

TEXT OF THE 15-DAY MODIFICATIONS TO:
AMENDMENTS TO THE CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST
PROCEDURES FOR 1985 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL
ENGINES AND VEHICLES

Note: Only the sections with modifications to the proposed amendments are shown. Amended sections not included in this document continue to be proposed for amendment as noticed on March 6, 1998 in the Board's Staff Report: Initial Statement of Reasons.

PROPOSED REGULATION ORDER

Amend the following sections of Title 13, California Code of Regulations, to read as set forth on the following pages:

- | | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 1956.8 | - Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles |
| | - Exhaust Emission Standards and Test Procedures - 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles |
| Section 1965 | - Emission Control and Smog Index Labels - 1979 and Subsequent Model-Year Motor Vehicles |
| Section 2036 | - Defects Warranty Requirements for 1979 Through 1989 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles; 1979 and Subsequent Model Motorcycles and Heavy-Duty Vehicles; and Motor Vehicle Engines Used in Such Vehicles. |
| Section 2112 | - Definitions |

Note: The regulatory amendments contained in this rulemaking are shown in underline to indicate additions to the text and ~~strikeout~~ to indicate deletions.

This document indicates changes to the 45-day notice. Deletions from the 45-day notice are indicated by ~~double underline strikeout~~. Insertions to the 45-day notice are indicated by double underline.

SECTION 1956.8, TITLE 13, CCR

Amend Title 13, California Code of Regulations, section 1956.8 to read:

1956.8. Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.

(a)(1) The exhaust emissions (A) from new 1985 and subsequent model heavy-duty diesel engines (except methanol-fueled engines) and heavy-duty natural-gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, (B) from new 1991 and subsequent model heavy-duty methanol-fueled diesel transit bus engines, and (C) from all new 1993 and subsequent model heavy-duty methanol-fueled, diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed:

Exhaust Emission Standards (grams per brake horsepower-hour)					
Model Year	Total Hydrocarbons or OMHCE ^A	Optional Non-methane Hydrocarbons ^A	Carbon Monoxide	Oxides of Nitrogen	Particulates
1985-1986	1.3		15.5	5.1	---
1987 ^B	1.3		15.5	5.1	---
1988-1989	1.3		15.5	6.0	0.60
1990	1.3	1.2	15.5	6.0	0.60
1991-1993 ^C	1.3	1.2	15.5	5.0	0.10
1991-1993 ^D	1.3	1.2	15.5	5.0	0.25 ^E
1994 -1997	1.3	1.2	15.5	5.0	0.10 ^E
1994-1995 ^F	1.3	1.2	15.5	5.0	0.07
1994-1995 ^G	1.3	1.2	15.5	3.5 to 0.5	0.07
1995-1997 ^J	1.3	1.2	15.5	3.5 to 0.5	0.10

1996 and subsequent	1.3 ^F	1.2	15.5	4.0 ^{L,Q}	0.05 ^{H,Q}
1996 and subsequent	1.3 ^G	1.2	15.5	2.5 to 0.5	0.05 ^H
1998 and subsequent	1.3 ^K	1.2	15.5	4.0 ^{O,S}	0.10 ^O
1998 and subsequent	1.3 ^J	1.2	15.5	2.5 to 0.5 ^T	0.10

<u>Model Year</u>	<u>Oxides of Nitrogen Plus Non-methane Hydrocarbons</u>	<u>Optional Oxides of Nitrogen Plus Non-methane Hydrocarbons</u>	<u>Carbon Monoxide</u>	<u>Particulates</u>
<u>2004 and subsequent</u>	<u>2.4</u> ^{L,P,S}	<u>2.5</u> ^{M,P,S}	<u>15.5</u>	<u>0.05</u> ^{H,P}
<u>2004 and subsequent</u>	<u>2.4</u> ^{L,P,S}	<u>2.5</u> ^{M,P,S}	<u>15.5</u>	<u>0.10</u> ^P
<u>2004 and subsequent</u>	n/a	<u>1.8 to 0.3</u> ^{L,R,T}	<u>15.5</u>	<u>0.05</u> ^H
<u>2004 and subsequent</u>	n/a	<u>1.8 to 0.3</u> ^{L,R,T}	<u>15.5</u>	<u>0.10</u>

^A The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled engines. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to methanol-fueled engines.

^B As an option a manufacturer may elect to certify to the 1988 model-year emission standards one year early, for the 1987 model year.

^C These standards apply to urban bus engines only.

- ^D For engines other than urban bus engines. For methanol-fueled engines, these standards shall be applicable beginning with the 1993 model year.
- ^E Emissions averaging may be used to meet this standard. Averaging is restricted to within each useful life subclass and is applicable only through the 1995 model year. Emissions from engines used in urban buses shall not be included in the averaging program. However, emissions from methanol-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled urban bus engines certified to a 0.10 grams per brake horsepower-hour standard for particulates for the 1991-1993 model years, and certified to a 0.07 grams per brake horsepower-hour standard for particulates for the 1994-1995 model years, may be included in the averaging program for petroleum-fueled engines other than urban bus engines.
- ^F These mandatory standards apply to urban bus engines only.
- ^G These optional standards apply to urban bus engines only. A manufacturer may elect to certify to an optional NO_x standard by 0.5 grams per brake horsepower-hour increments. Engines certified to any of these optional NO_x standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^H For in-use testing, a 0.07 gram per brake horsepower-hour standard for particulates shall apply.
- ^I A manufacturer may apply to the Executive Officer for an exemption from the 4.0 gram per brake horsepower-hour standard for oxides of nitrogen for 1996 and 1997 model year urban bus engines for which the manufacturer can demonstrate a technological need for the exemption. The exemption or exemptions shall not exceed 10 percent of the average of the manufacturer's total urban bus engine sales in California for the three model years prior to the model year for which an exemption is requested. The manufacturer shall submit technical justification for each engine model and shall provide the number of urban bus engine sales in California for the engine model for which the exemption is requested (if any) and for all urban bus engine models for the three preceding model years, to the Executive Officer when the manufacturer applies for the exemption.
- ^J These are optional standards and apply to all heavy-duty engines excluding urban bus engines. A manufacturer may elect to certify to an optional NO_x standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments. Engines certified to any of these optional NO_x standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^K These mandatory standards apply to all heavy-duty engines except urban bus engines.

- ^L This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, without individual restriction on the individual component values.
- ^M This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, with the non-methane hydrocarbon individual component value not to exceed 0.5 g/bhp-hr.
- ^N These standards apply to all heavy-duty engines except urban bus engines.
- ^O Engines of 1998 through 2003 model years may be eligible to generate banking credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^P Emissions averaging may be used to meet this standard. Averaging must be based on the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^R A manufacturer may elect to certify to an optional reduced-emission NO_x+NMHC standard between the values, inclusive, by 0.3 grams per brake horsepower-hour increments. Engines certified to any of these optional reduced-emission NO_x standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.
- ^S May be used as the certification standard for the higher emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)(3), below.
- ^T May be used as the certification standard for the lower emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)(3), below.

