

FINAL REGULATION ORDER

Note: This document is printed in a style to indicate changes from the existing provisions. All existing language is indicated by plain type. All additions to language are indicated by underlined text. All deletions to language are indicated by ~~strikeout~~. Only those portions containing the suggested modifications from the existing provisions are included. All other portions remain unchanged and are indicated by the symbol "***" for reference.

Amend Article 4, Chapter 9, Division 3, Title 13, California Code of Regulations (CCR), including recently adopted section 2425.1, to read as follows:

Chapter 9. Off-Road Vehicles and Engines Pollution Control Devices

Article 4. ~~Heavy-Duty~~ Off-Road Compression-IgnitionDiesel Cycle Engines and Equipment

§ 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 ~~en~~ titled "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 January 28, 2000. This document is incorporated by reference herein.

(2) "1996-1999 Smoke Test Procedures" means the document ~~en~~ titled "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 January 28, 2000. This document is incorporated by reference herein.

(3) "2000 ~~and Later~~ Plus Limited Test Procedures" means the document ~~en~~ titled "California Exhaust Emission Standards and Test Procedures for New 2000 and Later Tier 1, Tier 2, and Tier 3 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 January 28, 2000, and as amended October 20, 2005. This document is incorporated by reference herein.

(4) "2008 and Later Test Procedures" means the document titled "California Exhaust Emission Standards and Test Procedures for New 2008 and Later Tier 4 Off-Road Compression-Ignition Engines," which includes the standards and test procedures applicable to 2008 and later off-road compression-ignition engines, as adopted October 20, 2005. This document is incorporated by reference herein.

(5) "Adjustable parameter" means any device, system, or element of design that is capable of being adjusted manually (even if difficult to access), and which may affect emissions or engine performance during emission testing or normal in-use operation. This includes, but is not limited to, parameters related to injection timing and fueling rate. A parameter that is difficult to access may be excluded upon request to the Executive Officer if the parameter cannot be adjusted to a degree that affects emissions without significantly degrading engine performance, or if demonstrated that it will not be adjusted in a way that affects emissions during in-use operation.

(46) "Alternate 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.

(57) "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).

(68) "Assembly-line tests" are those tests or inspections that are performed on or at the end of the assembly line.

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

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

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

(912) "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.

(13) "Certified configuration" or "certified emissions configuration" means the assembled state of an engine that is equipped with a complete set of emission-related components and systems that are equivalent from an emissions standpoint (i.e., tolerances, calibrations, and specifications) to those components and systems that (A) were originally installed on the engine when it was issued an Executive Order, (B) have been approved by the engine manufacturer to supersede any of the original emission-related components and systems for that engine, or (C) are direct replacement parts equaling or exceeding the emissions-related performance of the original or superseded components and systems.

(40)(14) "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.

(44)(15) "Constant-speed engine" means (A) for engines subject to the 2000 and Later Plus Limited Test Procedures, an off-road compression-ignition engine that is governed to operate only at rated speed, or (B) for engines subject to the 2008 and Later Test Procedures, an off-road compression-ignition engine certified to operate only at constant speed. Constant-speed operation means engine operation with a governor

that controls the operator input to maintain an engine at a reference speed, even under changing load. For example, an isochronous governor changes reference speed temporarily during a load change, then returns the engine to its original reference speed after the engine stabilizes. Isochronous governors typically allow speed changes up to 1.0 %. Another example is a speed-droop governor, which has a fixed reference speed at zero load and allows the reference speed to decrease as load increases. With speed-droop governors, speed typically decreases (3 to 10) % below the reference speed at zero load, such that the minimum reference speed occurs near the engine's point of maximum power.

~~(12)~~(16) "Crankcase emissions" means airborne substances emitted into the atmosphere from any portion of the engine crankcase ventilation or lubrication system.

~~(13)~~(17) "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.

~~(14)~~(18) "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)~~(19) "Dealer" means that person or entity engaged in the selling of new off-road compression-ignition engines, vehicles or equipment to ultimate purchasers.

(20) "Deterioration factor" means the relationship between emissions at the end of useful life and emissions at the low-hour test point, expressed in one of the following ways, whichever is applicable: (A) For multiplicative deterioration factors, the ratio of emissions at the end of useful life to emissions at the low-hour test point; (B) For additive deterioration factors, the difference between emissions at the end of useful life and emissions at the low-hour test point.

