEL FUEL, OR ON-HIGHWAY DIESEL FUEL ONLY (500 ppm maximum)".

(2) The equipment must be labeled near the fuel inlet. If you manufacturer the engine, but not the equipment, provide the appropriate label to the equipment manufacturer and notify the equipment manufacturer in the installation instructions. Optionally, if the equipment manufacturer chooses to install its own label, you are not required to provide the label.

(g) You may ask us to approve modified labeling requirements in this part if you show that you are unable to meet them. We will approve your request if this is necessary and your alternate label is consistent with the requirements of this part.

(h) If you obscure the engine label while installing the engine in the equipment, you must place a duplicate label on the equipment. If others install your engine in their equipment in a way that obscures the engine label, we require them to add a duplicate label on the equipment (see 40 CFR 1068.105); in that case, give them the number of duplicate labels they request and keep the following records:

(1) The written request from the equipment manufacturer.

(2) The number of duplicate labels you send and the date you send them.

Subpart C—Certifying Engine Families

§1039.201 What are the general requirements for obtaining a certificate of conformity?
(a) You must send us a separate application for a certificate of conformity for each engine family. A certificate of conformity is valid from the date it is issued until December 31 of the model year for which it is issued.
(b) The application must contain all of the information required by this part and must not include false or incomplete statements or information (see §1039.255).
(c) We may ask you to include less information than we specify in this subpart, provided that all of the specified information is maintained as required by §1039.250.
(d) You must use good engineering judgment for all decisions related to your application (see 40 CFR 1068.5).
(e) An authorized representative of your company must approve and sign the application.
(f) See §1039.255 for provisions describing how we will process your application.

§1039.205 What must I include in my application?
This section specifies the information that must be in you application, unless we ask you to include less information under §1039.201(c). We may require you to provide additional information to evaluate your application.
(a) Describe the engine family's specifications and other basic parameters of the engine's design and emission controls. List the types of fuel on which your engines are designed to operate (for example, diesel fuel). For each engine configuration, list the intended maximum engine power and the associated production tolerances. If the production tolerance for maximum engine power for any configuration exceeds ±5 percent, or if the distribution of actual maximum engine power is asymmetrically distributed around the intended maximum engine power, then you must demonstrate that you have taken reasonable steps to minimize production variability with respect to maximum engine power.
(b) Explain how the emission-control system operates. Describe in detail all the system components for controlling exhaust emissions, including auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test engine. For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include all the following:
(1) Give a general overview of the engine, the emission-control strategies, and all AECDs.
(2) Describe each AECD's general purpose and function.
(3) Identify the parameters that each AECD senses (including measuring, estimating, calculating, or empirically deriving the values). Include equipment-based parameters and state whether you simulate them during testing with the applicable procedures.
(4) Describe the purpose for sensing each parameter.
(5) Identify the location of each sensor the AECD uses.
(6) Identify the threshold values for the sensed parameters that activate the AECD.
(7) Describe the parameters that the AECD modulates (controls) in response to any sensed parameters, including the range of modulation for each parameter, the relationship between the sensed parameters and the controlled parameters and how the modulation achieves the AECD's stated purpose. Use graphs and tables, as necessary.
(8) Describe each AECD's specific calibration details. This may be in the form of data tables, graphical representations, or some other description.
(9) Describe the hierarchy among the AECDs when multiple AECDs sense or modulate the same parameter. Describe whether the strategies interact in a comparative or additive manner and identify which AECD takes precedence in responding, if applicable.
(10) Explain the extent to which the AECD is included in the applicable test procedures specified in subpart F of this part.
(11) Do the following additional things for AECDs designed to protect engines or equipment:
(i) Identify the engine and/or equipment design limits that make protection necessary and describe any damage that would occur without the AECD.
(ii) Describe how each sensed parameter relates to the protected components' design limits or those operating conditions that cause the need for protection.
(iii) Describe the relationship between the design limits/parameters being protected and the parameters sensed or calculated as surrogates for those design limits/parameters, if applicable.
(iv) Describe how the modulation by the AECD prevents engines and/or equipment from exceeding design

limits.

(v) Explain why it is necessary to estimate parameters instead of measuring them directly and describe how the AECD calculates the estimated value, if applicable.

(vi) Describe how you calibrate the AECD modulation to activate only during conditions related to the stated need to protect components and only as needed to sufficiently protect those components.

(c) [Reserved]

(d) Describe the engines you selected for testing and the reasons for selecting them.

(e) Describe the test equipment and procedures that you used, including any special or alternate test procedures you used (see §1039.501).

(f) Describe how you operated the test engine prior to testing, including the duty cycle and the number of engine operating hours used to stabilize emission levels. Explain why the method of service accumulation was selected. Describe any scheduled maintenance you did.

(g) List the specifications of the test fuel to show that it falls within the required ranges we specify in 40 CFR part 1065, subpart C.

(h) Identify the engine family's useful life.

(i) Propose maintenance and use instructions for the ultimate purchaser of each new nonroad engine (see §1039.125).

(j) Propose emission-related installation instructions if you sell engines for someone else to install in a piece of nonroad equipment (see §1039.130).

(k) Propose an emission control information label.

(l) Identify the emission standards or FELs to which you are certifying engines in the engine family. Identify the of specifications of ambient operating regions that will apply for NTE testing under §1039.101(d)(4) (i).

(m) Identify the engine family's deterioration factors and describe how you developed them (see §1039.245). Present any emission test data you used for this.

(n) Certify that you operated your test engines as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part.

(o) Present emission data to show that you meet the applicable emission standards. Present emission data for hydrocarbons (NMHC or THCE, as applicable), NOx, and CO on a test engine to show your engines meet the duty-cycle emission standards we specify in §1039.101. Show these figures before and after applying regeneration factors and deterioration factors for each engine. Include test data for each type of fuel from 40 CFR part 1065, subpart C, on which you intend for engines in the engine family to operate. If we specify more than one grade of any fuel type (for example, No. 1 and No. 2 diesel fuel), you only need to submit test data for one grade, unless the regulations of this part specify otherwise for your engine. Note that §1039.235 allows you to submit an application in certain cases without new emission data.

(p) Report all test results, including those from invalid tests or from any other tests, whether or not they were conducted according to the test procedures of subpart F of this part.

(q) Describe all adjustable operating parameters (see §1039.115(e)), including production tolerances. Include the following in your description of each parameter:

(1) The nominal or recommended setting.

(2) The intended physically adjustable range.

(3) The limits or stops used to establish adjustable ranges.

(4) Information showing why the limits, stops, or other means of inhibiting adjustment are effective in preventing adjustment of parameters on in-use engines to settings outside the your intended physically adjustable ranges.

(r) Provide the information to read and interpret all the information broadcast by an engine's onboard computers and electronic control modules. State that, upon request, you will give us any hardware, software, or tools we would need to do this. If you broadcast a surrogate parameter for torque values, you must provide us what we need to convert these into torque units. You may reference any appropriate publicly released standards that define conventions for these messages and parameters. Format your information consistent with publicly released standards.

(s) Confirm that nothing will prevent sampling of exhaust emissions after engines are installed in equipment and placed in service. If this cannot be done by simply adding a 20-cm extension to the exhaust pipe, show how to sample exhaust emissions in a way that prevents diluting the exhaust sample with ambient air.

(t) State whether your engines will be limited to constant-speed applications. If your certification is limited to

constant-speed applications, describe how you will prevent use of these engines in applications for which they are not certified.
(u) Certify that all the engines in the engine family comply with the not-to-exceed emission standards we specify in subpart B of this part for all normal operation and use when tested as specified in §1039.515. Describe in detail any testing, engineering analysis, or other information on which you base this statement.
(v) Unconditionally certify that all the engines in the engine family comply with the requirements of this part, other referenced parts of the CFR, and the Clean Air Act.
(w) Include estimates of U.S.-directed production volumes.
(x) Include the information required by other subparts of this part. For example, include the information required by §1039.730, if you participate in the ABT program.

§1039.210 May I get preliminary approval before I complete my application?
If you send us information before you finish the application, we will review it and make any appropriate determinations, especially for questions related to engine family definitions, deterioration factors, service accumulation testing, and maintenance. Decisions made under this section are considered to be preliminary approval, subject to final review and approval. If you request preliminary approval related to the upcoming model year or the model year after that, we will make best-efforts to make the appropriate determinations as soon as practicable. We will generally not provide preliminary approval related to a future model year more than two years ahead of time.

§1039.220 How do I amend the maintenance instructions in my application?
You may amend your emission-related maintenance instructions after you submit your application for certification, as long as the amended instructions remain consistent with maintenance you performed on test engines and conform to the requirements of this part. You must send the Designated Compliance Officer a request to amend your application for certification or certificate of conformity for an engine family if you want to change the emission-related maintenance instructions in a way that could affect emissions. In your request, describe the proposed changes to the maintenance instructions. We will disapprove your request if we determine that the amended instructions are inconsistent with maintenance you performed on test engines.
(a) If you are decreasing the specified level of maintenance, you may distribute the new maintenance instructions to your customers 30 days after we receive your request, unless we disapprove your request. We may approve a shorter time or waive this requirement.
(b) If your requested change would not decrease the specified level of maintenance, you may distribute the new maintenance instructions anytime after you send your request. For example, this paragraph (b) would cover adding instructions to increase the frequency of a maintenance step for engines in severe-duty applications.
(c) You do not need to request approval if you are only making minor corrections (such as correcting typographical mistakes), clarifying your maintenance instructions, or changing instructions for maintenance unrelated to emission control.

§1039.225 How do I amend my application or certificate to include new or modified engines?
Before we issue you a certificate of conformity, you may amend your application to include new or modified engine configurations, subject to the provisions of this section. After we have issued your certificate of conformity, you may ask to amend your certificate to include new or modified engine configurations, subject to the provisions of this section. You must amend your application or certificate if any changes occur with respect to any information included in your application.
(a) You must amend your application or certificate before you take either of the following actions:
(1) Add an engine (that is, an additional engine configuration) to an engine family. In this case, the engine added must be consistent with other engines in the engine family, with respect to the criteria listed in §1039.230.
(2) Make a change that may affect emissions or an emission-related part to an engine already included in an engine family. This includes production and design changes. A change is deemed to affect emissions if it will affect emissions at any time during the engine's lifetime.
(b) Send the Designated Compliance Officer a request to amend the application or certificate for an engine family. In your request, do all of the following:
(1) Describe in detail the addition or change in the engine model or configuration you intend to make.
(2) Include engineering evaluations or data showing that the amended engine family complies with all

applicable emission standards. You may do this by showing that the original test engine is still appropriate with respect to showing compliance of the amended family with all applicable emission standards.

(3) If the original test engine for the engine family is not appropriate to show compliance for the new or modified nonroad engine, include new test data showing that the new or modified nonroad engine meets the requirements of this part.

(c) We may ask for more test data or engineering evaluations. You must give us these within 30 days after we request them.

(d) For engine families that are already covered by a certificate of conformity, we will determine whether the certificate of conformity would cover your new or modified nonroad engine. We will send you a written explanation of our decision. You may ask for a hearing if we deny your request (see §1039.820).

(e) For engine families that are already covered by a certificate of conformity, you may start producing the new or modified nonroad engine anytime after you send us your request to amend your certificate, prior to our decision under paragraph (d) of this section. If we determine that the affected engines do not meet applicable requirements, we will notify you to cease production of the engines and to recall the engines at no expense to the owner. Choosing to produce engines under this paragraph (e) is deemed to be consent to recall all engines that we determine do not meet applicable emission standards or other requirements and to remedy the nonconformity at no expense to the owner. If you do not provide within 30 days information required under paragraph (c) of this section, you must stop producing the new or modified engines.

§1039.230 How do I select engine families?

(a) Divide your product line into families of engines that are expected to have similar emission characteristics. Your engine family is limited to a single model year.

(b) Group engines in the same engine family if they are the same in all of the following aspects:

(1) The combustion cycle and fuel.

(2) The cooling system (water-cooled vs. air-cooled).

(3) Method of air aspiration.

(4) Method of exhaust aftertreatment (for example, catalytic converter or particulate trap).

(5) Combustion chamber design.

(6) Bore and stroke.

(7) Number of cylinders, (engines with aftertreatment devices only).

(8) Cylinder arrangement (engines with aftertreatment devices only).

(9) Method of control for engine operation other than governing, (i.e., mechanical or electronic).

(10) Power category.

(c) You may subdivide a group of engines that is identical under paragraph (b) of this section into different engine families, if you show the expected emission characteristics are different during the useful life.

(d) You may group engines that are not identical with respect to the things listed in paragraph (b) of this section in the same engine family if you show that their emission characteristics during the useful life will be similar.

§1039.235 What emission testing must I perform for my application for a certificate of conformity?

This section describes the emission testing you must perform to show compliance with the emission standards in §1039.101 (a) and (b). See §1039.205(u) regarding emission testing related to the NTE emission standards. See 40 CFR part 1065, subpart E, regarding service accumulation before emission testing

(a) Test your emission-data engines using the procedures and equipment specified in subpart F of this part.

(b) Select from each engine family an engine for each fuel type. Select the engine configuration with the highest fueling rate (primarily at the point of maximum torque), unless good engineering judgment indicates that a different configuration is more likely to exceed (or has emissions nearer to) an applicable emission standard. In making this selection, consider all factors expected to affect emission performance and compliance with the standards, including emission levels of all exhaust constituents, especially NOx and PM. Select the emission data test engine or engines from this configuration.

(c) We may choose to measure emissions from any of your test engines or other engines from the engine family.

(1) If we do this, you must provide the test engine at the location we select. We may decide to do the testing at your plant or any other facility. If we choose to do the testing at your plant, you must schedule it as soon as possible and make available the instruments and equipment we need.

(2) If we measure emissions on one of your test engines, the results of that testing become the official emission

results for the engine. Unless we later invalidate this data, we may decide not to consider your data in determining if your engine family meets the applicable emission standards.

(3) Before we test one of your engines, we may set its adjustable parameters to any point within the physically adjustable ranges (see §1039.115(e)).

(4) Calibrate the test engine within normal production tolerances for anything we do not consider an adjustable parameter (see §1039.205(q)).

(d) You may ask to use emission data for an equivalent engine family from previous model years instead of doing new tests, but only if the data show that the test engine would meet all the requirements applicable for the engine family covered by the application for certification. For the purpose of this paragraph, equivalent engines families are engine families that differ only with respect to model year.

(e) We may require you to test a second engine in addition to the engine tested under paragraph (b) of this section.

(f) If you use an alternate testing procedure under 40 CFR 1065.10 and later testing shows that such testing does not produce results that are equivalent to the procedures specified in subpart F of this part, we may reject data you generated using the alternate procedure.

(g) You are not required provide smoke emission data for engines having a certification PM emission level less than 0.07 g/kW-hr or a PM FEL less than 0.07 g/kW-hr.

§1039.240 How do I demonstrate that my engine family complies with exhaust emission standards?

(a) For purposes of certification, your engine family is considered in compliance with the applicable numerical emission standards in §1039.101 (a) and (b) if all emission-data engines representing that family have test results showing deteriorated emission levels at or below these standards. (Note: if you participate in the ABT program in subpart H of this part, your FELs are considered to be applicable emission standards with which you must comply.)

(b) Your engine family is deemed to not comply if any emission-data engine representing that family has test results showing a deteriorated emission level above any applicable emission standard from §1039.101 for any pollutant.

(c) To compare emission levels from the test engine with the applicable emission standards, apply deterioration factors to the measured emission levels for each pollutant. Section 1039.245 specifies how to test your engine to develop deterioration factors that represent the deterioration expected in emissions over your engines' full useful life. Your deterioration factors must be consistent with emission increases observed from any in-use testing with similar engines. Small-volume engine manufacturers may use assigned deterioration factors that we establish. Apply the deterioration factors as follows:

(1) If you use aftertreatment technology (other than particulate traps) to control emissions of a pollutant, the deterioration factor for that pollutant is the ratio of exhaust emissions at the end of useful life to exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one. This provision does not apply for smoke emissions. Multiplicative DFs must be specified to one more significant figure than the applicable standard.

(2) If you use particulate traps or if you use no aftertreatment technology to control emissions of a pollutant, the deterioration factor for that pollutant is the difference between exhaust emissions at the end of useful life and exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by adding the factor to the measured emissions. If the factor is less than zero, use zero. Deterioration factors for smoke emission are always additive. Additive DFs must be specified to one more decimal place than the applicable standard.

(3) If your engine vents crankcase emissions to the exhaust or to the atmosphere, you must account for crankcase emission deterioration, using good engineering judgment. You may use separate factors for crankcase emissions (either multiplicative or additive) or include the effects in combined exhaust and crankcase factors.

(d) After adjusting the emission levels for deterioration, round them to the same number of decimal places as the emission standard. Compare the rounded emission levels to the emission standard for each test engine.

(e) For engines subject to NMHC standards, you may base compliance on total hydrocarbon (THC) emissions. Indicate in your application for certification if you are using this option. If you do, measure THC emissions and calculate NMHC emissions as 98 percent of THC emissions:

$NMHC = (0.98) \times (THC)$.

§1039.245 How do I determine deterioration factors from exhaust durability testing?

Determine deterioration factors (DFs) to show that your engines will meet emission standards throughout the useful life, as described in §§1039.101 and 1039.240. This section describes how to determine deterioration factors, either with an engineering analysis, with pre-existing test data, or with new emission measurements. If you are required to perform durability testing, see §1039.220 for limitations on the maintenance that you may perform on your test engine. You must determine a separate DF for each pollutant.

(a) You may ask us to approve deterioration factors for an engine family with established technology based on engineering analysis instead of testing. Established technology refers to engines for which the applicable NMHC+NOx standard or FEL is greater than the Tier 3 NMHC+NOx standard described in 40 CFR §89.112, unless the engines use exhaust-gas recirculation or aftertreatment. Established technology also refers to engines for which the applicable NMHC+NOx standard or FEL is less than or equal to the Tier 3 NMHC+NOx standard if you can show that the engines do not have technologies other than those generally used on engines meeting NMHC+NOx standards less stringent than the Tier 3 standards.

(b) You may ask us to approve deterioration factors for an engine family based on emission measurements from similar highway or nonroad engines if you have already given us this data for certifying the other engines in the same or previous model years. Use good engineering judgment to decide whether the two engines are similar. We will approve your request if you show us that the emission measurements from other engines reasonably represent in-use deterioration for the nonroad engine family.

(c) If you are unable to determine deterioration factors for an engine family under paragraph (a) or (b) of this section, select engines, subsystems, or components for testing. Determine deterioration factors based on service accumulation and related testing to represent the deterioration expected from in-use engines over the full useful life. You must measure emissions from the test engine at least three times with evenly spaced intervals of service accumulation. You may use extrapolation to determine deterioration factors once you have established a trend of increasing emissions with age for each pollutant. You may use an engine installed in nonroad equipment to accumulate service hours instead of running the engine only in the laboratory. Use good engineering judgment for all aspects of the effort to establish deterioration factors under this paragraph (c).

(d) Include the following information in your application for certification (see §1039.205(n)):

(1) If you use test data from a different engine family, explain why this is appropriate and include all the emission measurements on which you base the deterioration factor.

(2) If you determine your deterioration factors based on engineering analysis, explain why this is appropriate and include a statement that all data, analyses, evaluations, and other information you used are available for our review upon request.

(3) If you conduct testing to determine deterioration factors, describe the form and extent of service accumulation, including a rationale for selecting the service-accumulation period and the method you use to accumulate hours.

§1039.250 What records must I keep and what reports must I send to EPA?

(a) Within 30 days after the end of the model year, send the Designated Compliance Officer a report describing how many engines you produced in each engine family during the model year. You must report the total number of engines you produced by maximum brake power, total displacement, and the type of fuel system. We may also ask you to give us production figures for each assembly plant if you produce engines at more than one plant. If you produced exempted engines under the provisions of §1039.625, include in your report the number of exempted engines you produced for each engine model and identify the buyer or shipping destination for each exempted engine.

(b) Organize and maintain the following records:

(1) A copy of all applications and any summary information you sent us.

(2) Any of the information we specify in §1039.205 that you were not required to include in your application.

(3) A detailed history of each emission-data engine. For each engine, describe all of the following:

(i) The test engine's construction, including its origin and buildup, steps you took to ensure that it represents production engines, any components you built specially for it, and all emission-related components.

(ii) How you accumulated engine operating hours (service accumulation), including the dates and the number of hours accumulated.

(iii) All maintenance, including modifications, parts changes, and other service, and the dates and reasons for the maintenance.

(iv) All your emission tests, including documentation on routine and standard tests, as specified in part 40 CFR part 1065, and the date and purpose of each test.

(v) All tests to diagnose engine or emission-control performance, giving the date and time of each and the reasons for the test.

(vi) Any other significant events.

(4) If we ask, you must give us projected production figures for an engine family. We may ask you to divide your production figures by maximum brake power, total displacement, or assembly plant.

(5) Emission test results from durability testing, and the information required by §1039.245(d).

(5) Keep a list of engine identification numbers for all the engines you produce under each certificate of conformity.

(b) Keep data from routine emission tests (such as test cell temperatures and relative humidity readings) for one year after we issue the associated certificate of conformity. Keep all other information specified in paragraph (a) of this section for eight years after we issue your certificate.

(c) Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.

(d) Send us copies of any engine maintenance instructions or explanations if we ask for them.

§1039.255 What decisions may EPA make regarding my certificate of conformity?