(2) Formaldehyde exhaust emissions from new 1993 and subsequent model methanol-fueled diesel engines, shall not exceed:

Model Year	Formaldehyde (g/bhp-hr)
1993-1995	0.10
1996 and subsequent	0.05

(3) An engine family whose design allows engine operation in either of two distinct alternative fueling modes, where each fueling mode is characterized by use of one fuel or a combination of two fuels and by significantly different emission levels under each mode, may certify to a different NO_x

or NOx plus NMHC (as applicable depending on model year) standard for each fueling mode, provided it meets the following requirements:

(A) The NOx or NOx plus NMHC certification standard used for operation under the higher emitting fueling mode must be one of the standards denoted by footnote S in (a)(1).

(B) The NOx or NOx plus NMHC certification standard used for operation under the lower emitting fueling mode must be one of the reduced-emission standards denoted by footnote T in (a)(1).

(C) The engine family is not used to participate in any manufacturer's averaging, banking or trading program.

(D) The engine family meets all other emission requirements contained in this section.

(E) The higher emitting fueling mode must be intended only for fail-safe vehicle operation when a malfunction or inadvertent fuel depletion precludes operation in the lower emitting fueling mode, as evidenced by a significantly reduced horsepower versus engine speed curve when operating in the higher emitting fueling mode when compared to the similar curve for the lower emitting fueling mode.

(b) The test procedures for determining compliance with standards applicable to 1985 and subsequent heavy-duty diesel engines and vehicles and the requirements for participation in the averaging, banking and trading programs, are set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended ~~June 4, 1997~~; [insert date of finalized amendment], which is incorporated herein by reference.

(c), (d), (e), (f), (g) [No Change]

(h) The exhaust emissions from new 1992 and subsequent model-year engines used in incomplete medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles, and for diesel engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles shall not exceed:

**Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty
Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super
Ultra-Low-Emission Vehicles, and for Diesel Engines Used in Medium-Duty
Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and
Super Ultra-Low-Emission Vehicles^{A,F}**
(grams per brake horsepower-hour)

<i>Model Year</i>	<i>Vehicle Emissions Category^B</i>	<i>Carbon Monoxide</i>	<i>Non-Methane Hydrocarbons and Oxides of Nitrogen^C</i>	<i>Formaldehyde</i>	<i>Particulates^D</i>
1992 ^E - 2001	LEV	14.4	3.5 ^K	0.050	0.10 ^K
2002-2003 ^E	LEV	14.4	3.0 ^K	0.050	0.10 ^K
1992-2003 ^{E,H}	ULEV	14.4	2.5 ^K	0.050	0.10 ^K
2004 and subsequent	ULEV - Opt. A.	14.4	2.5 ^{G,I,J,K}	0.050	0.10 ^{J,K}
2004 and subsequent	ULEV - Opt. B	14.4	2.4 ^{G,I,J,K}	0.050	0.10 ^{J,K}
1992 and subsequent	SULEV	7.2	2.0 ^K	0.025	0.05 ^K

^A This set of standards is optional. Manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-14,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, Title 13, California Code of Regulations. Manufacturers that choose to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in section 2139(c), Title 13, California Code of Regulations.

^B "LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.
"SULEV" means super ultra-low-emission vehicle.

^C This standard is the sum of the individual non-methane hydrocarbon emissions and oxides of nitrogen emissions. For methanol-fueled engines, non-methane hydrocarbons shall mean organic material hydrocarbon equivalent ("OMHCE").

^D This standard shall only apply to diesel engines and vehicles.

- ^E Manufacturers may certify engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles to these standards to meet the requirements of section 1956.8(g), Title 13, California Code of Regulations.
- ^F In-use compliance testing shall be limited to vehicles or engines with fewer than 90,000 miles.
- ^G [The U.S. EPA is considering the adoption of amendments to the federal emission standards for engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles as they existed June 24, 1996. If the U.S. EPA promulgates amendments to the emission standards for this category, the ARB will hold a noticed public hearing within one year of such promulgation to consider the adoption of similar or identical standards in California.]
- ^H For engines certified to the 3.5 grams per brake horsepower-hour (g/bhp-hr) LEV standards, the in-use compliance standard shall be 3.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 and subsequent SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.
- ^I Manufacturers have the option of certifying to either option A or B. Manufacturers electing to certify to Option A must demonstrate that the NMHC emissions do not exceed 0.5 g/bhp-hr.
- ^J Emissions averaging may be used to meet these standards for diesel engines, using the requirements for participation in averaging, banking and trading programs, as set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended [insert date of finalized amendment], incorporated by reference in paragraph (b), above.
- ^K Engines of 1998 and subsequent model years may be eligible to generate averaging, banking and trading credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended [insert date of finalized amendment], incorporated by reference in paragraph (b), above.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43103, 43104, and 43806, Health and Safety Code, and section 28114, Vehicle Code. Reference: Sections 39002, 39003, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106, 43204, and 43806, Health and Safety Code.

State of California
AIR RESOURCES BOARD

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES
FOR 1985 AND SUBSEQUENT MODEL
HEAVY-DUTY DIESEL-ENGINES AND VEHICLES

Adopted: April 8, 1985
Amended: July 29, 1986
Amended: January 22, 1990
Amended: May 15, 1990
Amended: December 26, 1990
Amended: July 12, 1991
Amended: October 23, 1992
Amended: October 22, 1993
Amended: March 24, 1994
Amended: September 22, 1994
Amended: June 29, 1995
Amended: June 4, 1997
Amended: [Insert date of finalized amendment]

NOTE: This document is printed in a style to indicate amendments to the existing California standards and test procedures. The amendments made in the present rulemaking to the existing California standards and test procedures are shown in redline to indicate additions to the text and *strikeout italics* to indicate deletions.

This document incorporates by reference, as the 45-day notice, various sections of the Code of Federal Regulations, some with modifications. Modifications to portions of paragraphs in the Federal language are indicated by underline for additions and ~~strikeout~~ for deletions. Larger portions of Federal language for a specific section which is not to be included in these procedures are denoted by the word "DELETE" and larger portions of new California language are indicated by "REPLACE WITH" or "INSERT". The symbols "*****" and "....." mean that the remainder of the federal text for a specific section, which is not shown in these procedures, has been included by reference, with only the printed text changed. The symbols "#####" mean that the remainder of the text of these procedures, which is not shown in this amendment document, has not been changed.

