

§ 1048.101

40 CFR Ch. I (7–1–04 Edition)

(2) Include your full corporate name and trademark.

(3) State the engine displacement (in liters) and maximum brake power.

(4) State: “THIS ENGINE IS EXCLUDED FROM THE REQUIREMENTS OF 40 CFR PART 1048 AS A “STATIONARY ENGINE.” INSTALLING OR USING THIS ENGINE IN ANY OTHER APPLICATION MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.”.

**Subpart B—Emission Standards and Related Requirements**

**§ 1048.101 What exhaust emission standards must my engines meet?**

Apply the exhaust emission standards in this section by model year. You may choose to certify engines earlier than we require. The Tier 1 standards apply only to steady-state testing, as described in paragraph (b) of this section. The Tier 2 standards apply to steady-state, transient, and field testing, as described in paragraphs (a), (b), and (c) of this section.

(a) *Standards for transient testing.* Starting in the 2007 model year, Tier 2 exhaust emission standards apply for transient measurement of emissions with the duty-cycle test procedures in subpart F of this part:

(1) The Tier 2 HC+NO<sub>x</sub> standard is 2.7 g/kW-hr and the Tier 2 CO standard is 4.4 g/kW-hr. For severe-duty engines, the Tier 2 HC+NO<sub>x</sub> standard is 2.7 g/kW-hr and the Tier 2 CO standard is 130.0 g/kW-hr. The standards in this

paragraph (a) do not apply for transient testing of high-load engines.

(2) You may optionally certify your engines according to the following formula instead of the standards in paragraph (a)(1) of this section:  $(HC+NO_x) \times CO^{0.784} \leq 8.57$ . The HC+NO<sub>x</sub> and CO emission levels you select to satisfy this formula, rounded to the nearest 0.1 g/kW-hr, become the emission standards that apply for those engines. You may not select an HC+NO<sub>x</sub> emission standard higher than 2.7 g/kW-hr or a CO emission standard higher than 20.6 g/kW-hr. The following table illustrates a range of possible values under this paragraph (a)(2):

TABLE 1 OF § 1048.101—EXAMPLES OF POSSIBLE TIER 2 DUTY-CYCLE EMISSION STANDARDS

HC+NO <sub>x</sub> (g/kW-hr)	CO (g/kW-hr)
2.7	4.4
2.2	5.6
1.7	7.9
1.3	11.1
1.0	15.5
0.8	20.6

(b) *Standards for steady-state testing.* Except as we allow in paragraph (d) of this section, the following exhaust emission standards apply for steady-state measurement of emissions with the duty-cycle test procedures in subpart F of this part:

(1) The following table shows the Tier 1 exhaust emission standards that apply to engines from 2004 through 2006 model years:

TABLE 2 OF § 1048.101—TIER 1 EMISSION STANDARDS (G/KW-HR)

Testing	General emission standards		Alternate emission standards for severe-duty engines	
	HC+NO <sub>x</sub>	CO	HC+NO <sub>x</sub>	CO
Certification and production-line testing	4.0	50.0	4.0	130.0
In-use testing	5.4	50.0	5.4	130.0

(2) Starting in the 2007 model year, engines must meet the Tier 2 exhaust emission standards in paragraph (a) of this section for both steady-state and transient testing. See paragraph (d) of this section for alternate standards that apply for certain engines.

(c) *Standards for field testing.* Starting in 2007, the following Tier 2 exhaust emission standards apply for emission measurements with the field-testing procedures in subpart F of this part:

(1) The HC+NO<sub>x</sub> standard is 3.8 g/kW-hr and the CO standard is 6.5 g/kW-hr. For severe-duty engines, the HC+NO<sub>x</sub>

**Environmental Protection Agency**

**§ 1048.101**

standard is 3.8 g/kW-hr and the CO standard is 200.0 g/kW-hr. For natural gas-fueled engines, you are not required to measure nonmethane hydrocarbon emissions or total hydrocarbon emissions for testing to show that the engine meets the emission standards of this paragraph (c); that is, you may assume HC emissions are equal to zero.