(a) If we determine your application is complete and shows that the engine family meets all the requirements of this part and the Act, we will issue a certificate of conformity for your engine family for that model year. We may make the approval subject to additional conditions.

(b) We may deny your application for certification if we determine that your engine family fails to comply with emission standards or other requirements of this part or the Act. Our decision may be based on a review of all information available to us. If we deny your application, we will explain why in writing.

(c) In addition, we may deny your application or suspend or revoke your certificate if you do any of the following:

(1) Refuse to comply with any testing or reporting requirements.

(2) Submit false or incomplete information (paragraph (e) of this section applies if this is fraudulent).

(3) Render inaccurate any test data.

(4) Deny us from completing authorized activities despite our presenting a warrant or court order (see 40 CFR 1068.20). This includes a failure to provide reasonable assistance.

(5) Produce engines for importation into the United States at a location where local law prohibits us from carrying out authorized activities.

(6) Fail to supply requested information or amend your application to include all engines being produced.

(7) Take any action that otherwise circumvents the intent of the Act or this part.

(d) We may void your certificate if you do not keep the records we require or do not give us information when we ask for it.

(e) We may void your certificate if we find that you intentionally submitted false or incomplete information.

(f) If we deny your application or suspend, revoke, or void your certificate, you may ask for a hearing (see §1039.820).

Subpart D—[Reserved]

Subpart E—In-use Testing

We may conduct in-use testing of any engine subject to the standards of this part. However, we will limit recall testing to the first 75 percent of each engine's useful life as specified in §1039.101(g).

Subpart F—Test Procedures

§1039.501 How do I run a valid emission test?

(a) Use the equipment and procedures for compression-ignition engines in 40 CFR part 1065 to determine whether engines meet the duty-cycle emission standards in §1039.101(a) and (b). Measure the emissions of CO_2 and all the pollutants we regulate in §1039.101 using the applicable sampling procedures in 40 CFR part 1065. Use the applicable duty cycles specified in §§1039.505 and 1039.510.

(b) Section 1039.515 describes the supplemental procedures for evaluating whether engines meet the not-to-exceed emission standards in §1039.101(c).

(c) Use the equipment and procedures in ISO 8178-9 for evaluating whether engines meet the smoke standards in §1039.105.

(d) Use the fuels specified in 40 CFR part 1065, subpart C, to conduct valid tests, except as noted in §1039.515.

(1) Use these test fuels or any commercially available fuel for service accumulation.

(2) For diesel-fueled engines, choose one of the diesel fuels in 40 CFR part 1065, subpart C, for emission testing. Identify this test fuel in your application for certification and ensure that the emission control information label is consistent with your selection of the test fuel (see §1039.135(f)). For example, do not test with 15 ppm sulfur fuel if you intend to label your engines to allow 500 ppm sulfur fuel.

(e) You may use special or alternate procedures to the extent we allow them under 40 CFR 1065.10.

(f) This subpart part is addressed to you as a manufacturer, but it applies equally to anyone who does testing for you, and to us when we conduct testing to determine if your engines meet emission standards.

§1039.505 Which duty cycles do I use for steady-state testing?

(a) Measure emissions by testing the engine on a dynamometer with one of the following steady-state duty cycles to determine whether it meets the steady-state emission standards in §1039.101(b):

(1) Use the 5-mode duty cycle described in Appendix I of this part for engines that you will certify only for constant-speed operation.

(2) [Reserved]

(3) Use the 6-mode duty cycle described in Appendix III of this part for engines with maximum power below 19 kW whose certification will not be limited to constant-speed applications.

(4) Use the 8-mode duty cycle described in Appendix IV of this part for engines with maximum power at or above 19 kW whose certification will not be limited to constant-speed applications.

(b) During idle mode, operate the engine with the following parameters:

(1) Hold the speed within your specifications.

(2) Set the engine to operate at its minimum fueling rate.

(3) Keep engine torque under 5 percent of maximum test torque.

(c) For full-load operating modes, operate the engine at its maximum fueling rate.

(d) See 40 CFR part 1065 for detailed specifications of tolerances and calculations.

(e) In the normal test sequence described in 40 CFR part 1065, subpart F, steady-state testing generally follows the transient test. For those cases where we do not require transient testing, perform the steady-state test after an appropriate warm-up period, consistent with good engineering judgment.

§1039.510 Which duty cycles do I use for transient testing?

(a) Measure emissions by testing the engine on a dynamometer with one of the following transient duty cycles to determine whether it meets the transient emission standards in §1039.101(a):

(1) If you certify an engine family for constant-speed operation only, use the transient duty-cycle described in Appendix V of this part.

(2) For all other engines, use the transient duty-cycle described in Appendix VI of this part.

(b) The transient test sequence consists of an initial run through the transient sequence from a cold start, 20 minutes with no engine operation, then a final run through the same transient sequence. Start sampling emissions immediately after you start the engine. Combine the results from these two test runs by applying a weighting factor of 10 percent to the cold-start measurement and 90 percent to the hot-start measurement.

(c) Conduct repeat tests and cool the engine down between tests as described in 40 CFR 86.1335-90 and 86.1336-84(e).

§1039.515 What are the test procedures related to not-to-exceed standards?
Use the test procedures described in 40 CFR 86.1370-2007 to determine whether the engine meets the not-to-exceed emission standards in §1039.101(c).

§1039.520 What testing must I perform to establish deterioration factors?
Section 1039.245 describes the method for using test data or engineering analysis to establish deterioration factors for an engine family.

§1039.525 How do I adjust emission levels to account for infrequently regenerating aftertreatment devices?
This section describes how to adjust emission results from engines using aftertreatment technology with infrequent regeneration events. For this section, "regeneration" means an intended event during which emission levels change while the system restores aftertreatment performance. For example, exhaust gas temperatures may increase temporarily to remove sulfur from adsorbers or to oxidize accumulated particulate matter in a trap. For this section, "infrequent" refers to regeneration events that are expected to occur less than once over the applicable transient duty cycle.

(a) Developing adjustment factors. Develop an upward adjustment factor and a downward adjustment factor for each pollutant based on measured emission data and observed regeneration frequency. Adjustment factors should generally apply to an entire engine family, but you may develop separate adjustment factors for different engine configurations within an engine family. You may use carryover or carry-across data to establish adjustment factors for an engine family, as described in §1039.235(d), consistent with good engineering judgment. All adjustment factors for regeneration are additive. You may use either of the following different approaches for engines that use aftertreatment with infrequent regeneration events:

(1) You may disregard this section if regeneration does not significantly effect emission levels for an engine family (or configuration) or if it is not practical to identify when regeneration occurs. If you do not use adjustment factors under this section, your engines must meet emission standards for all testing, without regard to regeneration.

(2) If your engines use aftertreatment technology with extremely infrequent regeneration and you are unable to apply the provisions of this section, you may ask us to approve an alternate methodology to account for regeneration events.

(b) Calculating average adjustment factors. Calculate the average adjustment factor (EF_A) based on the following equation:

$$EF_A = (F)(EF_H) + (1-F)(EF_L)$$

Where:

F = the frequency of the regeneration event in terms of the fraction of tests during which the regeneration occurs.

EF_H = measured emissions from a test in which the regeneration occurs.

EF_L = measured emissions from a test in which the regeneration does not occur.

(c) Applying adjustment factors. Apply adjustment factors based on whether regeneration occurs during the test run. You must be able to identify regeneration in a way that is readily apparent during all testing.

(1) If regeneration does not occur during a test run, add an upward adjustment factor to the measured emission rate. Determine the upward adjustment factor (UAF) using the following equation:

$$UAF = EF_A - EF_L$$

(2) If regeneration occurs during a test run, subtract a downward adjustment factor from the measured emission rate. Determine the downward adjustment factor (DAF) using the following equation:

$$DAF = EF_H - EF_A$$

(d) Sample calculation. If EF_L is 0.10 g/kW-hr, EF_H is 0.50 g/kW-hr, and F is 0.1 (the regeneration occurs once for each ten tests), then:

$EF_A = (0.1)(0.5 \text{ g/kW-hr}) + (1.0 - 0.1)(0.1 \text{ g/kW-hr}) = 0.14 \text{ g/kW-hr}$

UAF = 0.14 g/kW-hr - 0.10 g/kW-hr = 0.04 g/kW-hr

DAF = 0.50 g/kW-hr - 0.14 g/kW-hr = 0.36 g/kW-hr

Subpart G—Special Compliance Provisions

§1039.601 What compliance provisions apply to these engines?
Engine and equipment manufacturers, as well as owners, operators, and rebuilders of these engines, and all other persons, must observe the provisions of this part, the requirements and prohibitions in 40 CFR part 1068, and the requirements of the Act.

§1039.605 What provisions apply to engines already certified under the motor-vehicle program?
(a) If you are an engine manufacturer, this section allows you to certify nonroad engines to the requirements that apply under 40 CFR parts 85 and 86 instead of certifying them under the requirements of this part 1039. If you install engines in nonroad equipment, we will consider you an engine manufacturer if you modify the engine in any of the ways described in paragraph (c)(2) of this section; note that such engine modifications prevent you from using the provisions of this section. We consider engines you produce under this section to be exempt from the requirements of this part. See §1039.610 for similar provisions that apply to engines certified to chassis-based standards for motor vehicles.
(b) The only requirements or prohibitions from this part that apply to an engine that is exempt under this section are in this section. The engine exempted under this section must meet all applicable requirements from 40 CFR parts 85 and 86. This applies to engine manufacturers, equipment manufacturers who use these engines, and all other persons as if these engines were used in a motor vehicle.
(c) If you meet all the following criteria and requirements regarding your new nonroad engine, it is exempt from the standards in this part:

(1) Your engine must be covered by a valid certificate of conformity under 40 CFR part 86.

(2) You must not make any changes to the certified engine that we could reasonably expect to increase its exhaust emissions. For example, if you make any of the following changes to one of these engines, you do not qualify for this exemption:

(i) Change any fuel system parameters from the certified configuration.

(ii) Change any other emission-related components.

(iii) Modify or design the engine cooling system so that temperatures or heat rejection rates are outside the original engine manufacturer's specified ranges.

(3) You must demonstrate that fewer than 50 percent of the engine model's total sales, from all companies, are used in nonroad applications.

(4) The engine must have the label we require under 40 CFR part 86.

(5) You must add a permanent supplemental label to the engine in a position where it will remain clearly visible after installation in the equipment. In your engine's emission control information label, do the following:

(i) Include the heading: "Nonroad Engine Emission Control Information".

(ii) Include your full corporate name and trademark.

(iii) State: "THIS ENGINE WAS ADAPTED FOR NONROAD USE WITHOUT AFFECTING ITS EMISSION CONTROLS. THE EMISSION-CONTROL SYSTEM DEPENDS ON THE USE OF FUEL MEETING SPECIFICATIONS THAT APPLY FOR MOTOR-VEHICLE APPLICATIONS. OPERATING THE ENGINE ON OTHER FUELS MAY BE A VIOLATION OF FEDERAL LAW.".

(iv) State the date you finished modifying the engine (month and year), if applicable.

(6) The original and supplemental labels must be readily visible after the engine is installed in the equipment or, if the equipment obscures the engine's emission control information label, the equipment manufacturer must attach duplicate labels, as described in 40 CFR 1068.105.

(7) Send the Designated Officer a signed letter by the end of each calendar year (or less often if we tell you) with all the following information:

(i) Identify your full corporate name, address, and telephone number.

(ii) List the engine models you expect to produce under this exemption in the coming year.

(iii) State: "We produce each listed engine model for nonroad application without making any changes that could increase its certified emission levels, as described in 40 CFR 1039.605.".

(d) If your engines do not meet the criteria listed in paragraph (c) of this section, they will be subject to the standards and prohibitions of this part. Producing these engines without a valid exemption or certificate of conformity would violate the prohibitions in 40 CFR 1068.101.

(e) If you are the original engine manufacturer of both the highway and nonroad versions of an exempted engine, you must send us emission test data on the applicable nonroad duty cycle(s). You may include the data in your application for certification or in your letter requesting the exemption.
(f) If you are the original manufacturer of an exempted engine that is modified by another company under this exemption, we may require you to send us emission test data on the applicable nonroad duty cycle(s). If we ask for this data, we will allow a reasonable amount of time to collect it. You are responsible for emission-related compliance under 40 CFR parts 85 and 86 for these engines, unless another company becomes the engine manufacturer for these engines (see paragraph (a) of this section).
(g) If you are not an engine manufacturer, you may produce nonroad equipment from motor-vehicle engines under this section as long as the engine has the label we specify in paragraph (c)(5) of this section and you do not modify the engine in any way that may affect its emission control. Add the fueling label we specify in §1039.135(f)(1)(i).

§1039.610 What provisions apply to vehicles already certified under the motor-vehicle program?
(a) If you are an engine manufacturer, this section allows you to certify nonroad vehicles to the requirements that apply under 40 CFR parts 85 and 85 instead of certifying them under the requirements of this part 1039. We consider engines and vehicles you produce under this section to be exempt from the requirements of this part. See §1039.605 for similar provisions that apply to motor-vehicle engines certified to engine-based standards.
(b) The only requirements or prohibitions from this part that apply to an engine that is exempt under this section are in this section. The vehicle and the engine exempted under this section must meet all applicable requirements from 40 CFR parts 85 and 86. This applies to engine manufacturers, equipment manufacturers who use these engines, and all other persons as if these engines were used in a motor vehicle.
(c) If you meet all the following criteria and requirements regarding your new nonroad vehicle, it is exempt from the standards in this part:
(1) Your vehicle must be covered by a valid certificate of conformity under 40 CFR part 86.
(2) You must not make any changes to the certified engine or vehicle that we could reasonably expect to increase its exhaust emissions. For example, if you make any of the following changes, you do not qualify for this exemption:
(i) Change any fuel system parameters from the certified configuration.
(ii) Change any other emission-related components.
(iii) Modify or design the engine cooling system so that temperatures or heat rejection rates are outside the original engine manufacturer's specified ranges.
(3) You must demonstrate that fewer than 50 percent of the engine model's total sales, from all companies, are used in nonroad applications.
(4) The vehicle must have the label we require under 40 CFR part 86.
(5) You must add a permanent supplemental label to the engine in a position where it will remain clearly visible after installation in the equipment. In your engine's emission control information label, do the following:
(i) Include the heading: "Nonroad Engine Emission Control Information".
(ii) Include your full corporate name and trademark.
(iii) State: "THIS ENGINE WAS ADAPTED FOR NONROAD USE WITHOUT AFFECTING ITS EMISSION CONTROLS. THE EMISSION-CONTROL SYSTEM DEPENDS ON THE USE OF FUEL MEETING SPECIFICATIONS THAT APPLY FOR MOTOR-VEHICLE APPLICATIONS. OPERATING THE ENGINE ON OTHER FUELS MAY BE A VIOLATION OF FEDERAL LAW.".
(iv) State the date you finished modifying the engine (month and year), if applicable.
(6) The original and supplemental labels must be readily visible after the engine is installed in the equipment or, if the equipment obscures the engine's emission control information label, the equipment manufacturer must attach duplicate labels, as described in 40 CFR 1068.105.
(7) Send the Designated Officer a signed letter by the end of each calendar year (or less often if we tell you) with all the following information:
(i) Identify your full corporate name, address, and telephone number.
(ii) List the vehicle models you expect to produce under this exemption in the coming year.
(iii) State: "We produce each listed engine or vehicle model for nonroad application without making any changes that could increase its certified emission levels, as described in 40 CFR 1039.610.".
(d) If your engines do not meet the criteria listed in paragraph (c) of this section, they will be subject to the standards and prohibitions of this part. Producing these engines without a valid exemption or certificate of

conformity would violate the prohibitions in 40 CFR 1068.101.
(e) If you are the original engine manufacturer of both the highway and nonroad versions of an exempted engine, you must send us emission test data on the applicable nonroad duty cycle(s). You may include the data in your application for certification or in your letter requesting the exemption.
(f) If you are the original manufacturer of an exempted engine that is modified by another company under this exemption, we may require you to send us emission test data on the applicable nonroad duty cycle(s). If we ask for this data, we will allow a reasonable amount of time to collect it. You are responsible for emission-related compliance under 40 CFR parts 85 and 86 for these engines, unless another company becomes the engine manufacturer for these engines (see paragraph (a) of this section).
(g) If you are not an engine manufacturer, you may produce nonroad equipment from motor vehicles under this section as long as the engine has the label we specify in paragraph (c)(5) of this section and you do not modify the engine in any way that may affect its emission control.

§1039.615 What special provisions apply to engines using noncommercial fuels?
In §1039.115(e), we generally require that engines meet emission standards for any adjustment within the full range of any adjustable parameters. For engines that use noncommercial fuels significantly different than the specified test fuel of the same type, you may ask us to use the parameter-adjustment provisions of this section instead of those in §1039.115(e). Engines certified under this section must be in a separate engine family.
(a) If we approve your request, you may do the following:
(1) Certify the engine using the specified test fuel.
(2) Produce the engine without limits or stops to keep the engine adjusted within the certified range.
(3) Specify in-use adjustments different than the adjustable settings appropriate for the certified test fuel, consistent with the provisions of paragraph (b)(1) of this section.
(b) To produce engines under this section, you must do the following:
(1) Specify in-use adjustments needed so the engine's level of emission control is equivalent to that from the certified configuration.
(2) Add the following information to the emission control information label specified in §1039.135:
(i) Include instructions describing how to adjust the engine to operate in a way that maintains the effectiveness of the emission-control system.
(ii) State: "THIS ENGINE IS CERTIFIED TO OPERATE IN APPLICATIONS USING NONCOMMERCIAL FUEL. MALADJUSTMENT OF THE ENGINE IS A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.".
(3) Keep records to document the destinations and quantities of engines produced under this section.

§1039.620 What are the provisions for exempting engines used solely for competition?
(a) As an equipment manufacturer, you may use an uncertified engine if your vehicle or equipment will be used solely for competition.
(b) The definition of nonroad engine in 40 CFR 1068.30 excludes engines used solely for competition. These engines are not required to comply with this part, but 40 CFR 1068.101 restricts the use of competition engines for non-competition purposes and this section requires that you label these engines.
(c) As an engine manufacturer, your engine is exempt without a request if you have a written request for an exempted engine from the equipment manufacturer, showing the basis for believing that the equipment will be used solely for competition.
(d) We consider a vehicle or piece of equipment to be one that will be used solely for competition if it has features that are not easily removed that would make its use other than in competition unsafe, impractical, or highly unlikely.
(e) We may discontinue your exemption if we find that engines exempted under this section are not used solely for competition.
(f) You must permanently label engines exempted under this section to clearly indicate that they are to be used solely for competition. Failure to properly label an engine will void its exemption.

§1039.625 What requirements apply under the program for equipment-manufacturer flexibility?
The provisions of this section allow equipment manufacturers to produce equipment with engines certified to previous tiers of emission standards after the Tier 4 emission standards begin to apply. To be eligible to use these provisions, you must follow all the instructions in this section. See 40 CFR 89.102(d) and (e) for provisions that

apply to equipment made while Tier 1, Tier 2, or Tier 3 standards apply. See §1039.626 for requirements that apply specifically to equipment manufacturers using the flexibility provisions of this section for equipment produced outside the United States.

(a) General. We may allow you to introduce into commerce in the United States limited numbers of nonroad equipment with exempted engines under this section. These provisions are available up to seven years after Tier 4 emission standards begin for each engine-power category, as shown in Table 1 of this section. Consider all U.S.-directed equipment sales, including those from any parent or subsidiary companies, in showing that you meet the requirements of this section. You may use the exemptions in this section only if you have the primary responsibility for designing and manufacturing the equipment and install the engine in the equipment.

Table 1 of §1039.625

Engine Power	Model Year
kW < 19	2008
19 ≤ kW < 56	2013
56 ≤ kW < 130	2012
130 ≤ kW ≤ 560	2011
kW > 560	2011

(b) Allowances. The following provisions, which apply separately to each engine-power category used to define emission standards in §1039.101, describe how many exempted engines you may produce under this section:

(1) Percent-of-production allowances. You may produce a certain number of units with exempted engines based on a percentage of your total sales within an engine-power category. The sum of these percentages within an engine-power category during the seven-year period specified in paragraph (a) of this section may not exceed 80 percent of your U.S.-directed production, except as allowed under paragraph (b)(2) of this section.

(2) Small-volume allowances. You may produce up to 700 units with exempted engines within an engine-power category during the seven-year period, with no more than 200 units in any single calendar year within an engine-power category. This paragraph (b)(2) applies only to engines from a single engine family within each calendar year.

(c) Percentage calculation. Calculate annually the percentage of equipment with exempted engines from your total U.S.-directed production within an engine-power category if you need to show that you meet the percent-of-production allowances in paragraph (b)(1) of this section.

(d) Inclusion of engines not subject to Tier 4 standards. The following provisions apply to engines that are not subject to Tier 4 standards:

(1) If you use the provisions of §1068.105(a) to use up your inventories of engines not certified to new emission standards, do not include these units in your count of equipment with exempted engines under paragraph (b) of this section.

(2) If you install engines that are exempted from the Tier 4 standards for any reason, other than for equipment-manufacturer flexibility under this section, do not include these units in your count of exempted engines under paragraph (b) of this section. For example, if we grant a hardship exemption for the engine manufacturer, you do not need to count those as exempted engines under this section. This paragraph (d)(2) applies only if the engine has a permanent label describing why it is exempted from the Tier 4 standards.

