Proposed Regulation Order

NOTE: This document is printed in a style to indicate proposed changes from the existing provisions. All existing language is indicated by plain type. All proposed additions to language are indicated by underlined text. All proposed deletions to language are indicated by ~~strikeout~~.

Amend or Adopt Article 4, Chapter 9, Division 3, Title 13, California Code of Regulations, and the incorporated documents: California Exhaust Emission Standards and Test Procedures for New 1996-1999 Heavy-Duty Off-Road Compression-Ignition Engines, Part I-A; California Exhaust Emission Standards and Test Procedures for New 2000 and Later Off-Road Compression-Ignition Engines, Part I-B; California Exhaust Emission Standards and Test Procedures for New 1996 and Later Off-Road Compression-Ignition Engines, Part II; and California Smoke Test Procedures for New 1996-1999 Off-Road Compression-Ignition Engines, Part III.

Article 4. ~~Heavy-Duty~~ Off-Road ~~Diesel Cycle~~Compression-Ignition Engines

2420. Applicability.

(a) (1) This article shall be applicable to new heavy-duty off-road ~~diesel cycle~~compression-ignition engines, including all heavy-duty off-road alternate-fueled ~~diesel cycle~~compression-ignition engines, including those engines derived from existing diesel cycle engines (hereinafter, all such engines shall be referred to as ~~diesel cycle~~ compression-ignition engines) produced on or after January 1, 1996~~.~~, and all other new 2000 model year and later off-road compression-ignition engines, with the exception of all engines and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the Federal Clean Air Act (42 U.S.C. 7543(e)(1)(A)) and as defined by regulation of the U.S. Environmental Protection Agency.

(2) For any engine ~~which~~that is not a distinctly ~~diesel~~compression-ignition engine nor derived from such, the Executive Officer shall determine whether the engine shall be subject to these regulations, taking into consideration the relative similarity of the engine's torque-speed characteristics with those of ~~diesel~~ compression-ignition engines.

(3) Every new ~~heavy-duty~~ off-road ~~diesel-cycle~~ compression-ignition engine that is manufactured for sale, sold, offered for sale, introduced or delivered for introduction into commerce, or imported into California ~~which~~ and that is subject to any of the standards prescribed in this article and documents incorporated by reference therein, is required to be certified for use and sale by the manufacturer through the Air Resources Board and covered by an Executive Order, issued pursuant to Chapter 9, Article ~~3~~4, Section 2423.

(b) Each part of this article shall be deemed severable, and in the event that any part of this chapter or article is held to be invalid, the remainder shall continue in full force and effect.

(c) This article and documents incorporated by reference herein, include provisions for certification, labeling requirements, warranty, in-use compliance testing, quality-audit testing, and certification testing.

(d) (1) For purposes of this article, military tactical vehicles or equipment means vehicles or equipment owned by the U.S. Department of Defense and/or the U.S. military services and used in combat, combat support, combat service support, tactical or relief operations, or training for such operations.

(2) This article shall not apply to engines used in off-road military tactical vehicles or equipment which have been exempted from regulations under the federal national security exemption, 40 CFR, Subpart J, Section 89.908. It shall also not apply to those vehicles and equipment covered by the definition of military tactical vehicle that are commonly available and for which a federal certificate of conformity has been issued under 40 CFR Part 89, Subpart B.

(3) On January 1, 1997, the U.S. Department of Defense shall submit to the ARB a list of all vehicle and equipment types that are exempted under the above provisions and which are located in the State of California. If any additional vehicle and equipment types are added to the list during the previous 12 months, the U.S. Department of Defense shall update the list and submit it to the ARB by January 1 of the following year.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102, ~~and~~ 43104, and 43105 Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43105, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

2421. Definitions.

(a) The definitions in Section 1900 (b), Chapter 3, Title 13 of the California Code of Regulations, shall apply with the following additions:

(1) "1996-1999 Heavy-Duty Test Procedures" means the document entitled "California Exhaust Emission Standards and Test Procedures for New 1996-1999 Heavy-Duty Off-Road Compression-Ignition Engines, Part I-A," which includes the standards and test procedures applicable to 1996-1999 heavy-duty off-road compression-ignition engines, as adopted May 12, 1993, and as amended (date of amendment). This document is incorporated by reference in herein.

(2) "1996-1999 Smoke Test Procedures" means the document entitled "California Smoke Test Procedures for New 1996-1999 Off-Road Compression-Ignition Engines, Part III" which includes the standards and test procedures applicable to 1996-1999 heavy-duty off-road compression-ignition engines, as adopted May 12, 1993, and as amended (date of amendment). This document is incorporated by reference herein.

(3) "2000 and Later Test Procedures" means the document entitled "California Exhaust Emission Standards and Test Procedures for New 2000 and Later Off-Road Compression-Ignition Engines, Part I-B," which includes the standards and test procedures applicable to 2000 and later off-road compression-ignition engines, as adopted (date of adoption). This document is incorporated by reference herein.

~~(1)~~(4) "Alternate ~~F~~fuel" means any fuel that will reduce non-methane hydrocarbons (on a reactivity-adjusted basis), NOx, CO, and the potential risk associated with toxic air contaminants as compared to gasoline or diesel fuel and would not result in increased deterioration of the engine. Alternate fuels include, but are not limited to, methanol, ethanol, liquefied petroleum gas, compressed natural gas, and electricity.

~~(2)~~(5) "ARB Enforcement Officer" means any officer or employee of the Air Resources Board so designated in writing by the Executive Officer (or by his designee).

~~(3)~~(6) "Assembly-~~L~~line ~~T~~tests" are those tests or inspections ~~which~~that are performed on or at the end of the assembly line.

(7) "Blue Sky Series engine" means an off-road compression-ignition engine meeting the requirements of Section 2423(b)(4).

~~(4)~~(8) "Calendar ~~Y~~year" is defined as the twelve-month period commencing on January 1 through December 31.

(9) “Certification” means, with respect to new off-road compression-ignition engines, the obtaining of an Executive Order for an engine family complying with the off-road compression-ignition engine emission standards and requirements specified in this article.

(10) “Compression-ignition engine” means a type of engine with operating characteristics significantly similar to the theoretical Diesel combustion cycle. The non-use of a throttle to regulate intake flow for controlling power during normal operation is indicative of a compression-ignition engine. A compression-ignition engine may be petroleum-fueled (i.e., diesel-fueled) or alternate-fueled. All engines and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the Federal Clean Air Act (42 U.S.C. 7543(e)(1)(A) and as defined by regulation of the Environmental Protection Agency, are specifically not included within this category.

(11) “Constant-speed engine” means an off-road compression-ignition engine that is governed to operate only at rated speed.

~~(5)~~(12) “Crankcase ~~E~~emissions” means airborne substances emitted into the atmosphere from any portion of the engine crankcase ventilation or lubrication system.

~~(6)~~(13) “Compliance testing” means ARB directed emissions tests and inspections of a reasonable number of production engines and/or vehicles that are offered for sale, or manufactured for sale, in California in order to verify compliance with the applicable certification emission standards. The emissions tests may be conducted at ARB or contracted out facilities or at the manufacturer's facility. The testing will be done at the expense of the manufacturer.

~~(7)~~(14) “Confirmatory testing” means ARB directed emissions tests and inspections of the test engines and/or test vehicles used by the manufacturer to obtain test data for submittal with the certification application. The emissions tests may be conducted at ARB or contracted out facilities or at the manufacturer's facility. The testing will be done at the expense of the manufacturer.

(15) “Dealer” means that person or entity engaged in the selling of new off-road compression-ignition engines, vehicles or equipment to ultimate purchasers.

~~(8)~~(16) “Diesel ~~C~~cycle ~~E~~engine” means a type of engine with operating characteristics significantly similar to the theoretical diesel combustion cycle. The primary means of controlling power output in a diesel cycle engine is by limiting the amount of fuel that is injected into the combustion chambers of the engine. A diesel cycle engine may be petroleum-fueled (i.e., diesel-fueled) or alternate-fueled.

~~(9)~~(17) “Emission ~~C~~control ~~S~~system” includes any component, group of

components, or engine modification ~~which~~that controls or causes the reduction of substances emitted from an engine.