This document indicates changes to the 45-day notice. Deletions from the 45-day notice are indicated by ~~double underline strikeout~~. Insertions to the 45-day notice are indicated by double underline.

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL-ENGINES AND VEHICLES

The following provisions of Subparts A, I, and N, Part 86, Title 40, Code of Federal Regulations, as adopted or amended by the U.S. Environmental Protection Agency on the date listed, and only to the extent they pertain to the testing and compliance of exhaust emissions from heavy-duty Diesel-engines and vehicles, are adopted and incorporated herein by this reference as the California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles, except as altered or replaced by the provisions set forth below.

The federal regulations contained in the Subparts identified above which pertain to oxides of nitrogen emission averaging shall not be applicable to these procedures except for diesel engines and vehicles produced in the 1998 and subsequent model years. The federal regulations contained in the Subparts identified above which pertain to particulate emission averaging shall not be applicable to these procedures for 1996 and later model engines and vehicles except for diesel engines and vehicles produced in the 1998 and subsequent model years. The smoke exhaust test procedures shall be applicable to California petroleum-fueled, liquefied-petroleum gas-fueled, and compressed-natural gas fueled heavy-duty Diesel engines and vehicles for 1988 and later model years.

The federal regulations contained in the subparts identified above which pertain to nonconformance penalty shall not be applicable.

The federal regulations contained in the subparts identified above which pertain to evaporative emissions shall not be applicable to these procedures. Applicable regulations pertaining to evaporative emissions are contained in "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles," as incorporated in Title 13, California Code of Regulations, Section 1976.

Starting with the 1990 model year, these regulations shall be applicable to all heavy-duty Diesel natural-gas-fueled and liquefied-petroleum gas-fueled engines (and vehicles) including those engines derived from existing Diesel engines. For any engine which is not a distinctly Diesel engine nor derived from such, the Executive Officer shall determine whether the engine shall be subject to these regulations or alternatively to the heavy-duty Otto-cycle engine regulations, in consideration of the relative similarity of the engine's torque-speed characteristics and vehicle applications with those of Diesel and Otto-cycle engines.

The regulations concerning the certification of methanol-fueled diesel urban bus engines are not applicable in California until 1991 and subsequent model years. The regulations concerning the certification of all other methanol fueled diesel engines and vehicles are not applicable in California until 1993 and subsequent model years.

Regulations concerning the certification of incomplete medium-duty diesel low-emission vehicles and engines and ultra-low-emission vehicles and engines operating on any fuel are applicable for the 1992 and subsequent model years.

Subpart A, General Provisions for Emission Regulations for 1977 and Later model Year New Light-Duty Vehicles, Light-Duty Trucks, and Heavy-Duty Engines, and for 1985 and later Model Year New Gasoline-Fuel and Methanol Fueled Heavy-Duty Vehicles.

Adopt and amend § 86.004-11, Title 40, Code of Federal Regulations to read:

§ 86.004-11 Emission standards for 2004 and later model year diesel heavy-duty engines and vehicles.
[October 21, 1997]

(a)(1) Exhaust emissions from new 2004 and later model year diesel HDEs shall not exceed the following:

(i)(A) Oxides of Nitrogen plus Non-methane Hydrocarbons (NO_x + NMHC) for engines fueled with either petroleum fuel, natural gas, or liquefied petroleum gas, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(B) Oxides of Nitrogen plus Non-methane Hydrocarbon Equivalent (NO_x + NMHCE) for engines fueled with methanol, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(C) Optional Standard. Manufacturers may elect to certify to an Oxides of Nitrogen plus Non-methane Hydrocarbons (or equivalent for methanol-fueled engines) standard of 2.5 grams per brake horsepower-hour (0.93 gram per megajoule), as measured under transient operating conditions, provided that Non-methane Hydrocarbons (or equivalent for methanol-fueled engines) do not exceed 0.5 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines), as measured under transient operating conditions.

(D) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the emissions ABT programs for HDEs, within the restrictions described in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the NO_x plus NMHC (or NO_x plus NMHCE for methanol-fueled engines) FELs may not exceed 4.5 grams per brake horsepower-hour (1.7 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs. Additionally, families certified to the optional standard contained in paragraph (a)(1)(i)(C) of this section shall not exceed 0.50 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines) through the use of credits.

(E) DELETE

(ii) DELETE

(iii) Particulate.

(A) DELETE

(B) DELETE

(C) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the particulate ABT programs for HDEs, within the restrictions described in this section and in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed 0.25 gram per brake horsepower-hour (0.093 gram per megajoule).

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(2) of appendix I to this part, and measured and calculated in accordance with the procedures set forth in subpart N or P of this part, except as noted in § 86.098-23(c)(2) or superseding sections.

(b) DELETE

(c) DELETE

(d) DELETE

(e) A manufacturer may elect to certify 2003 2004 and later model year diesel engines, for use in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, to an optional reduced-emission oxides of nitrogen plus nonmethane hydrocarbons (NO_x plus NMHC) standard between 0.3 grams per brake horsepower-hour and 1.8 grams per brake horsepower-hour, inclusive, at 0.3 grams per brake horsepower-hour increments, as measured under transient operating conditions. Engines certified to a standard contained in this paragraph are not eligible to participate in NO_x, NO_x plus NMHC, or particulate ABT programs.

(f) An engine family whose design allows engine operation in either of two distinct alternative fueling modes, where each fueling mode is characterized by use of one fuel or a combination of two fuels and significantly different emission levels under each mode, may certify to a different NO_x plus NMHC (depending on model year) standard for each fueling mode, provided it meets the following requirements:

(1) The NO_x plus NMHC certification standard used for certification under the higher emitting fueling mode must be the standard contained in (a)(3)(i) of this section, as appropriate.

(2) The NO_x plus NMHC certification standard used for certification under the lower emitting fueling mode must be one of the reduced-emission standards contained in (e) of this section, as appropriate.

(3) The engine family is not used to participate in any manufacturer's averaging, banking or trading program.

(4) The engine family meets all other applicable emission standards in each fueling mode.

(5) The higher emitting fueling mode must be intended only for fail-safe vehicle operation in the case of a malfunction or inadvertent fuel depletion which precludes normal operation in the lower emitting

fueling mode. Evidence of such design intent would be a significantly reduced horsepower versus engine speed curve when operating in the higher emitting fueling mode as compared to the curve while operating in the lower emitting fueling mode.

(6) All applicable exhaust emission testing, data submission, and certification application requirements must be met separately for each of the two fueling modes of operation, but should be submitted for ARB approval in a single package.

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Adopt and amend § 86.098-15, Title 40, Code of Federal Regulations to read:

§ 86.098-15 NOx and particulate averaging, trading, and banking for heavy-duty engines, and NOx plus NMHC and particulate averaging, trading, and banking for medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating .

[October 21, 1997]

Introductory paragraph DELETE

New introductory paragraph (a) INSERT:

(a) Except as otherwise noted, references in this subsection to engines, heavy-duty engines, or HDEs shall include medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for sale in California for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. Except as otherwise noted, references to NOx averaging, banking and trading programs shall mean NOx plus NMHC averaging, trading and banking programs when applied to such medium-duty diesel-cycle engines.

(a)(1) Heavy-duty engines eligible for NOx and particulate averaging, trading and banking programs are described in the applicable emission standards sections in this subpart or in Title 13 California Code of Regulations §1956.8(h) . Manufacturers of heavy-duty engines certified for use in vehicles sold in California must utilize the requirements of paragraph (j) of this section for the inclusion of such engines in averaging, trading and banking programs. All heavy-duty engine families which include any engines labeled for use in clean-fuel vehicles as specified in 40 CFR part 88 are not eligible for these programs. Participation in these programs is voluntary.

(b) (6) If ~~EPA~~ARB or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to ~~EPA~~ARB under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative balances may be adjusted by ~~EPA~~ARB for retroactive use.

(i) If ~~EPA~~ARB review of a manufacturer's end-of-year report indicates a credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that engine family to zero, at the ratio of 1.2 credits purchased for every credit needed to bring the balance to zero. If sufficient credits are not available to bring the credit balance for the engine family in question to zero, ~~EPA~~ARB may void the certificate for that engine family ab initio.

(ii) If within 180 days of receipt of the manufacturer's end-of-year report, ~~EPA~~ARB review determines a reporting error in the manufacturer's favor (i.e. resulting in a positive credit balance) or if the manufacturer discovers such an error within 180 days of ~~EPA~~ARB receipt of the end-of-year report, the credits will be restored for use by the manufacturer.

(c)(1) For each participating engine family, NO_x and particulate emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-93a, to the nearest one-tenth of a Megagram (MG). Consistent units are to be used throughout the equation.

(i) For determining credit need for all engine families and credit availability for engine families generating credits for averaging programs only:

$$\text{Emission credits} = (\text{Std-FEL}) \times (\text{CF}) \times (\text{UL}) \times (\text{Production}) \times (10^{-6})$$

(ii) For determining credit availability for engine families generating credits for trading or banking programs:

$$\text{Emission credits} = (\text{Std-FEL}) \times (\text{CF}) \times (\text{UL}) \times (\text{Production}) \times (10^{-6}) \times (\text{Discount})$$

(c)(1) (iii) For purposes of the equations in paragraphs (c)(1)(i) and (ii) of this section:

Std = the current and applicable heavy-duty engine NO_x or particulate emission standard in grams per brake horsepower hour or grams per Megajoule. In the case of medium-duty engines, Std= the Tier 1 standard for the 1998 through 2001 model years, the LEV standard for the 2002 through 2003 model years, and the ULEV standard for the 2004 and subsequent model years.

FEL = the NO_x or particulate family emission limit for the engine family in grams per brake horsepower hour or grams per Megajoule.

CF = a transient cycle conversion factor in BHP-hr/mi or MJ/mi, as given in paragraph (c)(2) of this section.

UL = the useful life, or alternative life as described in paragraph (f) of § 86.094-21, for the given engine family in miles.

Production = the number of engines produced for U.S. sales within the given engine family during the model year. In the case of medium-duty engines and light heavy-duty engines, Production= the number of engines produced for California sales within the given engine family during the model year. Quarterly production projections are used for initial certification. Actual production is used for end-of-year compliance determination.

Discount = a one-time discount applied to all credits to be banked or traded within the model year generated. The discount applied here is 0.8. Banked credits traded in a subsequent model year will not be subject to an additional discount. Banked credits used in a subsequent model year's averaging program will not have the discount restored.

(d) Averaging sets for NOx emission credits: The averaging and trading of NOx emission credits will only be allowed between heavy-duty engine families intended for use in vehicles over 14,000 pounds gross vehicle weight rating, in the same averaging set and in the same regional category. Engines produced for sale in California constitute a separate regional category than engines produced for sale in the other 49 states. Banking and trading are not applicable to engines sold in California. Engines sold in California may only be used to generate credits to be banked for use in the year 2004 and later, according to paragraph (j) of this section. The averaging sets for the averaging and trading of NOx emission credits for heavy-duty engines are defined as follows:

(d)(2) For diesel cycle heavy-duty engines:

(i) Each of the three primary intended service classes for heavy-duty diesel engines Heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.090-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.090-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating, and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading among all diesel-cycle engine families within the same primary service class averaging set is allowed.

(ii) Urban buses are treated as members of the primary intended service class where they otherwise would fall.

(e) Averaging sets for particulate emission credits. The averaging and trading of particulate emission credits will only be allowed between diesel cycle heavy-duty engine families intended for use in vehicles over 14,000 pounds gross vehicle weight rating, in the same averaging set and in the same regional category. Engines produced for sale in California constitute a separate regional category than engines produced for sale in the other 49 states. Banking and trading are not applicable to engines sold in California. Engines sold in California may only be used to generate credits to be banked for use in the year 2004 and later, according to paragraph (j) of this section. The averaging sets for the averaging and trading of particulate emission credits for diesel cycle heavy-duty engines are defined as follows:

(1) Engines intended for use in urban buses constitute a separate averaging set from all other heavy-duty engines. Averaging and trading between diesel cycle bus engine families is allowed.

(2) For heavy-duty engines, exclusive of urban bus engines, each of the three primary intended service classes for heavy-duty diesel cycle engines heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.090-2, each constitute an averaging set. Light heavy-duty engines, as

defined in § 86.090-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading between diesel-cycle engine families within the same primary service class averaging set is allowed.

(3) Otto cycle engines may not participate in particulate averaging, trading, or banking.

(f)(1)(ii) Manufacturers may bank credits only after the end of the model year and after actual credits have been reported to EPAARB in the end-of-year report. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging.

(f)(3)(i) Banked credits may be used in averaging, or in trading, or in any combination thereof, during the certification period. Credits declared for banking from the previous model year but not reported to EPAARB may also be used. However, if EPAARB finds that the reported credits can not be proven, they will be revoked and unavailable for use.

(i) DELETE

(j) ~~Optional program~~ Program for early banking. Provisions set forth in paragraphs (a) through (i) of this section apply ~~except as specifically stated otherwise~~ only as allowed in paragraph (j) of this section. The procedures of paragraph (j) must be utilized for engines certified for sale in California to participate in ABT programs.

(1) To be eligible for the ~~optional~~ program described in paragraph (j) of this section, the following must apply:

(i) Credits are generated from diesel cycle heavy-duty engines certified and labeled for use in California vehicles of more than 14,000 pounds gross vehicle weight rating.

