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exemption, any suspension, revocation, voiding, or withdrawal of the Certificate as it applies to a non-exempt configuration for any reason will result in a suspension of the Certificate as it applies to the corresponding exempted configuration(s) of that model type, unless there is at least one other corresponding non-exempt configuration of the same model type still covered by the Certificate. The suspension of the Certificate as it applies to the exempted configuration(s) will be terminated when any one of the following occurs:

- (i) Another corresponding non-exempt configuration(s) receive(s) coverage under the Certificate; or
- (ii) Suspension of the Certificate as it applies to the corresponding non-exempt configuration(s) is terminated; or
- (iii) The Agency's action(s), with respect to suspension, revocation, voiding, or withdrawal of the Certificate as it applies to the corresponding non-exempt configuration(s), is reversed.

(3) The sale of a vehicle for principal use at a designated high-altitude location that has been exempted as set forth in paragraph (h) of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

(i)(1) The manufacturers may exempt 1996 and later model year vehicles from compliance at low altitude with the emission standards set forth in paragraph (a) of this section and § 86.090-8(b) if the vehicles:

- (i) Are not intended for sale at low altitude; and
- (ii) Are equipped with a unique, high-altitude axle ratio (rear-wheel drive vehicles) or a unique, high-altitude drivetrain (front-wheel drive vehicles) with a higher N/V ratio than other configurations of that model type which are certified in compliance with the emission standards of paragraph (a) of this section and § 86.090-8(b) under low-altitude conditions.

(2) The sale of a vehicle for principal use at low altitude that has been exempted as set forth in paragraph (i)(1) of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

(j) Any exempted light-duty vehicle that a manufacturer wishes to certify for sale under the provisions of § 86.090-8 (h) or paragraph (i) of this section is

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subject to the provisions of subpart Q of this part.

(k) *Cold Temperature Carbon Monoxide (CO) Standards—Light-Duty Vehicles.* Exhaust emissions from 1996 and later model year gasoline-fueled light-duty vehicles shall not exceed the cold temperature CO standard of 10.0 grams per mile for an intermediate useful life of 50,000 miles, as measured and calculated under the provisions set forth in subpart C of this part. This standard applies under both low and high altitude conditions.

[56 FR 25756, June 5, 1991, as amended at 57 FR 31915, July 17, 1992; 58 FR 16021, Mar. 24, 1993; 58 FR 34536, June 28, 1993; 58 FR 58417, Nov. 1, 1993; 59 FR 48499, Sept. 21, 1994; 60 FR 43887, Aug. 23, 1995; 62 FR 47120, Sept. 5, 1997; 75 FR 22979, Apr. 30, 2010]

§ 86.096-21 Application for certification.

(a)-(j) [Reserved]

(k) For light-duty vehicles and light-duty trucks, a manufacturer with an engine family that cannot be appropriately tested on all Certification Short Test emission test procedures described in § 86.1439 of this part may request an exemption, as described in § 86.1427 (d), from the inappropriate test(s) for purposes of demonstrating compliance with the Certification Short Test as described in subpart O of this part.

(l) For light-duty vehicles and light-duty trucks, a manufacturer with an engine family that can be appropriately tested on none of the Certification Short Test emission test procedures described in § 86.1439 of this part may request an alternative procedure as described in § 86.1427 (d).

[58 FR 16023, Mar. 24, 1993, as amended at 58 FR 34536, June 28, 1993; 58 FR 58417, Nov. 1, 1993; 59 FR 33913, July 1, 1994; 60 FR 34335, June 30, 1995; 75 FR 22979, Apr. 30, 2010]

§ 86.096-24 Test vehicles and engines.

(a) *General.* This paragraph applies to the grouping of vehicles or engines into families.

(1) The vehicles or engines covered by an application for certification will be divided into groupings of engines which are expected to have similar emission characteristics throughout their useful life. Each group of engines with similar

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emission characteristics is defined as a separate engine family.