~~(10)~~(18) "End of ~~A~~assembly-~~L~~line" is defined as that place where the final inspection test or quality-audit test is performed.

~~(11)~~(19) "Engine ~~M~~manufacturer" or "manufacturer" means ~~the manufacturer granted certification.~~ any person who is engaged in the manufacturing or assembling of new off-road engines or the importing of new off-road engines for resale and who has been granted certification, or any person who acts for and is under the control of a manufacturer in connection with the distribution of new off-road engines. "Engine manufacturer" or "manufacturer" does not include a dealer who receives new off-road engines for sale in commerce.

~~(12)~~(20) "Exhaust ~~E~~emissions" means substances emitted into the atmosphere from any opening downstream from the exhaust port of an off- highway engine.

(21) "Family emission limit" (FEL) means an emission level that is declared by the manufacturer to serve in lieu of an emission standard for certification purposes and for the averaging, banking, and trading program, as defined in Title 13, California Code of Regulations, Section 2423. A FEL must be expressed to the same number of decimal places as the applicable emission standard.

~~(13)~~(22) "Final ~~C~~calendar ~~Q~~quarter ~~P~~production" is defined as the calendar quarter in which the production of an engine family ends.

~~(14)~~(23) "First ~~C~~calendar ~~Q~~quarter ~~P~~production" is defined as the calendar quarter in which the production of an engine family begins.

~~(15)~~(24) "Fuel ~~S~~system" means the combination of any of the following components: fuel tank, fuel pump, fuel lines, oil injection metering system, carburetor or fuel injection components, or all fuel system vents.

~~(16)~~(25) "Gross ~~E~~engine ~~M~~malfunction" is defined as one yielding an emission value greater than the sum of the mean plus three (3) times the standard deviation. This definition shall apply only for determination of control limits.

~~(17)~~(26) "Heavy-~~D~~duty ~~O~~off-~~R~~road ~~Diesel Cycle~~ compression-ignition ~~E~~engines" or "~~E~~engines" are identified as: 1996 through 1999 model year diesel or alternate fuel powered diesel cycle internal combustion engines 175 horsepower and greater, operated on or in any device by which any person or property may be propelled, moved or drawn upon a highway, but are primarily used off a highway. The engines are designed for powering construction, farm, mining, forestry and industrial implements and equipment. They are designed to be used in, but are not limited to use in, the following applications: agricultural tractors, backhoes, excavators,

dozers, log skidders, trenchers, motor graders, portable generators and compressors and other miscellaneous applications.

Specifically excluded from this category are: 1) engines operated on or in any device used exclusively upon stationary rails or tracks; 2) engines used to propel marine vessels; 3) internal combustion engines attached to a foundation at a location; 4) transportable engines subject to District permitting rules which have been operated at a location for a period of one year or more on January 1, 1997; and 5) stationary or transportable gas turbines for power generation.

(27) "Identification number" means a specification (for example, model, number/serial number combination) that allows a particular off-road compression-ignition engine to be distinguished from other similar engines.

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

(29) "Maximum Rated Power" means the maximum brake kilowatt output of an engine as stated by the manufacturer in the manufacturer's sales and service literature and in the application for certification.

~~(18)~~(30) "Model year" means the manufacturer's annual production period, which includes January 1 of a calendar year or, if the manufacturer has no annual production period, the calendar year.

(31) "Off-road compression-ignition engine":

(A) Except as specified in paragraph (B) of this definition, an off-road compression-ignition engine is any internal combustion engine:

(i) in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function and is primarily used off the highways (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to wheels, skids, carrying handles, dolly, trailer, or platform.

(B) An internal combustion engine is not an off-road compression-ignition engine if:

(i) the engine is used to propel a vehicle subject to the emissions standards contained in Title 13, California Code of Regulations, Sections 1950 -

1978, or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the federal Clean Air Act (42 U.S.C. 7521); or

(ii) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the federal Clean Air Act (42 U.S.C. 7511); or

(iii) the engine otherwise included in paragraph (a)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at a single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

~~(19)~~(32) "Off-road vehicle" or "Off-road equipment" means a vehicle or equipment that is powered by an off-road compression-ignition engine~~any non-stationary device, powered by an internal combustion engine or motor, used primarily off the highways to propel, move, or draw persons or property including any device propelled, moved, or drawn exclusively by human power, and used in, but not limited to, any of the following applications: Marine Vessels, Construction/Farm Equipment, Locomotives, Utility and Lawn and Garden Equipment, Off-Road Motorcycles, and Off-Highway Vehicles~~.

(33) "Off-road vehicle manufacturer" or "Off-road equipment manufacturer" means any person engaging in the manufacturing or assembling of new off-road vehicles or equipment, or importing of new off-road vehicles or equipment for resale, or acting for and under the control of any person in connection with distributing new off-road vehicles or equipment. An off-road vehicle manufacturer or off-road equipment manufacturer does not include a dealer, nor any person engaging in the manufacturing or assembling of new off-road engines or equipment who does not install an engine as part of that manufacturing or assembling process. All off-road vehicle or equipment manufacturing entities that are under the control of the same person are considered to be a single off-road vehicle manufacturer or off-road equipment manufacturer.

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

~~(20)~~(35) "Otto cycle engine" means a type of engine with operating characteristics significantly similar to the theoretical Otto combustion cycle. The primary means of controlling

power output in an Otto cycle engine is by limiting the amount of air and fuel ~~which~~that can enter the combustion chambers of the engine. Gasoline-fueled engines are Otto cycle engines.

(36) "PM and Test Cycle Procedures" means the document entitled "California Exhaust Emission Standards and Test Procedures for New 1996 and Later Off-Road Compression-Ignition Engines, Part II," which includes the standards and test procedures applicable to 1996 and later heavy-duty off-road compression-ignition engines and to 2000 and later off-road compression-ignition engines, as adopted May 12, 1993, and as amended (date of amendment). This document is incorporated by reference herein

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

(38) "Propulsion marine compression-ignition engine" means a marine compression-ignition engine that is intended to move a vessel through the water or direct the movement of a vessel.

~~(21)~~(39) "Quality-audit test" is defined as the test performed on a sample of production engines produced for sale in California.

(40) "Rated speed" is the maximum full load governed speed for governed engines and the speed of maximum horsepower for ungoverned engines

~~(22)~~(41) "Representative engine sample" means that the sample is typical of the engine family or engine family group as a whole (as defined in ~~Sections 3 and 11 of the "California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines"~~applicable test procedures). Except as provided in Section 2427, a representative sample would not include a low volume subgroup of the engine family or engine family group.

~~(23)~~(42) "Scheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of components or systems required by the manufacturer that is performed on a periodic basis to prevent part failure or equipment or engine malfunction, or anticipated as necessary to correct an overt indication of malfunction or failure for which periodic maintenance is not appropriate.

(43) "Small off-road engine" has the meaning specified in Title 13, California Code of Regulations, Section 2401.

(44) “Tier 1 engine” means an engine subject to the Tier 1 emission standards listed in Section 2423(b)(1) of this article.

(45) “Tier 2 engine” means an engine subject to the Tier 2 emission standards listed in Section 2423(b)(1) of this article.

(46) “Tier 3 engine” means an engine subject to the Tier 3 emission standards listed in Section 2423(b)(1) of this article.

~~(24)~~(47) “Ultimate ~~P~~purchaser” means the first person who in good faith purchases a new engine or equipment for purposes other than resale.

~~(25)~~(48) “Unscheduled ~~M~~maintenance” means any inspection, adjustment, repair, removal, disassembly, cleaning, or replacement of components or systems ~~which~~that is performed to correct or diagnose a part failure which was not anticipated.

(49) “Useful life” means:

(A) For all engines rated under 19 kilowatts, and for constant speed engines rated under 37 kilowatts with rated speeds greater than or equal to 3,000 revolutions per minute, a period of use of five years or 3,000 hours of operation, whichever first occurs.

(B) For all other engines rated at or above 19 kilowatts and under 37 kilowatts, a period of use of seven years or 5,000 hours of operation, whichever first occurs.

(C) For all engines rated at or above 37 kilowatts, a period of use of ten years or 8,000 hours of operation, whichever first occurs.

(50) “Vessel” has the meaning specified in Section 9840 of the California Vehicle Code.