(3) If the engine's model year or manufacturing date for its engine-power category precedes the applicability of the Tier 4 standards, you may nevertheless start using the allowances under this section before the applicability of the Tier 4 standards apply; however, you may not start using these early allowances before the seven-year period for using allowances under the Tier 2 or Tier 3 program expires (see 40 CFR 89.102(d)). To use these early allowances, you must use engines that meet the emission standards described in paragraph (e) of this section. You must also count these units or calculate these percentages as described in paragraph (c) of this

section and apply them to the total number or percentage of equipment with exempted engines we allow for the Tier 4 standards as described in paragraph (b) of this section. The maximum number of cumulative early allowances is 10 percent under the percent-of-production allowance or 100 units under the small-volume allowance.

(4) Do not include equipment using model year 20008 or 2009 engines certified under the provisions of §1039.101(j) in your count of equipment using exempted engines.

(e) Standards. If you produce equipment with exempted engines under this section, the engines must meet less stringent emission standards.

(1) If you are using the provisions of paragraph (d)(3) of this section, engines must meet the appropriate Tier 1 (or more stringent) emission standards described in §89.112.

(2) In all other cases, engines with maximum power from 37 kW up to 560 kW must meet the appropriate Tier 3 standards described in §89.112. Engines with maximum power below 37 kW or at least 560 kW must meet the appropriate Tier 2 standards described in §89.112.

(f) Equipment labeling. You must add a permanent, legible label, written in block letters in English to the engine or another readily visible part of each piece of equipment you produce with exempted engines under this section. This label, which supplements the engine manufacturer's emission control information label, must include at least the following items:

(1) The label heading "EMISSION CONTROL INFORMATION".

(2) Your corporate name and trademark.

(3) The calendar year in which the equipment is manufactured.

(4) Whom to contact for further information.

(5) The following statement:

THIS EQUIPMENT [or identify the type of equipment] HAS AN ENGINE THAT HAS BEEN EXEMPTED FROM CURRENT FEDERAL NONROAD EMISSION STANDARDS, AS ALLOWED BY 40 CFR 1039.625.

(g) Notification and reporting. You must notify us of your intent to use the provisions of this section and send us an annual report to verify that you are not exceeding the allowances.

(1) Before January 1 of the first year you intend to use the flexibility provisions of this section, send the Designated Compliance Officer and the Designated Enforcement Officer a written notice of your intent, including:

(i) Your company's name and address.

(ii) Whom to contact for more information.

(iii) The calendar years you expect to use the exemption provisions of this section.

(iv) The name and address of the company that produces the engines you will be using for the equipment exempted under this section.

(v) Your best estimate of the number of units in each engine-power category you will produce under this section in the upcoming calendar year and whether you intend to comply under paragraph (b)(1) or (b)(2) of this section.

(vi) The number of units in each engine-power category you have sold in previous calendar years under 40 CFR 89.102(d).

(2) For each year that you use the flexibility provisions of this section, send the Designated Compliance Officer and the Designated Enforcement Officer a written report by March 31 of the following year. Include in your report the total number of engines you sold in the preceding year for each engine-power category, based on actual U.S.-directed production information. Also identify the percentages of U.S.-directed production that correspond to the number of units in each engine-power category and the cumulative numbers and percentages of units for all the units you have sold under this section for each engine-power category. You may omit the percentage figures if you include in the report a statement that you will not be using the percent-of-production allowances in paragraph (b)(1) of this section.

(h) Recordkeeping. Keep the following records of all equipment with exempted engines you produce under this section for at least five full years after the final year in which allowances are available for each engine-power category:

(1) The model number, serial number, and the date of manufacture for each engine and piece of equipment.

(2) The maximum power of each engine.

(3) The total number or percentage of equipment with exempted engines, as described in paragraph (b) of this

section and all documentation supporting your calculation..

(4) The notifications and reports we require under paragraph (g) of this section.

(i) Enforcement. Producing more exempted engines or equipment than we allow under this section, or installing engines that do not meet the certification requirements of paragraph (e) of this section, is a violation of 40 CFR 1068.101(a)(1). You must give us the records we require under this section if we ask for them (see 40 CFR 1068.101(a)(2)).

(j) Provisions for engine manufacturers. As an engine manufacturer, you may produce exempted engines as needed under this section. You do not have to request this exemption for your engines, but you must have written assurance from equipment manufacturers that they need a certain number of exempted engines under this section. Send us an annual report of the engines you produce under this section, as described in §1039.250(a). The exempted engines must meet less stringent standards, as described in paragraph (e) of this section. It must also have the label we require in §1039.135, with the following additional statement:

"THIS ENGINE HAS BEEN EXEMPTED FROM CURRENT FEDERAL NONROAD EMISSION STANDARDS. SELLING OR INSTALLING THIS ENGINE FOR ANY PURPOSE OTHER THAN FOR THE EQUIPMENT FLEXIBILITY PROVISIONS OF 40 CFR 1039.625 MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.

(k) Other exemptions. See 40 CFR 1068.255 for exemptions based on hardship for equipment manufacturers and secondary engine manufacturers.

§1039.626 What special provisions apply to engines imported under the equipment-manufacturer flexibility program?

This section identifies requirements that apply specifically to equipment manufacturers using the flexibility provisions of §1039.625 for equipment produced outside the United States. For purposes of this section, only a nonroad equipment manufacturer with primary responsibility for designing and manufacturing a piece of equipment that also installs the engine in the equipment is eligible to use the allowances under §1039.625. Companies that import equipment into the U.S., but do not have the primary responsibility for designing and manufacturing a piece of equipment or do not install the engine in the equipment are not eligible for these allowances. They may import exempt equipment if it is covered by an allowance or transition provision associated with an equipment manufacturer meeting the requirements of §1039.625 and this section. As an equipment manufacturer, you may use the allowances specified in §1039.625 if you comply with the provision in §1039.625 and commit to the following:

(a) Any United States Environmental Protection Agency inspector or auditor will be given full, complete and immediate access to conduct inspections and audits of the foreign nonroad equipment manufacturer.

(1) Inspections and audits may be either announced in advance by EPA, or unannounced.

(2) Access will be provided to any location where

(i) nonroad equipment or vehicle is produced;

(ii) Documents related to manufacturer operations are kept; and

(iii) Equipment or Vehicles are tested or stored.

(3) Inspections and audits may be by EPA employees or EPA contractors.

(4) Any documents requested that are related to matters covered by inspections and audits will be provided to an EPA inspector or auditor on request.

(5) Inspections and audits by EPA may include review and copying of any documents related to demonstrating compliance with the exceptions in § 1039.625.

(6) Inspections and audits by EPA may include taking samples of equipment or vehicles, and interviewing employees.

(7) Any employee of a foreign nonroad equipment manufacturer will be made available for interview by the EPA inspector or auditor, on request, within a reasonable time period.

(8) English language translations of any documents will be provided to an EPA inspector or auditor, on request, within 10 working days.

(9) English language interpreters will be provided to accompany EPA inspectors and auditors, on request.

(b) An agent for service of process located in the District of Columbia will be named, and service on this agent constitutes service on the foreign nonroad equipment manufacturer or any officer, or employee of the foreign nonroad equipment manufacturer for any action by EPA or otherwise by the United States related to the requirements of 40 CFR part 1039.

(c) The forum for any civil or criminal enforcement action related to the provisions of this section for violations of

the Clean Air Act or regulations promulgated thereunder shall be governed by the Clean Air Act, including the EPA administrative forum where allowed under the Clean Air Act.
(d) United States substantive and procedural laws shall apply to any civil or criminal enforcement action against the foreign nonroad equipment manufacturer or any employee of the foreign nonroad equipment manufacturer related to the provisions of this section.
(e) Submitting a notification of intention to use any of the exceptions in § 1039.625 above, producing and exporting equipment or vehicles to the United States for resale, and all other actions to comply with the requirements of 40 CFR part 1039 constitute actions or activities covered by and within the meaning of 28 U.S.C. 1605(a)(2), but solely with respect to actions instituted against the foreign nonroad equipment manufacturer, its agents, officers, and employees in any court or other tribunal in the United States for conduct that violates the requirements of part 1039, including such conduct that violates Title 18 U.S.C. section 1001, Clean Air Act section 113(c)(2), or other applicable provisions of the Clean Air Act.
(f) The foreign nonroad equipment manufacturer, or its agents, officers, or employees, will not seek to detain or to impose civil or criminal remedies against EPA inspectors or auditors, whether EPA employees or EPA contractors, for actions performed within the scope of EPA employment related to the provisions of this section.
(g) The commitment required by this section shall be signed by the owner or president of the foreign nonroad equipment manufacturer business.
(h) Sovereign immunity. By submitting a notification of its intent to use the flexibility provision under §1039.625, or by producing and exporting for resale to the United States nonroad equipment under this section, the foreign nonroad equipment manufacturer, its agents, officers, and employees, without exception, become subject to the full operation of the administrative and judicial enforcement powers and provisions of the United States without limitation based on sovereign immunity, with respect to actions instituted against the foreign nonroad equipment manufacturer, its agents, officers, and employees in any court or other tribunal in the United States for conduct that violates the requirements applicable to the foreign nonroad equipment manufacturer under 40 CFR part 1039, including such conduct that violates Title 18 U.S.C. section 1001, Clean Air Act section 113(c)(2), or other applicable provisions of the Clean Air Act.
(i) English language reports. Any report or other document submitted to EPA by any foreign nonroad equipment manufacturer shall be in the English language, or shall include an English language translation.

§1039.630 What are the hardship provisions for equipment manufacturers?
If you qualify for the hardship provisions specified in 40 CFR 1068.255, we may approve your hardship application subject to three additional conditions:
(a) You must show that you were selling new equipment with engines that were certified to meet the requirements of 40 CFR part 89 before 2003.
(b) You must show that you have used up the allowances to produce equipment with exempted engines under §1039.625.
(c) You may produce engines under this section for up to one year total (or two years for small-volume manufacturers).

§1039.635 What are the hardship provisions for engine manufacturers?
If you qualify for the hardship provisions specified in 40 CFR 1068.245, we may approve a period of delayed compliance for up to two years total for small-volume manufacturers or one year total for all other companies. If you qualify for the hardship provisions specified in 40 CFR 1068.250 for small-volume manufacturers, we may approve a period of delayed compliance for up to two years total.

§1039.639 What special provisions apply to engines sold in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?
Engines introduced into commerce in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are subject to the latest emission standards in 40 CFR 89.112 instead of the Tier 4 standards in §1039.101, but only if the engines include the following statement on the label we require in 40 CFR 89.110 (or on a separate, permanent label with your corporate name and trademark): “THIS ENGINE DOES NOT CONFORM TO U.S. EPA EMISSION REQUIREMENTS IN EFFECT AT THE TIME OF PRODUCTION AND MAY NOT BE IMPORTED INTO THE UNITED STATES OR ANY TERRITORY OF THE UNITED STATES EXCEPT GUAM, AMERICAN SAMOA, OR THE COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS.”.

Introducing any such engine into commerce in any state or territory of the United States other than Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands, throughout its lifetime, is a violation of 40 CFR 1068.101(a)(1).

§1039.645 What special provisions apply to engines used for transportation refrigeration units?

The provisions of this section apply for engines used in transportation refrigeration units (TRUs). All other provisions of this part apply for these engines, except as specified in this section.

(a) Engines used only in TRU applications may be certified using the following special provisions:

(1) The engines are not required to meet the transient emission standards of subpart B of this part.

(2) The steady-state emission standards of subpart B apply for emissions measured over the steady-state test cycle described in paragraph (b) of this section instead of the otherwise applicable test cycle described in Appendix I, III, or IV of this part.

(b) The steady-state test cycle for TRU engines is:

Steady-state Cycle for TRU Engines

Mode Number	Engine Speed	Observed Torque[1]	Minimum Time in mode (minutes)	Weighting Factors
1	Maximum test speed	75	3.0	0.25
2	Maximum test speed	50	3.0	0.25
3	Intermediate test speed	75	3.0	0.25
4	Intermediate test speed	50	3.0	0.25

[1]The percent torque is relative to the maximum torque at the given engine speed.

(c) Engines certified under this section must be certified in a separate engine family that contains only TRU engines.

(d) You must do the following for each engine certified under this section:

(1) State on the emission control information label for each engine that is certified under the provisions of this section: "THIS ENGINE IS CERTIFIED TO OPERATE ONLY IN TRANSPORTATION REFRIGERATION UNITS. USE OF THIS THE ENGINE IN OTHER APPLICATIONS IS A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.".

(2) State in the installation instructions required by §1039.130 all instructions necessary to ensure that the engine will operate only in the modes covered by the test cycle described in this section.

(3) Keep records to document the destinations and quantities of engines produced under this section.

(e) An engine is not a TRU engine that can be certified under this section if any of the following are true:

(1) The engine is installed in any equipment other than refrigeration units for railcars, truck trailers or other freight vehicles.

(2) The engine operates in any mode not covered by the test cycle described in this section, except for negligible transitional operation between two allowable modes. As an example, a thirty-second transition period would clearly not be considered negligible.

(3) The engine is sold in a configuration that allows the engine to operate in any mode not covered by the test cycle described in this section. As an example, this would include an engine sold without a governor that limited operation to only those modes covered by the test cycle described in this section.

(4) The engine is subject to Tier 3 or earlier standards, or phase-out Tier 4 standards.

(f) All engines certified under this section must comply with the NTE requirements of subpart B of this part. This requirement applies without regard to whether the engine would otherwise have been subject to NTE standards if it had not been certified under this section.

Subpart H—Averaging, Banking, and Trading for Certification

§1039.701 General provisions.

(a) You may average, bank, and trade (ABT) emission credits for purposes of certification as described in this subpart to show compliance with the standards of this part. Participation in this program is voluntary.

(b) The averaging set restrictions that apply are specified in §1039.735.

(c) The definitions of Subpart I of this part apply to this subpart. The following definitions also apply:

(1) Actual credits means credits you have generated that we have verified in reviewing the final report.

(2) Broker means any entity that facilitates a trade between a buyer and seller.

(3) Buyer means the entity that receives credits as a result of trade.

(4) Reserved credits means credits you have generated that we have not yet verified in reviewing the final report.

(5) Seller means the entity that provides credits during a trade.

(6) Standard means the standard that applies under subpart B of this part for engines not participating in the ABT program of this subpart.

(d) Credits generated under this subpart cannot be used to offset any exceedances above FEL. This applies for all testing, including certification, SEA, and in-use testing. Note: You may use credits to allow you to recertify the engine family to a higher FEL that would be applicable to future production.

(e) Credits can be used in the year they are generated or in future years. Credits may not be used for past model years.

(f) Engine families that use credits for one or more pollutants, may not generate positive credits for another pollutant.

§1039.705 How do I generate and calculate emission credits?

The provisions of this section apply separately for calculating NOx credits, NMHC+NOx credits, or PM credits.

(a) Calculate positive credits for an engine family that has an FEL below the applicable standard. Calculate negative credits for an engine family that has an FEL above the applicable standard.

(b) For each participating engine family, calculate NOx emission credits, NMHC+NOx emission credits and/or PM emission credits (positive or negative) according to the following equation. Round them to the nearest one-hundredth of a megagram (Mg), using consistent units throughout the equation:

$$\text{Emission credits} = (\text{Std} - \text{FEL}) \times (\text{Volume}) \times (\text{AvgPR}) \times (\text{UL}) \times (10^{-6})$$

Where:

Std = the standard, in grams per kilowatt-hour, that applies under subpart B of this part for engines not participating in the ABT program of this subpart.

FEL = the family emission limit for the engine family in grams per kilowatt-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, as described in paragraph (c) of this section.

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

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

(c) Use quarterly projections of production volumes for initial certification. Compliance at the end of the model year is determined based on the actual applicable production/sales volumes. Do not include any of the following engines in your applicable production/sales volumes:

(1) Engines exempted under subpart G of this part or under part 1068.

(2) Exported engines.

(3) Engines not subject to the requirements of this part, including engines excluded under §1039.5.

(4) Engines certified using special test procedures under 40 CFR 1065.10. (Note: this restriction does not apply for engines certified using alternate test procedures under 40 CFR 1065.10.)

(5) Any other engines, where we indicate elsewhere in this part 1039 that they are not to be included in the calculations of this subpart.

§1039.710 How do I average?

(a) Averaging is the exchange of emissions credits among engine families.

(b) You may certify one or more engine families to an FEL above or below the applicable standard if you show, at the time of certification, that the summation of your projected balance of all emissions credit transactions in that model year is greater than or equal to zero.

(c) If you certify an engine family to an FEL that exceeds the applicable standard, you must obtain sufficient emissions credits to offset the credit shortfall produced by the engine family. Emissions credits used in averaging to address this shortfall may come from emissions credits generated from your other engine families in the same model year, from banked emissions credits, or from emissions credits obtained through trading.

§1039.715 How do I bank emission credits?

(a) Banking is the retention of emissions credits by the manufacturer generating the emissions credits, for use in averaging or trading in future model years.

(b) In your application for certification, designate any emissions credits that you intend to bank. These credits will be considered reserved credits. During the model year, and before submittal of the end-of-year report, credits originally designated for banking may be redesignated for trading or averaging for the end-of-year report or final report.

(c) Credits designated 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 or final report or any subsequent audit actions.

(d) Banked credits are considered actual credits only after the end of the model year and after EPA has reviewed the end-of-year and final reports.

§ 1039.720 How do I trade emissions credits?

(a) Trading is the exchange of emissions credits between manufacturers. Trading of emissions credits may only occur within the same averaging set.

(b) You may trade actual or reserved credits. Credits banked in a previous model year or credits generated during the model year of the trading transaction may be used for trading. Traded reserved credits, such as those generated during the model year of the trading transaction, remain reserved until we verify them after the end of the model year. Traded credits may be used for averaging, banking, or further trading transactions.

(c) If a negative credit balance results from a transaction, both the buyer and seller are liable, except in cases deemed involving fraud. Certificates of all engine families participating in a negative trade may be voided under §1039.740.

§1039.725 What records must I keep?

(a) Establish, maintain and keep the following properly organized and indexed records for each engine family certified using the ABT program in this subpart:

(1) Model year and EPA engine family.
(2) FELs.
(3) Useful life.
(4) Maximum engine power for each configuration tested
(5) Projected applicable production/sales volume for the model year.
(6) Actual applicable production/sales volume for the model year.

(b) Establish, maintain and keep the following properly organized and indexed records for each engine in the ABT program:

(1) Model year and EPA engine family.
(2) Engine identification number.
(3) Maximum engine power.
(4) Build date and assembly plant.
(5) Purchaser and destination.

(c) Manufacturers involved in trading reserved credits must maintain the records specified in this paragraph (c) for each engine family in the trading program We may ask you to provide this information on a quarterly basis. This requirement applies with respect the following information:

(1) The engine family.
(2) The actual quarterly and cumulative applicable production/sales volume.

(3) All values required to calculate credits.
(4) The resulting type and number of credits generated/required.
(5) How and where credit surpluses are dispersed.
(6) How and through what means credit deficits are met.

(d) Keep the records required by this section for eight years from the due date for the end-of-year report. You may use any appropriate storage formats or media, including paper, microfilm, or computer diskettes .

(e) Nothing in this section limits our discretion in requiring the manufacturer to retain additional records or submit information not specifically required by this section.

(f) Upon request, you must submit to us the information specified in this section.

§1039.730 What must I include in my application for certification?

(a) You must declare in your application your intent to use the provisions of this subpart for each engine family that will be certified using the ABT program. You must also declare for which pollutants you are using ABT, and declare the FELs for your engine family for those pollutants. Your FELs must comply with the specifications of subpart B of this part, including the FEL caps. FELs must be expressed to the same number of decimal places as the applicable standards.

(b) Include the following in your application for certification:

(1) A statement that, to the best of your belief, you will not have a negative credit balance for any engine family when all credits are calculated.

(2) Detailed calculations of projected emission credits (positive or negative) based on quarterly projections of applicable production/sales volume. If your engine family will generate positive emission credits, state specifically where the credits will be applied (e.g., to which engine family they will be applied in averaging, trading, or if they will be reserved for banking). If you have negative emission credits for your engine family, state the source of positive credits needed to offset the negative credits. Describe the source of credits by indicating from which engine family (and manufacturer, as applicable), and by specifying whether the credits are actual or reserved and whether they come from banking, trading, or from averaging with your other engine families within the model year.

§1039.732 What reports must I submit after the end of the model year?

This section specifies the requirements for submitting the end-of-year report and the final report. This section specifies in paragraph (g) an additional report that must be submitted if you are involved in a trade of credits.

(a) (1) If any of your engine families are certified using the ABT provisions of this subpart, you must submit the end-of-year report within 90 days of the end of the model year. The end-of-year report must include the information specified in this section. We may waive the requirement to submit the end-of year report, provided you submit the final report specified in paragraph (a)(2) of this section.

(2) If any of your engine families are certified using the ABT provisions of this subpart, you must submit the final report within 270 days of the end of the model year. The final report must include the information specified in this section.

(b) Failure to submit reports on time is a violation of the Act with respect to each engine.

(c) Your end-of-year and final reports must identify the engine families for which they apply and must include:

(i) Detailed calculation of emission credits (positive or negative) based on actual applicable production/sales volumes. Base your applicable production/sales volumes on the location of first retail sale. This location is also called the final product purchase location. A dealership is a typical location for the first retail sale.