(ii) During certification, the manufacturer shall declare its intent to include specific engine families in the program described in this paragraph (j). Separate declarations are required for each program and no engine families may be included in both programs in the same model year.

(2) Credit generation and use.

(i) Credits shall only be generated by 1998 and later model year engine families.

(ii) Credits may only be used for 2004 and later model year heavy-duty diesel engines. When used with 2004 and later model year engines, NO_x credits may be used to meet the NO_x plus NMHC standard, except as otherwise provided in § 86.004-11(a)(1)(i)(D), and under the requirements of 86.004-15.

(iii) DELETE

(3) Program flexibilities.

(i) NO_x and PM credits that are banked until model year 2004 under this paragraph (j) may be used in 2004 or any model year thereafter without being forfeited due to credit age. This supersedes the requirement in paragraph (f)(2)(i) of this section.

(ii) There are no regional category restraints for averaging, trading, and banking of credits generated under the program described in paragraph (j) of this section, except as noted in paragraphs (d), (e), and (j)(1)(i) of this section. ~~This supersedes the regional category provisions described in the opening text of paragraphs (d) and (e) of this section.~~

(iii) Credit discounting.

(A) For NO_x and PM credits generated under this paragraph (j) from heavy-duty engine families with NO_x certification levels greater than 3.5 grams per brake horsepower-hour for oxides of nitrogen, a Discount value of 0.9 shall be used in place of 0.8 in the credit availability equation in paragraph (c)(1) of this section. For credits generated from medium duty engine families, a Discount value of 0.9 shall be used if the NO_x plus NMHC value is greater than the applicable standard required in subparagraph (c)(1)(iii) less 0.5 g/BHP-hr.

(B) For NO_x and PM credits generated under this paragraph (j) from heavy-duty engine families with NO_x certification levels less than or equal to 3.5 grams per brake horsepower-hour for oxides of nitrogen, a Discount value of 1.0 shall be used in place of 0.8 in the credit availability equation in paragraph (c)(1) of this section. For credits generated from medium duty engine families, a Discount value of 1.0 shall be used if the NO_x plus NMHC value is less than the applicable standard required in subparagraph (c)(1)(iii) less 0.5 g/BHP-hr.

(iv) Credit apportionment. At the manufacturer's option, marketable emission reduction credits for NO_x, for use in emission reduction credit programs other than ABT, may be generated based upon engine certification to the optional reduced-emission NO_x certification standards of § 86.098-11(e), except that medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating may not be used as the basis for generating marketable emission reduction credits. Use of any marketable emission reduction credits generated must meet the requirements of the individual emission reduction credit program where the credits will be applied. ~~credits generated under the provisions described in this section may be sold to or otherwise provided to another party for use in programs other than the averaging, trading and banking program described in this section.~~

~~(A) The manufacturer shall pre-identify two emission levels per engine family for the purposes of credit apportionment. One emission level shall be the FEL and the other shall be the level of the standard that the engine family is required to certify to under § 86.098-11. For each engine family, the manufacturer may report engine sales in two categories, "ABT-only credits" and "nonmanufacturer-owned credits". For those engine sales used to generate ABT credits, the manufacturer shall report engine sales in the category "ABT-only credits". For those engine sales certified to generate marketable emission reduction credits for NOx, the manufacturer shall report engine sales in the category "nonmanufacturer-owned credits".~~

~~(1) For engine sales reported as "ABT-only credits", the credits generated must be used solely in the ABT program described in this section or §86.004-15.~~

~~(2) The engine manufacturer may declare a portion of engine sales "nonmanufacturer-owned credits" and this portion of the credits generated between the standard and the FEL, based on the calculation in paragraph (c)(1) of this section, any marketable NOx credits generated based upon such sales would belong to another party. For ABT, the manufacturer may not generate any credits for the engine sales reported as "nonmanufacturer-owned credits". Engines reported as "nonmanufacturer-owned credits" shall comply with the FEL and the requirements of the ABT program in all other respects.~~

~~(B) Only manufacturer-owned credits resulting from engine sales reported as "ABT-only credits" shall be used in the averaging, trading, and banking provisions described in this section.~~

~~(C) Credits shall not be double-counted. Credits used in the ABT program may not be provided to an engine purchaser for use in another program.~~

~~(D) Manufacturers shall determine and state the number of engines sold as "ABT-only credits" and "nonmanufacturer-owned credits" in the end-of-model year reports required under § 86.098-23.~~

~~(v) For medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations 1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating:~~

~~(1) From the 1998 model year through the 2005 model year, credits may be generated by an alternative mechanism proposed by the engine manufacturer and approved by the Executive Officer of the ARB. The alternative credit-generating mechanism shall not include any attribute expressly prohibited under the federal ABT program, such as cross-class or cross-fuel trading.~~

~~(2) Manufacturers must annually submit a proposed plan for generating credits to the Executive Officer of the ARB and have it approved prior to sale of engines of that model year in California.~~

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Adopt and amend § 86.004-15, Title 40, Code of Federal Regulations to read:

§ 86.004-15 NOx and particulate averaging, trading, and banking for heavy-duty engines, and NOx plus NMHC and particulate averaging, trading, and banking for medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating.

[October 21, 1997]

New introductory paragraph (a) INSERT:

(a) Except as otherwise noted, references in this subsection to engines, heavy-duty engines or HDEs shall include medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for sale in California for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. Except as otherwise noted, references to NOx averaging, banking and trading programs shall mean NOx plus NMHC averaging, trading and banking programs when applied to such medium-duty diesel-cycle engines.

(a)(1) Heavy-duty engines eligible for NOx, NOx plus NMHC, and particulate averaging, trading and banking programs are described in the applicable emission standards sections in this subpart or in Title 13 California Code of Regulations §1956.8(h) ~~with the addition that engines certified and labeled for use in California vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating may also participate in ABT programs, subject to the requirements of this section.~~ All heavy-duty engine families which include any engines labeled for use in clean-fuel vehicles as specified in 40 CFR part 88 are not eligible for these programs. Participation in these programs is voluntary.

(b) Participation in the NOx, NOx plus NMHC, and/or particulate averaging, trading, and banking programs shall be done as follows.

(1) During certification, the manufacturer shall:

(i) Declare its intent to included specific engine families in the averaging, trading and/or banking programs. Separate declarations are required for each program and for each pollutant (i.e., NOx, NOx plus NMHC, and particulate).

(ii) Declare an FEL for each engine family participating in one or more of these three programs.

(A) The FEL must be to the same level of significant digits as the emission standard (one-tenth of a gram per brake horsepower-hour for NOx, NOx plus NMHC, emissions and one-hundredth of a gram per brake horsepower-hour for particulate emissions).