~~(26)~~(51) “Warrantable ~~C~~condition” means any condition of an engine ~~which~~that triggers the responsibility of the manufacturer to take corrective action pursuant to Section 2425.

~~(27)~~(52) “Warranted ~~P~~part” means any emissions-related part installed on a engine by the equipment or engine manufacturer, or installed in a warranty repair, which is listed on the warranty parts list.

~~(28)~~(53) “Warranty period” means the period of time, either in years or hours of operation, that the engine or part is covered by the warranty provisions.

~~(29)~~(54) “Warranty station” means a service facility authorized by the equipment or engine manufacturer to perform warranty repairs. This shall include all manufacturer

distribution centers ~~which~~that are franchised to service the subject equipment or engines.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code.
Reference: Sections 43013, 43018, 43101, 43102, 43104, 43105, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

2422. [Reserved]

2423. Exhaust Emission Standards, and Test Procedures – Heavy-Duty Off-Road Diesel Cycle Compression-Ignition Engines.

(a) This section shall be applicable to new heavy-duty off-road diesel cyclecompression-ignition engines, produced on or after January 1, 1996, and all other new 2000 and later model year off-road compression-ignition engines. For the purpose of this section, these engines shall be called "diesel cyclecompression-ignition engines".

(b) (1) Exhaust emissions from new heavy-duty off-roaddiesel cycle compression-ignition engines, sold in this state, shall not exceed the levels contained in Table 1. Table 1 follows:

Exhaust Emission Standards
(grams per brake horsepower-hour)

Model Year	Hydrocarbon	Carbon monoxide	Oxides of nitrogen	Particulate
1996 to 2000 (175 to 750 Horsepower, inclusive)	1.0	8.5	6.9	0.4
2001 and subsequent (175 to 750 Horsepower, inclusive)	1.0	8.5	5.8	0.16
2000 and subsequent (Greater than 750 Horsepower)	1.0	8.5	6.9	0.4

Table 1. – Exhaust Emission Standards
(grams per kilowatt-hour)

Maximum Rated Power (kW)[1]	Tier	Model Year	NOx[2]	HC[3]	NMHC+ NOx[4]	CO[5]	PM[6]
KW<8	Tier 1	2000-2004	—	—	10.5	8.0	1.0
	Tier 2	2005 and later	—	—	7.5	8.0	0.80
8≤kW<19	Tier 1	2000-2004	—	—	9.5	6.6	0.80
	Tier 2	2005 and later	—	—	7.5	6.6	0.80
19≤kW<37	Tier 1	2000-2003	—	—	9.5	5.5	0.80
	Tier 2	2004 and later	—	—	7.5	5.5	0.60
37≤kW<75	Tier 1	2000-2003	9.2	—	—	—	—
	Tier 2	2004-2007	—	—	7.5	5.0	0.40
	Tier 3	2008 and later	—	—	4.7	5.0	—
75≤kW<130	Tier 1	2000-2002	9.2	—	—	—	—
	Tier 2	2003-2006	—	—	6.6	5.0	0.30
	Tier 3	2007 and later	—	—	4.0	5.0	—
130≤kW<225	Tier 1	1996-2002	9.2	1.3	—	11.4	0.54
	Tier 2	2003-2005	—	—	6.6	3.5	0.20
	Tier 3	2006 and later	—	—	4.0	3.5	—
225≤kW<450	Tier 1	1996-2000	9.2	1.3	—	11.4	0.54
	Tier 2	2001-2005	—	—	6.4	3.5	0.20
	Tier 3	2006 and later	—	—	4.0	3.5	—
450≤kW≤560	Tier 1	1996-2001	9.2	1.3	—	11.4	0.54
	Tier 2	2002-2005	—	—	6.4	3.5	0.20
	Tier 3	2006 and later	—	—	4.0	3.5	—
KW>560	Tier 1	2000-2005	9.2	1.3	—	11.4	0.54
	Tier 2	2006 and later	—	—	6.4	3.5	0.20

1. kW means kilowatts.
2. NOx means Oxides of Nitrogen.
3. HC means Hydrocarbons.
4. NMHC+NOx means Non-Methane Hydrocarbons plus Oxides of Nitrogen.
5. CO means Carbon Monoxide.
6. PM means Particulate Matter.

(2) Manufacturers may elect to include engine families in the averaging, banking, and trading program, the provisions of which are specified in the 2000 and Later Test Procedures. The manufacturer must set a family emission limit (FEL) not to exceed the levels contained in Table 2. The FEL established by the manufacturer serves as the standard for that engine family. Table 2 follows:

Table 2 – Upper Limit for Family Emission Limits (FEL)
(grams per kilowatt-hour)

Maximum Rated Power (kW)	Tier	Model Year	NOx	NMHC+NOx	PM FEL
KW<8	Tier 1	2000-2004	—	16.0	1.2
	Tier 2	2005 and later	—	10.5	1.0
8≤kW<19	Tier 1	2000-2004	—	16.0	1.2
	Tier 2	2005 and later	—	9.5	0.80
19≤kW<37	Tier 1	2000-2003	—	16.0	1.2
	Tier 2	2004 and later	—	9.5	0.80
37≤kW<75	Tier 1	2000-2003	14.6	—	—
	Tier 2	2004-2007	—	11.5	1.2
	Tier 3	2008 and later	—	7.5	—
75≤kW<130	Tier 1	2000-2002	14.6	—	—
	Tier 2	2003-2006	—	11.5	1.2
	Tier 3	2007 and later	—	6.6	—
130≤kW<225	Tier 1	2000-2002	14.6	—	—
	Tier 2	2003-2005	—	10.5	0.54
	Tier 3	2006 and later	—	6.6	—
225≤kW<450	Tier 1	2000	14.6	—	—
	Tier 2	2001-2005	—	10.5	0.54
	Tier 3	2006 and later	—	6.4	—
450≤kW≤560	Tier 1	2000-2001	14.6	—	—
	Tier 2	2002-2005	—	10.5	0.54
	Tier 3	2006 and later	—	6.4	—
KW>560	Tier 1	2000-2005	14.6	—	—
	Tier 2	2006 and later	—	10.5	0.54

~~(2)~~(3) (A) The opacity of smoke emissions from new 1996 through ~~2000~~ 1999 model year heavy-duty off-road ~~diesel cycle~~ compression-ignition engines 175 to 750 horsepower, inclusive, or from all new 2000 and later model year ~~heavy-duty off-road diesel cycle engines greater than 750 horsepower,~~ compression-ignition engines sold in this state, shall not exceed:

1. 20 percent during the engine acceleration mode.
2. 15 percent during the engine lugging mode.
3. 50 percent during the peaks in either mode.

(B) ~~The opacity of smoke emissions from new 2001 and later model year heavy-duty off-road diesel cycle engines 175 to 750 horsepower, inclusive, sold in this state, shall not exceed:~~

~~1. 20 percent during the engine acceleration mode.~~
~~2. 15 percent during engine lugging mode.~~
~~3. 35 percent during the peaks in either mode.~~

The following engines are exempt from the requirements of this section:
1. Single-cylinder engines.
2. Propulsion marine compression-ignition engines.
3. Constant-speed engines.

(4) Low-emitting Blue Sky Series engines requirements.

(A) *Voluntary standards*. Engines may be designated "Blue Sky Series" engines through the 2004 model year by meeting the voluntary standards contained in Table 3, which apply to all certification and in-use testing. Blue Sky Series engines shall not be included in the Averaging, Banking, and Trading program. Table 3 follows:

Table 3.—Voluntary Emission Standards
(grams per kilowatt-hour)

Maximum Rated Power (kW)	NMHC + NOx	PM
kW<8	4.6	0.48
8≤kW<19	4.5	0.48
19≤kW<37	4.5	0.36
37≤kW<75	4.7	0.24
75≤kW<130	4.0	0.18
130≤kW≤560	4.0	0.12
kW>560	3.8	0.12

(B) *Additional standards*. Blue Sky Series engines are subject to all provisions that would otherwise apply under this part, except as specified in paragraph (C) of this section.