(ii) Demonstrate that you have the positive credits needed to offset any negative credits.

(iii) State whether you will reserve any credits for banking.

(d) Send end-of-year reports to the Designated Compliance Officer.

(e) If you generate credits for banking and you do not send your end-of-year reports within 90 days after the end of the model year, you may not use the credits until we receive and review your reports. You may not use projected credits pending our review.

(f) Errors discovered in your end-of-year report or final report, including errors in calculating credits, are corrected as follows:

(1) Any errors discovered in the end-of-year report may be corrected in the final report up to 270 days from the end of the model year.

(2) Errors discovered by the manufacturer in the final report may be corrected up to 270 days from the end of

the model year, and credits will be recalculated.

(3) If we or you determine within 270 days of the end of the model year, that an error occurred that mistakenly decreased your positive credits, the error will be corrected and credits will be recalculated. Such errors will not be corrected if the are determined more than 270 days from of the end of the model year.

(4) In cases where credit balance is negative, if we determine that an error occurred that mistakenly decreased your balance of credits, we may, but are not required to, correct the error and recalculate the credits. This applies whether or not the error was discovered by you.

(5) If we determine at any time, that an error occurred that mistakenly increased your balance of credits, we will correct the error and recalculate the credits to decrease your balance. This applies whether or not the error was discovered by you.

(g) If you trade credits, you must send the Designated Compliance Officer a report of the trade, within 90 days of any credit trade, that includes the following information:

(1) The corporate names of the buyer, seller, and any brokers.

(2) Copies of contracts related to credit trading from the buyer, seller, and broker, as applicable.

(3) The engine families involved in the trade.

(4) The actual quarterly and cumulative applicable production/sales volume.

(5) The values required to calculate credits as given in §1039.705.

(6) The resulting type and number of credits generated.

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

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

(h) Include in each report a statement certifying the accuracy and authenticity of its contents.

§1039.735 What restrictions apply for using credits?

The following restrictions apply for credit use:

(a) Averaging sets. Credits may be exchanged only within an averaging set. For Tier 4 engines, there is a single averaging set that includes all power categories. See paragraph (b) for provisions related to credits generated relative to earlier tiers of standards.

(b) Credits from a different tier of standards. (1) For purposes of ABT under this subpart, you may not use credits generated from engines subject to emission standards under 40 CFR part 89, except as specified in the following table:

If the power rating of the credit-generating engine is. . .	Then you may use the following credits for Tier 4 compliance. . .
(i) Less than 37 kW	Credits from engines subject to emission standards in 89.112(a) Table 1, identified as Tier 2.
(ii) At least 37 kW, but less than 560 kW	Credits from engines subject to emission standards in 89.112(a) Table 1, identified as Tier 3.
(iii) 560 kW or higher	Credits from engines subject to emission standards in 89.112(a) Table 1, identified as Tier 2.

(2) Credits generated from marine engines under the provisions of 40 CFR part 89 may not used under this part.

(3) Credits generated from nonmarine engines under the provisions of 40 CFR part 89 allowed to be used under this part are subject to the averaging set restrictions described in 40 CFR 89.204. This means that credits generated by engines at or above 19 kW may not be used by engines less than 19 kW, and credits generated by engines less than 19 kW may not be used by engines at or above 19 kW.

(4) See 40 CFR part 89 for other restrictions that may apply for use of credits generated under that part.

(c) NOx and NMHC+NOx credits. You may use NOx credits to show compliance with NMHC+NOx standards. You may use NMHC+NOx credits to show compliance with NOx standards, but you must adjust the NMHC+NOx credits downward by twenty percent when you use them, as shown in the following equation:

$$\text{NOx credits} = (0.8) \times (\text{NMHC+NOx credits}).$$

(d) Other restrictions. Other sections of this part may include ABT restrictions for engines certified under certain

special provisions. Those restrictions apply as specified.

§1039.740 What can happen if I do not comply with the provisions of this subpart?

(a)(1) All certificates issued for engine family participating in this ABT program are conditional upon your full compliance with the provisions of this subpart during the model year of production and afterwards.

(2) Failure to comply with any provisions of this subpart will be deemed to be a failure to satisfy the conditions upon which the certificate was issued, and the certificate may be voided.

(3) By choosing to participate in this ABT program, you are responsible to establish to EPA's satisfaction that the conditions under which the certificate was issued were satisfied or waived.

(b) You may certify your engine family to an FEL above a applicable standard based on a projection that you will have sufficient credits to offset the credit deficit for the engine family. However, if you cannot show in your final report that you have sufficient actual credits to offset a credit deficit for any engine family, we may void the certificate of conformity for the engine family.

(c) We may void the certificate of conformity for an engine family for which you fail to retain the records required in this subpart or to provide such information to us upon request.

Subpart I—Definitions and Other Reference Information

§1039.801 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

Act means the Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Adjustable parameter means any device, system, or element of design that someone can adjust (including those which are difficult to access) and that, if adjusted, may affect emissions or engine performance during emission testing or normal in-use operation. This includes, but is not limited to parameters related to injection timing and fueling rate. You may ask us to exclude a parameter that is difficult to access if it cannot be adjusted to affect emissions without significantly degrading performance, or if you otherwise show us that it will not be adjusted in a way that affects emissions during in-use operation.

Aftertreatment means relating to any system, component, or technology mounted downstream of the exhaust valve or exhaust port whose design function is to reduce exhaust emissions.

Aircraft has the meaning given in 40 CFR 87.1.

Auxiliary emission control device means any element of design that senses temperature, motive speed, engine RPM, transmission gear, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

Blue Sky Series engine means an engine meeting the requirements of §1039.140.

Brake power means the usable power output of the engine, not including power required to operate fuel pumps, oil pumps, or coolant pumps.

Broker means any entity that facilitates a trade of emission credits between a buyer and seller.

Calibration means the set of specifications and tolerances specific to a particular design, version, or application of a component or assembly capable of functionally describing its operation over its working range.

Certification means obtaining a certificate of conformity for an engine family that complies with the emission standards and requirements in this part.

Certified emission level means the highest deteriorated emission level in an engine family for a given pollutant from either transient or steady-state testing.

Compression-ignition means relating to a type of reciprocating, internal-combustion engine that is not a spark-ignition engine.

Constant-speed means relating to an engine governed to operate at rated speed.

Crankcase emissions means airborne substances emitted to the atmosphere from any part of the engine crankcase's ventilation or lubrication systems. The crankcase is the housing for the crankshaft and other related internal parts.

Designated Compliance Officer means the Manager, Engine Programs Group (6405-J), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., Washington, DC 20460.

Designated Enforcement Officer means the Director, Air Enforcement Division (2242A), U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW.,Washington, DC 20460.

Deteriorated emission level means the emission level that results from applying the applicable deterioration factor to the official emission result of the emission-data engine.

Deterioration factor means a number that is added to or multiplied by a low-hour test result to project the emission rate at the end of the useful life.

Emission-control system means any device, system, or element of design that controls or reduces the regulated emissions from an engine.

Emission-data engine means an engine that is tested for certification.

Emission-related maintenance means maintenance that substantially affects emissions or is likely to substantially affect emissions deterioration.

Engine family means a group of engines with similar emission characteristics, as specified in §1039.230.

Engine manufacturer means the manufacturer of the engine. See the definition of "manufacturer" in this section.

Engine used in a locomotive means either an engine placed in the locomotive to move other equipment, freight, or passenger traffic; or an engine mounted on the locomotive to provide auxiliary power.

Exempted means relating to an engine that is not required to meet otherwise applicable standards because the engine conforms to regulatory conditions specified for an exemption in this part 1039 or in part 1068 of this chapter.

Exempted engines are deemed to be "subject to" the standards of this part, even though they are not required to comply with the otherwise applicable requirements. Engines exempted with respect to a certain tier of standards may be required to comply with an earlier tier of standards as a condition of the exemption; for example, engines exempted with respect to Tier 4 standards may be required to comply with Tier 3 standards.

Excluded means relating to an engine that either:

(1) Has been determined not to be a nonroad engine, as specified in 40 CFR 1068.30; or

(2) Is a nonroad engine that, according to §1039.5, is not subject to this part 1039.

Exhaust-gas recirculation means an emission-control technology that reduces emissions by routing exhaust gases that had been exhausted from the combustion chamber(s) back into the engine to be mixed with incoming air prior to or during combustion. The use of valve timing to increase the amount of residual exhaust gas in the combustion chamber(s) that is mixed with incoming air prior to or during combustion is not considered to be exhaust-gas recirculation for the purposes of this part.

Family emission limit (FEL) means an emission level declared by the manufacturer to serve in place of an emission standard for certification under the emission-credit program in subpart H of this part. The family emission limit must be expressed to the same number of decimal places as the emission standard it replaces.

Fuel system means all components involved in transporting, metering, and mixing the fuel from the fuel tank to the combustion chamber(s), including the fuel tank, fuel tank cap, fuel pump, fuel filters, fuel lines, carburetor or fuel-injection components, and all fuel-system vents.

Fuel type means a general category of fuels such as diesel fuel or natural gas. There can be multiple grades within a single type of fuel, such as No. 1 diesel and No. 2 diesel.

Good engineering judgment has the meaning we give in 40 CFR 1068.5.

Hydrocarbon (HC) means the hydrocarbon group on which the emission standards are based for each fuel type. For petroleum-fueled engines and natural gas-fueled engines, HC means nonmethane hydrocarbon (NMHC). For alcohol-fueled engines, HC means total hydrocarbon equivalent (THCE).

Identification number means a unique specification (for example, model number/serial number combination) that allows someone to distinguish a particular engine from other similar engines.

Intermediate test speed has the meaning we give in 40 CFR 1065.515.

Manufacture means the physical and engineering process of designing, constructing, and assembling of a nonroad engine or a piece of nonroad equipment.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures an engine, vehicle, or piece of equipment for sale in the United States or otherwise introduces a new nonroad engine into commerce in the United States. This includes importers who import engines, equipment, or vehicles for resale. (Note: In §1039.626, the term "equipment manufacturer" has a more narrow meaning; that narrow meaning only applies to that section.)

Marine engine means an engine that someone installs or intends to install on a marine vessel. There are two kinds of marine engines:

(1) Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement.

(2) Auxiliary marine engine means a marine engine not used for propulsion.

Marine vessel means a vehicle that is capable of operation in water but is not capable of operation out of water. Amphibious vehicles are not marine vessels.

Maximum engine power means the measured maximum brake power output of an engine. The maximum engine power of an engine configuration is the average maximum engine power of the engines within the configuration. The maximum engine power of an engine family is the highest maximum engine power of the engine configurations within the family. (Note: §1039.230 generally prohibits grouping engines from different power categories in the same engine family.)

Maximum test speed has the meaning we give in 40 CFR 1065.515.

Maximum test torque has the meaning we give in 40 CFR 1065.1001.

Model year means one of the following things:

(1) For freshly manufactured engines (see definition of "new nonroad engine," paragraph (1)), model year means one of the following:

(i) Calendar year.

(ii) Your annual new model production period if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the

previous calendar year and it must end by December 31 of the named calendar year.
(2) For an engine that is converted to a nonroad engine after being placed into service in a motor vehicle, model year means the calendar year in which the engine was originally produced (see definition of "new nonroad engine," paragraph (2)).
(3) For a nonroad engine excluded under §1039.5 that is later converted to operate in an application that is not excluded, model year means the calendar year in which the engine was originally produced (see definition of "new nonroad engine," paragraph (3)).
(4) For engines that are not freshly manufactured but are installed in new nonroad equipment, model year means the calendar year in which the engine is installed in the new nonroad equipment. This installation date is based on the time that final assembly of the equipment is complete (see definition of "new nonroad engine," paragraph (4)).
(5) For an engine modified by an importer (not the original engine manufacturer) who has a certificate of conformity for the imported engine (see definition of "new nonroad engine," paragraph (5)), model year means one of the following:
(i) The calendar year in which the importer finishes modifying and labeling the engine.
(ii) Your annual production period for producing engines if it is different than the calendar year; follow the guidelines in paragraph (1)(ii) of this definition.
(6) For an engine you import that does not meet the criteria in paragraphs (1) through (5) of the definition of "new nonroad engine," model year means the calendar year in which the engine manufacturer completed the original assembly of the engine. In general, this applies to used equipment that you import without conversion or major modification.

Motor vehicle has the meaning we give in 40 CFR 85.1703(a). In general, motor vehicle means a self-propelled vehicle that can transport one or more people or any material, but doesn't include any of the following:
(1) Vehicles having a maximum ground speed over level, paved surfaces no higher than 40 km per hour (25 miles per hour).
(2) Vehicles that lack features usually needed for safe, practical use on streets or highways— for example, safety features required by law, a reverse gear (except for motorcycles), or a differential.
(3) Vehicles whose operation on streets or highways would be unsafe, impractical, or highly unlikely. Examples are vehicles with tracks instead of wheels, very large size, or features associated with military vehicles, such as armor or weaponry.

New nonroad engine means any of the following things:
(1) A freshly manufactured nonroad engine for which the ultimate purchaser has never received the equitable or legal title. This kind of vehicle might commonly be thought of as "brand new." In the case of this paragraph (1), the engine is no longer new when the ultimate purchaser receives this title or the product is placed into service, whichever comes first.
(2) An engine originally manufactured as a motor vehicle engine that is later intended to be used in a piece of nonroad equipment. In this case, the engine is no longer a motor vehicle engine and becomes a "new nonroad engine". The engine is no longer new when it is placed into nonroad service.
(3) A nonroad engine that has been previously placed into service in an application we exclude under §1039.5, where that engine is installed in a piece of equipment for which these exclusions do not apply. The engine is no longer new when it is placed into nonroad service. For example, this would apply to a stationary engine that is no longer used in a stationary application.
(4) An engine not covered by paragraphs (1) through (3) of this definition that is intended to be installed in new nonroad equipment. The engine is no longer new when the ultimate purchaser receives a title for the equipment or the product is placed into service, whichever comes first. This generally includes installation of used engines in new equipment.
(5) An imported nonroad engine covered by a certificate of conformity issued under this part, where someone other than the original engine manufacturer modifies the engine after its initial assembly and holds the certificate. The engine is no longer new when it is placed into nonroad service.
(6) An imported nonroad engine that is not covered by a certificate of conformity issued under this part at the time of importation. This addresses uncertified engines and vehicles that have been placed into service in other countries and that someone seeks to import into the United States. Importation of this kind of new nonroad engine (or vehicle containing such an engine) is generally prohibited by 40 CFR part 1068.

New nonroad equipment means either of the following things:
(1) A nonroad vehicle or other piece of equipment for which the ultimate purchaser has never received the equitable

or legal title. The product is no longer new when the ultimate purchaser receives this title or the product is placed into service, whichever comes first.
(2) An imported nonroad piece of equipment with an engine not covered by a certificate of conformity issued under this part at the time of importation and manufactured after the date for applying the requirements of this part.

Noncommercial fuel means a fuel that is not marketed or sold as a commercial product. For example, this includes methane produced and released from landfills or oil wells.

Noncompliant engine means an engine that was originally covered by a certificate of conformity, but is not in the certified configuration or otherwise does not comply with the conditions of the certificate.

Nonconforming engine means an engine not covered by a certificate of conformity that would otherwise be subject to emission standards.

Nonmethane hydrocarbon means the difference between the emitted mass of total hydrocarbons and the emitted mass of methane.

Nonroad means relating to nonroad engines or equipment that includes nonroad engines.

Nonroad engine has the meaning given in 40 CFR 1068.30. In general this means all internal- combustion engines except motor vehicle engines, stationary engines, or engines used solely for competition. This part does not apply to all nonroad engines (see §1039.5).

Nonroad equipment means a vehicle or piece of equipment that is powered by one or more nonroad engines.

Nonroad equipment manufacturer means any person engaged in manufacturing or assembling new nonroad vehicles or equipment or importing such vehicles or equipment for resale. This includes any person who acts for and is under the control of any such person in connection with distributing such vehicles or equipment. A nonroad vehicle or equipment manufacturer does not include any dealer with respect to new nonroad vehicles or equipment received by such person in commerce. A nonroad equipment manufacturer does not include any person engaged in the manufacturing or assembling of new nonroad vehicles or equipment who does not install an engine as part of that manufacturing or assembling process. All nonroad vehicle or equipment manufacturing entities under the control of the same person are considered to be a single nonroad equipment manufacturer.

Official emission result means the measured emission rate for a test engine on a given duty cycle before the application of any deterioration factor, but after the applicability of regeneration adjustment factors.

Opacity means the fraction of a beam of light, expressed in percent, which fails to penetrate a plume of smoke.

Oxides of nitrogen has the meaning given it in 40 CFR part 1065

Particulate trap means a filtering device that is designed to physically trap all particulate matter above a certain size.

Placed into service means used for its intended purpose.

Point of first retail sale means the location at which the retail sale occurs. This generally means a dealership.

Power category means a specific range maximum engine power that defines the applicability of standards. For example, the 56-130 kW power category includes all engines with maximum power of at least 56 kW but less than 130 kW. See §1039.101 for a list of specific power categories. (Note: In some cases, FEL caps are based on subcategories of power categories.)

Rated speed means the maximum full load governed speed for governed engines ane the speed of maximum horsepower for ungoverned engines.

Revoke means to discontinue the certificate for an engine family. If we revoke a certificate, you must apply for a new certificate before continuing to produce the affected engines. This does not apply to engines you no longer possess.

Round means to round numbers according to ASTM E29-02 (incorporated by reference in §1039.810), unless otherwise specified.

Scheduled maintenance means adjusting, repairing, removing, disassembling, cleaning, or replacing components or systems that is periodically needed to keep a part from failing or malfunctioning. It also may mean actions you expect are necessary to correct an overt indication of failure or malfunction for which periodic maintenance is not appropriate.

Small-volume engine manufacturer means an engine manufacturer that had engine families certified to meet the requirements of 40 CFR part 89 before 2003 and had annual U.S.-directed production of no more than 2,500 units in 2002 and all earlier calendar years. For manufacturers owned by a parent company, the limit applies to the production of the parent company and all of its subsidiaries.

Spark-ignition means relating to a gasoline-fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle.

Spark-ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

Suspend means to temporarily discontinue the certificate for an engine family. If we suspend a certificate, you may not sell engines from that engine family unless we reinstate the certificate or approve a new one.

Test engine means an engine in a test sample.

Test sample means the collection of engines selected from the population of an engine family for emission testing.

Tier 1 means relating to the Tier 1 emission standards, as shown in 40 CFR 89.112.

Tier 2 means relating to the Tier 2 emission standards, as shown in 40 CFR 89.112.

Tier 3 means relating to the Tier 3 emission standards, as shown in 40 CFR 89.112.

Tier 4 means relating to the Tier 4 emission standards, as shown in §1039.101. This includes the emission standards for all pollutants if an engine is subject to Tier 4 emission standards for any pollutant. For example, this includes the Tier 3 HC+NOx standard during the phase-in period when engines are subject to the Tier 4 PM standard.

Total hydrocarbon means the combined mass organic compounds measured by our total hydrocarbon test procedure, expressed as a hydrocarbon with a hydrogen-to-carbon mass ratio of 1.85:1.

Total hydrocarbon equivalent means the sum of the carbon mass contributions of non-oxygenated hydrocarbons, alcohols and aldehydes, or other organic compounds that are measured separately as contained in a gas sample, expressed as petroleum-fueled engine hydrocarbons. The hydrogen-to-carbon ratio of the equivalent hydrocarbon is 1.85:1.

Ultimate purchaser means, with respect to any new nonroad equipment or new nonroad engine, the first person who in good faith purchases such new nonroad equipment or new nonroad engine for purposes other than resale.

United States means the States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, American Samoa, and the U.S. Virgin Islands.

Upcoming model year means for an engine family the model year after the one currently in production.

U.S.-directed production volume means the number of engine units, subject to the requirements of this part, produced by a manufacturer for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the Unites States.

Useful life means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years. It is the period during which a new nonroad engine is required to comply with all applicable emission standards. See §1039.101(g).

Variable-speed engine means an engine that is not a constant-speed engine.

Void means to invalidate a certificate or an exemption. If we void a certificate, all the engines produced under that engine family for that model year are considered noncompliant, and you are liable for each engine produced under the certificate and may face civil or criminal penalties or both. This applies equally to all engines in the engine family including engines produced before we voided the certificate. If we void an exemption, all the engines produced under that exemption are considered uncertified (or nonconforming), and you are liable for each engine produced under the exemption and may face civil or criminal penalties or both. You may not produce any additional engines using the voided exemption.

Volatile liquid fuel means any fuel other than diesel or biodiesel that is a liquid at atmospheric pressure and has a Reid Vapor Pressure higher than 2.0 psi.

We (us, our) means the Administrator of the Environmental Protection Agency and any authorized representatives.

§1039.805 What symbols, acronyms, and abbreviations does this part use?

The following symbols, acronyms, and abbreviations apply to this part:

°C	degrees Celsius.
ASTM	American Society for Testing and Materials.
cc	cubic centimeters.
CFR	Code of Federal Regulations.
CI	compression-ignition.
cm	centimeter.
CO	carbon monoxide.
CO_2	carbon dioxide.