~~(16)~~(21) "Diesel cycle 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.

~~(17)~~(22) "Emission control system" includes any component, group of components, or engine modification that controls or causes the reduction of substances emitted from an engine.

~~(18)~~(23) "End of assembly line" is defined as that place where the final inspection test or quality-audit test is performed.

~~(19)~~(24) "Engine manufacturer" or "manufacturer" means 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.

~~(20)~~(25) "Exhaust emissions" means substances emitted into the atmosphere from any opening downstream from the exhaust port of an off-highway engine.

~~(21)~~(26) "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.

~~(22)~~(27) "Final calendar quarter production" is defined as the calendar quarter in which the production of an engine family ends.

~~(23)~~(28) "First calendar quarter production" is defined as the calendar quarter in which the production of an engine family begins.

~~(24)~~(29) "Fuel 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.

~~(25)~~(30) "Gross engine 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.

~~(26)~~(31) "Heavy-duty off-road compression-ignition engines" or "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: ~~(4A)~~ engines operated on or in any device used exclusively upon stationary rails or tracks; ~~(2B)~~ marine diesel engines ~~used to propel marine vessels~~; ~~(3C)~~ internal combustion engines attached to a foundation at

a location; (4D) 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 (5E) stationary or transportable gas turbines for power generation.

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

(28)(33) "Marine diesel engine" means a compression-ignition engine that is installed or intended to be installed on a vessel. There are two types of Marine Diesel Engines: (A) Propulsion marine compression-ignition engines, which are those that move or are intended to move a vessel through water or direct the movement of a vessel, and (B) Auxiliary marine diesel engines, which are integral to the vessel, but which do not propel the vessel. This definition includes portable auxiliary marine engines or generators only if their fueling, cooling, or exhaust systems are an integral part of the vessel.

(33)(34) "Maximum Engine Power" means the maximum brake power point on the nominal power curve for a specific engine configuration, rounded to the nearest whole kilowatt. The "nominal power curve" of an engine configuration means the relationship between maximum available engine brake power and engine speed for a specific engine configuration, as determined using the mapping procedures specified in Part 1065 of the 2008 and Later Test Procedures, based on the manufacturer's design and production specifications for that engine. This relationship may also be expressed by a torque curve that relates maximum available engine torque with engine speed. The nominal power curve shall be within the normal production variability of actual power curves for production engines of the same engine configuration. This definition of Maximum Engine Power shall be applicable for all references to a specific power value or range of power values with respect to engines subject to the 2008 and Later Test Procedures, except as otherwise noted or permitted by the Executive Officer. Maximum Engine Power shall be used as the basis for categorizing engine families into appropriate Tier 4 power categories.

(29)(35) "Maximum Rated Power" means the maximum brake kilowatt output of an engine at rated speed as stated by the manufacturer in the manufacturer's sales and service literature and in the application for certification. Maximum Rated Power shall be used as the basis for categorizing engine families into appropriate Tier 1, Tier 2, and Tier 3 power categories, except as otherwise noted or permitted by the Executive Officer.

(35)(36) "Maximum Test Speed" has the same meaning as defined in Part 1065.1001 of the 2008 and Later Test Procedures.

(30)(37) "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)~~(38) "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:

1. in or on a piece of equipment that is self-propelled or serves as 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
2. in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or
3. 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:

1. the engine is used to propel a vehicle subject to the emission 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 ~~s~~Section 202 of the federal Clean Air Act (42 U.S.C. 7521); or
2. the engine is regulated by a federal New Source Performance Standard promulgated under ~~s~~Section 111 of the federal Clean Air Act (42 U.S.C. 7511); or
3. the engine otherwise included in paragraph (A)(3.) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter 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.

~~(32)~~(39) "Off-road vehicle" or "Off-road equipment" means a vehicle or equipment that is powered by an off-road compression-ignition engine.

~~(33)~~(40) "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 and 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)~~(41) "Opacity" means the fraction of a beam of light, expressed in percent, which fails to penetrate a plume of smoke.

~~(35)~~(42) "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 that can enter the combustion chambers of the engine. Gasoline-fueled engines are Otto cycle engines.