(B) In no case may the FEL exceed the upper limit prescribed in the section concerning the applicable heavy-duty engine NOx, NOx plus NMHC, and particulate emission standards. In the case of

medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, the FEL is subject to the same upper limit as required for heavy-duty engines.

(iii) Calculate the projected emission credits (positive or negative) based on quarterly production projections for each participating family and for each pollutant, using the applicable equation in paragraph (c) of this section and the applicable factors for the specific engine family.

(iv)(A) Determine and state the source of the needed credits according to quarterly projected production for engine families requiring credits for certification.

(B) State where the quarterly projected credits will be applied for engine families generating credits.

(C) Credits may be obtained from or applied to only engine families within the same averaging set as described in paragraphs (d) or (e) of this section. Credits available for averaging, trading, or banking as defined in § 86.090-2, may be applied exclusively to a given engine family, or reserved as defined in § 86.091-2.

(D) Credits generated before the year 2004 to be used to certify engines in the combined light heavy-duty and medium-duty averaging set, as described in paragraphs (d)(2)(i) and (e)(2), in the year 2004 and later, must have been generated through the sale of engines in California.

(2) Based on this information each manufacturer's certification application must demonstrate:

(i) That at the end of model year production, each engine family has a net emissions credit balance of zero or more using the methodology in paragraph (c) of this section with any credits obtained from averaging, trading or banking.

(ii) The source of the credits to be used to comply with the emission standard if the FEL exceeds the standard, or where credits will be applied if the FEL is less than the emission standard. In cases where credits are being obtained, each engine family involved must state specifically the source (manufacturer/engine family) of the credits being used, including the year of generation of the credits being used and whether the credits were generated from engines sold in California or from 49-state engines. In cases where credits are being generated/supplied, each engine family involved must state specifically the designated use (manufacturer/engine family or reserved) of the credits involved. All such reports shall include all credits involved in averaging, trading or banking.

(3) During the model year manufacturers must:

(i) Monitor projected versus actual production to be certain that compliance with the emission standards is achieved at the end of the model year.

(ii) Provide the end-of-model year reports required under § 86.001-23.

(iii) For manufacturers participating in emission credit trading, maintain the quarterly records required under § 86.091-7(c)(8).

(4) Projected credits based on information supplied in the certification application may be used to obtain a certificate of conformity. However, any such credits may be revoked based on review of end-of-model year reports, follow-up audits, and any other compliance measures deemed appropriate by the Administrator.

(5) Compliance under averaging, banking, and trading will be determined at the end of the model year. Engine families without an adequate amount of NO_x, NO_x plus NMHC, and/or particulate emission credits will violate the conditions of the certificate of conformity. The certificates of conformity may be voided *ab initio* for engine families exceeding the emission standard.

(6) If EPAARB or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to EPAARB under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative balances may be adjusted by EPAARB for retroactive use.

(i) If EPAARB review of a manufacturer's end-of-year report indicates a credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that engine family to zero, using the discount specified in paragraph (c)(1) of this section on the ratio of credits purchased for every credit needed to bring the balance to zero. If sufficient credits are not available to bring the credit balance for the family in question to zero, EPAARB may void the certificate for that engine family *ab initio*.

(ii) If within 180 days of receipt of the manufacturer's end-of-year report, EPAARB review determines a reporting error in the manufacturer's favor (i.e., resulting in a positive credit balance) or if the manufacturer discovers such an error within 180 days of EPAARB receipt of the end-of-year report, the credits will be restored for use by the manufacturer.

(c)(1)(iv) For medium-duty diesel-cycle engines certified in the 2004 and 2005 model years under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, an additional adjustment to the Std value described in (c)(1)(iii) above, allowing for certification using Federal certification fuel may be made on an individual engine family basis as determined by the ARB Executive Officer upon application by the engine manufacturer.

(c)(2)(ii) When more than one configuration is chosen by EPAARB to be tested in the certification of an engine family (as described in § 86.085-24), the conversion factor used is to be based upon a

production weighted average value of the configurations in an engine family to calculate the conversion factor.

(d)(2) For NO_x plus NMHC credits from diesel-cycle heavy-duty engines:

~~(i) Each of the three primary intended service classes for heavy-duty diesel engines Heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.004-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.004-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading among all diesel-cycle engine families within the same primary service class averaging set is allowed. In addition, diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating also constitute an averaging set eligible to participate in ABT programs beginning with the 2004 model year.~~

(ii) Urban buses are treated as members of the primary intended service class where they otherwise would fall.

(e) Averaging sets for particulate emission credits.

(2) For heavy-duty engines, exclusive of urban bus engines, ~~each of the three primary intended service classes for heavy-duty diesel cycle engines heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.004-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.004-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading between diesel-cycle engine families within the same primary service class averaging set is allowed. In addition, diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, may also constitute an averaging set eligible to participate in ABT programs beginning with the 2004 model year.~~

(3) Otto cycle engines may not participate in particulate averaging, trading, or banking.

(f)(1)(ii) Manufacturers may bank credits only after the end of the model year and after actual credits have been reported to EPA/ARB in the end-of-year report. During the model year and before

submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging.

(f)(3) Use of banked emission credits. The use of banked credits shall be within the averaging set and other restrictions described in paragraphs (d) and (e) of this section, and only for the following purposes:

(i) Banked credits may be used in averaging, or in trading, or in any combination thereof, during the certification period. Credits declared for banking from the previous model year but not reported to EPA/ARB may also be used. However, if EPA/ARB finds that the reported credits can not be proven, they will be revoked and unavailable for use.

(ii) Banked credits may not be used for NO_x, NO_x plus NMHC, or particulate averaging and trading to offset emissions that exceed an FEL. Banked credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, banked credits may be used for subsequent production of the engine family if the manufacturer elects to recertify to a higher FEL.

(iii) Banked NO_x credits from 2003 and prior may be used in place of NO_x plus NMHC credits after 2003 provided that they are used in the correct averaging set and the NO_x credits have not expired.

(iv) Diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, may not be certified using banked credits which were generated from the sale of engines sold prior to the 2004 model year. Banked credits generated before the 2004 model year to be applied toward the certification of engines in the combined light heavy-duty and medium-duty averaging set, as described in paragraphs (d)(2)(i) and (e)(2) above, must have been generated through the sale of eligible engines within California. Credits generated before the 2004 model year from engines sold outside of California may not be used to certify light heavy-duty or medium-duty engines for sale in California.

(i) DELETE

(j) Credit apportionment. At the manufacturer's option, marketable emission reduction credits for NO_x plus NMHC, for use in emission reduction credit programs other than ABT, may be generated based upon engine certification to the optional reduced-emission NO_x plus NMHC certification standards of § 86.004-11(e), except that medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating may not be used as the basis for generating marketable emission reduction credits. Use of any marketable emission reduction credits generated must meet the requirements of the individual emission reduction credit program where the credits will be applied. credits generated from diesel-cycle heavy-duty engines under the provisions described in this section

may be sold to or otherwise provided to another party for use in programs other than the averaging, trading and banking program described in this section.