EPA	Environmental Protection Agency.
FEL	Family Emission Limit.
g/kW-hr	grams per kilowatt-hour.
HC	hydrocarbon.
ISO	International Organization for Standardization.
kPa	kilopascals.
kW	kilowatts.
m	meters.
MIL	malfunction-indicator light.
mm Hg	millimeters of mercury.
NMHC	nonmethane hydrocarbons.
NOx	oxides of nitrogen (NO and NO_2).
psi	pounds per square inch of absolute pressure.
psig	pounds per square inch of gauge pressure.
rpm	revolutions per minute.
SAE	Society of Automotive Engineers.
SI	spark-ignition.
THC	total hydrocarbon.
THCE	total hydrocarbon equivalent.
TRU	transportation refrigeration unit
U.S.C.	United States Code.

§1039.810 What materials does this part reference?

We have incorporated by reference the documents listed in this section. The Director of the Federal Register approved the incorporation by reference as prescribed in 5 U.S.C. 552(a) and 1 CFR part 51. Anyone may inspect copies at the U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave., NW., Room B102, EPA West Building, Washington, DC 20460 or the Office of the Federal Register, 800 N. Capitol St., NW., 7th Floor, Suite 700, Washington, DC.

(a) ASTM material. Table 1 of §1039.810 lists material from the American Society for Testing and Materials that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428. Table 1 follows:

Table 1 of §1039.810—ASTM Materials

Document number and name	Part 1039 reference
ASTM E29-02, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.	1039.801

(b) SAE material. Table 2 of §1039.810 lists material from the Society of Automotive Engineering that we have incorporated by reference. The first column lists the number and name of the material. The second column lists the sections of this part where we reference it. Anyone may purchase copies of these materials from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096. Table 2 follows:

Table 2 of §1039.810—SAE Materials

Document number and name	Part 1039 reference
SAE J1930, Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms, May 1998.	1039.135

§1039.815 How should I request EPA to keep my information confidential?

(a) Clearly show what you consider confidential by marking, circling, bracketing, stamping, or some other method. We will store your confidential information as described in 40 CFR part 2. Also, we will disclose it only as specified in 40 CFR part 2.

(b) If you send us a second copy without the confidential information, we will assume it contains nothing confidential whenever we need to release information from it.

(c) If you send us information without claiming it is confidential, we may make it available to the public without further notice to you, as described in 40 CFR 2.204.

§1039.820 How do I request a hearing?

See 40 CFR part 1068, subpart G, for information related to hearings.

Appendix I to Part 1039— Nonroad Compression-ignition (CI) Steady-state Cycle for Constant-Speed Engines

Mode Number	Engine Speed	Torque[1]	Minimum Time in mode (minutes)	Weighting Factors
1	Maximum test speed	100	3.0	0.05
2	Maximum test speed	75	3.0	0.25
3	Maximum test speed	50	3.0	0.30
4	Maximum test speed	25	3.0	0.30
5	Maximum test speed	10	3.0	0.10

[1]The percent torque is relative to the maximum torque at maximum test speed.

Appendix II to Part 1039— [Reserved]

Appendix III to Part 1039— Nonroad Compression-ignition (CI) Steady-state Cycle for Variable-Speed Engines with Maximum Power below 19 kW

Mode Number	Engine Speed	Observed Torque[1]	Minimum Time in mode (minutes)	Weighting Factors
1	Maximum test speed	100	3.0	0.09
2	Maximum test speed	75	3.0	0.20
3	Maximum test speed	50	3.0	0.29
4	Maximum test speed	25	3.0	0.30
5	Maximum test speed	10	3.0	0.07
6	Idle	0	3.0	0.05

[1]The percent torque is relative to the maximum torque at maximum test speed.

Appendix IV to Part 1039— Nonroad Compression-ignition (CI) Steady-state Cycle for Variable-Speed Engines with Maximum Power at or above 19 kW

Mode Number	Engine Speed	Observed Torque[1]	Minimum Time in mode (minutes)	Weighting Factors
1	Maximum test speed	100	3.0	0.15
2	Maximum test speed	75	3.0	0.15
3	Maximum test speed	50	3.0	0.15
4	Maximum test speed	10	3.0	0.10
5	Intermediate test speed	100	3.0	0.10
6	Intermediate test speed	75	3.0	0.10
7	Intermediate test speed	50	3.0	0.10
8	Idle	0	3.0	0.15

[1]The percent torque is relative to the maximum torque at the given engine speed.

Appendix V to Part 1039— Nonroad Compression-ignition (CI) Transient Cycle for Constant-Speed Engines

Time (s)	Normalized Speed	Normalized Torque
1	58%	5%
2	58%	5%
3	58%	5%
4	58%	5%
5	58%	5%
6	58%	5%
7	58%	5%
8	58%	5%
9	58%	5%
10	58%	5%
11	58%	5%
12	58%	5%
13	58%	5%
14	58%	5%
15	58%	5%
16	58%	5%
17	58%	5%
18	58%	5%
19	58%	5%
20	58%	5%
21	65%	8%
22	72%	11%
23	79%	14%
24	86%	17%
25	93%	20%
26	93%	20%
27	93%	20%
28	93%	20%
29	93%	20%
30	93%	20%
31	93%	20%
32	94%	20%
33	94%	22%
34	94%	23%
35	93%	23%
36	93%	25%
37	93%	24%
38	94%	23%
39	93%	21%
40	94%	21%
41	96%	22%
42	95%	19%
43	95%	14%
44	95%	10%
45	93%	50%
46	93%	36%
47	93%	29%
48	93%	26%
49	95%	29%
50	95%	26%
51	95%	18%
52	95%	14%
53	95%	10%
54	95%	9%
55	93%	42%
56	93%	42%
57	93%	35%
58	93%	29%
59	93%	28%
60	93%	28%
61	93%	25%
62	93%	28%
63	93%	26%
64	93%	26%
65	95%	24%
66	95%	17%
67	95%	13%
68	95%	10%
69	95%	9%
70	94%	51%
71	93%	45%
72	93%	42%
73	94%	40%
74	93%	30%
75	93%	27%
76	93%	25%
77	93%	23%
78	93%	22%
79	94%	21%
80	93%	20%
81	95%	20%
82	95%	19%
83	95%	14%
84	95%	11%
85	95%	9%
86	95%	8%
87	95%	7%
88	95%	7%
89	95%	6%
90	95%	6%
91	95%	6%
92	95%	6%
93	81%	5%
94	93%	53%
95	93%	43%
96	93%	35%
97	93%	34%
98	93%	29%
99	93%	26%
100	93%	25%
101	93%	23%
102	93%	21%
103	93%	20%
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995	93%	30%	1049	95%	16%	1103	95%	6%
996	93%	29%	1050	95%	12%	1104	92%	42%
997	93%	23%	1051	95%	10%	1105	93%	36%
998	93%	24%	1052	96%	8%	1106	93%	33%
999	93%	22%	1053	96%	7%	1107	92%	60%
1000	94%	20%	1054	95%	7%	1108	93%	48%
1001	93%	17%	1055	96%	7%	1109	93%	36%
1002	93%	16%	1056	95%	6%	1110	93%	30%
1003	93%	16%	1057	96%	6%	1111	93%	28%
1004	93%	15%	1058	96%	6%	1112	93%	24%
1005	93%	17%	1059	88%	5%	1113	93%	24%
1006	93%	18%	1060	89%	49%	1114	93%	23%
1007	93%	20%	1061	93%	34%	1115	93%	23%
1008	93%	21%	1062	93%	27%	1116	93%	25%
1009	93%	18%	1063	93%	26%	1117	93%	27%
1010	93%	17%	1064	93%	25%	1118	93%	29%
1011	92%	54%	1065	93%	22%	1119	93%	26%
1012	93%	38%	1066	93%	23%	1120	93%	26%
1013	93%	29%	1067	93%	21%	1121	93%	21%
1014	93%	24%	1068	93%	21%	1122	93%	23%
1015	93%	24%	1069	93%	23%	1123	93%	23%
1016	93%	24%	1070	93%	23%	1124	94%	23%
1017	93%	23%	1071	93%	23%	1125	93%	40%
1018	93%	20%	1072	93%	23%	1126	94%	67%
1019	93%	20%	1073	93%	23%	1127	93%	46%
1020	93%	18%	1074	93%	22%	1128	93%	38%

1129	93%	29%	1153	93%	24%	1177	79%	21%
1130	93%	28%	1154	93%	28%	1178	72%	16%
1131	93%	27%	1155	93%	23%	1179	65%	10%
1132	93%	29%	1156	93%	24%	1180	58%	5%
1133	93%	28%	1157	93%	34%	1181	58%	5%
1134	94%	33%	1158	93%	31%	1182	58%	5%
1135	93%	31%	1159	93%	35%	1183	58%	5%
1136	93%	30%	1160	93%	31%	1184	58%	5%
1137	94%	42%	1161	93%	32%	1185	58%	5%
1138	93%	31%	1162	93%	31%	1186	58%	5%
1139	93%	29%	1163	93%	30%	1187	58%	5%
1140	93%	27%	1164	93%	23%	1188	58%	5%
1141	93%	23%	1165	93%	23%	1189	58%	5%
1142	93%	23%	1166	93%	36%	1190	58%	5%
1143	93%	20%	1167	93%	32%	1191	58%	5%
1144	93%	20%	1168	93%	25%	1192	58%	5%
1145	93%	23%	1169	93%	31%	1193	58%	5%
1146	93%	22%	1170	93%	33%	1194	58%	5%
1147	93%	23%	1171	93%	33%	1195	58%	5%
1148	93%	25%	1172	93%	33%	1196	58%	5%
1149	93%	20%	1173	93%	33%	1197	58%	5%
1150	93%	25%	1174	93%	33%	1198	58%	5%
1151	93%	23%	1175	93%	33%	1199	58%	5%
1152	93%	23%	1176	86%	28%			

Appendix VI to Part 1039— Nonroad Compression-ignition (CI) Composite Transient Cycle

Time (s)	Normalized Speed	Normalized Torque
1	0%	0%
2	0%	0%
3	0%	0%
4	0%	0%
5	0%	0%
6	0%	0%
7	0%	0%
8	0%	0%
9	0%	0%
10	0%	0%
11	0%	0%
12	0%	0%
13	0%	0%
14	0%	0%
15	0%	0%
16	0%	0%
17	0%	0%
18	0%	0%
19	0%	0%
20	0%	0%
21	0%	0%
22	0%	0%
23	0%	0%
24	1%	3%
25	1%	3%
26	1%	3%
27	1%	3%
28	1%	3%
29	1%	3%
30	1%	6%
31	1%	6%
32	2%	1%
33	4%	13%
34	7%	18%
35	9%	21%
36	17%	20%
37	33%	42%
38	57%	46%
39	44%	33%
40	31%	0%
41	22%	27%
42	33%	43%
43	80%	49%
44	105%	47%
45	98%	70%
46	104%	36%
47	104%	65%
48	96%	71%
49	101%	62%
50	102%	51%
51	102%	50%
52	102%	46%
53	102%	41%
54	102%	31%
55	89%	2%
56	82%	0%
57	47%	1%
58	23%	1%
59	1%	3%
60	1%	8%
61	1%	3%
62	1%	5%
63	1%	6%
64	1%	4%
65	1%	4%
66	0%	6%
67	1%	4%
68	9%	21%
69	25%	56%
70	64%	26%
71	60%	31%
72	63%	20%
73	62%	24%
74	64%	8%
75	58%	44%
76	65%	10%
77	65%	12%
78	68%	23%
79	69%	30%
80	71%	30%
81	74%	15%
82	71%	23%
83	73%	20%
84	73%	21%
85	73%	19%
86	70%	33%
87	70%	34%
88	65%	47%
89	66%	47%
90	64%	53%
91	65%	45%
92	66%	38%
93	67%	49%
94	69%	39%
95	69%	39%
96	66%	42%
97	71%	29%
98	75%	29%
99	72%	23%
100	74%	22%
101	75%	24%
102	73%	30%
103	74%	24%
104	77%	6%
105	76%	12%
106	74%	39%
107	72%	30%
108	75%	22%
109	78%	64%
110	102%	34%
111	103%	28%
112	103%	28%
113	103%	19%
114	103%	32%
115	104%	25%
116	103%	38%
117	103%	39%
118	103%	34%
119	102%	44%
120	103%	38%
121	102%	43%
122	103%	34%
123	102%	41%
124	103%	44%
125	103%	37%
126	103%	27%
127	104%	13%
128	104%	30%
129	104%	19%
130	103%	28%
131	104%	40%
132	104%	32%
133	101%	63%
134	102%	54%
135	102%	52%
136	102%	51%
137	103%	40%
138	104%	34%
139	102%	36%
140	104%	44%
141	103%	44%
142	104%	33%
143	102%	27%
144	103%	26%
145	79%	53%
146	51%	37%
147	24%	23%
148	13%	33%
149	19%	55%
150	45%	30%
151	34%	7%
152	14%	4%
153	8%	16%
154	15%	6%
155	39%	47%
156	39%	4%

157	35%	26%	211	26%	18%	265	47%	45%
158	27%	38%	212	18%	29%	266	43%	56%
159	43%	40%	213	14%	51%	267	42%	27%
160	14%	23%	214	13%	11%	268	42%	64%
161	10%	10%	215	12%	9%	269	75%	74%
162	15%	33%	216	15%	33%	270	68%	96%
163	35%	72%	217	20%	25%	271	86%	61%
164	60%	39%	218	25%	17%	272	66%	0%
165	55%	31%	219	31%	29%	273	37%	0%
166	47%	30%	220	36%	66%	274	45%	37%
167	16%	7%	221	66%	40%	275	68%	96%
168	0%	6%	222	50%	13%	276	80%	97%
169	0%	8%	223	16%	24%	277	92%	96%
170	0%	8%	224	26%	50%	278	90%	97%
171	0%	2%	225	64%	23%	279	82%	96%
172	2%	17%	226	81%	20%	280	94%	81%
173	10%	28%	227	83%	11%	281	90%	85%
174	28%	31%	228	79%	23%	282	96%	65%
175	33%	30%	229	76%	31%	283	70%	96%
176	36%	0%	230	68%	24%	284	55%	95%
177	19%	10%	231	59%	33%	285	70%	96%
178	1%	18%	232	59%	3%	286	79%	96%
179	0%	16%	233	25%	7%	287	81%	71%
180	1%	3%	234	21%	10%	288	71%	60%
181	1%	4%	235	20%	19%	289	92%	65%
182	1%	5%	236	4%	10%	290	82%	63%
183	1%	6%	237	5%	7%	291	61%	47%
184	1%	5%	238	4%	5%	292	52%	37%
185	1%	3%	239	4%	6%	293	24%	0%
186	1%	4%	240	4%	6%	294	20%	7%
187	1%	4%	241	4%	5%	295	39%	48%
188	1%	6%	242	7%	5%	296	39%	54%
189	8%	18%	243	16%	28%	297	63%	58%
190	20%	51%	244	28%	25%	298	53%	31%
191	49%	19%	245	52%	53%	299	51%	24%
192	41%	13%	246	50%	8%	300	48%	40%
193	31%	16%	247	26%	40%	301	39%	0%
194	28%	21%	248	48%	29%	302	35%	18%
195	21%	17%	249	54%	39%	303	36%	16%
196	31%	21%	250	60%	42%	304	29%	17%
197	21%	8%	251	48%	18%	305	28%	21%
198	0%	14%	252	54%	51%	306	31%	15%
199	0%	12%	253	88%	90%	307	31%	10%
200	3%	8%	254	103%	84%	308	43%	19%
201	3%	22%	255	103%	85%	309	49%	63%
202	12%	20%	256	102%	84%	310	78%	61%
203	14%	20%	257	58%	66%	311	78%	46%
204	16%	17%	258	64%	97%	312	66%	65%
205	20%	18%	259	56%	80%	313	78%	97%
206	27%	34%	260	51%	67%	314	84%	63%
207	32%	33%	261	52%	96%	315	57%	26%
208	41%	31%	262	63%	62%	316	36%	22%
209	43%	31%	263	71%	6%	317	20%	34%
210	37%	33%	264	33%	16%	318	19%	8%

319	9%	10%	373	17%	7%	427	74%	51%
320	5%	5%	374	16%	13%	428	76%	57%
321	7%	11%	375	11%	6%	429	76%	72%
322	15%	15%	376	9%	5%	430	85%	72%
323	12%	9%	377	9%	12%	431	84%	60%
324	13%	27%	378	12%	46%	432	83%	72%
325	15%	28%	379	15%	30%	433	83%	72%
326	16%	28%	380	26%	28%	434	86%	72%
327	16%	31%	381	13%	9%	435	89%	72%
328	15%	20%	382	16%	21%	436	86%	72%
329	17%	0%	383	24%	4%	437	87%	72%
330	20%	34%	384	36%	43%	438	88%	72%
331	21%	25%	385	65%	85%	439	88%	71%
332	20%	0%	386	78%	66%	440	87%	72%
333	23%	25%	387	63%	39%	441	85%	71%
334	30%	58%	388	32%	34%	442	88%	72%
335	63%	96%	389	46%	55%	443	88%	72%
336	83%	60%	390	47%	42%	444	84%	72%
337	61%	0%	391	42%	39%	445	83%	73%
338	26%	0%	392	27%	0%	446	77%	73%
339	29%	44%	393	14%	5%	447	74%	73%
340	68%	97%	394	14%	14%	448	76%	72%
341	80%	97%	395	24%	54%	449	46%	77%
342	88%	97%	396	60%	90%	450	78%	62%
343	99%	88%	397	53%	66%	451	79%	35%
344	102%	86%	398	70%	48%	452	82%	38%
345	100%	82%	399	77%	93%	453	81%	41%
346	74%	79%	400	79%	67%	454	79%	37%
347	57%	79%	401	46%	65%	455	78%	35%
348	76%	97%	402	69%	98%	456	78%	38%
349	84%	97%	403	80%	97%	457	78%	46%
350	86%	97%	404	74%	97%	458	75%	49%
351	81%	98%	405	75%	98%	459	73%	50%
352	83%	83%	406	56%	61%	460	79%	58%
353	65%	96%	407	42%	0%	461	79%	71%
354	93%	72%	408	36%	32%	462	83%	44%
355	63%	60%	409	34%	43%	463	53%	48%
356	72%	49%	410	68%	83%	464	40%	48%
357	56%	27%	411	102%	48%	465	51%	75%
358	29%	0%	412	62%	0%	466	75%	72%
359	18%	13%	413	41%	39%	467	89%	67%
360	25%	11%	414	71%	86%	468	93%	60%
361	28%	24%	415	91%	52%	469	89%	73%
362	34%	53%	416	89%	55%	470	86%	73%
363	65%	83%	417	89%	56%	471	81%	73%
364	80%	44%	418	88%	58%	472	78%	73%
365	77%	46%	419	78%	69%	473	78%	73%
366	76%	50%	420	98%	39%	474	76%	73%
367	45%	52%	421	64%	61%	475	79%	73%
368	61%	98%	422	90%	34%	476	82%	73%
369	61%	69%	423	88%	38%	477	86%	73%
370	63%	49%	424	97%	62%	478	88%	72%
371	32%	0%	425	100%	53%	479	92%	71%
372	10%	8%	426	81%	58%	480	97%	54%

481	73%	43%	535	75%	33%	589	49%	56%
482	36%	64%	536	81%	17%	590	79%	70%
483	63%	31%	537	76%	45%	591	104%	59%
484	78%	1%	538	76%	30%	592	103%	54%
485	69%	27%	539	80%	14%	593	102%	56%
486	67%	28%	540	71%	18%	594	102%	56%
487	72%	9%	541	71%	14%	595	103%	61%
488	71%	9%	542	71%	11%	596	102%	64%
489	78%	36%	543	65%	2%	597	103%	60%
490	81%	56%	544	31%	26%	598	93%	72%
491	75%	53%	545	24%	72%	599	86%	73%
492	60%	45%	546	64%	70%	600	76%	73%
493	50%	37%	547	77%	62%	601	59%	49%
494	66%	41%	548	80%	68%	602	46%	22%
495	51%	61%	549	83%	53%	603	40%	65%
496	68%	47%	550	83%	50%	604	72%	31%
497	29%	42%	551	83%	50%	605	72%	27%
498	24%	73%	552	85%	43%	606	67%	44%
499	64%	71%	553	86%	45%	607	68%	37%
500	90%	71%	554	89%	35%	608	67%	42%
501	100%	61%	555	82%	61%	609	68%	50%
502	94%	73%	556	87%	50%	610	77%	43%
503	84%	73%	557	85%	55%	611	58%	4%
504	79%	73%	558	89%	49%	612	22%	37%
505	75%	72%	559	87%	70%	613	57%	69%
506	78%	73%	560	91%	39%	614	68%	38%
507	80%	73%	561	72%	3%	615	73%	2%
508	81%	73%	562	43%	25%	616	40%	14%
509	81%	73%	563	30%	60%	617	42%	38%
510	83%	73%	564	40%	45%	618	64%	69%
511	85%	73%	565	37%	32%	619	64%	74%
512	84%	73%	566	37%	32%	620	67%	73%
513	85%	73%	567	43%	70%	621	65%	73%
514	86%	73%	568	70%	54%	622	68%	73%
515	85%	73%	569	77%	47%	623	65%	49%
516	85%	73%	570	79%	66%	624	81%	0%
517	85%	72%	571	85%	53%	625	37%	25%
518	85%	73%	572	83%	57%	626	24%	69%
519	83%	73%	573	86%	52%	627	68%	71%
520	79%	73%	574	85%	51%	628	70%	71%
521	78%	73%	575	70%	39%	629	76%	70%
522	81%	73%	576	50%	5%	630	71%	72%
523	82%	72%	577	38%	36%	631	73%	69%
524	94%	56%	578	30%	71%	632	76%	70%
525	66%	48%	579	75%	53%	633	77%	72%
526	35%	71%	580	84%	40%	634	77%	72%
527	51%	44%	581	85%	42%	635	77%	72%
528	60%	23%	582	86%	49%	636	77%	70%
529	64%	10%	583	86%	57%	637	76%	71%
530	63%	14%	584	89%	68%	638	76%	71%
531	70%	37%	585	99%	61%	639	77%	71%
532	76%	45%	586	77%	29%	640	77%	71%
533	78%	18%	587	81%	72%	641	78%	70%
534	76%	51%	588	89%	69%	642	77%	70%