(2) You may apply the following formula to determine alternate emission standards that apply to your engines instead of the standards in paragraph (c)(1) of this section:  $(HC+NO_x) \times CO^{0.791} \leq 16.78$ . HC+NO<sub>x</sub> emission levels may not exceed 3.8 g/kW-hr and CO emission levels may not exceed 31.0 g/kW-hr. The following table illustrates a range of possible values under this paragraph (c)(2):

TABLE 3 OF § 1048.101—EXAMPLES OF POSSIBLE TIER 2 FIELD-TESTING EMISSION STANDARDS

HC+NO <sub>x</sub> (g/kW-hr)	CO (g/kW-hr)
3.8	6.5
3.1	8.5
2.4	11.7
1.8	16.8
1.4	23.1
1.1	31.0

(d) *Engine protection.* For engines that require enrichment at high loads to protect the engine, you may ask to meet alternate Tier 2 standards of 2.7 g/kW-hr for HC+NO<sub>x</sub> and 31.0 g/kW-hr for CO instead of the emission standards described in paragraph (b)(2) of this section for steady-state testing. If we approve your request, you must still meet the transient testing standards in paragraph (a) of this section and the field-testing standards in paragraph (c) of this section. To qualify for this allowance, you must do all the following things:

- (1) Show that enrichment is necessary to protect the engine from damage.
- (2) Show that you limit enrichment to operating modes that require additional cooling to protect the engine from damage.
- (3) Show in your application for certification that enrichment will rarely occur in use in the equipment in which your engines are installed. For example, an engine that is expected to oper-

ate 5 percent of the time in use with enrichment would clearly not qualify.

(4) Include in your installation instructions any steps necessary for someone installing your engines to prevent enrichment during normal operation (see § 1048.130).

(e) *Fuel types.* Apply the exhaust emission standards in this section for engines using each type of fuel specified in 40 CFR part 1065, subpart C, for which they are designed to operate. You must meet the numerical emission standards for hydrocarbons in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

- (1) Gasoline- and LPG-fueled engines: THC emissions.
- (2) Natural gas-fueled engines: NMHC emissions.
- (3) Alcohol-fueled engines: THCE emissions.

(f) *Small engines.* Certain engines with total displacement at or below 1000 cc may comply with the requirements of 40 CFR part 90 instead of complying with the requirements of this part, as described in § 1048.615.

(g) *Useful life.* Your engines must meet the exhaust emission standards in paragraphs (a) through (c) of this section over their full useful life (§ 1048.240 describes how to use deterioration factors to show this). The minimum useful life is 5,000 hours of operation or seven years, whichever comes first.

(1) Specify a longer useful life in hours for an engine family under either of two conditions:

- (i) If you design, advertise, or market your engine to operate longer than the minimum useful life (your recommended hours until rebuild may indicate a longer design life).
- (ii) If your basic mechanical warranty is longer than the minimum useful life.

(2) You may request a shorter useful life for an engine family if you have documentation from in-use engines showing that these engines will rarely operate longer than the alternate useful life. The useful life value may not be shorter than any of the following:

- (i) 1,000 hours of operation.
- (ii) Your recommended overhaul interval.

(iii) Your mechanical warranty for the engine.

(h) *Applicability for testing.* The standards in this subpart apply to all testing, including production-line and in-use testing, as described in subparts D and E of this part.

**§ 1048.105 What evaporative emissions standards and requirements apply?**

(a) Starting in the 2007 model year, engines that run on a volatile liquid fuel (such as gasoline), must meet the following evaporative emissions standards and requirements:

(1) Evaporative hydrocarbon emissions may not exceed 0.2 grams per gallon of fuel tank capacity when measured with the test procedures for evaporative emissions in subpart F of this part.