(C) *Test procedures*. NOx, NMHC, and PM emissions are measured using the procedures set forth in 40 CFR part 86, subpart N (July 1, 1999), which is incorporated by reference, in lieu of the procedures set forth in subpart E of the 2000 and Later Test Procedures. CO emissions may be measured using procedures set forth either in 40 CFR part 86, subpart N (July 1, 1999), or in subpart E of the 2000 and Later Test Procedures. Manufacturers may use an alternate procedure to demonstrate the desired level of control if approved in advance by the Executive Officer. Engines meeting the requirements to qualify as Blue Sky Series engines must be capable of maintaining a comparable level of emission control when tested using the procedures set forth in both Section 89.112 (c) and subpart E of the 2000 and Later Test Procedures. The numerical emission levels measured using the procedures from subpart E of the 2000 and Later Test Procedures may be up to 20 percent higher than those measured using procedures from 40 CFR part 86, subpart N, (July 1, 1999), and still be considered comparable.

~~(3)~~(5) No crankcase emissions shall be discharged into the ambient atmosphere

from any new 1996 ~~or later -~~1999 model year ~~alternate-fueled~~ heavy-duty off-road ~~diesel cycle~~compression-ignition engine ~~or any new 1996 or later model year heavy-duty off-road naturally aspirated petroleum-fueled diesel cycle engine~~ or any Tier 2 or later off-road compression-ignition engine. This provision does not apply to petroleum-fueled diesel cycle engines using turbochargers, pumps, blowers, or superchargers for air induction.

(c) (1) The test procedures for determining certification and compliance with the standards for gaseous exhaust emissions from new 1996-1999 heavy-duty off-road ~~diesel~~compression-ignition engines sold in the state are set forth in ~~"California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines," adopted May 12, 1993~~the 1996-1999 Heavy-Duty Test Procedures.

(2) The test procedures for determining certification and compliance with the standards for ~~the opacity of smoke emissions from new heavy-duty off-road diesel cycle engines sold in the state are set forth in "California Smoke Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines," adopted May 12, 1993~~gaseous exhaust emissions and the standards for opacity of smoke emissions from new 2000 model year and later off-road compression-ignition engines sold in the state are set forth in the 2000 and Later Test Procedures.

(3) The test procedures for determining certification and compliance with the standards for particulate exhaust emissions from new 1996 and later off-road compression-ignition engines sold in the state are set forth in the PM and Test Cycle Procedures.

(4) The test procedures for determining certification and compliance with the standards for the opacity of smoke emissions from new 1996-1999 off-road compression-ignition engines sold in the state are set forth in the 1996-1999 Smoke Test Procedures.

(d) *Implementation flexibility for equipment and vehicle manufacturers and post-manufacture marinizers.* Off-road equipment and vehicle manufacturers and post-manufacture marinizers may take any of the otherwise prohibited actions identified in the 2000 and Later Test Procedures (Section 89.1003(a)(1)) with respect to 2000 model year and later off-road equipment and vehicles and marine compression-ignition engines, subject to the requirements of paragraph (e) of this section. The following allowances apply separately to each engine power category subject to standards under Section 2423(b)(1):

(1) *Percent-of-production allowances.*

(A) *Equipment rated at or above 37 kW.* For off-road equipment and vehicles with engines rated at or above 37 kW, a manufacturer may take any of the actions identified in the 2000 and Later Test Procedures (Section 89.1003(a)(1)) for a portion of its California-directed production volume of such equipment and vehicles during the seven years immediately following the date on which Tier 2 engine standards first apply to engines used in such equipment and vehicles, provided that the seven-year sum of the U.S.-directed portions in

each year, as expressed as a percentage for each year, does not exceed 80, and provided that all such equipment and vehicles or equipment contain only Tier 1 engines;

(B) *Equipment rated under 37 kW.* For off-road equipment and vehicles and marine diesel engines with engines rated under 37 kW, a manufacturer may take any of the actions identified in the 2000 and Later Test Procedures (Section 89.1003(a)(1)) for a portion of its California-directed production volume of such equipment and vehicles during the seven years immediately following the date on which Tier 1 engine standards first apply to engines used in such equipment and vehicles, provided that the seven-year sum of the U.S.-directed portions in each year, as expressed as a percentage for each year, does not exceed 80.

(2) *Small volume allowances.* An off-road equipment or vehicle manufacturer or post-manufacture marinizer may exceed the production percentages in paragraph (d)(1) of this section for a portion of its California-directed production, provided that in each regulated power category the manufacturer's total of U.S.-directed excepted off-road equipment and vehicles and marine diesel engines over the years in which the percent of production allowance applies:

(i) does not exceed 100 units times the number of years in which the percent-of-production allowance applies, and

(ii) does not exceed 200 units in any year, and

(iii) does not use engines from more than one engine family, or, for excepted equipment, vehicles, and marine diesel engines using engines not belonging to any engine family, from more than one engine manufacturer.

(3) *Inclusion of previous-tier engines.* Off-road equipment and vehicles and marine diesel engines built with previous tier or noncertified engines under the existing inventory provisions of the 2000 and Later Test Procedures (40 CFR Section 89.1003(b)(4)) need not be included in determining compliance with paragraphs (d)(1) and (d)(2) of this section.

(e) *Recordkeeping and calculation to verify compliance.* The following shall apply to off-road equipment or vehicle manufacturers and post-manufacture marinizers who produce excepted equipment or vehicles or marine diesel engines under the provisions of paragraph (d) of this section:

(1) For each power category in which excepted off-road equipment or vehicles or marine diesel engines are produced, a calculation to verify compliance with the requirements of paragraph (d) of this section shall be made by the off-road equipment or vehicle manufacturer or post-manufacture marinizer. This calculation shall be made no later than December 31 of the year following the last year in which allowances are used, and shall be based on actual national production information from the subject years. If both the percent-of-production and small volume allowances have been exceeded, then the manufacturer is in violation of Section

2420(a)(3), except as provided under paragraphs (f) and (h) of this section.

(2) An off-road equipment or vehicle manufacturer or post-manufacture marinizer shall keep records of all off-road equipment and vehicles and marine diesel engines sold in California and excepted under the provisions of paragraph (d) of this section, for each power category in which exceptions are taken. These records shall include equipment and engine model numbers, serial numbers, and dates of manufacture, and engine rated power. In addition, the manufacturer shall keep records sufficient to demonstrate the verifications of compliance required in paragraph (e)(1) of this section. All records shall be kept until at least two full years after the final year in which allowances are available for each power category, and shall be made available to the Executive Officer upon request.

(f) *Hardship relief.* Off-road equipment and vehicle manufacturers and post-manufacture marinizers may take any of the otherwise prohibited actions identified in Section 89.1003(b)(4) of the 2000 and Later Test Procedures, if approved by the Executive Officer or designee, and subject to the following requirements:

(1) The application for relief must be submitted for approval to the Chief of the Mobile Source Operations Division in writing prior to the earliest date in which the applying manufacturer would be in violation of Section 2423 (b)(1). The off-road equipment or vehicle manufacturer applying for hardship relief must submit evidence for approval, showing that the following requirements have been met:

(i) The off-road equipment or vehicle manufacturer applying for hardship relief must not be the manufacturer of the engines used in the equipment or vehicle for which relief is sought. This requirement does not apply to post-manufacture marinizers.

(ii) The conditions causing the impending violation must not be substantially the fault of the applying manufacturer.

(iii) The conditions causing the impending violation must be such that the off-road equipment or vehicle manufacturer applying for hardship relief will experience serious economic hardship if relief is not granted.

(iv) The off-road equipment or vehicle manufacturer applying for hardship relief must demonstrate that no allowances under paragraph (d) of this section will be available to avoid the impending violation.

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

(3) The Executive Officer may impose other conditions on the granting of relief

including provisions to recover the lost environmental benefit.

(g) *Alternative Flexibility for Post-Manufacture Marinizers.* Post-manufacture marinizers may elect to delay the effective date of the Tier 1 standards for marine propulsion diesel engines rated under 37 kW by one year, instead of using the provisions of paragraphs (d) and (f) of this section. Post-manufacture marinizers wishing to take advantage of this provision must inform the Executive Officer of their intent to do so in writing before the date that the standards would otherwise take effect.

