

§ 94.1

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APPENDIX I TO PART 94—EMISSION-RELATED ENGINE PARAMETERS AND SPECIFICATIONS.

AUTHORITY: 42 U.S.C. 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7545, 7547, 7549, 7550 and 7601(a).

SOURCE: 64 FR 73331, Dec. 29, 1999, unless otherwise noted.

Subpart A—General Provisions for Emission Regulations for Compression-Ignition Marine Engines

§ 94.1 Applicability.

(a) Except as noted in paragraphs (b) and (c) of this section, the provisions of this part apply to manufacturers (including post-manufacture marinizers and dressers), rebuilders, owners and operators of:

(1) Marine engines that are compression-ignition engines manufactured (or that otherwise become new) on or after January 1, 2004;

(2) Marine vessels manufactured (or that otherwise become new) on or after January 1, 2004 and which include a compression-ignition marine engine.

(b) Notwithstanding the provision of paragraph (c) of this section, the requirements and prohibitions of this part do not apply with respect to the engines identified in paragraphs (a)(1) and (2) of this section where such engines are:

(1) Marine engines with rated power below 37 kW; or

(2) Marine engines on foreign vessels.

(c) The provisions of Subpart L of this part apply to everyone with respect to the engines identified in paragraph (a) of this section.

[67 FR 68341, Nov. 8, 2002, as amended at 68 FR 9780, Feb. 28, 2003]

§ 94.2 Definitions.

(a) The definitions of this section apply to this subpart. They also apply to all subparts of this part, except where noted otherwise.

(b) As used in this part, all terms not defined in this section shall have the meaning given them in the Act: *Act* means the Clean Air Act as amended (42 U.S.C. 7401 *et seq.*).

Adjustable Parameter means any device, system, or element of design which is physically or electronically capable of being adjusted (including those which are difficult to access) and which, if adjusted, may affect emissions or engine performance during emission testing.

Administrator means the Administrator of the Environmental Protection

Agency or his/her authorized representative.

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

Annex VI Technical Code means the "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines," adopted by the International Maritime Organization (incorporated by reference in § 94.5).

Applicable standard means a standard to which an engine is subject; or, where an engine is certified to another standard or FEL, applicable standard means the other standard or FEL to which the engine is certified, as allowed by § 94.8. This definition does not apply to subpart D of this part.

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

Auxiliary emission control device (AECD) means any element of design which senses temperature, vessel speed, engine RPM, atmospheric pressure, manifold pressure or vacuum, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system (including, but not limited to injection timing); or any other feature that causes in-use emissions to be higher than those measured under test conditions.

Averaging means the exchange of emission credits among engine families within a given manufacturer's product line.

Banking means the retention of emission credits by a credit holder for use in future calendar year averaging or trading as permitted by the regulations in this part.

Base engine means a land-based engine to be marinized, as configured prior to marinization.

Blue Sky Series engine means an engine meeting the requirements of § 94.7(e).

Brake-specific fuel consumption means the mass of fuel consumed by an engine during a test segment divided by the brake-power output of the engine during that same test segment.

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

Category 1 means relating to a marine engine with a rated power greater than or equal to 37 kilowatts and a specific engine displacement less than 5.0 liters per cylinder.

Category 2 means relating to a marine engine with a specific engine displacement greater than or equal to 5.0 liters per cylinder but less than 30 liters per cylinder.

Category 3 means relating to a marine engine with a specific engine displacement greater than or equal to 30 liters per cylinder.

Commercial means relating to an engine or vessel that is not a recreational marine engine or a recreational vessel.

Compliance date means the date on which compliance with a standard becomes mandatory. For example, the compliance date for standards which first apply to the 2004 model year, is January 1, 2004.

Compression-ignition means relating to an engine that is not a spark-ignition engine.

Configuration means any subclassification of an engine family which can be described on the basis of gross power, emission control system, governed speed, injector size, engine calibration, and other parameters as designated by the Administrator.

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

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

Defeat device means an AECD or other control feature that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal engine operation and use, unless the AECD or other control feature has been identified by the manufacturer in the application for certification, and:

(1) Such conditions are substantially represented by the portion of the applicable duty cycle of § 94.105 during which the applicable emission rates are measured;

(2) The need for the AECD or other control feature is justified in terms of protecting the engine or vessel against damage or accident; or

(3) The AECD or other control feature does not go beyond the requirements of engine starting.