(1) ~~The manufacturer shall pre-identify two emission levels per engine family for the purposes of credit apportionment. One emission level shall be the FEL and the other shall be the level of the standard that the engine family is required to certify to under § 86.004-11. For each engine family, the manufacturer may report engine sales in two categories, "ABT-only credits" and "nonmanufacturer-owned credits". For those engine sales used to generate ABT credits, the manufacturer shall report engine sales in the category "ABT-only credits". For those engine sales certified to generate marketable emission reduction credits for NOx, the manufacturer shall report engine sales in the category "nonmanufacturer-owned credits".~~

(i) For engine sales reported as "ABT-only credits", the credits generated must be used solely in the ABT program described in this section.

(ii) ~~The engine manufacturer may declare a portion of engine sales "nonmanufacturer-owned credits" and this portion of the credits generated between the standard and the FEL, based on the calculation in paragraph (c)(1) of this section, any marketable NOx credits generated based upon such sales would belong to the engine purchaser. For ABT, the manufacturer may not generate any credits for the engine sales reported as "nonmanufacturer-owned credits". Engines reported as "nonmanufacturer-owned credits" shall comply with the FEL and the requirements of the ABT program in all other respects.~~

(2) Only manufacturer-owned credits resulting from engine sales reported as "ABT-only credits" shall be used in the averaging, trading, and banking provisions described in this section.

(3) Credits shall not be double-counted. Credits used in the ABT program may not be provided to an engine purchaser for use in another program.

(4) Manufacturers shall determine and state the number of engines sold as "ABT-only credits" and "nonmanufacturer-owned credits" in the end-of-model year reports required under § 86.098-23.

(1) For medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations 1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating:

(1) Credits may be generated by an alternative mechanism proposed by the engine manufacturer and approved by the Executive Officer of the ARB. The alternative credit-generating mechanism shall not include any attribute expressly prohibited under the federal ABT program, such as cross-class or cross-fuel trading.

(2) Manufacturers must annually submit a proposed plan for generating credits to the Executive Officer of the ARB and have it approved prior to sale of engines of that model year in California.

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**Subpart N - Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines;
Gaseous and Particulate Exhaust Test Procedures**

Adopt and amend § 86.1313-90, Title 40 Code of Federal Regulations to read:

§ 86.1313-90 Fuel Specifications. April 11, 1989.

* * * * *

(b)(2) Except as noted below, petroleum fuel for diesel engines ... shall be used. For 1993 and subsequent model-year diesel-fueled engines, the petroleum fuel used in exhaust emissions testing may meet the specifications in Table N94-2 of 40 Code of Federal Regulations section 86.1313-94(b)(2), as adopted August 21, 1990, or substantially equivalent specifications approved by the Executive Officer as an option to the specifications in Table N90-2. For 1995 ~~and subsequent through 2003~~ through 2005 model-year medium-duty diesel-fueled engines, and for 1996 and 1997 model-year urban bus engines only, the petroleum fuel used in exhaust emissions testing may meet the specifications listed below, or substantially equivalent specifications approved by the Executive Officer, as an option to the specifications in Table N90-2. Where a manufacturer elects pursuant to this subparagraph to conduct exhaust emission testing using the specifications in Table N94-2, or the specifications listed below, the Executive Officer shall conduct exhaust emission testing with the diesel fuel meeting the specifications elected by the manufacturer.

Fuel Property	Limit	Test Method ^a
Natural Cetane Number	47-55	D613-86
Distillation Range, °F		Title 13 CCR, §2282(g)(3)
IBP	340-420	
10% point	400-490	
50% point	470-560	
90% point	550-610	
EP	580-660	
API Gravity, degrees	33-39	D287-82
Total Sulfur, wt. %	0.01-0.05	Title 13 CCR, §2282(g)(3)
Nitrogen Content, ppmw	100-500	Title 13 CCR, §2282(g)(3)
Total Aromatic Hydrocarbons, vol.%	8-12	Title 13 CCR, §2282(g)(3)
Polycyclic Aromatic		
Hydrocarbons, wt. % (max.)	1.4	Title 13 CCR, §2282(g)(3)
Flashpoint, °F (max)	130	D 93-80
Viscosity @ 40°F, centistokes	2.0-4.1	D 445-83

^a ASTM specifications unless otherwise noted. A reference to a subsection of Title 13, CCR, §2282 means the test method identified in that subsection for the particular property. A test method other than that specified may be used following a determination by the Executive Officer that the other method produces results equivalent to the results of the specified method.

(b)(3) Except as noted below, petroleum fuel for diesel engines ... shall be used. For 1993 and subsequent model-year diesel-fueled engines, excluding the 1995 and subsequent through 2003 through 2005 model-year medium-duty diesel-fueled engines referenced below, the petroleum fuel used in service accumulation may meet the specifications in Table N94-3 of 40 Code of Federal Regulations section 86.1313-94(b)(3), as adopted August 21, 1990, or substantially equivalent specifications approved by the Executive Officer as an option to the specifications in Table N90-3. For 1995 and subsequent through 2003 through 2005 model-year medium-duty diesel-fueled engines, and for 1996 and 1997 model-year urban bus engines only, diesel fuel representative of commercial diesel fuel which will be generally available through retail outlets shall be used in service accumulation.

(b)(4)(i) Methanol fuel used in service accumulation of 1991 through 1993 model-year methanol-fueled diesel engines shall be representative of commercially available methanol fuel. Methanol used in fuel for exhaust emission testing of 1991 through 1993 model-year methanol-fueled diesel engines shall be chemical grade methanol. The specifications set forth in subparagraph (b)(4)(ii) may be used as an option for 1993 model-year engines.

(b)(4)(ii) Methanol fuel specifications for 1994 and subsequent model-year methanol-fueled diesel engines.

Mileage-accumulation fuel: For methanol-fueled diesel-cycle methanol engines, fuel which meets the specifications listed in Title 13, CCR, Section 2292.1 or 2292.2, as applicable.

Emission-testing fuel: For methanol-fueled diesel-cycle methanol engines, fuel which meets the specifications listed in Title 13, CCR, Section 2292.1 or 2292.2, as modified by the following:

The fuel specification for 2292.1 shall be modified to: a) require methanol content at 98.0 ± 0.5 volume percent; b) require ethanol content at 1.0 ± 0.1 volume percent; c) require certification gasoline as noted in paragraph 9(a) of the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles at 1.0 ± 1.0 volume percent.