(h) *Allowance for the production of engines.* Engine manufacturers may take any of the otherwise prohibited actions identified in the 2000 and Later Test Procedures (40 CFR Section 89.1003(a)(1)) with regard to uncertified engines or Tier 1 engines, as appropriate, if the engine manufacturer has received written assurance from the equipment manufacturer that the engine is required to meet the demand for engines created under paragraphs (d), (f), or (g) of this section. Manufacturers shall provide to the Executive Officer annually, as part of the certification application, a list of the equipment manufacturers requesting such engines. The list shall include the equipment manufacturers' names, engine models, and volumes.

~~(d)~~(i) [Reserved]

~~(e)~~(j) ~~No new engines shall be produced for sale to replace pre-1996 model year engines after January 1, 2000, unless those engines comply with the 1996 model year emission standards.~~

(1) A new compression-ignition off-road engine intended solely to replace an engine in a piece of off-road equipment that was originally produced with an engine manufactured prior to the applicable implementation date as specified in Section 2423, shall not be subject to the emission requirements of Section 2423 provided that:

(i) The engine manufacturer has ascertained that no engine produced by itself or the manufacturer of the engine that is being replaced, if different, and certified to the requirements of this article, is available with the appropriate physical or performance characteristics to repower the equipment; and

(ii) Unless an alternative control mechanism is approved in advance by the Executive Officer, the engine manufacturer or its agent takes ownership and possession of the engine being replaced; and

(iii) The replacement engine is clearly labeled with the following language, or similar alternate language approved in advance by the Executive Officer:

THIS ENGINE DOES NOT COMPLY WITH CALIFORNIA AND FEDERAL OFF-ROAD OR ON-HIGHWAY EMISSION REQUIREMENTS. SALE OR INSTALLATION OF THIS ENGINE FOR ANY PURPOSE OTHER THAN AS A REPLACEMENT ENGINE FOR AN ENGINE MANUFACTURED PRIOR TO JANUARY 1 [INSERT APPROPRIATE YEAR] IS A VIOLATION OF CALIFORNIA AND FEDERAL LAW SUBJECT TO CIVIL PENALTY.

(2) At the conclusion of each of the 2000-2004 model years, the manufacturer must provide, by engine model, the actual number of replacement engines produced for California during the model year, and a description of the physical or performance characteristics of those models that indicate that certified replacement engine(s) were not available as per paragraph (1).

~~(f)~~(k) Any new engine certified to comply with California emission standards and test procedures for on-road applications may, upon approval by the Executive Officer, be considered to be in compliance with these regulations.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101 and 43104, Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43104, and 43211-43212, Health and Safety Code.

2424. Emission Control Labels - 1996 and Later ~~Heavy-Duty~~ Off-Road ~~Diesel Cycle~~ Compression-Ignition Engines

(a) Purpose.

The Air Resources Board recognizes that certain emissions-critical or emissions-related parts must be properly identified and maintained in order for engines to meet the applicable emission standards. The purpose of these specifications is to require engine manufacturers to affix a label (or labels) on each production engine (or equipment) to provide the engine or equipment owner and service mechanic with information necessary for the proper maintenance of these parts in customer use.

(b) Applicability.

(1) These specifications shall apply to 1996 ~~-~~ 1999 ~~and later~~ model year heavy-duty off-road ~~diesel cycle~~ compression-ignition engines, which have been certified to the applicable emission standards pursuant to Health and Safety Code Section 43013.

(2) These specifications shall apply to 2000 and later model year compression-ignition engines, which have been certified to the applicable emission standards pursuant to Health and Safety Code Section 43013.

~~(2)~~(3) Engine manufacturers who have certified such engines shall be responsible for complying with these specifications.

(c) Label Content and Location.

(1) For 1996-1999 heavy-duty off-road compression-ignition engines:

(A) A tune-up label shall be permanently attached to the engine block or other major component in such a way that it will be readily visible after installation of the engine in the equipment. If the equipment obscures the label on the engine, the equipment manufacturer shall attach a supplemental label such that it is readily visible.

~~(2)~~ (B) In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label). Each label shall be affixed in such a manner that it cannot be removed without destroying or defacing the label, and shall not be affixed to any part which is likely to be replaced during the equipment's useful life. The label(s) shall not be affixed to any component which is easily detached from the engine.

~~(3)~~ (C) In addition, an engine serial number shall be stamped on the engine block or stamped on a metal label riveted to the engine block. Engine manufacturers shall keep

records such that the engine serial number can easily be used to determine if an engine was certified for the applicable model year.

~~(4)~~ (D) The label shall be in the English language and use block letters and numerals which shall be of a color that contrasts with the background of the label.

~~(5)~~ (E) The label shall contain the following information:

~~(A)~~ (i) The label heading shall read:

"Important Engine Information."

~~(B)~~ (ii) Full corporate name and trademark of the manufacturer.

~~(C)~~ (iii) "This (specify equipment or engine, as applicable) is certified to operate on (specify operating fuel(s))."

~~(D)~~ (iv) *Identification of the Exhaust Emission Control System*. Abbreviations may be used and shall conform to the nomenclature and abbreviations found in the Society of Automotive Engineers document J1930 which is incorporated by reference herein [in Section 1977, Title 13, CCR], entitled "Diagnostic Acronyms, Terms, and Definitions for Electrical/Electronic Systems."~~.~~

~~(E)~~ (v) The specifications and adjustments recommended by the manufacturer, including, if applicable: initial injection timing, and fuel rate (in mm /stroke) at advertised horsepower. These specifications shall indicate the proper transmission position, (if applicable), during tune-up and what accessories, if any, should be in operation, and what systems, if any (e.g., vacuum advance, air pump), should be disconnected during the tune-up. If the manufacturer does not recommend adjustment of the foregoing specifications, the manufacturer shall include in lieu of the "specifications" the single statement "No other adjustments needed." For all engines, the instructions for tune-up adjustments shall be sufficiently clear on the label to preclude the need for a mechanic or equipment owner to refer to another document in order to correctly perform the adjustments.

~~(F)~~ (vi) An unconditional statement of compliance with the appropriate model year California regulations; for example, "This engine conforms to 1996 California regulations for heavy-duty off-road diesel cycle engines as applicable."

~~(G)~~ (vii) Total engine displacement (in cubic centimeters, liters, or cubic inches) and engine family identification.

~~(6)~~ ~~(F)~~ ~~(A)~~(i) The manufacturer of any engine certified with a clean fuel (i.e., low-sulfur diesel fuel) shall at the time of engine manufacture, affix a permanent legible label specifying the appropriate operating fuel(s).

~~(B)~~ (ii)The label shall be located immediately adjacent to each fuel tank filler inlet and outside of any filler inlet compartment. It shall be located so that it is readily visible to any person introducing fuel to such filler inlet; Provided, however, that the Executive Officer shall upon application from an engine manufacturer, approve other label locations that achieve the purpose of this paragraph. If the engine is manufactured separately from the equipment, the label shall be affixed to the engine and located so that it is readily visible. Such labels shall be in English and in block letters, which shall be of a color that contrasts with their background.

(2) For 2000 and later off-road compression-ignition engines, the label content and location must comply with the requirements in Section 89.110 of the 2000 and Later Test Procedures.

(d) The provisions of these specifications shall not prevent a manufacturer from also stating on the label that such engine or equipment conforms to any applicable federal emission standards for new engines, or any other information that such manufacturer deems necessary for, or useful to, the proper operation and satisfactory maintenance of the equipment or engine.

(e) As used in these specifications, readily visible to the average person shall mean that the label shall be readable from a distance of eighteen inches (46 centimeters) without any obstructions from equipment or engine parts (including all manufacturer available optional equipment) except for flexible parts (e.g., vacuum hoses, ignition wires) that can be moved out of the way without disconnection. Alternatively, information required by these specifications to be printed on the label shall be no smaller than 8 point type size provided that no equipment or engine parts (including all manufacturer available optional equipment), except for flexible parts, obstruct the label.

(f) The labels and any adhesives used shall be designed to withstand, for the engine's or equipment's total expected life, typical equipment environmental conditions in the area where the label is attached. Typical equipment environmental conditions shall include, but are not limited to, exposure to engine fuels, lubricants and coolants (e.g., diesel fuel, motor oil, water, ethylene glycol). The manufacturer shall submit, with its certification application, a statement attesting that its labels comply with these requirements.