(2) For nonmetallic fuel lines, you must specify and use products that meet the Category 1 specifications in SAE J2260 (incorporated by reference in § 1048.810).

(3) Liquid fuel in the fuel tank may not reach boiling during continuous engine operation in the final installation at an ambient temperature of 30 °C. Note that gasoline with a Reid vapor pressure of 62 kPa (9 psi) begins to boil at about 53 °C.

(b) Note that § 1048.245 allows you to use design-based certification instead of generating new emission data.

(c) If other companies install your engines in their equipment, give them any appropriate instructions, as described in § 1048.130.

**§ 1048.110 How must my engines diagnose malfunctions?**

(a) *Equip your engines with a diagnostic system.* Starting in the 2007 model year, equip each engine with a diagnostic system that will detect significant malfunctions in its emission-control system using one of the following protocols:

(1) If your emission-control strategy depends on maintaining air-fuel ratios at stoichiometry, an acceptable diagnostic design would identify malfunction whenever the air-fuel ratio does not cross stoichiometry for one minute of intended closed-loop operation. You may use other diagnostic strategies if we approve them in advance.

(2) If the protocol described in paragraph (a)(1) of this section does not apply to your engine, you must use an alternative approach that we approve in advance. Your alternative approach must generally detect when the emission-control system is not functioning properly.

(b) *Use a malfunction-indicator light (MIL).* The MIL must be readily visible to the operator; it may be any color except red. When the MIL goes on, it must display “Check Engine,” “Service Engine Soon,” or a similar message that we approve. You may use sound in addition to the light signal. The MIL must go on under each of these circumstances:

(1) When a malfunction occurs, as described in paragraph (a) of this section.

(2) When the diagnostic system cannot send signals to meet the requirement of paragraph (b)(1) of this section.

(3) When the engine’s ignition is in the “key-on” position before starting or cranking. The MIL should go out after engine starting if the system detects no malfunction.

(c) *Control when the MIL can go out.* If the MIL goes on to show a malfunction, it must remain on during all later engine operation until servicing corrects the malfunction. If the engine is not serviced, but the malfunction does not recur for three consecutive engine starts during which the malfunctioning system is evaluated and found to be working properly, the MIL may stay off during later engine operation.

(d) *Store trouble codes in computer memory.* Record and store in computer memory any diagnostic trouble codes showing a malfunction that should illuminate the MIL. The stored codes must identify the malfunctioning system or component as uniquely as possible. Make these codes available through the data link connector as described in paragraph (g) of this section. You may store codes for conditions that do not turn on the MIL. The system must store a separate code to show when the diagnostic system is disabled (from malfunction or tampering).

(e) *Make data, access codes, and devices accessible.* Make all required data accessible to us without any access codes or devices that only you can supply.

Ensure that anyone servicing your engine can read and understand the diagnostic trouble codes stored in the on-board computer with generic tools and information.

(f) *Consider exceptions for certain conditions.* Your diagnostic systems may disregard trouble codes for the first three minutes after engine starting. You may ask us to approve diagnostic-system designs that disregard trouble codes under other conditions that would produce an unreliable reading, damage systems or components, or cause other safety risks. This might include operation at altitudes over 8,000 feet.

(g) *Follow standard references for formats, codes, and connections.* Follow conventions defined in the following documents (incorporated by reference in § 1048.810) or ask us to approve using updated versions of (or variations from) these documents:

(1) ISO 9141-2 Road vehicles-Diagnostic systems—Part 2: CARB requirements for interchange of digital information, February 1994.

(2) ISO 14230-4 Road vehicles—Diagnostic systems—Keyword Protocol 2000—Part 4: Requirements for emission-related systems, June 2000.

**§ 1048.115 What other requirements must my engines meet?**

Your engines must meet the following requirements:

(a) *Closed crankcase.* Your engines may not vent crankcase emissions into the atmosphere throughout their useful life, with the following exception: your engines may vent crankcase emissions if you measure and include these crankcase emissions with all measured exhaust emissions.