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

Deterioration factor means the difference between exhaust emissions at the end of useful life and exhaust emissions at the low hour test point expressed as either: the ratio of exhaust emissions at the end of useful life to exhaust emissions at the low hour test point (for multiplicative deterioration factors); or the difference between exhaust emissions at the end of useful life and exhaust emissions at the low hour test point (for additive deterioration factors).

Diesel fuel means any fuel suitable for use in diesel engines which is commonly or commercially known or sold as diesel fuel or marine distillate fuel.

Dresser means any entity that modifies a land-based engine for use in a marine vessel, in compliance with the provisions of § 94.907. This means that dressers may not modify the engine in a way that would affect emissions.

Emission control system means those devices, systems or elements of design which control or reduce the emission of substances from an engine. This includes, but is not limited to, mechanical and electronic components and controls, and computer software.

Emission credits means the amount of emission reduction or exceedance, by an engine family, below or above the emission standard, respectively, as calculated under subpart D of this part. Emission reductions below the standard are considered as “positive credits,” while emission exceedances above the standard are considered as “negative credits.” In addition, “projected credits” refer to emission credits based on the projected applicable production/sales

volume of the engine family. “Reserved credits” are emission credits generated within a calendar year waiting to be reported to EPA at the end of the calendar year. “Actual credits” refer to emission credits based on actual applicable production/sales volume as contained in the end-of-year reports submitted to EPA.

Emission-data engine means an engine which is tested for purposes of emission certification or production line testing.

Emission-related defect means a defect in design, materials, or workmanship in a device, system, or assembly which affects any parameter or specification enumerated in Appendix I of this part.

Emission-related maintenance means that maintenance which substantially affects emissions or which is likely to affect the deterioration of the engine or vessel with respect to emissions.

Engine family means a group of engine configurations that are expected to have similar emission characteristics throughout the useful lives of the engines (see § 94.204), and that are (or were) covered (or requested to be covered) by a specific certificate of conformity.

Engineering analysis means a summary of scientific and/or engineering principles and facts that support a conclusion made by a manufacturer, with respect to compliance with the provisions of this part.

EPA Enforcement Officer means any officer or employee of the Environmental Protection Agency so designated in writing by the Administrator or his/her designee.

Exhaust emissions means substances (i.e., gases and particles) emitted to the atmosphere from any opening downstream from the exhaust port or exhaust valve of an engine.

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

Family Emission Limit (FEL) means an emission level declared by the certifying manufacturer to serve in lieu of an otherwise applicable emission standard for certification and compliance purposes in the averaging, banking and trading program. FELs are expressed to the same number of decimal places as the applicable emission standard.

Foreign vessel means a vessel of foreign registry or a vessel operated under the authority of a country other than the United States.

Fuel system means the combination of fuel tank(s), fuel pump(s), fuel lines and filters, pressure regulator(s), and fuel injection components, fuel system vents, and any other component involved in the delivery of fuel to the engine.

Green Engine Factor means a factor that is applied to emission measurements from an engine that has had little or no service accumulation. The Green Engine Factor adjusts emission measurements to be equivalent to emission measurements from an engine that has had approximately 300 hours of use.

Hydrocarbon standard means an emission standard for total hydrocarbons, nonmethane hydrocarbons, or total hydrocarbon equivalent; or a combined emission standard for NO_x and total hydrocarbons, nonmethane hydrocarbons, or total hydrocarbon equivalent.

Identification number means a specification (for example, model number/serial number combination) which allows a particular engine to be distinguished from other similar engines.

Importer means an entity or person who imports engines from a foreign country into the United States (including its territories).

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

Low hour engine means an engine during the interval between the time that normal assembly operations and adjustments are completed and the time that 300 additional operating hours have been accumulated (including hours of operation accumulated during emission testing, if performed).

Malfunction means a condition in which the operation of a component in an engine occurs in a manner other than that specified by the certifying manufacturer (e.g., as specified in the application for certification); or the operation of an engine in that condition.

Manufacturer means any person engaged in the manufacturing or assembling of new engines or importing such engines for resale, or who acts for and is under the control of any such person in connection with the distribution of such engines. The term manufacturer includes post-manufacturer marinizers, but does not include any dealer with respect to new engines received by such person in commerce.

Manufacturer-owned engine means an uncertified marine engine that is owned and controlled by a manufacturer, is used for product development, and is not sold or leased.

Marine engine means an engine that is installed or intended to be installed on a marine vessel. This definition does not include portable auxiliary engines for which the fueling, cooling and exhaust systems are not integral parts of the vessel.

Marine vessel has the meaning specified in the General Provisions of the United States Code, 1 U.S.C. 3.