643	77%	71%	697	102%	71%	751	103%	35%
644	79%	72%	698	102%	71%	752	102%	48%
645	78%	70%	699	102%	69%	753	103%	49%
646	80%	70%	700	102%	71%	754	102%	48%
647	82%	71%	701	102%	68%	755	102%	46%
648	84%	71%	702	100%	69%	756	103%	47%
649	83%	71%	703	102%	70%	757	102%	49%
650	83%	73%	704	102%	68%	758	102%	42%
651	81%	70%	705	102%	70%	759	102%	52%
652	80%	71%	706	102%	72%	760	102%	57%
653	78%	71%	707	102%	68%	761	102%	55%
654	76%	70%	708	102%	69%	762	102%	61%
655	76%	70%	709	100%	68%	763	102%	61%
656	76%	71%	710	102%	71%	764	102%	58%
657	79%	71%	711	101%	64%	765	103%	58%
658	78%	71%	712	102%	69%	766	102%	59%
659	81%	70%	713	102%	69%	767	102%	54%
660	83%	72%	714	101%	69%	768	102%	63%
661	84%	71%	715	102%	64%	769	102%	61%
662	86%	71%	716	102%	69%	770	103%	55%
663	87%	71%	717	102%	68%	771	102%	60%
664	92%	72%	718	102%	70%	772	102%	72%
665	91%	72%	719	102%	69%	773	103%	56%
666	90%	71%	720	102%	70%	774	102%	55%
667	90%	71%	721	102%	70%	775	102%	67%
668	91%	71%	722	102%	62%	776	103%	56%
669	90%	70%	723	104%	38%	777	84%	42%
670	90%	72%	724	104%	15%	778	48%	7%
671	91%	71%	725	102%	24%	779	48%	6%
672	90%	71%	726	102%	45%	780	48%	6%
673	90%	71%	727	102%	47%	781	48%	7%
674	92%	72%	728	104%	40%	782	48%	6%
675	93%	69%	729	101%	52%	783	48%	7%
676	90%	70%	730	103%	32%	784	67%	21%
677	93%	72%	731	102%	50%	785	105%	59%
678	91%	70%	732	103%	30%	786	105%	96%
679	89%	71%	733	103%	44%	787	105%	74%
680	91%	71%	734	102%	40%	788	105%	66%
681	90%	71%	735	103%	43%	789	105%	62%
682	90%	71%	736	103%	41%	790	105%	66%
683	92%	71%	737	102%	46%	791	89%	41%
684	91%	71%	738	103%	39%	792	52%	5%
685	93%	71%	739	102%	41%	793	48%	5%
686	93%	68%	740	103%	41%	794	48%	7%
687	98%	68%	741	102%	38%	795	48%	5%
688	98%	67%	742	103%	39%	796	48%	6%
689	100%	69%	743	102%	46%	797	48%	4%
690	99%	68%	744	104%	46%	798	52%	6%
691	100%	71%	745	103%	49%	799	51%	5%
692	99%	68%	746	102%	45%	800	51%	6%
693	100%	69%	747	103%	42%	801	51%	6%
694	102%	72%	748	103%	46%	802	52%	5%
695	101%	69%	749	103%	38%	803	52%	5%
696	100%	69%	750	102%	48%	804	57%	44%

805	98%	90%	859	76%	5%	913	83%	26%
806	105%	94%	860	49%	8%	914	80%	63%
807	105%	100%	861	51%	7%	915	80%	59%
808	105%	98%	862	51%	20%	916	83%	100%
809	105%	95%	863	78%	52%	917	81%	73%
810	105%	96%	864	80%	38%	918	83%	53%
811	105%	92%	865	81%	33%	919	80%	76%
812	104%	97%	866	83%	29%	920	81%	61%
813	100%	85%	867	83%	22%	921	80%	50%
814	94%	74%	868	83%	16%	922	81%	37%
815	87%	62%	869	83%	12%	923	82%	49%
816	81%	50%	870	83%	9%	924	83%	37%
817	81%	46%	871	83%	8%	925	83%	25%
818	80%	39%	872	83%	7%	926	83%	17%
819	80%	32%	873	83%	6%	927	83%	13%
820	81%	28%	874	83%	6%	928	83%	10%
821	80%	26%	875	83%	6%	929	83%	8%
822	80%	23%	876	83%	6%	930	83%	7%
823	80%	23%	877	83%	6%	931	83%	7%
824	80%	20%	878	59%	4%	932	83%	6%
825	81%	19%	879	50%	5%	933	83%	6%
826	80%	18%	880	51%	5%	934	83%	6%
827	81%	17%	881	51%	5%	935	71%	5%
828	80%	20%	882	51%	5%	936	49%	24%
829	81%	24%	883	50%	5%	937	69%	64%
830	81%	21%	884	50%	5%	938	81%	50%
831	80%	26%	885	50%	5%	939	81%	43%
832	80%	24%	886	50%	5%	940	81%	42%
833	80%	23%	887	50%	5%	941	81%	31%
834	80%	22%	888	51%	5%	942	81%	30%
835	81%	21%	889	51%	5%	943	81%	35%
836	81%	24%	890	51%	5%	944	81%	28%
837	81%	24%	891	63%	50%	945	81%	27%
838	81%	22%	892	81%	34%	946	80%	27%
839	81%	22%	893	81%	25%	947	81%	31%
840	81%	21%	894	81%	29%	948	81%	41%
841	81%	31%	895	81%	23%	949	81%	41%
842	81%	27%	896	80%	24%	950	81%	37%
843	80%	26%	897	81%	24%	951	81%	43%
844	80%	26%	898	81%	28%	952	81%	34%
845	81%	25%	899	81%	27%	953	81%	31%
846	80%	21%	900	81%	22%	954	81%	26%
847	81%	20%	901	81%	19%	955	81%	23%
848	83%	21%	902	81%	17%	956	81%	27%
849	83%	15%	903	81%	17%	957	81%	38%
850	83%	12%	904	81%	17%	958	81%	40%
851	83%	9%	905	81%	15%	959	81%	39%
852	83%	8%	906	80%	15%	960	81%	27%
853	83%	7%	907	80%	28%	961	81%	33%
854	83%	6%	908	81%	22%	962	80%	28%
855	83%	6%	909	81%	24%	963	81%	34%
856	83%	6%	910	81%	19%	964	83%	72%
857	83%	6%	911	81%	21%	965	81%	49%
858	83%	6%	912	81%	20%	966	81%	51%

967	80%	55%	1021	82%	35%	1075	99%	39%
968	81%	48%	1022	79%	53%	1076	103%	11%
969	81%	36%	1023	82%	30%	1077	103%	19%
970	81%	39%	1024	83%	29%	1078	103%	7%
971	81%	38%	1025	83%	32%	1079	103%	13%
972	80%	41%	1026	83%	28%	1080	103%	10%
973	81%	30%	1027	76%	60%	1081	102%	13%
974	81%	23%	1028	79%	51%	1082	101%	29%
975	81%	19%	1029	86%	26%	1083	102%	25%
976	81%	25%	1030	82%	34%	1084	102%	20%
977	81%	29%	1031	84%	25%	1085	96%	60%
978	83%	47%	1032	86%	23%	1086	99%	38%
979	81%	90%	1033	85%	22%	1087	102%	24%
980	81%	75%	1034	83%	26%	1088	100%	31%
981	80%	60%	1035	83%	25%	1089	100%	28%
982	81%	48%	1036	83%	37%	1090	98%	3%
983	81%	41%	1037	84%	14%	1091	102%	26%
984	81%	30%	1038	83%	39%	1092	95%	64%
985	80%	24%	1039	76%	70%	1093	102%	23%
986	81%	20%	1040	78%	81%	1094	102%	25%
987	81%	21%	1041	75%	71%	1095	98%	42%
988	81%	29%	1042	86%	47%	1096	93%	68%
989	81%	29%	1043	83%	35%	1097	101%	25%
990	81%	27%	1044	81%	43%	1098	95%	64%
991	81%	23%	1045	81%	41%	1099	101%	35%
992	81%	25%	1046	79%	46%	1100	94%	59%
993	81%	26%	1047	80%	44%	1101	97%	37%
994	81%	22%	1048	84%	20%	1102	97%	60%
995	81%	20%	1049	79%	31%	1103	93%	98%
996	81%	17%	1050	87%	29%	1104	98%	53%
997	81%	23%	1051	82%	49%	1105	103%	13%
998	83%	65%	1052	84%	21%	1106	103%	11%
999	81%	54%	1053	82%	56%	1107	103%	11%
1000	81%	50%	1054	81%	30%	1108	103%	13%
1001	81%	41%	1055	85%	21%	1109	103%	10%
1002	81%	35%	1056	86%	16%	1110	103%	10%
1003	81%	37%	1057	79%	52%	1111	103%	11%
1004	81%	29%	1058	78%	60%	1112	103%	10%
1005	81%	28%	1059	74%	55%	1113	103%	10%
1006	81%	24%	1060	78%	84%	1114	102%	18%
1007	81%	19%	1061	80%	54%	1115	102%	31%
1008	81%	16%	1062	80%	35%	1116	101%	24%
1009	80%	16%	1063	82%	24%	1117	102%	19%
1010	83%	23%	1064	83%	43%	1118	103%	10%
1011	83%	17%	1065	79%	49%	1119	102%	12%
1012	83%	13%	1066	83%	50%	1120	99%	56%
1013	83%	27%	1067	86%	12%	1121	96%	59%
1014	81%	58%	1068	64%	14%	1122	74%	28%
1015	81%	60%	1069	24%	14%	1123	66%	62%
1016	81%	46%	1070	49%	21%	1124	74%	29%
1017	80%	41%	1071	77%	48%	1125	64%	74%
1018	80%	36%	1072	103%	11%	1126	69%	40%
1019	81%	26%	1073	98%	48%	1127	76%	2%
1020	86%	18%	1074	101%	34%	1128	72%	29%

1129	66%	65%	1166	75%	21%	1203	69%	46%
1130	54%	69%	1167	74%	15%	1204	68%	62%
1131	69%	56%	1168	75%	13%	1205	68%	62%
1132	69%	40%	1169	76%	10%	1206	68%	62%
1133	73%	54%	1170	75%	13%	1207	68%	62%
1134	63%	92%	1171	75%	10%	1208	68%	62%
1135	61%	67%	1172	75%	7%	1209	68%	62%
1136	72%	42%	1173	75%	13%	1210	54%	50%
1137	78%	2%	1174	76%	8%	1211	41%	37%
1138	76%	34%	1175	76%	7%	1212	27%	25%
1139	67%	80%	1176	67%	45%	1213	14%	12%
1140	70%	67%	1177	75%	13%	1214	0%	0%
1141	53%	70%	1178	75%	12%	1215	0%	0%
1142	72%	65%	1179	73%	21%	1216	0%	0%
1143	60%	57%	1180	68%	46%	1217	0%	0%
1144	74%	29%	1181	74%	8%	1218	0%	0%
1145	69%	31%	1182	76%	11%	1219	0%	0%
1146	76%	1%	1183	76%	14%	1220	0%	0%
1147	74%	22%	1184	74%	11%	1221	0%	0%
1148	72%	52%	1185	74%	18%	1222	0%	0%
1149	62%	96%	1186	73%	22%	1223	0%	0%
1150	54%	72%	1187	74%	20%	1224	0%	0%
1151	72%	28%	1188	74%	19%	1225	0%	0%
1152	72%	35%	1189	70%	22%	1226	0%	0%
1153	64%	68%	1190	71%	23%	1227	0%	0%
1154	74%	27%	1191	73%	19%	1228	0%	0%
1155	76%	14%	1192	73%	19%	1229	0%	0%
1156	69%	38%	1193	72%	20%	1230	0%	0%
1157	66%	59%	1194	64%	60%	1231	0%	0%
1158	64%	99%	1195	70%	39%	1232	0%	0%
1159	51%	86%	1196	66%	56%	1233	0%	0%
1160	70%	53%	1197	68%	64%	1234	0%	0%
1161	72%	36%	1198	30%	68%	1235	0%	0%
1162	71%	47%	1199	70%	38%	1236	0%	0%
1163	70%	42%	1200	66%	47%	1237	0%	0%
1164	67%	34%	1201	76%	14%	1238	0%	0%
1165	74%	2%	1202	74%	18%			

NOTE: THE DRAFT REGULATORY TEXT FOR THE EXISTING PARTS 1065 AND 1068 INCLUDE UNCHANGED TEXT. PROPOSED CHANGES AND ADDITIONS ARE HIGHLIGHTED.

PART 1065—TEST PROCEDURES AND EQUIPMENT

The authority for part 1065 continues to read as follows:
Authority: 42 U.S.C. 7401-7671(q).

Subpart A—[Amended]

§1065.1 Applicability.

(a) This part describes the procedures that apply to testing that we require for the following engines or for equipment using the following engines:

(1) Large nonroad spark-ignition engines we regulate under 40 CFR part 1048.

(2) Vehicles that we regulate under 40 CFR part 1051 (i.e., recreational SI vehicles) that are regulated based on engine testing. See 40 CFR part 1051 to determine which vehicles may be certified based on engine test data.

(3) Land-based nonroad compression-ignition engines we regulate under 40 CFR part 1039.

(b) This part does not apply to any of the following engine or vehicle categories:

(1) Light-duty highway vehicles (see 40 CFR part 86).

(2) Heavy-duty highway Otto-cycle engines (see 40 CFR part 86).

(3) Heavy-duty highway diesel engines (see 40 CFR part 86).

(4) Aircraft engines (see 40 CFR part 87).

(5) Locomotive engines (see 40 CFR part 92).

~~(6) Land-based nonroad diesel engines (see 40 CFR part 89).~~[Reserved]

(7) General marine engines (see 40 CFR parts 89 and 94)

(8) Marine outboard and personal watercraft engines (see 40 CFR part 91).

(9) Small nonroad spark-ignition engines (see 40 CFR part 90).

(c) This part is addressed to you as a manufacturer, but it applies equally to anyone who does testing for you, and to us when we conduct testing to determine if you meet emission standards.

(d) Paragraph (a) of this section identifies the parts of the CFR that define emission standards and other requirements for particular types of engines. In this part 1065, we refer to each these other parts generically as the "standard-setting part." For example, 40 CFR part 1051 is always the standard-setting part for snowmobiles. Follow the standard-setting part if it differs from this part.

(e) For equipment subject to this part and regulated under equipment-based or vehicle-based standards, interpret the term "engine" in this part to include equipment and vehicles(see 40 CFR 1068.30).

Section 1065.10 is amended by revising paragraph (c)(3) to read as follows:

§1065.10 Other test procedures.

* * * * *

(c) * * *

(3) You may ask to use alternate procedures that produce measurements equivalent to those from the specified procedures. If you send us a written request showing your procedures are equivalent, and we agree that they are equivalent, we will allow you to use them. You may not use an alternate procedure until we approve them, either by: telling you directly that you may use this procedure; or issuing guidance to all manufacturers, which allows you to use the alternate procedure without additional approval. You may use the statistical procedures specified in 40 CFR 1306-07(d) to demonstrate equivalence.

Subpart B—[Amended]

Section 1065.115 is amended to read as follows:

§ 1065.115 Exhaust gas sampling system; compression ignition engines.

Use the exhaust-gas sampling system specified in 40 CFR 86.1310 to measure emissions from compression-ignition nonroad engines.

Subpart C—[Amended]

Section 1065.205 is amended to read as follows:

§1065.205 Test fuel specifications for distillate diesel fuel.

Petroleum distillate diesel fuel used as a test fuel must meet the following specifications:

Item		ASTM Test Method No.	Type 2-D
(i)Cetane Number		D613	40-50
(ii)Cetane Index		D976	40-50
(iii)Distillation range:			
(A) IBP	˚C	D86	171-204
(B) 10 pct. point	˚C	D86	204-238
(C) 50 pct. point	˚C	D86	243-282
(D) 90 pct. point	˚C	D86	293-332
(E) EP	˚C	D86	321-366
(iv) Gravity	˚API	D287	32-37
(v) Total sulfur	ppm	D2622	7-15
(vi) Hydrocarbon composition:			
(A) Aromatics, minimum (Remainder shall be paraffins, naphthenes, and olefins)	pct.	D5186	10
(vii) Flashpoint, min.	˚C	D93	54
(viii) Viscosity	centistokes	D445	2.0-3.2

Subpart D—[Amended]

Section 1065.310 is amended to read as follows:

§1065.310 CVS calibration.

Use the procedures of 40 CFR 86.1319-90 to calibrate the CVS.

Subpart E—[Amended]

Section 1065.405 is amended by revising paragraph (b) to read as follows:

§1065.405 Preparing and servicing a test engine.

* * * * *

(b) Run the test engine, with all emission-control systems operating, long enough to stabilize emission levels.
(1) For SI engines, if you accumulate 50 hours of operation, you may consider emission levels stable without measurement.
(2) For CI engines, if you accumulate 125 hours of operation, you may consider emission levels stable without measurement.
* * * * *

Subpart F—[Amended]

Section 1065.530 is amended by revising paragraph (b)(3)(iii) and Table 1 and adding a new Table 2 and paragraph (d) to read as follows:

§1065.530 Test cycle validation criteria.

* * * * *

(b) * * *

(3) * * *

(iii) For a valid test, make sure the feedback cycle's integrated brake kilowatt-hour is within 5 percent of the reference cycle's integrated brake kilowatt-hour. Also, ensure that the slope, intercept, standard error, and coefficient of determination meet the criteria in the following tables (you may delete individual points from the regression analyses, consistent with good engineering judgment):

Table 1 of §1065.530—
Statistical Criteria for Validating Test Cycles for Spark-Ignition Engines

	Speed	**Torque**	**Power**
1. Slope of the regression line (m)	0.950 to 1.030	0.830 to 1.030	0.880 to 1.030.
2. Y intercept of the regression line (b)	$\|b\| \leq$ 50 rpm	$\|b\| \leq$ 5.0 percent of maximum torque from power map	$\|b\| \leq$ 3.0 percent of maximum torque from power map.
3. Standard error of the estimate of Y on X (SE)	100 rpm	15 percent of maximum torque from power map	10 percent of maximum power from power map.
4. Coefficient of determination (r^2)	$r^2 \geq 0.970$	$r^2 \geq 0.880$	$r^2 \geq 0.900$.

Table 2 of §1065.530—
Statistical Criteria for Validating Test Cycles for Compression-Ignition Engines

	Speed	**Torque**	**Power**
1. Slope of the regression line (m)	0.950 to 1.030	0.830 to 1.030 (hot); 0.77 to 1.03 (cold)	0.890 to 1.030 (hot); 0.870 to 1.030 (cold).
2. Y intercept of the regression line (b)	$\|b\| \leq$ 50 rpm	$\|b\| \leq$ 20 Nm or $\|b\| \leq$ 2.0 percent of maximum torque from power map, whichever is greater	$\|b\| \leq$ 4.0 kW or $\|b\| \leq$ 3.0 percent of maximum torque from power map, whichever is greater.
3. Standard error of the estimate of Y on X (SE)	100 rpm	13 percent of maximum torque from power map	8 percent of maximum power from power map.
4. Coefficient of determination (r^2)	$r^2 \geq 0.970$	$r^2 \geq 0.880$ (hot); $r^2 \geq 0.850$ (cold);	$r^2 \geq 0.910$ (hot); $r^2 \geq 0.850$ (cold).

* * * * *

(d) Transient testing with constant-speed engines. For constant-speed engines with installed governor operating over a transient duty cycle, the test cycle validation criteria in this section apply to engine-torque values but not engine-speed values.

Subpart G—[Amended]

Section 1065.615 is amended by revising paragraphs (c) and (d) to read as follows:

§1065.615 Bag sample calculations.

* * * * *

(c) Calculate total brake work (kW-hr) done during the emissions sampling period of each segment or mode and then weight it by the applicable test cycle weighting factors.

(d) Calculate emissions in g/kW-hr by dividing the total weighted mass emission rate (g/test) by the total cycle-weighted brake work for the test.

* * * * *

Section 1065.620 is added to read as follows:

§1065.620 Continuous sample analysis and calculations.

Use the sample analysis procedures and calculations of 40 CFR subpart N for continuous samples.

Subpart H—[Amended]

Section 1065.701 is added to read as follows:

§ 1065.701 Particulate measurements.

Use the particulate sampling system and procedures specified in 40 CFR part 86 subpart N to measure particulate emissions from compression-ignition nonroad engines.

Subpart J—[Amended]

Section 1065.910 is amended to read as follows:

§1065.910 Measurement accuracy and precision.