~~(36)~~(43) "PM and Test Cycle Limited Procedures" means the document entitled "California Exhaust Emission Standards and Test Procedures for New 1996 and Later Tier 1, Tier 2, and Tier 3 Off-Road Compression-Ignition Engines, Part II," which includes the standards and test procedures applicable for 1996 and later heavy-duty off-road compression-ignition engines, as adopted May 12, 1993, and as amended ~~January 28, 2000~~ October 20, 2005. This document is incorporated by reference herein.

~~(37)~~(44) "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.

~~(44)~~(45) "Power category" means a specific range of maximum power that defines the applicability of standards. For example, references to the 56-130 kW power category and $56 \leq \text{kW} < 130$ include all engines with maximum power at or above 56 kW but below 130 kW. Also references to 56-560 kW power categories or $56 \leq \text{kW} \leq 560$ include all engines with maximum power at or above 56 kW, but at or below 560 kW, even though these engines span multiple power categories. Note that in some cases, FEL caps are based on a subset of a power category. The Tier 4 applicable power categories are defined as follows:

(A) Engines with maximum engine power below 19 kW.

(B) Engines with maximum engine power at or above 19 kW but below 56 kW.

(C) Engines with maximum engine power at or above 56 kW but below 130 kW.

(D) Engines with maximum engine power at or above 130 kW but at or below 560 kW.

(E) Engines with maximum engine power above 560 kW.

~~(38)~~(46) "Propulsion marine compression-ignition engine" means a marine compression-ignition engine that is intended to move a vessel through water or direct the movement of a vessel.

~~(39)~~(47) "Quality-audit test" is defined as the test performed on a sample of production engines produced for sale in California.

~~(40)~~(48) "Rated speed" is the maximum full load governed speed for governed engines and the speed of maximum horsepower for ungoverned engines.

~~(41)~~(49) "Representative engine sample" means that the sample is typical of the engine family or engine family group as a whole (as defined in 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.

~~(42)~~(50) "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)~~(51) "Small off-road engine" has the meaning specified in Title 13, California Code of Regulations, Section 2401.

~~(51)~~(52) "Small-volume engine manufacturer" means a small business engine manufacturer that had engine families certified to meet the requirements of 40 CFR part 89 before 2003, had annual U.S.-directed production of no more than 2,500 units in 2002 and all earlier calendar years, and has 1000 or fewer employees. For manufacturers owned by a parent company, the production limit applies to the production of the parent company and all its subsidiaries and the employee limit applies to the total number of employees of the parent company and all its subsidiaries.

~~(44)~~(53) "Tier 1 engine" means an engine subject to the Tier 1 emission standards listed in Section 2423(b)(1)(A) of this article.

~~(45)~~(54) "Tier 2 engine" means an engine subject to the Tier 2 emission standards listed in Section 2423(b)(1)(A) of this article.

~~(46)~~(55) "Tier 3 engine" means an engine subject to the Tier 3 emission standards listed in Section 2423(b)(1)(A) of this article.

~~(55)~~(56) "Tier 4 engine" means an engine subject to the Tier 4 emission standards listed in Section 2423(b)(1)(B) of this article.

~~(47)~~(57) "Ultimate purchaser" means the first person who in good faith purchases a new engine or equipment for purposes other than resale.

~~(48)~~(58) "Unscheduled maintenance" means any inspection, adjustment, repair, removal, disassembly, cleaning, or replacement of components or systems that is performed to correct or diagnose a part failure which was not anticipated.

~~(49)~~(59) "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, whichever first occurs.

~~(50)~~(60) "Vessel" has the meaning specified in Section 9840 of the California Vehicle Code.

~~(51)~~(61) "Warrantable condition" means any condition of an engine that triggers the responsibility of the manufacturer to take corrective action pursuant to Section 2425.

~~(52)~~(62) "Warranted part" means any emissions-related part installed on an engine by the equipment manufacturer, or installed in a warranty repair, which is listed on the warranty parts list.

~~(53)~~(63) "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.

~~(54)~~(64) "Warranty station" means a service facility authorized by the equipment or engine manufacturer to perform warranty repairs. This shall include all manufacturer distribution centers 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.