Maximum Test Power means:

(1) For Category 1 engines, the power output observed at the maximum test speed with the maximum fueling rate possible.

(2) For Category 2 engines, 90 percent of the power output observed at the maximum test speed with the maximum fueling rate possible.

Maximum test speed means the engine speed defined by § 94.107 to be the maximum engine speed to use during testing.

Maximum Test Torque means the torque output observed at the test speed with the maximum fueling rate possible at that speed.

Method of aspiration means the method whereby air for fuel combustion enters the engine (e.g., naturally aspirated or turbocharged).

Model year means the manufacturer's annual new model production period which includes January 1 of the calendar year, ends no later than December 31 of the calendar year, and does not begin earlier than January 2 of the previous calendar year. Where a manufacturer has no annual new model production period, model year means calendar year.

New marine engine means:

(1)(i) A marine engine, the equitable or legal title to which has never been transferred to an ultimate purchaser;

(ii) A marine engine installed on a vessel, the equitable or legal title to such vessel has never been transferred to an ultimate purchaser; or

(iii) A marine engine that has not been placed into service on a vessel.

(2) Where the equitable or legal title to an engine or vessel is not transferred to an ultimate purchaser prior to its being placed into service, the engine ceases to be new after it is placed into service.

(3) With respect to imported engines, the term "new marine engine" means an engine that is not covered by a certificate of conformity under this part at the time of importation, and that was manufactured after the starting date of the emission standards in this part which are applicable to such engine (or which would be applicable to such engine had it been manufactured for importation into the United States).

New vessel means:

(1)(i) A vessel, the equitable or legal title to which has never been transferred to an ultimate purchaser; or

(ii) For vessels with no Category 3 engines, a vessel that has been modified such that the value of the modifications exceeds 50 percent of the value of the modified vessel. The value of the modification is the difference in the assessed value of the vessel before the modification and the assessed value of the vessel after the modification. Use the following equation to determine if the fractional value of the modification exceeds 50 percent:

$$\text{Percent of value} = \frac{[(\text{Value after modification}) - (\text{Value before modification})] \times 100\%}{(\text{Value after modification})}$$

(iii) For vessels with Category 3 engines, a vessel that has undergone a modification, which:

(A) Substantially alters the dimensions or carrying capacity of the vessel; or

(B) Changes the type of vessel; or

(C) Substantially prolongs the vessel's life.

(2) Where the equitable or legal title to a vessel is not transferred to an ultimate purchaser prior to its being placed into service, the vessel ceases to be new when it is placed into service.

Nonconforming marine engine means a marine engine which is not covered by a certificate of conformity prior to importation or being offered for importation (or for which such coverage has not been adequately demonstrated to EPA); or a marine engine which was originally covered by a certificate of conformity, but which is not in a certified configuration, or otherwise does not comply with the conditions of that certificate of conformity.

NOTE: This definition does not include domestic marine engines which are not covered by a certificate of conformity prior to their introduction into U.S. commerce; such engines are considered to be "noncomplying marine engines."

Oxides of nitrogen means nitric oxide and nitrogen dioxide. Oxides of nitrogen are expressed quantitatively as if the nitric oxide were in the form of nitrogen dioxide (oxides of nitrogen are assumed to have a molecular weight equivalent to nitrogen dioxide).

Passenger has the meaning given by 46 U.S.C. 2101 (21) and (21a). In the context of commercial vessels, this generally means that a passenger is a person that pays to be on the vessel.

Post-manufacture marinizer means an entity that produces a marine engine by modifying a non-marine engine, whether certified or uncertified, complete or partially complete, where such entity is not controlled by the manufacturer of the base engine or by an entity that also controls the manufacturer of the base engine. In addition, vessel manufacturers that substantially modify marine engines are post-

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manufacture marinizers. For the purpose of this definition, “substantially modify” means changing an engine in a way that could change engine emission characteristics.

Presentation of credentials means the display of the document designating a person as an EPA enforcement officer.

Primary fuel means that type of fuel (e.g., petroleum distillate diesel fuel) that is expected to be consumed in the greatest quantity (volume basis) when the engine is operated in use.

Propulsion engine means an engine that moves a vessel through the water or directs the movement of a vessel.

Recreational marine engine means a Category 1 propulsion marine engine that is intended by the manufacturer to be installed on a recreational vessel, and which is permanently labeled as follows: “THIS ENGINE IS CATEGORIZED AS A RECREATIONAL MARINE ENGINE UNDER 40 CFR PART 94. INSTALLATION OF THIS ENGINE IN ANY NONRECREATIONAL VESSEL IS A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.”