(b) *Torque broadcasting.* Electronically controlled engines must broadcast their speed and output shaft torque (in newton-meters) on their controller area networks. Engines may alternatively broadcast a surrogate value for torque that can be read with a remote device. This information is necessary for testing engines in the field (see 40 CFR 1065.515). This requirement applies beginning in the 2007 model year. Small-volume engine manufacturers may omit this requirement.

(c) *EPA access to broadcast information.* If we request it, you must provide us any hardware or tools we would need to readily read, interpret, and record all information broadcast by an engine's on-board computers and electronic control modules. If you broadcast a surrogate parameter for torque values, you must provide us what we need to convert these into torque units. We will not ask for hardware or tools if they are readily available commercially.

(d) *Emission sampling capability.* Produce all your engines to allow sampling of exhaust emissions in the field without damaging the engine or equipment. Show in your application for certification how this can be done in a way that prevents diluting the exhaust sample with ambient air. To do this, you might simply allow for extending the exhaust pipe by 20 cm; you might also install exhaust ports downstream of any aftertreatment devices.

(e) *Adjustable parameters.* Engines that have adjustable parameters must meet all the requirements of this part for any adjustment in the physically adjustable range.

(1) We do not consider an operating parameter adjustable if you permanently seal it or if ordinary tools cannot readily access it.

(2) We may require that you set adjustable parameters to any specification within the adjustable range during certification testing, production-line testing, selective enforcement auditing, or any 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 you may reasonably expect the engine to encounter during normal operation and use. This does not apply to auxiliary emission-control devices

## § 1048.120

## 40 CFR Ch. I (7–1–04 Edition)

you identify in your certification application if any of the following is true:

(1) The conditions of concern were substantially included in your prescribed duty cycles.

(2) You show your design is necessary to prevent catastrophic engine (or equipment) damage or accidents.

(3) The reduced effectiveness applies only to starting the engine.

### § 1048.120 What warranty requirements apply to me?

(a) *General requirements.* You must warrant to the ultimate buyer that the new nonroad engine meets two conditions:

(1) It is designed, built, and equipped it to conform at the time of sale 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 50 percent of the engine's useful life in hours of operation or at least three years, whichever comes first. In the case of a high-cost warranted part, the warranty must be valid for at least 70 percent of the engine's useful life in hours of operation or at least five years, whichever comes first. You may offer an emission-related warranty more generous than we require. This warranty may not be shorter than any published or negotiated warranty you offer for the engine or any of its 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).

(c) *Components covered.* The emission-related warranty must cover components whose failure would increase an engine's emissions, including electronic controls, fuel injection (for liquid or gaseous fuels), exhaust-gas recirculation, aftertreatment, or any other system you develop to control emissions. We generally consider replacing or repairing other components to be the owner's responsibility.

(d) *Scheduled maintenance.* You may schedule emission-related maintenance for a component named in paragraph (c) of this section, subject to the restrictions of § 1048.125. You are not required to cover this scheduled maintenance

under your warranty if the component meets either of the following criteria:

(1) The component was in general use on similar engines, and was subject to scheduled maintenance, before January 1, 2000.

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

(e) *Limited applicability.* You may deny warranty claims under this section if the operator caused the problem, as described in 40 CFR 1068.115.

(f) *Aftermarket parts.* As noted 40 CFR 1068.101, it is a violation of the Act to manufacture an engine part if one of its main effects is to reduce the effectiveness of the engine's emission controls. If you make an aftermarket part, you may—but do not have to—certify that using the part will still allow engines to meet emission standards, as described in 40 CFR 85.2114.

### § 1048.125 What maintenance instructions must I give to buyers?

Give the ultimate buyer 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 it meets two criteria:

(i) Operators are reasonably likely to do the maintenance you call for.

(ii) Engines need the maintenance to meet emission standards.

(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 critical emission-related maintenance more frequently than the following intervals, except as specified in paragraph (a)(4) of this section:

(i) For catalyts, fuel injectors, electronic control units, superchargers, and turbochargers: the useful life of the engine family.