(2) To be classed in the same engine family, engines must be identical in all the respects listed in paragraphs (a)(2) (i) through (x) of this section.

(i) The cylinder bore center-to-center dimensions.

(ii)-(iii) [Reserved]

(iv) The cylinder block configuration (air-cooled or water-cooled: L-6, 90 deg., V-8, and so forth).

(v) The location of the intake and exhaust valves (or ports).

(vi) The method of air aspiration.

(vii) The combustion cycle.

(viii) Catalytic converter characteristics.

(ix) Thermal reactor characteristics.

(x) Type of air inlet cooler (for example, intercoolers and after-coolers) for diesel heavy-duty engines.

(3)(i) Engines identical in all the respects listed in paragraph (a)(2) of this section may be further divided into different engine families if the Administrator determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the features of each engine listed in paragraphs (a)(3)(i) (A) through (G) of this section.

(A) The bore and stroke.

(B) The surface-to-volume ratio of the nominally dimensioned cylinder at the top dead center positions.

(C) The intake manifold induction port sizes and configuration.

(D) The exhaust manifold port size and configuration.

(E) The intake and exhaust valve sizes.

(F) The fuel system.

(G) The camshaft timing and ignition or injection timing characteristics.

(ii) Light-duty trucks and heavy-duty engines produced in different model years and distinguishable in the respects listed in paragraph (a)(2) of this section are treated as belonging to a single engine family if the Administrator requires it, after determining that the engines may be expected to have similar emission deterioration characteristics.

(4) Where engines are of a type which cannot be divided into engine families based upon the criteria listed in para-

graphs (a)(2) and (3) of this section, the Administrator establishes families for those engines based upon those features most related to their emission characteristics. Engines that are eligible to be included in the same engine family based on the criteria in paragraphs (a)(2) and (a)(3)(i) of this section may be further divided into different engine families if the manufacturer determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the features of each engine listed in paragraphs (a)(4) (i) through (iii) of this section.

(i) The dimension from the center line of the crankshaft to the center line of the camshaft.

(ii) The dimension from the center line of the crankshaft to the top of the cylinder block head face.

(iii) The size of the intake and exhaust valves (or ports).

(5)-(7) [Reserved]

(8)(i) If the manufacturer elects to participate in the Production AMA Durability Program, the engine families covered by an application for certification must be grouped based upon similar engine design and emission control system characteristics. Each of these groups constitute a separate engine family group.

(ii) To be classed in the same engine family group, engine families must contain engines identical in all of the respects listed in paragraphs (a)(8)(ii) (A) through (D) of this section.

(A) The combustion cycle.

(B) The cylinder block configuration (air-cooled or water-cooled: L-6, V-8, rotary, etc.).

(C) Displacement (engines of different displacement within 50 cubic inches or 15 percent of the largest displacement and contained within a multidisplacement engine family will be included in the same engine family group).

(D) Catalytic converter usage and basic type (non-catalyst, oxidation catalyst only, three-way catalyst equipped).

(9) Engine families identical in all respects listed in paragraph (a)(8) of this section may be further divided into different engine family groups if the Administrator determines that they are

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expected to have significantly different exhaust emission control system deterioration characteristics.

(10) A manufacturer may request the Administrator to include in an engine family group engine families in addition to those grouped under the provisions of paragraph (a)(8) of this section. This request must be accompanied by information the manufacturer believes supports the inclusion of these additional engine families.

(11) A manufacturer may combine into a single engine family group those light-duty vehicle and light-duty truck engine families which otherwise meet the requirements of paragraphs (a) (8) through (10) of this section.

(12) Those vehicles covered by an application for certification which are equipped with gasoline-fueled or methanol-fueled heavy-duty engines will be divided into groupings of vehicles on the basis of physical features which are expected to affect evaporative emissions. Each group of vehicles with similar features must be defined as a separate evaporative emission family.