(g) The manufacturer shall obtain approval from the Executive Officer for all label formats and locations prior to use. Approval of the specific maintenance settings is not required; however, the format for all such settings and tolerances, if any, is subject to review. If the

Executive Officer finds that the information on the label is vague or subject to misinterpretation, or that the location does not comply with these specifications, he or she may require that the label or its location be modified accordingly.

(h) Samples of all actual production labels used within an engine family shall be submitted to the Executive Officer within thirty days after the start of production.

(i) The Executive Officer may approve alternate label locations or may, upon request, waive or modify the label content requirements provided that the intent of these specifications is met.

(j) The manufacturer of any engine shall furnish to the Executive Officer, at the beginning of the model year, any engine identification number coding system which identifies whether such engine(s) are covered by an Executive Order.

(k) If the Executive Officer finds any engine (or equipment) manufacturer using labels which are different from those approved or which do not substantially comply with the readability or durability requirements set forth in these specifications, the manufacturer shall be subject to being enjoined from any further sales of such products in the State of California pursuant to Section 43017 of the Health and Safety Code. Prior to seeking to enjoin a manufacturer, the Executive Officer shall consider any information provided by the manufacturer.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104 and 43105, Health and Safety Code.

2425. Defects Warranty Requirements for 1996 and Later ~~Heavy-Duty~~ Off-Road ~~Diesel Cycle~~ Compression-Ignition Engines.

(a) Applicability. This section shall apply to new 1996 ~~-~~1999 ~~and later~~ model year heavy-duty off-road ~~diesel cycle~~ compression-ignition engines~~.~~ and new 2000 and later model year compression-ignition engines. The warranty period shall begin on the date the engine or equipment is delivered to an ultimate purchaser. The use of alternative fuels shall not void the warranties on any engine certified to use such fuel.

(b) General Emissions Warranty Coverage. The manufacturer of each ~~heavy-duty~~ off-road ~~diesel cycle~~ compression-ignition engine shall warrant to the ultimate purchaser and each subsequent purchaser that the engine is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code; and

(2) Free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the engine manufacturer's application for certification for a period of five years or 3,000 hours of operation, whichever occurs first, for all engines rated at 19 kW and greater, except as noted below. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years. For all engines rated less than 19 kW, and for constant speed engines rated under 37 kW with rated speeds greater than or equal to 3,000 rpm, the period of two years or 1,500 hours of operation, whichever occurs first, shall apply. In the absence of a device to measure hours of use, the engine shall be warranted for a period of two years.

(c) The warranty on emissions-related parts shall be interpreted as follows:

(1) Any warranted part which is not scheduled for replacement as required maintenance in the written instructions required by Subsection (e) shall be warranted for the warranty period defined in Subsection (b)(2). If any such part fails during the period of warranty coverage, it shall be repaired or replaced by the engine manufacturer according to Subsection (4) below. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

(2) Any warranted part which is scheduled only for regular inspection in the written instructions required by Subsection (e) shall be warranted for the warranty period defined in Subsection (b)(2). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period.

(3) Any warranted part which is scheduled for replacement as required maintenance in the written instructions required by Subsection (e) shall be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by the engine manufacturer according to Subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4) Repair or replacement of any warranted part under the warranty provisions of this article shall be performed at no charge to the owner at a warranty station.

(5) Notwithstanding the provisions of Subsection (4) above, warranty services or repairs shall be provided at all manufacturer distribution centers ~~which~~that are franchised to service the subject engines.

(6) The owner shall not be charged for diagnostic labor ~~which~~that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7) The engine manufacturer shall be liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.

(8) Throughout the engine's warranty period defined in Subsection (b)(2), the engine manufacturer shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(9) Any replacement part, as defined in Section 1900(~~B~~b)(13), Title 13, may be used in the performance of any maintenance or repairs and must be provided without charge to the owner. It is not necessary for replacement parts to be the same brand or by the same manufacturer as the original part sold with the engine. Such use shall not reduce the warranty obligations of the engine manufacturer.

(10) Add-on or modified parts, as defined in Section 1900 (~~B~~b)(1) and (~~B~~b)(10), Title 13, may not be used. Such use shall be grounds for disallowing a warranty claim made in accordance with this article. The engine manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of such an add-on or modified part.

(11) The Executive Officer may request and, in such case, the engine manufacturer shall provide, any documents which describe that manufacturer's warranty procedures or policies.

(d) Each manufacturer shall include a copy of the following emission warranty parts list with each new engine, using those portions of the list applicable to the engine.

(1) Fuel Metering System
- (A) Fuel injection system.
- (B) Air/fuel ratio feedback and control system.
- (C) Cold start enrichment system.

(2) Air Induction System
- (A) Controlled hot air intake system.
- (B) Intake manifold.
- (C) Heat Riser Valve and Assembly.
- (D) Turbocharger Systems.
- (E) Charge Air Cooling Systems.

(3) Exhaust Gas Recirculation (EGR) System
- (A) EGR valve body, and carburetor spacer if applicable.
- (B) EGR rate feedback and control system.

(4) Air injection System
- (A) Air pump or pulse valve.
- (B) Valves affecting distribution of flow.
- (C) Distribution manifold.

(5) Catalyst or Thermal Reactor System
- (A) Catalytic converter.
- (B) Thermal reactor.
- (C) Exhaust manifold.

(6) Particulate Controls
- (A) Traps, filters, precipitators, and any other device used to capture particulate emissions.
- (B) Regenerators, oxidizers, fuel additive devices, and any other device used to regenerate or aid in the regeneration of the particulate control device.
- (C) Control Device Enclosures and Manifolding.
- (D) Smoke Puff Limiters.

(7) Positive Crankcase Ventilation (PCV) System.
- (A) PCV Valve.
- (B) Oil Filler Cap.

(8) Miscellaneous items Used in Above Systems
- (A) Vacuum, temperature, and time sensitive valves and switches.
- (B) Electronic controls.
- (C) Hoses, belts, connectors, assemblies, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware.
- (D) Pulleys, belts and idlers.

(e) Each manufacturer shall furnish with each new engine written instructions for the maintenance and use of the engine by the owner. The instructions shall be consistent with this article and applicable regulations contained herein.

(f) Each manufacturer shall submit the documents required by Subsections (d) and (e) with the manufacturer's preliminary application for engine certification for approval by the Executive Officer. Approval by the Executive Officer of the documents required by Subsections (d) and (e) shall be a condition of certification. The Executive Officer shall approve or disapprove the documents required by Subsections (d) and (e) within 90 days of the date such documents are received from the manufacturer. (Title ~~13~~17, California Code of Regulations (CCR), section 60030.) Any disapproval shall be accompanied by a statement of the reasons therefor. In the event of disapproval, the manufacturer may file for an adjudicative hearing pursuant to Title 17, California Code of Regulations ~~Section 60040 et seq.~~Division 3, Chapter 1, Subchapter 1.25, Articles 1 and 2, to review the decision of the Executive Officer.

(g) In the application, each manufacturer shall include a statement concerning proper maintenance of the engine to maximize emissions performance. The statement shall include, but not be limited to, information on air filter care and replacement schedule, proper fueling and fuel mixing, engine maintenance, and a maintenance schedule to ensure that the owner returns to a servicing center to check for deposits, debris build-up, etc.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102, ~~and~~ 43104, and 43105 Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43102 and 43205.5, Health and Safety Code.

2426. Emission Control System Warranty Statement.

(a) Each manufacturer shall furnish a copy of the following statement with each new 1996-1999 heavy-duty off-road ~~diesel cycle~~ compression-ignition engine, using those portions of the statement applicable to the engine.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The **California Air Resources Board** (and manufacturer's name, optional) is pleased to explain the **emission control system warranty** on your **(year)** engine. In California, new heavy-duty off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. (Manufacturer's name) must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, (manufacturer's name) will repair your heavy-duty off-road engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The **(year)** and later heavy-duty off-road engines are warranted for **(warranty period)**. If any emission-related part on your engine is defective, the part will be repaired or replaced by (manufacturer's name).