Measurement systems used for field testing have accuracy and precision comparable to those of dynamometer testing. Measurement systems that conform to the provisions of §§1065.915 through 1065.950 are deemed to be in compliance with the accuracy and precision requirements of paragraph of this section. If you other field testing measurement systems you need to have documentation indicating that it is comparable to a dynamometer system.
(a) The two systems must be calibrated independently to NIST traceable standards or equivalent national standards for this comparison. We may approve the us of other standards. Calculations of emissions results for this test should be consistent with the field testing data reduction scheme for both the in-use equipment and the dynamometer equipment, and each complete test cycle will be considered one "summing interval", Si as defined in the field-testing data reduction scheme.
(b) While other statistical analyses may be acceptable, we recommend that the comparison be based on a minimum of seven (7) repeats of collocated and simultaneous tests. Perform this comparison over the applicable steady-state and transient test cycles using an engine that is fully warmed up such that its coolant temperature is thermostatically controlled. If there is no applicable transient test cycle, use the applicable steady-state cycle. Anyone who intends to submit an alternative comparison is encouraged to first contact EPA Office of Transportation and Air Quality, Assessment and Standards Division to discuss the applicant's intended statistical analysis. The Division may provide further guidance specific to the appropriate statistical analysis for the respective application.
(c) The following statistical tests are suggested. If the comparison is paired, it must demonstrate that the alternate system passes a two-sided, paired t-test. If the test is unpaired, it must demonstrate that the alternate system passes a two-sided, unpaired t-test. The average of these tests for the reference system must return results less than or equal to the applicable emissions standard. The t-test is performed as follows, where "n" equals the number of tests:
(1) Calculate the average of the in-use system results; this is Iavg.
(2) Calculate the average of the results of the system to which the in-use system was Referenced; this is Ravg.
(3) Calculate the "n-1" standard deviations for the in-use and reference averages; these are Isd and Rsd respectively. Form the F ratio: F = (Isd/Rsd) 2. F must be less than the critical F value, Fcrit at a 95% confidence interval for "n-1" degrees of freedom. Table 1 of this section lists 95% confidence interval Fcrit values for n-1 degrees of freedom. Note that n_A represents the number of alternate system samples, while n_R represents the number of reference system samples.
(4) For an unpaired comparison, calculate the t-value:
$t_{unpaired} = (I_{avg} - R_{avg}) / ((I_{sd}^2 + R_{sd}^2) / n)^{½}$
(5) For a paired comparison, calculate the "n-1" standard deviation (squared) of the differences, d_i, between the paired results, where "i" represents the i^{th} test of n number of tests:
$S_D^2 = (Sd_i^2 - ((Sd_i)^2/n))/(n-1)$
(6) For a paired comparison, calculate the t-value:
$t_{paired} = (I_{avg} - R_{avg}) / (S_D^2/n)^{½}$
(d) The absolute value of t must be less than the critical t value, t_{crit} at a 95% confidence interval for "n-1" degrees of freedom. Table 2 of this section lists 95% confidence interval t_{crit} values for n-1 degrees of freedom.

Table 2 of §1065.910	
n-1	t_{crit}
6	2.45
7	2.36
8	2.31
9	2.26
10	2.23
11	2.20
12	2.18
13	2.16
14	2.14
15	2.13
16	2.12
17	2.11
18	2.10
19	2.09
20	2.09

PART 1068— GENERAL COMPLIANCE PROVISIONS FOR NONROAD PROGRAMS

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

Subpart A—Applicability and Miscellaneous Provisions

§1068.1 Does this part apply to me?

(a) The provisions of this part apply to everyone with respect to the following engines and to equipment using the following engines (including owners, operators, parts manufacturers, and persons performing maintenance).

(1) Large nonroad spark-ignition engines we regulate under 40 CFR part 1048.

(2) Recreational SI engines and vehicles that we regulate under 40 CFR part 1051 (such as snowmobiles and off-highway motorcycles).

(3) Land-based nonroad diesel engines that we regulate under 40 CFR part 1039.

(b) This part does not apply to any of the following engine or vehicle categories:

(1) Light-duty motor vehicles (see 40 CFR part 86).

(2) Heavy-duty motor vehicles and motor vehicle engines (see 40 CFR part 86).

(3) Aircraft engines (see 40 CFR part 87).

(4) Locomotive engines (see 40 CFR part 92).

(5) [Reserved]

(6) Marine diesel engines (see 40 CFR parts 89 and 94)

(7) Marine outboard and personal watercraft engines (see 40 CFR part 91).

(8) Small nonroad spark-ignition engines (see 40 CFR part 90).

(c) For equipment subject to this part and regulated under equipment-based standards, interpret the term "engine" in this part to include equipment (see §1068.30).

(d) Paragraph (a)(1) of this section identifies the parts of the CFR that define emission standards and other requirements for particular types of engines and vehicles. This part 1068 refers to each these other parts generically as the "standard-setting part." For example, 40 CFR part 1051 is always the standard-setting part for snowmobiles. Follow the provisions of the standard-setting part if they are different than any of the provisions in this part.

(e) (1) The provisions of §§1068.30, 1068.310, and 1068.320 apply for stationary spark-ignition engines beginning January 1, 2004, and for stationary compression-ignition engines beginning January 1, 2006.

(2) The provisions of §§1068.30 and 1068.235 apply for the types of engines listed in paragraph (a) of this section beginning January 1, 2004, where they are used solely for competition.

§1068.27 May EPA conduct testing with my production engines?

If we request it, you must make a reasonable number of production-line engines available for a reasonable time so we can test or inspect them for compliance with the requirements of this chapter.

§1068.30 What definitions apply to this part?

The following definitions apply to this part. The definitions apply to all subparts unless we note otherwise. All undefined terms have the meaning the Act gives to them. The definitions follow:

* * * * *

Aftertreatment means relating to any system, component, or technology mounted downstream of the exhaust valve or exhaust port whose design function is to reduce exhaust emissions.

* * * * *

Subpart B—Prohibited Actions and Related Requirements

§1068.101 What general actions does this regulation prohibit?

This section specifies actions that are prohibited and the maximum civil penalties that we can assess for each violation. The maximum penalty values listed in paragraphs (a) and (b) of this section are shown for calendar year 2002. As described in paragraph (e) of this section, maximum penalty limits for later years are set forth in 40 CFR part 19.

(a) The following prohibitions and requirements apply to manufacturers of new engines and manufacturers of equipment containing these engines, except as described in subparts C and D of this part:

(1) You may not sell, offer for sale, or introduce or deliver into commerce in the United States or import into the United States any new engine or equipment after emission standards take effect for that engine or equipment, unless it has a valid certificate of conformity for its model year and the required label or tag. You also may not take any of the actions listed in the previous sentence with respect to any equipment containing an engine subject to this part's provisions, unless the engine has a valid and appropriate certificate of conformity ~~for its model year~~ and the required engine label or tag. For purposes of this paragraph (a)(1), an appropriate certificate of conformity is one that applies for the same model year as the model year of the equipment (except as allowed by §1068.105(a)), covers the appropriate category of engines (such as locomotive or CI marine), and conforms to all requirements specified for equipment in the standard-setting part. This requirements of this paragraph (a)(1) also cover new engines you produce to replace an older engine in a piece of equipment, unless the engine qualifies for the replacement-engine exemption in §1068.240. We may assess a civil penalty up to $31,500 for each engine in violation.

(2) This chapter requires you to record certain types of information to show that you meet our standards. You must comply with these requirements to make and maintain required records (including those described in §1068.501). You may not deny us access to or copying of your records if we have the authority to see or copy them. Also, you must give us the required reports or information without delay. Failure to comply with the requirements of this paragraph is prohibited. We may assess a civil penalty up to $31,500 for each day in violation.

(3) You may not keep us from entering your facility to test engines or inspect if we are authorized to do so. Also, you must perform the tests we require (or have the tests done for you). Failure to perform this testing is prohibited. We may assess a civil penalty up to $31,500 for each day in violation.

(b) The following prohibitions apply to everyone with respect to the engines to which this part applies:

(1) You may not remove or disable a device or element of design that may affect an engine's emission levels. This restriction applies before and after the engine is placed in service. Section 1068.120 describes how this applies to rebuilding engines. For a manufacturer or dealer, we may assess a civil penalty up to $31,500 for each engine in violation. For anyone else, we may assess a civil penalty up to $3,150 for each engine in violation. This does not apply in any of the following situations:

(i) You need to repair an engine and you restore it to proper functioning when the repair is complete.

(ii) You need to modify an engine to respond to a temporary emergency and you restore it to proper functioning as soon as possible.

(iii) You modify a new engine that another manufacturer has already certified to meet emission standards, intending to recertify it under your own engine family. In this case you must tell the original manufacturer not to include the modified engines in the original engine family.

(2) You may not knowingly manufacture, sell, offer to sell, or install, an engine part if one of its main effects is to bypass, impair, defeat, or disable the engine's control of emissions. We may assess a civil penalty up to $3,150 for each part in violation.

(3) For an engine that is excluded from any requirements of this chapter because it is a stationary engine, you may not move it or install it in any mobile equipment, except as allowed by the provisions of this chapter. You may not circumvent or attempt to circumvent the residence-time requirements of paragraph (2)(iii) of the nonroad engine definition in §1068.30. We may assess a civil penalty up to $31,500 for each day in violation.

(4) For an uncertified engine or piece of equipment that is excluded or exempted from any requirements of this chapter because it is to be used solely for competition, you may not use it in a manner that is inconsistent with use solely for competition. We may assess a civil penalty up to $31,500 for each day in violation.

(5) You may not import an uncertified engine or piece of equipment if it is defined to be new in the standard-setting part, and it would have been subject to standards had it been built in the United States. We may assess a civil penalty up to $31,500 for each day in violation. Note the following:

(i) The definition of new is broad for imported engines; uncertified engines and equipment (including used engines and equipment) are generally considered to be new when imported.

(ii) Engines that were originally manufactured before applicable EPA standards were in effect are generally not subject to emission standards.

(6) You must meet your obligation to honor your emission-related warranty under §1068.115 and to fulfill any applicable responsibilities to recall engines under §1068.505. Failure to meet these obligations is prohibited. We may assess a civil penalty up to $31,500 for each engine in violation.

(c) Exemptions from these prohibitions are described in subparts C and D of this part.

(d) The standard-setting parts describe more requirements and prohibitions that apply to manufacturers (including importers) and others under this chapter.

(e) The maximum penalty values listed in paragraphs (a) and (b) of this section are shown for calendar year 2002. Maximum penalty limits for later years may be adjusted based on the Consumer Price Index. The specific regulatory provisions for changing the maximum penalties, published in 40 CFR part 19, reference the applicable U.S. Code citation on which the prohibited action is based. The following table is shown here for informational purposes:

Table 1 of §1068.101—Legal Citation for Specific Prohibitions for Determining Maximum Penalty Amounts

Part 1068 Regulatory Citation of Prohibited Action	General Description of Prohibition	U.S. Code Citation for Clean Air Act Authority
§1068.101 (a) (1)	Introduction into commerce of an uncertified product.	42 U.S.C. 7522(a)(1)
§1068.101 (a)(2)	Failure to provide information.	42 U.S.C. 7522(a)(2)
§1068.101 (a)(3)	Denying access to facilities.	42 U.S.C. 7522(a)(2)
§1068.101 (b)(1)	Tampering with emission controls by a manufacturer or dealer.	42 U.S.C. 7522(a)(3)
	Tampering with emission controls by someone other than a manufacturer or dealer.	
§1068.101 (b)(2)	Sale or use of a defeat device.	42 U.S.C. 7522(a)(3)
§1068.101 (b)(3)	Mobile use of a stationary engine.	42 U.S.C. 7522(a)(1)
§1068.101 (b)(4)	Noncompetitive use of an uncertified engine that is exempted for competition.	42 U.S.C. 7522(a)(1)
§1068.101 (b) (5)	Importation of an uncertified product.	42 U.S.C. 7522(a)(1)

§1068.105 What other provisions apply to me specifically if I manufacture equipment needing certified engines?

This section describes general provisions that apply to equipment manufacturers. See the standard-setting part for any requirements that apply for certain applications.

(a) Transitioning to new standards. You may use up your normal inventory of engines not certified to new emission standards if they were built before the date of the new standards. However, stockpiling these engines violates §1068.101(a)(1).

(b) Installing engines. You must follow the engine manufacturer's emission-related installation instructions. For example, you may need to constrain where you place an exhaust aftertreatment device or integrate into your equipment models a device for sending visual or audible signals to the operator. Not meeting the manufacturer's emission-related installation instructions is a violation of §1068.101(b)(1).

(c) Attaching a duplicate label. If you obscure the engine's label, you must do four things to avoid violating §1068.101(a)(1):

(1) Send a request for duplicate labels in writing with your company's letterhead to the engine manufacturer. Include the following information in your request:

(i) Identify the type of equipment and the specific engine and equipment models needing duplicate labels.
(ii) Identify the engine family (from the original engine label).
(iii) State the reason that you need a duplicate label for each equipment model.
(iii) Identify the number of duplicate labels you will need.

(2) Permanently attach the duplicate label to your equipment by securing it to a part needed for normal operation and not normally requiring replacement. Make sure an average person can easily read it.

(3) Destroy any unused duplicate labels if you find that you will not need them.

(4) Keep the following records for at least eight years after the end of the model year identified on the engine label:

(i) Keep a copy of your written request.
(ii) Keep drawings or descriptions that show how you apply the duplicate labels to your equipment.
(iii) Maintain a count of duplicate labels that you use or destroy.

(d) Producing nonroad equipment certified to highway emission standards. You may produce nonroad equipment from complete or incomplete motor vehicles with the motor vehicle engine if you meet three criteria:

(1) The engine or vehicle is certified to 40 CFR part 86.

(2) The engine is not adjusted outside the manufacturer's specifications.

(3) The engine or vehicle is not modified in any way that may affect its emission control. This applies to evaporative emission controls, but not refueling emission controls.

Subpart C— Exemptions and Exclusions

§1068.210 What are the provisions for exempting test engines?

(a) We may exempt engines that are not exempted under other sections of this part that you will use for research, investigations, studies, demonstrations, or training. This may include engines placed into service if the primary purpose is to develop a fundamentally new emission-control technology related either to an alternative fuel or an aftertreatment device.

(b) Anyone may ask for a testing exemption.

(c) If you are a certificate holder, you may request an exemption for engines you intend to include in test programs over a two-year period.

(1) In your request, tell us the maximum number of engines involved and describe how you will make sure exempted engines are used only for this testing.

(2) Give us the information described in paragraph (d) of this section if we ask for it.

(d) If you are not a certificate holder do all of the following:

(1) Show that the proposed test program has a valid purpose under paragraph (a) of this section.

(2) Show you need an exemption to achieve the purpose of the test program (time constraints may be a basis for needing an exemption, but the cost of certification alone is not).

(3) Estimate the duration of the proposed test program and the number of engines involved.

(4) Allow us to monitor the testing.

(5) Describe how you will ensure that you stay within this exemption's purposes. Address at least the following things:

(i) The technical nature of the test.
(ii) The test site.
(iii) The duration and accumulated engine operation associated with the test.
(iv) Ownership of the engines involved in the test.
(v) The intended final disposition of the engines.
(vi) How you will identify, record, and make available the engine identification numbers.
(vii) The means or procedure for recording test results.

(e) If we approve your request for a testing exemption, we will send you a letter or a memorandum for your signature describing the basis and scope of the exemption. The exemption does not take effect until we receive the signed letter or memorandum from you. It will also include any necessary terms and conditions, which normally require you to do the following:

(1) Stay within the scope of the exemption.

(2) Create and maintain adequate records that we may inspect.

(3) Add a permanent, legible label, written in block letters in English, to a readily visible part of each exempted engine. This label must include at least the following items:
(i) The label heading "EMISSION CONTROL INFORMATION".
(ii) Your corporate name and trademark.
(iii) Engine displacement, engine family identification (as applicable), and model year of the engine; or whom to contact for further information.
(iv) The statement "THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.210 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.".
(4) Tell us when the test program is finished.
(5) Tell us the final disposition of the engines.
(6) Send us a written confirmation that you meet the terms and conditions of this exemption.

§1068.215 What are the provisions for exempting manufacturer-owned engines?
(a) You are eligible for the exemption for manufacturer-owned engines only if you are a certificate holder.
(b) An engine may be exempt without a request if it is a nonconforming engine under your ownership and control and you operate it to develop products, assess production methods, or promote your engines in the marketplace. You may not lease, sell, or use the engine to generate revenue, either by itself or in a piece of equipment.
(c) To use this exemption, you must do three things:
(1) Establish, maintain, and keep adequately organized and indexed information on each exempted engine, including the engine identification number, the use of the engine on exempt status, and the final disposition of any engine removed from exempt status.
(2) Let us access these records, as described in §1068.20.
(3) Add a permanent, legible label, written in block letters in English, to a readily visible part of each exempted engine. This label must include at least the following items:
(i) The label heading "EMISSION CONTROL INFORMATION".
(ii) Your corporate name and trademark.
(iii) Engine displacement, engine family identification (as applicable), and model year of the engine or whom to contact for further information.
(iv) The statement "THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.215 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.".

§1068.220 What are the provisions for exempting display engines?
(a) Anyone may request an exemption for display engines.
(b) A nonconforming display engine will be exempted if it is used only for displays in the interest of a business or the general public. This exemption does not apply to engines displayed for private use or any other purpose we determine is inappropriate for a display exemption.
(c) You may operate the exempted engine, but only if we approve specific operation that is part of the display.
(d) You may sell or lease the exempted engine only with our advance approval; you may not use it to generate revenue.
(e) To use this exemption, you must add a permanent, legible label, written in block letters in English, to a readily visible part of each exempted engine. This label must include at least the following items:
(1) The label heading "EMISSION CONTROL INFORMATION".
(2) Your corporate name and trademark.
(3) Engine displacement, engine family identification (as applicable), and model year of the engine or whom to contact for further information.
(4) The statement "THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.220 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.".
(f) We may set other conditions for approval of this exemption.

§1068.225 What are the provisions for exempting engines for national security?
(a) You are eligible for the exemption for national security only if you are a manufacturer.

(b) Your engine is exempt without a request if you produce it for a piece of equipment owned or used by an agency of the federal government responsible for national defense, where the equipment has armor, permanently attached weaponry, or other substantial features typical of military combat.
(c) You may request a national security exemption for engines not meeting the conditions of paragraph (b) of this section, as long as your request is endorsed by an agency of the federal government responsible for national defense. In your request, explain why you need the exemption.

§1068.245 What temporary provisions address hardship due to unusual circumstances?
(a) After considering the circumstances, we may permit you to introduce into commerce engines or equipment that do not comply with emission standards if all the following conditions apply:
(1) Unusual circumstances that are clearly outside your control and that could not have been avoided with reasonable discretion prevent you from meeting requirements from this chapter.
(2) You exercised prudent planning and were not able to avoid the violation; you have taken all reasonable steps to minimize the extent of the nonconformity.
(3) Not having the exemption will jeopardize the solvency of your company.
(4) No other allowances are available under the regulations in this chapter to avoid the impending violation.
(b) To apply for an exemption, you must send the Designated Officer a written request as soon as possible before you are in violation. In your request, show that you meet all the conditions and requirements in paragraph (a) of this section.
(c) Include in your request a plan showing how you will meet all the applicable requirements as quickly as possible.
(d) You must give us other relevant information if we ask for it.
(e) We may include reasonable additional conditions on an approval granted under this section, including provisions to recover or otherwise address the lost environmental benefit or paying fees to offset any economic gain resulting from the exemption. For example, in the case of multiple tiers of emission standards, we may require that you meet the less stringent standards.
(f) Add a permanent, legible label, written in block letters in English, to a readily visible part of each engine exempted under this section. This label must include at least the following items:
(1) The label heading "EMISSION CONTROL INFORMATION".
(2) Your corporate name and trademark.
(3) Engine displacement (in liters), rated power, and model year of the engine or whom to contact for further information.
(4) The statement “THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.245 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.”.

§1068.250 What are the provisions for extending compliance deadlines for small-volume manufacturers under hardship?
(a) After considering the circumstances, we may extend the compliance deadline for you to meet new or revised emission standards, as long as you meet all the conditions and requirements in this section.
(b) To be eligible for this exemption, you must qualify under the standard-setting part for special provisions for small businesses or small-volume manufacturers.
(c) To apply for an extension, you must send the Designated Officer a written request. In your request, show that all the following conditions and requirements apply:
(1) You have taken all possible business, technical, and economic steps to comply.
(i) In the case of importers of engines produced by other companies, show that you attempted to find a manufacturer capable of supplying complying products as soon as you became aware of the applicable requirements, but were unable to do so.
(ii) For all other manufacturers, show that the burden of compliance costs prevents you from meeting the requirements of this chapter.
(2) Not having the exemption will jeopardize the solvency of your company.
(3) No other allowances are available under the regulations in this chapter to avoid the impending violation.
(d) In describing the steps you have taken to comply under paragraph (c)(1) of this section, include at least the following information:
(1) Describe your business plan, showing the range of projects active or under consideration.

(2) Describe your current and projected financial standing, with and without the burden of complying full with the applicable regulations in this chapter.

(3) Describe your efforts to raise capital to comply with regulations in this chapter (this may not apply for importers).

(4) Identify the engineering and technical steps you have taken or plan to take to comply with regulations in this chapter.

(5) Identify the level of compliance you can achieve. For example, you may be able to produce engines that meet a somewhat less stringent emission standard than the regulations in this chapter require.

(e) Include in your request a plan showing how you will meet all the applicable requirements as quickly as possible.