(13) For gasoline-fueled or methanol-fueled heavy-duty vehicles to be classified in the same evaporative emission family, vehicles must be identical with respect to the items listed in paragraphs (a)(13) (i) and (ii) of this section.

(i) Method of fuel/air metering (that is, carburetion versus fuel injection).

(ii) Carburetor bowl fuel volume, within a 10 cc range.

(14) For vehicles equipped with gasoline-fueled or methanol-fueled heavy-duty engines to be classified in the same evaporative emission control system, vehicles must be identical with respect to the items listed in paragraphs (a)(14) (i) through (ix) of this section.

- (i) Method of vapor storage.
- (ii) Method of carburetor sealing.
- (iii) Method of air cleaner sealing.
- (iv) Vapor storage working capacity, within a 20g range.
- (v) Number of storage devices.
- (vi) Method of purging stored vapors.
- (vii) Method of venting the carburetor during both engine off and engine operation.
- (viii) Liquid fuel hose material.
- (ix) Vapor storage material.

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(15) Where vehicles equipped with gasoline-fueled or methanol-fueled heavy-duty engines are types which cannot be divided into evaporative emission family-control system combinations based on the criteria listed above, the Administrator establishes evaporative emission family-control system combinations for those vehicles based on features most related to their evaporative emission characteristics.

(b) *Emission data*—(1) *Light-duty vehicles and light-duty trucks*. This paragraph applies to light-duty vehicle and light-duty truck emission data vehicles.

(i)–(ii) [Reserved]

(iii) Within an engine family and exhaust emission control system, the manufacturer may alter any emission data vehicle (or other vehicles such as current or previous model year emission data vehicles, fuel economy data vehicles, and development vehicles provided they meet emission data vehicles' protocol) to represent more than one selection under paragraph (b)(1) (i), (ii), (iv), or (vii) of this section.

(iv) If the vehicles selected in accordance with paragraphs (b)(1) (i) and (ii) of this section do not represent each engine-system combination, then one vehicle of each engine-system combination not represented will be selected by the Administrator. The vehicle selected is the vehicle expected to exhibit the highest emissions of those vehicles remaining in the engine family.

(v) For high-altitude exhaust emission compliance for each engine family, the manufacturer must follow one of the procedures described in paragraphs (b)(1)(v) (A) and (B) of this section.

(A) The manufacturer must select for testing under high-altitude conditions the vehicle expected to exhibit the highest emissions from the nonexempt vehicles selected in accordance with § 86.096-24(b)(1) (ii), (iii), and (iv); or

(B) In lieu of testing vehicles according to paragraph (b)(1)(v)(A) of this section, a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of such high-altitude emission testing as the manufacturer deems appropriate, all light-duty vehicles and light-duty

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trucks not exempt under § 86.090–8(h) or § 86.094–9(h) comply with the emission standards at high altitude.

(vi) If 90 percent or more of the engine family sales will be in California, a manufacturer may substitute emission data vehicles selected by the California Air Resources Board criteria for the selections specified in § 86.096–24(b)(1) (i), (ii), and (iv).

(vii) [Reserved]

(viii)(A) [Reserved]

(B) In lieu of testing vehicles according to § 86.096–24(b)(1)(viii)(A), a manufacturer may provide a statement in its application for certification that, based on the manufacturer's engineering evaluation of such high-altitude emission testing as the manufacturer deems appropriate, all light-duty vehicles and light-duty trucks not exempt under § 86.090–8(h) or § 86.094–9(h) comply with the emission standards at high altitude.

(ix) Vehicles selected under paragraph (b)(1)(v)(A) of this section may be used to satisfy the requirements of paragraph (b)(1)(viii)(A) of this section.