(ii) For gaseous fuel-system components (cleaning without disassembly only) and oxygen sensors: 2,500 hours.

(4) If your engine family has an alternate useful life shorter than the period specified in paragraph (a)(3)(ii) of this section, you may not schedule maintenance on those components more frequently than the alternate useful life (see § 1048.101(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 substandard fuel or atypical engine operation. For exam-

ple, you may specify more frequent cleaning of fuel system components for engines you have reason to believe will be using fuel that causes substantially more engine performance problems than commercial fuels of the same type that are generally available across the United States.

(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 or changing air, fuel, or oil filters.

(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.

EFFECTIVE DATE NOTE: At 69 FR 39259, June 29, 2004, § 1048.125 was amended by revising

§ 1048.130

paragraph (a) introductory text and paragraph (d), effective Aug. 30, 2004. For the convenience of the user, the revised text is set forth as follows:

§ 1048.125 What maintenance instructions must I give to buyers?

(a) Critical emission-related maintenance. Critical emission-related maintenance includes any adjustment, cleaning, repair, or replacement of critical emission-related components. This may also include additional emission-related maintenance that you determine is critical if we approve it in advance. You may schedule critical emission-related maintenance on these components if you meet the following conditions:

\* \* \* \* \*

(d) Noncritical emission-related maintenance. You may schedule any amount of emission-related inspection or maintenance that is not covered by paragraph (a) of this section, as long as you state in the owners manual that these steps are not necessary to keep the emission-related warranty valid. If operators fail to do this maintenance, this does not allow you to disqualify those engines from in-use testing or deny a warranty claim. Do not take these inspection or maintenance steps during service accumulation on your emission-data engines.

\* \* \* \* \*

§ 1048.130 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 engines installed this way will meet emission standards.

(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 any other instructions needed to install an exhaust aftertreatment device and to locate exhaust sampling ports consistent with your application for certification.

(4) Describe the steps needed to control evaporative emissions, as described in §§ 1048.105 and 1048.245.

(5) Describe any necessary steps for installing the diagnostic system described in § 1048.110.

(6) 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, tell equipment manufacturers not to install the engines in variable-speed applications. Also, if you need to avoid sustained high-load operation to meet the field-testing emission standards we specify in § 1048.101(c) or to comply with the provisions of § 1048.101(d), describe how the equipment manufacturer must properly size the engines for a given application.

(7) Describe any other instructions to make sure the installed engine will operate according to design specifications in your application for certification.

(8) 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.

§ 1048.135 How must I label and identify the engines I produce?

(a) Assign each production engine a unique identification number and permanently and legibly affix, engrave, or stamp it on the engine.

(b) At the time of manufacture, add a permanent emission control information label identifying each engine. To meet labeling requirements, do four things:

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

(2) Design and produce it to be 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.

(c) On your engine's emission control information label, do 13 things:

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

(2) Include your full corporate name and trademark.

(3) State: "THIS ENGINE IS CERTIFIED TO OPERATE ON [specify operating fuel or fuels].".

(4) Identify the emission-control system; your identifiers must use names and abbreviations consistent with SAE J1930 (incorporated by reference in § 1048.810).

(5) List all requirements for fuel and lubricants.

(6) State the date of manufacture (DAY (optional), MONTH, and YEAR); if you stamp this information on the engine and print it in the owner's manual, you may omit it from the emission control information label.

(7) State: "THIS ENGINE MEETS U.S. ENVIRONMENTAL PROTECTION AGENCY REGULATIONS FOR (MODEL YEAR) LARGE NONROAD SI ENGINES.".

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

(9) State the engine's displacement (in liters) and maximum brake power.

(10) State the engine's useful life (see § 1048.101(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) Identify the emission standards to which you have certified the engine.

(d) Some of your engines may need more information on the emission control information label.