Recreational vessel has the meaning given in 46 U.S.C. 2101 (25), but excludes “passenger vessels” and “small passenger vessels” as defined by 46 U.S.C. 2101 (22) and (35) and excludes vessels used solely for competition. In general, for this part, “recreational vessel” means a vessel that is intended by the vessel manufacturer to be operated primarily for pleasure or leased, rented or chartered to another for the latter’s pleasure, excluding the following vessels:

(1) Vessels of less than 100 gross tons that carry more than 6 passengers (as defined in this section).

(2) Vessels of 100 gross tons or more that carry one or more passengers (as defined in this section).

(3) Vessels used solely for competition.

Residual fuel means a petroleum product containing the heavier compounds that remain after the distillate fuel oils (e.g., diesel fuel and marine distillate fuel) and lighter hydrocarbons are distilled away in refinery operations.

Round means to round numbers according to ASTM E29-02 (incorporated

by reference in § 94.5), unless otherwise specified.

Service life means the total life of an engine. Service life begins when the engine is originally manufactured and continues until the engine is permanently removed from service.

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

Small-volume boat builder means a boat manufacturer with fewer than 500 employees and with annual U.S.-directed production of fewer than 100 boats. For manufacturers owned by a parent company, these limits apply to the combined production and number of employees of the parent company and all its subsidiaries.

Small-volume manufacturer means a manufacturer with annual U.S.-directed production of fewer than 1,000 internal combustion engines (marine and nonmarine). For manufacturers owned by a parent company, the limit applies to the production of the parent company and all its subsidiaries.

Spark-ignition means relating to a gasoline-fueled engine or other engines with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark-ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

Specified by a certificate of conformity or specified in a certificate of conformity means stated or otherwise specified in a certificate of conformity or an approved application for certification.

Test engine means an engine in a test sample.

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

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Tier 1 means relating to an engine subject to the Tier 1 emission standards listed in § 94.8.

Tier 2 means relating to an engine subject to the Tier 2 emission standards listed in § 94.8.

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

Trading means the exchange of engine emission credits between credit holders.

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

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

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

Useful life means the period during which an engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as hours of operation and years. It is the period during which a new engine is required to comply with all applicable emission standards. (Note: § 94.9(a) specifies minimum requirements for useful life values.)

Vessel means a marine vessel.

Vessel operator means any individual that physically operates or maintains a vessel, or exercises managerial control over the operation of the vessel.

Vessel owner means the individual or company that holds legal title to a vessel.

Voluntary emission recall means a repair, adjustment, or modification program voluntarily initiated and con-

ducted by a manufacturer to remedy any emission-related defect for which notification of engine or vessel owners has been provided.

[64 FR 73331, Dec. 29, 1999, as amended at 67 FR 68341, Nov. 8, 2002; 68 FR 9781, Feb. 28, 2003; 68 FR 54960, Sept. 19, 2003]

§ 94.3 Abbreviations.

The abbreviations of this section apply to all subparts of this part and have the following meanings:

AECD—Auxiliary emission control device.
API—American Petroleum Institute.
ASTM—American Society for Testing and Materials.
°C—Degrees Celsius.
CI—Compression ignition.
CO—Carbon monoxide.
CO₂—Carbon dioxide.
disp.—volumetric displacement of an engine cylinder.
EGR—Exhaust gas recirculation.
EP—End point.
EPA—Environmental Protection Agency.
FEL—Family emission limit.
ft—foot or feet.
FTP—Federal Test Procedure.
g—gram(s).
g/kW-hr—Grams per kilowatt hour.
gal—U.S. gallon.
h—hour(s).
HC—hydrocarbon.
Hg—Mercury.
hp—horsepower.
ICI—Independent Commercial Importer.
in—inch(es).
K—Kelvin.
kg—kilogram(s).
km—kilometer(s).
kPa—kilopascal(s).
kW—kilowatt.
L/cyl—liters per cylinder.
m—meter(s).
max—maximum.
mg—milligram(s).
min—minute.
ml—milliliter(s).
mm—millimeter.
NIST—National Institute for Standards and Testing.
NMHC—Non-methane hydrocarbons.
NTIS—National Technical Information Service.
NO—nitric oxide.
NO₂—nitrogen dioxide.
NO_x—oxides of nitrogen.
No.—number.
O₂—oxygen.
pct—percent.
PM—particulate matter.
PMM—post-manufacture marinizer.
ppm—parts per million by volume.
ppmC—parts per million, carbon.