(x) [Reserved]

(xi) For cold temperature CO exhaust emission compliance for each engine family, the Administrator will select for testing the vehicle expected to emit the highest emissions from the vehicles selected in accordance with paragraphs (b)(1) (i), (ii), (iii), and (iv) of this section. This vehicle is tested by the manufacturer in accordance with the test procedures in subpart C of this part or with alternative procedures requested by the manufacturer and approved in advance by the Administrator.

(xii) For CST exhaust emission compliance for each engine family, the Administrator will select for testing one vehicle from among the vehicles selected in accordance with paragraphs (b)(1) (i) through (iv) of this section. This vehicle is tested by the manufacturer in accordance with the test procedures set forth in subpart O of this part.

(2) *Otto-cycle heavy-duty emission data engines.* This paragraph applies to Otto-cycle heavy-duty emission data engines.

(i)–(ii) [Reserved]

(iii) The Administrator selects a maximum of two engines within each

engine family based upon features indicating that they may have the highest emission levels of the engines in the engine family in accordance with the criteria described in paragraphs (b)(2)(iii) (A) and (B) of this section.

(A) The Administrator selects one emission data engine first based on the largest displacement within the engine family. Then from those within the largest displacement the Administrator selects, in the order listed, the engine with the highest fuel flow at the speed of maximum rated torque, with the most advanced spark timing, with no EGR or lowest EGR flow, and with no air pump or with the lowest actual flow air pump.

(B) The Administrator selects one additional engine from within each engine family. The engine selected is the engine expected to exhibit the highest emissions of those engines remaining in the engine family. If all engines within the engine family are similar, the Administrator may waive the requirements of this paragraph.

(iv) If the engines selected in accordance with paragraph (b)(2)(iii) of this section do not represent each engine displacement-exhaust emission control system combination, then the Administrator selects one engine of each engine displacement-exhaust emission control system combination not represented.

(v) Within an engine family/displacement/control system combination, the manufacturer may alter any emission data engine (or other engine including current or previous model year emission data engines and development engines provided they meet the emission data engines' protocol) to represent more than one selection under paragraph (b)(2)(iii) of this section.

(3) *Diesel heavy-duty emission data engines.* This paragraph applies to diesel-cycle heavy-duty emission data engines.

(i) Engines will be chosen to be run for emission data based upon engine family groupings. Within each engine family, the requirements of paragraphs (b)(3) (i) through (iv) of this section must be met.

(ii) Engines of each engine family will be divided into groups based upon their exhaust emission control systems. One engine of each engine system

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combination must be run for smoke emission data and gaseous emission data. Either the complete gaseous emission test or the complete smoke test may be conducted first. Within each combination, the engine that features the highest fuel feed per stroke, primarily at the speed of maximum rated torque and secondarily at rated speed, will usually be selected. If there are military engines with higher fuel rates than other engines in the same engine system combinations, then one military engine is also selected. The engine with the highest fuel feed per stroke is usually the one selected.

(iii) The Administrator may select a maximum of one additional engine within each engine-system combination based upon features indicating that it may have the highest emission levels of the engines of that combination. In selecting this engine, the Administrator will consider such features as the injection system, fuel system, compression ratio, rated speed, rated horsepower, peak torque speed, and peak torque.

(iv) Within an engine family control system combination, the manufacturer may alter any emission data engine (or other engine including current or previous model year emission data engines and development engines provided they meet the emission data engines' protocol) to represent more than one selection under paragraphs (b)(3) (ii) and (iii) of this section.

(c) *Durability data*—(1) *Light-duty vehicle durability data vehicles*. This paragraph applies to light-duty vehicle durability data vehicles.

(i) A durability data vehicle is selected by the Administrator to represent each engine-system combination. The vehicle selected must be of the engine displacement with the largest projected sales volume of vehicles with that control-system combination in that engine family and is designated by the Administrator as to transmission type, fuel system, inertia weight class, and test weight.