The specification for 2292.2 shall be modified to require certification gasoline as noted in paragraph 9(a) of the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, as the hydrocarbon fraction. The vapor pressure specification for the emission-testing fuel shall be adjusted to 8.0-8.5 psi, using common blending components from the gasoline stream.

(b)(4)(iii) Fuel additives and ignition improvers intended for use in methanol test fuels shall be subject to the approval of the Executive Officer. In order for such approval to be

granted, a manufacturer must demonstrate that emissions will not be adversely affected by the use of the fuel additive or ignition improver.

* * * * *

ADD SUBPARAGRAPH (e) TO READ:

(e) Natural Gas and Liquefied Petroleum Gas Test Fuel.

(e)(1) Natural Gas Test Fuel.

(e)(1)(i) Natural gas used in service accumulation for 1990 through 1993 model-year diesel engines shall be representative of commercial natural gas which is generally available. Natural gas meeting the specifications below, or substantially equivalent specifications approved by the Executive Officer, shall be used in exhaust emission testing for 1990 through 1993 model-year diesel engines. The specifications set forth in subparagraph (e)(1)(ii) may be used as an option for 1993 model-year engines.

Natural Gas Emission Test Fuel Specification

<u>Specification</u>	<u>Value</u>	<u>Tolerance</u>	<u>Calculation Method</u>
Wobbe Number	1350	± 0.5%	ASTM D 1945 Using AGA Bulletin No. 36

Hydrocarbons (expressed as percent of total organic carbon present)

Methane	88%	± 0.5%	ASTM D 1945
Ethane	8%	± 0.3%	ASTM D 1945
C ₃ and higher HC	4%	± 0.2%	ASTM D 1945
C ₆ and higher HC	0.5%	maximum	ASTM D 1945
Total unsaturated HC	0.5%	maximum	ASTM D 2650

Other Species (expressed as mole percent)

Hydrogen	0.1%	maximum	ASTM D 2650
Carbon Monoxide	0.1%	maximum	ASTM D 2650

Other Requirements

1. Free from liquids over the entire range of temperatures and pressures encountered in the engine and fuel system.
2. Free from solid particulate matter.

(e)(1)(ii) Natural gas used in service accumulation and in exhaust emission testing for 1994 and subsequent model-year engines shall meet the specifications as follows:

Mileage accumulation fuel: Natural gas meeting the specification listed in Title 13, CCR, Section 2292.5 shall be used in service accumulation.

Emission-test fuel: Natural gas meeting specifications listed in Title 13, CCR, Section 2292.5 as modified by the following: a) methane content at 90.0 ± 1.0 mole percent; b) ethane content at 4.0 ± 0.5 mole percent; c) C_3 and higher hydrocarbon content at 2.0 ± 0.3 mole percent; d) oxygen content at 0.5 mole percent maximum; e) inert gas (sum of CO_2 and N_2) content at 3.5 ± 0.5 mole percent.

(e)(2)(i) Liquefied Petroleum Gas Test Fuel. Liquefied petroleum gas used in service accumulation for 1990 through 1993 model-year diesel engines shall be representative of commercial liquefied petroleum gas which is generally available through retail outlets. Liquefied petroleum gas used in exhaust and evaporative emission testing for 1990 through 1993 model-year diesel engines shall conform to NGPA HD-5 specification. The specifications set forth in subparagraph (e)(1)(ii) may be used as an option for 1993 model-year engines.

(e)(2)(ii) Liquefied petroleum gas used in service accumulation and in exhaust and evaporative emission testing for 1994 and subsequent model-year diesel engines shall meet the specifications as follows:

Mileage accumulation fuel: Liquefied petroleum gas meeting the specifications listed in Title 13, CCR, Section 2292.6 shall be used in service accumulation.

Emission-test fuel: Liquefied petroleum gas meeting the specifications listed in Title 13, CCR, Section 2292.6 shall be used for exhaust and evaporative emission testing with the following exceptions: a) propane content limited to 93.5 ± 1.0 volume percent; b) propene content limited to 3.8 ± 0.5 volume percent; and c) butane and heavier components limited to 1.9 ± 0.3 volume percent.

(e)(3) The specification range of the fuels to be used under paragraphs (e)(1) and (e)(2) of this section shall be reported in accordance with 86.090-21(b)(3).

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Adopt § 86.1344-94, Title 40, Code of Federal Regulations to read:

§ 86.1344-94 Required information. [October 21, 1997]

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Amend Additional Requirements, California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles to read:

Additional Requirements

1. Any reference to vehicle or engine sales or vehicle or engine production volume throughout the United States shall mean vehicle or engine sales or vehicle or engine production volume in each the United States and California.
2. Regulations concerning EPA hearings, EPA inspections, and specific language on the Certificate of Conformity, shall not be applicable to these procedures.
3. Any reference made to Selective Enforcement Auditing (SEA) shall not be applicable to these procedures.
4. Methanol-fueled engines and vehicles shall comply with the "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Liquefied Petroleum Gas- or Gasoline- or Methanol-Fueled Motor Vehicles," as incorporated in Title 13, California Code of Regulations, Section 1976.
5. In addition to the standards and provisions specified in CFR Section 86.091-11 and 86.094-11 (emission standards for diesel-fuel and diesel methanol heavy-duty engines and vehicles), the following formaldehyde emission levels as measured under transient operating conditions shall not be exceeded for methanol-fueled engines and vehicles:

Model Year	Formaldehyde (g/bhp-hr)
1993-1995	0.10
1996 and Subsequent	0.05

The following formaldehyde emission levels as measured under transient operating conditions shall not be exceeded for 1992 and subsequent low-emission and ultra-low-emission vehicles and engines used in low-emission and ultra-low-emission vehicles operating on any fuel.

Model Year	Formaldehyde (g/bhp-hr)
1992 and Subsequent Low-Emission Vehicles and Engines	0.050
1992 and Subsequent Ultra-Low-Emission Vehicles and Engines	0.025

6. All dedicated gaseous-fuel, dual-fuel, and multi-fuel diesel engines (and vehicles), including those engines derived from existing diesel engines shall comply with the requirements which are applicable to heavy-duty diesel engines, except where otherwise noted.
7. Prior to the 2004 model year, non-methane ~~Non-methane~~ hydrocarbon emissions shall be measured in accordance with the "California Non-Methane Hydrocarbon Test Procedures," as last amended July 12, 1991, which is incorporated herein by reference.

8. For dual-fuel or multi-fuel gaseous engines and vehicles, the noted deterioration factors shall be determined separately for operation on each type of fuel or combination of fuels that the engine is designed to use. For certification to be granted, the provisions of §86.091-28(c) must be met separately for emissions using each type and combination of fuels.

9. Except where otherwise noted, references to requirements for averaging, banking and trading programs for heavy-duty engines shall also apply for medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, under the restrictions of §86.098-15 and §86.004-15, as incorporated herein.