OWNER'S WARRANTY RESPONSIBILITIES:

— As the heavy-duty off-road engine owner, you are responsible for the performance of the **required maintenance listed in your owner's manual**. (Manufacturer's name) recommends that you retain all receipts covering maintenance on your heavy-duty off-road engine, but (manufacturer's name) cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

— As the heavy-duty off-road engine owner, you should however be aware that (manufacturer's name) may deny you warranty coverage if your heavy-duty off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

— Your engine is designed to operate on (fuel) only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

— You are responsible for initiating the warranty process. The ARB suggests that you present your heavy-duty off-road engine to a (manufacturer's name) dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact (Insert chosen manufacturer's contact) at **1-XXX-XXX-XXXX**.

(b) ~~Commencing with the~~For 1996-1999 model year heavy-duty off-road compression-ignition engines, each manufacturer shall furnish with each new engine a warranty statement which generally describes the obligations and rights of the engine manufacturer and owner under this article. Engine manufacturers shall also include in the warranty statement a phone number the customer may use to obtain their nearest franchised service center.

(c) Each manufacturer shall submit the documents required by Subsections (a) and (b) with the manufacturer's preliminary application for new engine certification for approval by the Executive Officer. The Executive Officer may reject or require modification of the documents to the extent the submitted documents do not satisfy the requirements of Subsections (a) and (b). Approval by the Executive Officer of the documents required by Subsections (a) and (b) shall be a condition of certification. The Executive Officer shall approve or disapprove the documents required by Subsections (a) and (b) within 90 days of the date such documents are received from the manufacturer. Any disapproval shall be accompanied by a statement of the reasons therefor. In the event of disapproval, the manufacturer may petition the Board to review the decision of the Executive Officer.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43102 and 43205.5 Health and Safety Code.

2427. Production ~~New~~ Engine ~~Compliance and Quality Audit~~ Testing, ~~– New Heavy-Duty Off-Road Diesel Cycle Engines~~ Selection, Evaluation, and Enforcement Action.

(a) Compliance Test Procedures

(1) These procedures are applicable to ~~,commencing with~~ the 1996-1999 model year~~, to any~~ heavy-duty off-road compression-ignition engine family groups (as defined in Sections 3 and 11 of the ~~"California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines"~~1996-1999 Heavy-Duty Test Procedures) or any subgroups within an engine family group selected for compliance testing pursuant to this section.

(2) The Executive Officer may, with respect to any new engine family group or subgroup being sold, offered for sale, or manufactured for sale in California, order an engine manufacturer to make available for compliance testing and/or inspection a reasonable number of engines, and may direct that the engines be delivered to the state board at the Haagen-Smit Laboratory, 9528 Telstar Avenue, El Monte, California or where specified by the Executive Officer. The Executive Officer may also, with respect to any new engine family group or subgroup being sold, offered for sale, or manufactured for sale in California, have a manufacturer compliance test and/or inspect a reasonable number of engines at the manufacturer's facility under the supervision of an ARB Enforcement Officer. Engines shall be representatively selected from sources specified by the Executive Officer according to a method approved by him/her, which insofar as practical shall exclude engines which would result in an unreasonable disruption of the manufacturer's distribution system. To the extent practical, the Executive Officer shall test a representative configuration (as defined in ~~Section 3 of the "California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines"~~the 1996-1999 Heavy-Duty Test Procedures) from the engine family group in order to minimize manufacturers' expense and inconvenience in testing different engine configurations.

A subgroup of an engine family group may be selected for compliance testing only if the Executive Officer has reason to believe that the emissions characteristics of that subgroup are substantially in excess of the emissions of the engine family group as a whole.

(3) For all 1996 –1999 ~~and subsequent model year~~ heavy-duty off-road compression-ignition ~~diesel cycle~~ engines selected for compliance testing, the selection and testing of engines and the evaluation of data shall be made in accordance with the procedures set forth herein.

(4) For manufacturers that have more than one engine family group, the Air Resources Board or its designated laboratory shall procure and test at the manufacturer's expense no more than one engine family group per year, if compliance testing is required.

Notwithstanding the above, if a manufacturer fails to demonstrate compliance with the

emission standards after one engine family group has been tested, the ARB or its designated laboratory may test additional engine family groups at the manufacturer's expense, until compliance is demonstrated on one engine family group or all of a manufacturer's engine family groups have been tested. However, the ARB may conduct engine enforcement testing pursuant to the engine test procedures specified in Section 2423, at its own expense. In such an instance, the Executive Officer shall order testing only in those cases where evidence such as quality audit test data or in-use test data indicate that engines may not be in compliance.

(5) All testing shall be conducted in accordance with the applicable model year certification emission test procedures. Break-in before testing may be performed on test engines to the same extent it is performed on assembly-line quality audit testing engines (See subsection (b)). No break-in or modifications, adjustments, or special preparation or maintenance will be allowed on engines chosen for compliance testing without the written consent of the Executive Officer. Such consent shall not be unreasonably withheld where such adjustment or alteration is required to render the engine testable and reasonably operative.

(6) If the manufacturer elects to specify a different break-in or adjustments, they will be performed by the manufacturer under the supervision of ARB personnel.

(7) Correction of damage or maladjustment which may reasonably be found to have resulted from shipment of the engine is permitted only after testing the engine, except where 100 percent of the manufacturer's production is given that inspection or maintenance by the manufacturer's own personnel. Exceptions are allowed in the cases where the damage results in the engine being unsafe to operate, inoperable, or unable to complete the emission test. Additionally, an exception is allowed if the damage results in engine performance deficiencies which would be obvious in customer service and which would cause the customer to seek repair of the engine. The manufacturer may request that the engine be repaired from shipping damage, and be retested. If the Executive Officer concurs, the engine may be retested, and the original test results may be replaced by the after-repair test results.

(8) Engines shall be representatively chosen from the selected engine family group or subgroup. Manufacturers shall indicate which sampling plan (as described in paragraphs (9) and (10), below) they prefer to use prior to the start of testing. Once testing has begun, manufacturers may not switch to the other sampling plan; the generated test results will be final. Each chosen engine shall be tested according to the ~~"California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" ("Test Procedures")~~ 1996-1999 Heavy-Duty Test Procedures to determine its emissions. Unique specialty hardware and personnel normally necessary to prepare the engine for the performance of the test as set forth in the applicable ~~T~~test ~~P~~procedures shall be supplied by the manufacturer within seven days after request. Failure to supply this unique specialty hardware or personnel may not be used by the manufacturer as a cause for invalidation of the subsequent tests.

(9) Primary Sampling Plan

(A) Engines shall be tested in groups of five until a “Pass” or “Fail” decision is reached for each pollutant independently for the engine family group or subgroup in accordance with the following table:

Number of Engines Tested	Decide “Fail” If "U" is greater than or equal to	Decide “Pass” If “U” is less than or equal to
5	2.18	-0.13
10	2.11	0.51
15	2.18	0.88
20	2.29	1.16

where:

$$U = \frac{\sum_{i=1}^{n} (x_i - \mu_0)}{(\sum_{i=1}^{n} (x_i - \mu_0^2)^{0.5}}$$

x_i = the projected emissions of one pollutant for the *i*th engine tested.

μ_0 = the applicable model year emission standard for that pollutant.

n = the number of engines tested.

(B) The Executive Officer shall find that a group of engines has failed the compliance testing pursuant to the above table if he or she finds that the average emissions of the engines within the selected engine family group or subgroup exceed the applicable model year new engine emission standard for at least one pollutant.

(C) If no decision can be reached after 20 engines have been tested, the Executive Officer shall not make a “Fail” decision for the selected engine family group or subgroup on the basis of these 20 tests alone. Under these circumstances the Executive Officer shall elect to test 10 additional engines. If the average emissions from the 30 engines tested exceed any one of the exhaust emission standards for which a “Pass” decision has not been previously made, the Executive Officer shall render a “Fail” decision.

(10) Alternate Sampling Plan for Low Volume Engine Family Groups

Any manufacturer subject to new engine compliance testing on an engine family group with a sales volume of less than 2000 engines per year may use the alternative sampling and testing schedule below.