(ii) A manufacturer may elect to operate and test additional vehicles to represent any engine-system combination. The additional vehicles must be of the same engine displacement, transmission type, fuel system, and in-

ertia weight class as the vehicle selected for that engine-system combination in accordance with the provisions of paragraph (c)(1)(i) of this section. Notice of an intent to operate and test additional vehicles must be given to the Administrator no later than 30 days following notification of the test fleet selection.

(2) *Light-duty trucks*. This paragraph applies to vehicles, engines, subsystems, or components used to establish exhaust emission deterioration factors for light-duty trucks.

(i) The manufacturer must select the vehicles, engines, subsystems, or components to be used to determine exhaust emission deterioration factors for each engine-family control system combination. Whether vehicles, engines, subsystems, or components are used, they must be selected so that their emission deterioration characteristics may be expected to represent those of in-use vehicles, based on good engineering judgment.

(ii) [Reserved]

(3) *Heavy-duty engines*. This paragraph applies to engines, subsystems, or components used to establish exhaust emission deterioration factors for heavy-duty engines.

(i) The manufacturer must select the engines, subsystems, or components to be used to determine exhaust emission deterioration factors for each engine-family control system combination. Whether engines, subsystems, or components are used, they must be selected so that their emission deterioration characteristics may be expected to represent those of in-use engines, based on good engineering judgment.

(ii) [Reserved]

(d) For purposes of testing under § 86.094-26 (a)(9) or (b)(11), the Administrator may require additional emission data vehicles (or emission data engines) and durability data vehicles (light-duty vehicles only) identical in all material respects to vehicles (or engines) selected in accordance with paragraphs (b) and (c) of this section, provided that the number of vehicles (or engines) selected may not increase the size of either the emission data fleet or the durability data fleet by more than 20 percent or one vehicle (or engine), whichever is greater.

(e)(1) [Reserved]

(2) Any manufacturer may request to certify engine families with combined total sales of fewer than 10,000 light-duty vehicles, light-duty trucks, heavy-duty vehicles, and heavy-duty engines utilizing the procedures contained in § 86.094-14 for emission data vehicle selection and determination of deterioration factors. The deterioration factors are applied only to entire engine families.

(f) [Reserved]

(g) This paragraph applies to light-duty vehicles and light-duty trucks, but does not apply to the production vehicles selected under paragraph (h) of this section.

(1)(i) Where it is expected that more than 33 percent of a carline, within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option), the full estimated weight of that item must be included in the curb weight computation for each vehicle available with that item in that carline, within that engine-system combination.

(ii) Where it is expected that 33 percent or less of the carline, within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option), no weight for that item will be added in computing the curb weight for any vehicle in that carline, within that engine-system combination, unless that item is standard equipment on the vehicle.

(iii) In the case of mutually exclusive options, only the weight of the heavier option will be added in computing the curb weight.

(iv) Optional equipment weighing less than three pounds per item need not be considered.

(2)(i) Where it is expected that more than 33 percent of a carline, within an engine-system combination, will be equipped with an item (whether that item is standard equipment or an option) that can reasonably be expected to influence emissions, then such items must actually be installed (unless excluded under paragraph (g)(2)(ii) of this section) on all emission data and durability data vehicles of that carline, within that engine-system combina-

tion, on which the items are intended to be offered in production. Items that can reasonably be expected to influence emissions are: air conditioning, power steering, power brakes, and other items determined by the Administrator.

(ii) If the manufacturer determines by test data or engineering evaluation that the actual installation of the optional equipment required by paragraph (g)(2)(i) of this section does not affect the emissions or fuel economy values, the optional equipment need not be installed on the test vehicle.

(iii) The weight of the options must be included in the design curb weight and must also be represented in the weight of the test vehicles.

(iv) The engineering evaluation, including any test data, used to support the deletion of optional equipment from test vehicles, must be maintained by the manufacturer and be made available to the Administrator upon request.

(3) [Reserved]

(h) *Production AMA Durability Program durability data vehicles.* This paragraph applies to light-duty vehicle durability data vehicles selected under the Production AMA Durability Program described in § 86.094-13.