(f) You must give us other relevant information if we ask for it.

(g) An authorized representative of your company must sign the request and include the statement: "All the information in this request is true and accurate, to the best of my knowledge.".

(h) Send your request for this extension at least nine months before the relevant deadline. If different deadlines apply to companies that are not small-volume manufacturers, do not send your request before the regulations in question apply to the other manufacturers. Otherwise, do not send your request more than three years before the relevant deadline.

(i) We may include reasonable requirements on an approval granted under this section, including provisions to recover or otherwise address the lost environmental benefit. For example, we may require that you meet a less stringent emission standard or buy and use available emission credits.

(j) We will approve extensions of up to one year. We may review and revise an extension as reasonable under the circumstances.

(k) Add a permanent, legible label, written in block letters in English, to a readily visible part of each engine exempted under this section. This label must include at least the following items:

(1) The label heading "EMISSION CONTROL INFORMATION".

(2) Your corporate name and trademark.

(3) Engine displacement (in liters), rated power, and model year of the engine or whom to contact for further information.

(4) The statement "THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.250 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.".

§1068.255 What are the provisions for exempting engines for hardship for equipment manufacturers and secondary engine manufacturers?

This section describes how, in unusual circumstances, we may exempt certain engines to prevent a hardship to an equipment manufacturer or a secondary engine manufacturer. This section does not apply to products that are subject to vehicle-based emission standards.

(a) Equipment exemption. As an equipment manufacturer, you may ask for approval to produce exempted equipment for up to 12 months. We will generally limit this to the first year that new or revised emission standards apply. Send the Designated Officer a written request for an exemption before you are in violation. In your request, you must show you are not at fault for the impending violation and that you would face serious economic hardship if we do not grant the exemption. This exemption is not available under this paragraph (a) if you manufacture the engine you need for your own equipment or if complying engines are available from other engine manufacturers that could be used in your equipment, unless we allow it elsewhere in this chapter. We may impose other conditions, including provisions to recover the lost environmental benefit. In determining whether to grant the exemptions, we will consider all relevant factors, including the following:

(1) The number of engines to be exempted.

(2) The size of your company and your ability to endure the hardship.

(3) The amount of time you had to redesign your equipment to accommodate a complying engine.

(4) Whether there was any breach of contract by an engine supplier.

(5) The potential for market disruption.

(b) Engine exemption. As an engine manufacturer, you may produce nonconforming engines for the equipment we exempt in paragraph (a) of this section. You do not have to request this exemption for your engines, but you must have written assurance from equipment manufacturers that they need a certain number of exempted engines under this section. Add a permanent, legible label, written in block letters in English, to a readily visible part of each exempted engine. This label must include at least the following items:

(1) The label heading "EMISSION CONTROL INFORMATION".
(2) Your corporate name and trademark.
(3) Engine displacement (in liters), rated power, and model year of the engine or whom to contact for further information.
(4) The statement "THIS ENGINE IS EXEMPT UNDER 40 CFR 1068.255 FROM EMISSION STANDARDS AND RELATED REQUIREMENTS.".

(c) Secondary engine manufacturers. As a secondary engine manufacturer, you may ask for approval to produce exempted engines under this section for up to one year. We may require you to certify your engines to compliance levels above the emission standards that apply. For example, if you need an exemption from a second tier of standards, we may require you to meet the standards that applied to earlier model years.

(1) For the purpose of this section, a secondary engine manufacturer is a manufacturer that produces an engine by modifying an engine that is made by a different manufacturer for a different type of application. This includes, for example, automotive engines converted for use in industrial applications, or land-based engines converted for use in marine applications. This applies whether the secondary engine manufacturer is modifying a complete or partially complete engine and whether the engine was previously certified to emission standards or not. To be a secondary engine manufacturer, you must not be controlled by the manufacturer of the base engine (or by an entity that also controls the manufacturer of the base engine). In addition, equipment manufacturers that substantially modify engines become secondary engine manufacturers. For the purpose of this definition, "substantially modify" means changing an engine in a way that could change its emission characteristics.
(2) The provisions in paragraph (a) of this section that apply to equipment manufacturers requesting an exemption apply equally to you, except that you may manufacture the engines. Before we can approve the exemption under this section, you must commit to a plan to make up the lost environmental benefit.
(i) If you produce uncertified engines under this exemption, we will calculate the lost environmental benefit based on our best estimate of uncontrolled emission rates for your engines.
(ii) If you produce engines under this exemption that are certified to a compliance level less stringent than the emission standards that would otherwise apply, we will calculate the lost environmental benefit based on the compliance level you select for your engines.
(3) The labeling requirements in paragraph (b) of this section apply to your exempted engines; however, if you certify engines to specific compliance levels, state on the label the compliance levels that apply to each engine.

Subpart D—Imports

§1068.310 What are the exclusions for imported engines?

Engines or equipment that are not subject to our emission standards are not subject to the restrictions on imports in §1068.301(b). If you show us that your engines qualify under one of the paragraphs of this section, we will approve your request to import such excluded engines. You must have our approval to import an engine under paragraph (a) of this section. You may, but are not required to request our approval to import the engines under paragraph (b) or (c) of this section. The following engines are excluded:

(a) Engines used solely for competition. Engines you use solely for competition are generally excluded from the restrictions on imports in §1068.301(b), but only if they are properly labeled according to §1068.320. The standard-setting part may set special provisions for the manufacture, sale, or import of engines used solely for competition. Section 1068.101(b)(4) prohibits using these excluded engines for other purposes.

(b) Stationary engines. The definition of nonroad engine in 40 CFR 1068.30 does not include certain engines used in stationary applications. Such engines are not subject to the restrictions on imports in §1068.301(b), but only if they are properly labeled according to §1068.320. Section 1068.101 restricts the use of stationary engines for non-stationary purposes.

(c) Other engines. The standard-setting parts may exclude engines used in certain applications. For example, engines used in aircraft, underground mining, and hobby vehicles are generally excluded.

§1068.315 What are the permanent exemptions for imported engines?

We may approve a permanent exemption from the restrictions on imports under §1039.301(b) under the following conditions:

(a) National security exemption. You may an import engine under the national security exemption in §1068.225, but only if they are properly labeled according to §1068.320.
(b) Manufacturer-owned engine exemption. You may import a manufacturer-owned engine, as described in §1068.215.
(c) Replacement engine exemption. You may import a nonconforming replacement engine as described in §1068.240. To use this exemption, you must be a certificate holder for an engine family we regulate under the same part as the replacement engine.
(d) Extraordinary circumstances exemption. You may import a nonconforming engine if we grant hardship relief as described in §1068.245.
(e) Hardship exemption. You may import a nonconforming engine if we grant an exemption for the transition to new or revised emission standards, as described in §1068.255.
(f) Identical configuration exemption. You may import a nonconforming engine if it is identical to certified engines produced by the same manufacturer, subject to the following provisions:
(1) You may import only the following engines under this exemption:
(i) Large nonroad spark-ignition engines (see part 1048 of this chapter).
(ii) Recreational nonroad spark-ignition engines and equipment (see part 1051 of this chapter).
(iii) Land-based nonroad diesel engines (see part 1039 of this chapter).
(2) You must meet all the following criteria:
(i) You have owned the engine for at least one year.
(ii) You agree not to sell, lease, donate, trade, or otherwise transfer ownership of the engine for at least five years, or until the engine is eligible for the exemption in paragraph (g) of this section. During this period, the only acceptable way to dispose of the engine is to destroy or export it.
(iii) You use data or evidence sufficient to show that the engine is in a configuration that is the same as an engine the original manufacturer has certified to meet emission standards that apply at the time the manufacturer finished assembling or modifying the engine in question. If you modify the engine to make it identical, you must follow the original manufacturer's complete written instructions.
(3) We will tell you in writing if we find the information insufficient to show that the engine is eligible for this exemption. In this case, we will not consider your request further until you address our concerns.
(g) Ancient engine exemption. If you are not the original engine manufacturer, you may import a nonconforming engine that is subject to a standard-setting part and was first manufactured at least 21 years earlier, as long as it is still in its original configuration.

§1068.320 How must I label an imported engine with an exclusion or a permanent exemption?
(a) For engines imported under §1068.310(a) or (b) or §1068.315 (a), you must place a permanent label or tag on each engine. If no specific label requirements from the standard-setting part or from subpart C of this part apply, you must meet the following requirements:
(1) Attach the label or tag in one piece so no one can remove it without destroying or defacing it.
(2) Make sure it is durable and readable for the engine's entire life.
(3) Secure it to a part of the engine needed for normal operation and not normally requiring replacement.
(4) Write it in block letters in English.
(5) Make it readily visible to the average person after the engine is installed in the equipment.
(b) On the engine label or tag, do the following:
(1) Include the heading "Emission Control Information".
(2) Include your full corporate name and trademark.
(3) State the engine displacement (in liters) and rated power. If the engine's rated power is not established, state the approximate power rating accurately enough to allow a determination of which standards would otherwise apply.
(4) State: "THIS ENGINE IS EXEMPT FROM THE REQUIREMENTS OF [identify the part referenced in 40 CFR 1068.1(a) that would otherwise apply], AS PROVIDED IN [identify the paragraph authorizing the exemption (for example, "40 CFR 1068.315(a)")]. INSTALLING THIS ENGINE IN ANY DIFFERENT APPLICATION MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.".
(c) Get us to approve alternate label language if it is more accurate for your engine.

§1068.325 What are the temporary exemptions for imported engines?

If we approve a temporary exemption from the restrictions on importing an engine under §1039.301(b), you may import it under the conditions in this section. We may ask the U.S. Customs Service to require a specific bond amount to make sure you comply with the requirements of this subpart. You may not sell or lease one of these engines while it is in the United States. You must eventually export the engine as we describe in this section unless you get a certificate of conformity for it or it qualifies for one of the permanent exemptions in §1068.315. Section 1068.330 specifies an additional temporary exemption allowing you to import certain engines you intend to sell or lease.

(a) Exemption for repairs or alterations. You may temporarily import a nonconforming engine under bond solely to repair or alter it. You may operate the engine in the United States only to repair or alter it or to ship it to or from the service location. Export the engine directly after the engine servicing is complete.

(b) Testing exemption. You may temporarily import a nonconforming engine under bond for testing if you follow the requirements of §1068.210. You may operate the engine in the United States only to allow testing. This exemption expires one year after you import the engine, unless we approve a one-time request for an extension of up to one more year. The engine must be exported before the exemption expires.

(c) Display exemption. You may temporarily import a nonconforming engine under bond for display, as described in §1068.220. This exemption expires one year after you import the engine, unless we approve your request for an extension. We may approve an extension of up to one more year for each request, but no more than three years in total. The engine must be exported by the time the exemption expires or directly after the display concludes, whichever comes first.

(d) Export exemption. You may temporarily import a nonconforming engine to export it, as described in §1068.230. You may operate the engine in the United States only as needed to prepare it for export. Label the engine as described in §1068.230.

(e) Diplomatic or military exemption. You may temporarily import nonconforming engines without bond if you represent a foreign government in a diplomatic or military capacity. In your request to the Designated Officer (see §1068.305), include either written confirmation from the U.S. State Department that you qualify for this exemption or a copy of your orders for military duty in the United States. We will rely on the State Department or your military orders to determine when your diplomatic or military status expires, at which time you must export your exempt engines.

§1068.340 What special provisions apply to Independent Commercial Importers?

We generally consider engines to be new when they are imported into the United States, even if they have previously been used outside the country. See 40 CFR part 89, subpart G and 40 CFR 89.906(b) for special provisions allowing Independent Commercial Importers to show that such engines meet the requirements of the standard-setting part without the full certification process.

Subpart F—Reporting Defects and Recalling Engines

§1068.501 How do I report engine defects?

(a) General provisions. As an engine manufacturer, you must investigate in certain circumstances whether emission-related components are defective and send us reports as specified by this section.

(1) The term emission-related component includes those components listed in Appendix I of this part. For the purposes of this section, complete engines shall also be considered an emissions-related component. It also includes factory settings of emission-related parameters and specifications listed in Appendix II of this part.

(2) For the purposes of this section, defects do not include damage to emission-related components (or maladjustment of parameters) caused by owners improperly maintaining or abusing their engine.

(3) You must track the information specified in paragraph (b)(1) of this section. You are not required to collect additional information other than that specified in paragraph (b)(1) of this section before reaching the threshold for an investigation specified in paragraph (e) of this section.

(4) You may ask us to allow you to use alternate methods for tracking, investigating, reporting, and correcting emission-related defects. In your request, explain and demonstrate why you believe your alternate system will be at least as effective in tracking, identifying, investigating, evaluating, reporting, and correcting potential and actual emissions-related defects as the requirements in this section.

(5) If we determine that emission-related defects result in a substantial number of properly maintained and used engines not conforming to the regulations of this chapter during their useful life, we may order you to conduct a recall of your engines (see §1068.505).

(6) Send the defect reports and status reports required by this section to the Designated Officer.

(7) This section distinguishes between defects and possible defect. A possible defect occurs anytime there is an indication that an emission-related component might have a defect, as described in paragraph (b)(1) of this section.

(b) Investigation of possible defects. If the number of engines that have a possible defect, as defined by paragraph (b)(1) of this section, exceed the thresholds specified in paragraph (e) of this section, you must conduct an investigation to determine if an emission-related component is actually defective.

(1) You must track warranty claims, parts shipments, and the other information specified in paragraph (b)(1)(iii) of this section. You must classify an engine component as having a possible defect if any of the following is true:

(i) A warranty claim is submitted for the component, whether this is under your emission-related warranty or any other warranty.

(ii) You ship a replacement component other than for normally scheduled maintenance during the useful life of the engine.

(iii) You receive any other information indicating the component may be defective, such as information from dealers or hot line complaints.

(2) Your investigation must be prompt, thorough, consider all relevant information, follow scientific and engineering principles, and be designed to obtain all the information specified in paragraph (d) of this section.

(3) Your investigation only needs to consider possible defects that occur within the useful life period, or within five years after the end of the model year, whichever is longer.

(4) You must continue your investigation until you are able to show that components are not defective or you obtain all the information specified for a defect report in paragraph (d) of this section. Send us an updated defect report anytime you have significant additional information.

(5) If a component with a possible defect is used in additional engine families or model years, you must investigate whether the component or part may be defective when used in these additional engine families or model years, and include these results in any defect report you send under paragraph (c) of this section.

(6) If your initial investigation concludes that the number of engines with a defect is fewer than the thresholds specified in paragraph (f) of this section, but other information later becomes available that may show that the number of engines with a defect exceeds these thresholds, then you must resume your investigation. If you resume an investigation, you must include the information from the earlier investigation to determine whether to send a defect report.

(c) Reporting defects. You must send us a defect report in either of the following cases:

(1) Your investigation shows that the number of engines with a defect exceeds the thresholds specified in paragraph (f) of this section. Send the defect report within 15 days after the date you identify this number of defective engines. See paragraph (h) of this section for reporting requirements that apply if the number of engines with a defect does not exceed the thresholds in paragraph (f) of this section.

(2) You know a defective emission-related component exists in a number of engines that exceeds the thresholds specified in paragraph (f) of this section, regardless of how you obtain this information. Send the defect report within 15 days after you learn that the number of defects exceeds one of these thresholds.

(d) Contents of a defect report. Include the following information in a defect report:

(1) Your corporate name and a person to contact regarding this defect.

(2) A description of the defect, including a summary of any engineering analyses and associated data, if available.

(3) A description of the engines that may have the defect, including engine families, models, and range of production dates. Note that you must address all model years for the engines, not just the model year for which you triggered the reporting requirement.

(4) An estimate of the number and percentage of each class or category of affected engines that have or may have the defect, and an explanation of how you determined this number.

(5) An estimate of the defect's impact on emissions, with an explanation of how you calculated this estimate and a summary of any emission data demonstrating the impact of the defect, if available.

(6) A description of your plan for addressing the defect or an explanation of your reasons for not believing the defects must be remedied.

(e) Thresholds for conducting a defect investigation. Unless the standard-setting part specifies otherwise, you must begin a defect investigation based on the following threshold values:

(1) For engine with rated power under 560 kW:

(i) When the component is a catalytic converter (or other aftertreatment device), for one of the following number of engines that may have the defect:

(A) For engine families with annual sales below 4,000 units: 20 or more engines.

(B) For engine families with annual sales between 4,000 and 100,000 units: more than 2 percent of the total number of engines in the engine family.

(C) For engine families with annual sales above 100,000 units: 2,000 or more engines.

(ii) When the emission-related component is anything but a catalytic converter (or other aftertreatment device), for one of the following number of engines that may have the defect:

(A) For engine families with annual sales below 4,000 units: 40 or more engines.

(B) For engine families with annual sales between 4,000 and 100,000 units: more than 4 percent of the total number of engines in the engine family.

(C) For engine families with annual sales above 100,000 units: 4,000 or more engines.

(2) For engine with rated power greater than or equal to 560 kW, if the number of engines in an engine family that may have the defect exceeds 1 percent of the total number of engines in the engine family or 5 engines, whichever is greater.

(f) Thresholds for filing a defect report. You must send a defect report based on the following threshold values:

(1) For engine with rated power under 560 kW:

(i) When the component is a catalytic converter (or other aftertreatment device), for one of the following number of engines that may have the defect:

(A) For engine families with annual sales below 4,000 units: 5 or more engines.

(B) For engine families with annual sales between 4,000 and 100,000 units: more than 0.125 percent of the total number of engines in the engine family.

(C) For engine families with annual sales above 100,000 units: 125 or more engines.

(ii) When the emission-related component is anything but a catalytic converter (or other aftertreatment device), for one of the following number of engines that may have the defect:

(A) For engine families with annual sales below 4,000 units: 10 or more engines.

(B) For engine families with annual sales between 4,000 and 100,000 units: more than 0.250 percent of the total number of engines in the engine family.

(C) For engine families with annual sales above 100,000 units: 250 or more engines.

(2) For engine with rated power greater than or equal to 560 kW, if the number of engines in an engine family that has the defect exceeds 0.5 percent of the total number of engines in the engine family or 2 engines, whichever is greater.

(g) How to count defects. In most cases, you may track defects separately for each model year and engine family. For families with annual U.S.-directed production volumes under 5,000 engines, you may apply the percentage thresholds in paragraphs (e) and (f) of this section on the basis of multiple model years, for engines using the same emission-related components. To determine whether you exceed the investigation threshold in paragraph (e) of this section, count defects that you correct before they reach the ultimate purchaser. Do not count these corrected defects to determine whether you exceed the reporting threshold in paragraph (f) of this section.

(h) Investigation reports. If you investigate possible defects under paragraph (b) of this section and find that the number of engines with a defect does not exceed the thresholds specified in paragraph (f) of this section, you must send us a report supporting this conclusion. Include the information specified in paragraph (d) of this section, or explain why the information is not relevant. Send this report within 15 days after the date you reach this conclusion.

(i) Future production. If you identify a design or manufacturing defect that prevents engines from meeting the requirements of this part, you must correct the defect as soon as possible for any future production for engines in every family affected by the defect. This applies without regard to whether you are required to conduct a defect investigation or submit a defect report under this section.

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nR-1 \ nI-1	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
6	4.284	4.207	4.147	4.099	4.06	4.027	4	3.976	3.956	3.938	3.922	3.908	3.896	3.884	3.874
7	3.866	3.787	3.726	3.677	3.637	3.603	3.575	3.55	3.529	3.511	3.494	3.48	3.467	3.455	3.445
8	3.581	3.5	3.438	3.388	3.347	3.313	3.284	3.259	3.237	3.218	3.202	3.187	3.173	3.161	3.15
9	3.374	3.293	3.23	3.179	3.137	3.102	3.073	3.048	3.025	3.006	2.989	2.974	2.96	2.948	2.936
10	3.217	3.135	3.072	3.02	2.978	2.943	2.913	2.887	2.865	2.845	2.828	2.812	2.798	2.785	2.774
11	3.095	3.012	2.948	2.896	2.854	2.818	2.788	2.761	2.739	2.719	2.701	2.685	2.671	2.658	2.646
12	2.996	2.913	2.849	2.796	2.753	2.717	2.687	2.66	2.637	2.617	2.599	2.583	2.568	2.555	2.544
13	2.915	2.832	2.767	2.714	2.671	2.635	2.604	2.577	2.554	2.533	2.515	2.499	2.484	2.471	2.459
14	2.848	2.764	2.699	2.646	2.602	2.565	2.534	2.507	2.484	2.463	2.445	2.428	2.413	2.4	2.388
15	2.79	2.707	2.641	2.588	2.544	2.507	2.475	2.448	2.424	2.403	2.385	2.368	2.353	2.34	2.328
16	2.741	2.657	2.591	2.538	2.494	2.456	2.425	2.397	2.373	2.352	2.333	2.317	2.302	2.288	2.276
17	2.699	2.614	2.548	2.494	2.45	2.413	2.381	2.353	2.329	2.308	2.289	2.272	2.257	2.243	2.23
18	2.661	2.577	2.51	2.456	2.412	2.374	2.342	2.314	2.29	2.269	2.25	2.233	2.217	2.203	2.191
19	2.628	2.544	2.477	2.423	2.378	2.34	2.308	2.28	2.256	2.234	2.215	2.198	2.182	2.168	2.155
20	2.599	2.514	2.447	2.393	2.348	2.31	2.278	2.25	2.225	2.203	2.184	2.167	2.151	2.137	2.124