Number of Engines Tested	Decide "Fail" If number of failed engines is greater than or equal to	Decide "Pass" If number of failed engines is less than or equal to
1	No Failure Decision	No Passing Decision
2	No Failure Decision	0
3	3	0
4	4	1
5	4	1
6	5	2
7	5	2
8	6	3
9	6	4
10	6	5

(11) If the Executive Officer determines, in accordance with the procedures set forth herein, that an engine family group, engine family, or any subgroup within an engine family exceeds the emission standards for one or more pollutants, the manufacturer may be subject to being enjoined from any further sales of such products in the State of California pursuant to Section 43017 of the Health and Safety Code. Prior to seeking to enjoin a manufacturer, the Executive Officer shall consider quality audit test results, if any, and any additional test data or other information provided by the manufacturers.

(12) Engines selected for inspection shall be checked to verify the presence of those emissions-related components specified in the manufacturer's application for certification, and for the accuracy of any adjustments, part numbers and labels specified in that application. If any engine selected for inspection fails to conform to any applicable law in Part 5 (commencing with Section 43000) of Division 26 of the Health and Safety Code, or any regulation adopted by the state board pursuant thereto, other than an emissions standard applied to new engines to determine "certification" as specified in Chapter 9, the Executive Officer shall notify the manufacturer and may seek to enjoin the manufacturer from any further sales of such products in the State of California pursuant to Section 43017 of the Health and Safety Code. Prior to seeking to enjoin a manufacturer, the Executive Officer shall consider any information provided by the manufacturer.

(b) Quality-Audit Test Procedures

(1) The 1996-1999 and later model year heavy-duty off-road diesel cycle compression-ignition engines certified for sale in California shall be subject to the Quality-Audit requirements specified herein. Each manufacturer shall use the quality-audit test procedures specified herein.

(2) These procedures specify the quality-audit test procedures in conjunction with the 1996-1999 Heavy-Duty Test Procedures, adopted May 12, 1993. An engine is in compliance with these quality-audit standards and test procedures only when all portions of these quality-audit test procedures are fulfilled.

(3) Air Resources Board (ARB) personnel and mobile laboratories shall have access to engine or equipment assembly plants, distribution facilities, and test facilities for the purpose of engine selection, testing, and observation. Scheduling of access shall be arranged with the designated manufacturer's representative and shall not unreasonably disturb normal operations (See Section 6 of the 1996-1999 Heavy-Duty Test Procedures).

(4) Applicability

These procedures shall apply to all certified 1996-1999 and later model year heavy-duty off-road diesel cycle compression-ignition engine family groups.

If a manufacturer cannot provide actual California sales data, it shall provide its total production and an estimate of California sales. The manufacturer shall also provide supporting material for its estimate.

(5) Engine Sample Selection

For each engine family group with California sales volumes of 150 units or more per year, the manufacturer shall select for quality audit testing a representative sample of three engines or one percent of production, whichever is greater, from the highest sales volume engine family within the engine family group. For engine family groups with California sales volumes of less than 150 units per year, no testing shall be required unless requested by the Executive Officer based upon information and belief that such engine family groups are in noncompliance with applicable regulations. Each selected engine for quality-audit testing must pass the inspection test, by being equipped with the appropriate emission control systems certified by the ARB. The procedure for selecting engines must be submitted to the Chief, Mobile Source Division, 9528 Telstar Avenue, El Monte, CA, 91731, prior to the start of production for the 1996 model year.

(6) Engine Preparation and Preconditioning

(A) The engine shall be tested after the manufacturer has determined that the emissions have stabilized. Engine manufacturers shall report the break-in schedule used on each test engine.

The manufacturer shall submit to the Executive Officer the schedule for hours of use accumulation or engine run-in and any changes to the schedule with each quarterly report.

(B) If an engine is shipped to a remote facility for quality-audit testing, and adjustment or repair is necessary because of such shipment, the manufacturer shall perform the necessary adjustments or repairs only after the initial test of the engine. Exceptions are allowed in the cases where the damage results in the engine being unsafe to operate, inoperable, or unable to complete the emission test. Additionally, an exception is allowed if the damage results in engine performance deficiencies which would be obvious in customer service and which would cause the customer to seek repair of the engine.

Manufacturers shall report to the Executive Officer in the quarterly report, all adjustments or repairs performed on engines prior to each test. In the event a retest is performed, application may be made to the Executive Officer, within ten days of the emission test, for permission to substitute the after-repair test results for the original test results. When requested by the manufacturer, the Executive Officer will either affirm or deny the application within ten working days from receipt of the request.

(C) If a manufacturer determines that the emission test results of an engine are invalid, the engine must be retested. Emission results from all tests shall be reported. The manufacturer shall include a detailed report on the reasons for each invalidated test in the quarterly report.

(7) Quality-Audit Engine Selection Criteria

(A) Engines shall be representatively selected.

(B) At the end of each calendar quarter, all of the data accumulated during the quarter shall be reported to the Executive Officer. Upon accumulation of sufficient data, the compliance of the engine family group with the emission standards is determined.

(8) Standards and Test Procedures; Evaluation

The exhaust sampling and analytical procedures shall be those described in the ~~Test Procedures~~1996-1999 Heavy-Duty Test Procedures. An engine family group is considered to have failed the quality audit test if the average emissions do not comply with the applicable certification standards. Any corrective action to bring the engines into compliance with the standards must be

applied to all engines in the engine family group reasonably expected to be in noncompliance based on the audit data and other relevant information.

(9) Reports

Each engine manufacturer shall submit a report to the ARB within 45 calendar days of the end of each calendar quarter and of the model year. More frequent reports may be required if the Executive Officer invokes this section at the end of each month. Each engine manufacturer shall review the test results of each engine family group at the end of each month.

The quarterly report shall include the following:

(A) The total production and sample size for each engine family group.

(B) A description of each test engine (i.e., date of test, engine family group, engine size, engine identification number, fuel system, engine code or calibration number, and test location).

(C) The break-in schedule used on each test engine.

(D) The exhaust emission data for HC, CO, NOx and PM for each test engine.

The data reported shall be rounded to one significant figure beyond the number of significant figures in the applicable standard as follows for all engines:

HC	CO	NOx	PM
.XX	.XX	.XX	.XXX

(E) The retest emissions data, as described in paragraph (b)(6)(C) above for any engine failing the initial test, and description of the corrective measures taken, including specific components replaced or adjusted.

(F) A statistical analysis of the quality-audit test results stating:

1. Number of engines tested.

2. Average emissions and standard deviations of the sample for HC, CO, NOx and PM.

(G) All aborted test data and reasons for any aborted tests.

(10) When assembly-line engines exceed an emission standard, as set forth herein, or when data submitted by the manufacturer indicates that assembly-line quality-audit testing is being improperly performed, the manufacturer may be subject to being enjoined from any further sales of such products in the State of California pursuant to Section 43017 of the Health and Safety Code. Prior to seeking to enjoin a manufacturer, the Executive Officer shall consider any information provided by the manufacturer, including any corrective action to the noncomplying engine family group. Enforcement penalties shall be imposed only for egregious violations (e.g., those situations where emissions from a few engines significantly exceed emission standards, or where the number of engines exceeding the emissions standards are significant).

(c) Selective Enforcement Audit

(1) The 2000 and later model year off-road compression-ignition engines certified for sale in California shall be subject to the Selective Enforcement Audit requirements specified in Subpart F of the 2000 and Later Test Procedures.

(2) These procedures specify the Selective Enforcement Audit test procedures in conjunction with the 2000 and Later Test Procedures. An engine is in compliance with these Selective Enforcement Audit standards and test procedures only when all portions of these Selective Enforcement Audit test procedures are fulfilled.

(3) Air Resources Board (ARB) personnel and mobile laboratories shall have access to engine or equipment assembly plants, distribution facilities, and test facilities for the purpose of engine selection, testing, and observation. Scheduling of access shall be arranged with the designated manufacturer's representative and shall not unreasonably disturb normal operations.

(~~c~~d) Any manufacturer obtaining certification under this part shall supply to the Executive Officer, upon request, a reasonable number of production engines selected by the Executive Officer which are representative of the engines, emission control systems, fuel systems, and transmissions offered and typical of production models available for sale under the certificate. These engines shall be supplied for testing at such time and place and for such reasonable periods as the Executive Officer may require. Heavy-duty engines supplied under this paragraph may be required to be mounted in chassis and appropriately equipped for operation on a chassis dynamometer.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102, ~~and~~ 43104, and 43105 Health and Safety Code.
Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104 and 43210-43212, Health and Safety Code.