(1) In order to update the durability data to be used to determine a deterioration factor for each engine family group, the Administrator will select durability data vehicles from the manufacturer's production line. Production vehicles will be selected from each model year's production for those vehicles certified using the Production AMA Durability Program procedures.

(i) The Administrator selects the production durability data vehicle designs from the designs that the manufacturer offers for sale. For each model year and for each engine family group, the Administrator may select production durability data vehicle designs of equal number to the number of engine families within the engine family group, up to a maximum of three vehicles.

(ii) The production durability data vehicles representing the designs selected in paragraph (h)(1)(i) of this section are randomly selected from the

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manufacturer's production. The Administrator makes these random selections unless the manufacturer (with prior approval of the Administrator) elects to make the random selections.

(iii) The manufacturer may select additional production durability data vehicle designs from within the engine family group. The production durability data vehicles representing these designs must be randomly selected from the manufacturer's production in accordance with paragraph (h)(1)(ii) of this section.

(iv) For each production durability data vehicle selected under paragraph (h)(1) of this section, the manufacturer must provide to the Administrator (before the vehicle is tested or begins service accumulation) the vehicle identification number. Before the vehicle begins service accumulation the manufacturer must also provide the Administrator with a description of the durability data vehicle as specified by the Administrator.

(v) In lieu of testing a production durability data vehicle selected under paragraph (h)(1) of this section, and submitting data therefrom, a manufacturer may, with the prior written approval of the Administrator, submit exhaust emission data from a production vehicle of the same configuration for which all applicable data has previously been submitted.

(2) If, within an existing engine family group, a manufacturer requests to certify vehicles of a new design, engine family, emission control system, or with any other durability-related design difference, the Administrator determines if the existing engine family group deterioration factor is appropriate for the new design. If the Administrator cannot make this determination or deems the deterioration factor not appropriate, the Administrator selects preproduction durability data vehicles under the provisions of paragraph (c) of this section. If vehicles are then certified using the new design, the Administrator may select production vehicles with the new design under the provisions of paragraph (h)(1) of this section.

(3) If a manufacturer requests to certify vehicles of a new design that the Administrator determines are a new

engine family group, the Administrator selects preproduction durability data vehicles under the provisions of paragraph (c) of this section. If vehicles are then certified using the new design, the Administrator may select production vehicles of that design under the provisions of paragraph (h)(1) of this section.

[58 FR 58417, Nov. 1, 1993, as amended at 75 FR 22979, Apr. 30, 2010]

§ 86.096-26 Mileage and service accumulation; emission measurements.

(a)-(b) [Reserved]

(c)(1)-(c)(3) [Reserved]

(c)(4) The manufacturer shall determine, for each engine family, the number of hours at which the engine system combination is stabilized for emission-data testing. The manufacturer shall maintain, and provide to the Administrator if requested, a record of the rationale used in making this determination. The manufacturer may elect to accumulate 125 hours on each test engine within an engine family without making a determination. Any engine used to represent emission-data engine selections under § 86.094-24(b)(2) shall be equipped with an engine system combination that has accumulated at least the number of hours determined under this paragraph. Complete exhaust emission tests shall be conducted for each emission-data engine selection under § 86.094-24(b)(2). Evaporative emission controls must be connected, as described in § 86.1337-96(a)(1). The Administrator may determine under § 86.094-24(f) that no testing is required.

[58 FR 16024, Mar. 24, 1993, as amended at 75 FR 22979, Apr. 30, 2010]

§ 86.096-30 Certification.

(a)(1)-(14) [Reserved]

(a)(15) For all light-duty vehicles certified to evaporative test procedures and accompanying standards specified under § 86.096-8:

(i) All certificates issued are conditional upon the manufacturer complying with all provisions of § 86.096-8 both during and after model year production.

(ii) Failure to meet the required implementation schedule sales percentages as specified in § 86.096-8 will be