(1) If you have an engine family that has been certified only for constant-speed engines, add to the engine label "CONSTANT-SPEED ONLY".

(2) If you have an engine family that has been certified only for variable-speed engines, add to the engine label "VARIABLE-SPEED ONLY".

(3) If you have an engine family that has been certified only for high-load engines, add to the engine label "THIS ENGINE IS NOT INTENDED FOR OP-

ERATION AT LESS THAN 75 PERCENT OF FULL LOAD.".

(4) If you certify an engine to the voluntary standards in § 1048.140, add to the engine label "BLUE SKY SERIES".

(5) If you produce an engine we exempt from the requirements of this part, see subpart G of this part and 40 CFR part 1068, subparts C and D, for more label information.

(6) If you certify an engine family under § 1048.101(d) (and show in your application for certification that in-use engines will experience infrequent high-load operation), add to the engine label "THIS ENGINE IS NOT INTENDED FOR OPERATION AT MORE THAN \_ PERCENT OF FULL LOAD.". Specify the appropriate percentage of full load based on the nature of the engine protection. You may add other statements to discourage operation in engine-protection modes.

(e) Some engines may not have enough space for an emission control information label with all the required information. In this case, you may omit the information required in paragraphs (c)(3), (c)(4), (c)(5), and (c)(12) of this section if you print it in the owner's manual instead.

(f) If you are unable to meet these labeling requirements, you may ask us to modify them consistent with the intent of this section.

#### **§ 1048.140 What are the provisions for certifying Blue Sky Series engines?**

This section defines voluntary standards for a recognized level of superior emission control for engines designated as "Blue Sky Series" engines. Blue Sky Series engines must meet one of the following standards:

(a) For the 2003 model year, to receive a certificate of conformity, a "Blue Sky Series" engine family must meet all the requirements in this part that apply to 2004 model year engines. This includes all testing and reporting requirements.

(b) For the 2003 through 2006 model years, to receive a certificate of conformity, a "Blue Sky Series" engine family must meet all the requirements in this part that apply to 2007 model year engines. This includes all testing and reporting requirements.

(c) For any model year, to receive a certificate of conformity as a “Blue Sky Series” engine family must meet all the requirements in this part, while certifying to the following exhaust emission standards:

(1) 0.8 g/kW-hr HC+NO<sub>x</sub> and 4.4 g/kW-hr CO using steady-state and transient test procedures, as described in subpart F of this part.

(2) 1.1 g/kW-hr HC+NO<sub>x</sub> and 6.6 g/kW-hr CO using field-testing procedures, as described in subpart F of this part.

(d) If you certify an engine family under this section, it is subject to all the requirements of this part as if these voluntary standards were mandatory.

**§ 1048.145 What provisions apply only for a limited time?**

The provisions in this section apply instead of other provisions in this part. This section describes when these interim provisions expire.

(a) *Family banking.* You may certify an engine family to comply with Tier 1 or Tier 2 standards earlier than necessary. For each model year of early compliance for an engine family, you may delay compliance with the same standards for an equal number of engines from another engine family (or families) for one model year. If you certify engines under the voluntary standards of §1048.140, you may not use them in your calculation under this paragraph (a). Base your calculation on actual power-weighted nationwide sales for each family. You may delay compliance for up to three model years. For example, if you sell 1,000 engines with an average power rating of 60 kW certified a year early, you may delay certification to that tier of standards for up to 60,000 kW-engine-years in any of the following ways:

(1) Delay certification of another engine family with an average power rating of 100 kW of up to 600 engines for one model year.

(2) Delay certification of another engine family with an average power rating of 100 kW of up to 200 engines for three model years.

(3) Delay certification of one engine family with an average power rating of 100 kW of up to 400 engines for one model year and a second engine family

with an average power rating of 200 kW of up to 50 engines for two model years.

(b) *Hydrocarbon standards.* For 2004 through 2006 model years, engine manufacturers may use nonmethane hydrocarbon measurements to demonstrate compliance with applicable emission standards.

(c) *Transient emission testing.* Engines rated over 560 kW are exempt from the transient emission standards in §1048.101(a).

(d) *Tier 1 deterioration factors.* For Tier 1 engines, base the deterioration factor from §1048.240 on 3500 hours of operation. We may assign a deterioration factor for a Tier 1 engine family, but this would not affect your need to meet all emission standards that apply.

(e) [Reserved]

(f) *Optional early field testing.* You may optionally use the field-testing procedures in subpart F of this part for any in-use testing required under subpart E of this part to show that you meet Tier 1 standards. In this case, the same Tier 1 in-use emission standards apply to both steady-state testing in the laboratory and field testing.

(g) *Small-volume provisions.* If you qualify for the hardship provisions in §1068.250 of this chapter, we may approve extensions of up to four years total.

(h) *2004 certification.* For the 2004 model year, you may choose to have the emission standards and other requirements that apply to these engines in California serve as the emission standards and other requirements applicable under this part, instead of those in subpart A of this part. To ask for a certificate under this paragraph (h), send us the application for certification that you prepare for the California Air Resources Board instead of the information we otherwise require in §1048.205.

(i) *Recreational vehicles.* Engines or vehicles identified in the scope of 40 CFR part 1051 that are not yet regulated under that part are excluded from the requirements of this part. For example, snowmobiles produced in 2004

are not subject to the emission standards in this part. Once emission standards apply to these engines and vehicles, they are excluded from the requirements of this part under § 1048.5(a)(1).

### Subpart C—Certifying Engine Families

#### § 1048.201 What are the general requirements for submitting a certification application?

(a) Send us an application for a certificate of conformity for each engine family. Each application is valid for only one model year.

(b) The application must not include false or incomplete statements or information (see § 1048.255).

(c) We may choose to ask you to send us less information than we specify in this subpart, but this would not change your recordkeeping requirements.

(d) 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.

#### § 1048.205 What must I include in my application?

In your application, do all the following things unless we ask you to send us less information:

(a) Describe the engine family's specifications and other basic parameters of the engine's design. List the types of fuel you intend to use to certify the engine family (for example, gasoline, liquefied petroleum gas, methanol, or natural gas).

(b) Explain how the emission-control systems operate.

(1) Describe in detail all the system components for controlling exhaust emissions, including auxiliary emission-control devices and all fuel-system components you will install on any production or test engine. Explain why any auxiliary emission-control devices are not defeat devices (see § 1048.115(g)). Do not include detailed calibrations for components unless we ask for them.

(2) Describe the evaporative emission controls.

(c) Explain how the engine diagnostic system works, describing especially the engine conditions (with the corresponding diagnostic trouble codes) that cause the malfunction-indicator light to go on. Propose what you consider to be extreme conditions under which the diagnostic system should disregard trouble codes, as described in § 1048.110.

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

(e) Describe any special or alternate test procedures you used (see § 1048.501).

(f) Describe how you operated the engine or vehicle prior to testing, including the duty cycle and the number of engine operating hours used to stabilize emission levels. 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 buyer of each new nonroad engine (see § 1048.125).

(j) Propose emission-related installation instructions if you sell engines for someone else to install in a piece of nonroad equipment (see § 1048.130).

(k) Identify each high-cost warranted part and show us how you calculated its replacement cost, including the estimated retail cost of the part, labor rates, and labor hours to diagnose and replace defective parts.

(l) Propose an emission control information label.

(m) Present emission data to show that you meet emission standards.

(1) Present exhaust emission data for HC, NO<sub>x</sub>, and CO on a test engine to show your engines meet the duty-cycle emission standards we specify in § 1048.101(a) and (b). Show these figures before and after applying deterioration factors for each engine. Starting in the 2007 model year, identify the duty-cycle emission standards to which you are certifying engines in the engine family. Include test data for each type of fuel from 40 CFR part 1065, subpart C, on which you intend for engines in