

APPENDIX B

PROPOSED AMENDMENTS TO THE CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2004 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL-CYCLE ENGINES AND VEHICLES

PROPOSED

State of California
AIR RESOURCES BOARD

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2004 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL ENGINES AND VEHICLES

Adopted: December 12, 2002
Amended: July 24, 2003
Amended: [Requirements to Reduce Idling Emissions adopted by the Board on October 20, 2005, and currently being finalized. These amendments are not included in this version. For more information, see <http://www.arb.ca.gov/regact/hdvidle/hdvidle.htm>]
Amended: (Insert date of finalized amendment)

NOTE: Proposed amendments in this document are printed in a style to indicate changes from existing provisions (July 24, 2003 amendments.) All existing language is indicated by plain type. All additions to the existing language are indicated by underline. All deletions to the existing language are indicated by ~~strikeout~~. Only those portions of the existing language containing the proposed modifications are included. All other portions remain unchanged and are indicated by the symbol “* * * * *” for reference. A complete set of the test procedures, adopted on December 12, 2002, is available at http://www.arb.ca.gov/msprog/onroadhd/2004hddtps_levhdg02_clean_11-13.pdf .

**CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES
FOR 2004 AND SUBSEQUENT MODEL
HEAVY-DUTY DIESEL ENGINES AND VEHICLES**

The following provisions of Subparts A, I, and N, S, and T, Part 86, and of Subparts A through K, Part 1065, Title 40, Code of Federal Regulations, as adopted or amended by the U.S. Environmental Protection Agency on the date set forth next to the 40 CFR Part 86 applicable section listed below, 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 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," except as altered or replaced by the provisions set forth below.

PART 86 – CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

PART I. GENERAL PROVISIONS FOR CERTIFICATION AND IN-USE VERIFICATION OF EMISSIONS.

§86.1 Reference materials. June 14, 2005.

- 1 Delete subparagraph (a).
- 2 Amend subparagraph (b) as follows:
 - 2.1 Delete subparagraphs (b)(1) through (b)(5).
 - 2.2 Subparagraph (b)(6) [No change.]

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-Fueled, Natural Gas-Fueled, Liquefied Petroleum Gas-Fueled and Methanol-Fueled Heavy-Duty Vehicles.

1. General Applicability. [§86.xxx-1]

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2. Definitions. [§86.xxx-2]

A. Federal Provisions.

1. **§86.004-2** January 18, 2001. [All federal definitions apply, except as otherwise noted below. Definitions specific to other requirements are contained in separate documents.]

B. California Provisions.

“**Administrator**” means the Executive Officer of the Air Resources Board.

“**Certificate of Conformity**” means “Executive Order” certifying vehicles for sale in California.

“**Certification**” means certification as defined in Section 39018 of the Health and Safety Code.

“**EPA**” shall also mean Air Resources Board or Executive Officer of the Air Resources Board

“**EPA Enforcement Officer**” means the Executive Officer or his delegate.

“**Medium-duty engine**” means a heavy-duty engine that is used to propel a medium-duty vehicle.

“**Medium-duty vehicle**” means 2004 through 2006 model year heavy-duty low-emission vehicle, ultra-low-emission vehicle, super-ultra-low-emission vehicle or zero-emission vehicle certified to the standards in title 13, CCR, section 1960.1(h)(2) having a manufacturer's gross vehicle weight rating of 14,000 pounds or less; and any 2004 and subsequent model heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission vehicle certified to the standards in title 13, CCR section 1956.8(h), having a manufacturer's gross vehicle weight rating between 8,501 and 14,000 pounds.

“**NTE standard**” means NTE emission limit.

“**Warranty period**” [For guidance see title 13, CCR, §2036].

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11. Emission standards for diesel heavy-duty engines and vehicles. [§86.xxx-11]

A. Federal provisions.

1. §86.004-11 Emission standards for 2004 and later model year diesel heavy-duty engines and vehicles. October 6, 2000.

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2. §86.007-11 Emission standards and supplemental requirements for 2007 and later model year diesel heavy-duty engines and vehicles. ~~January 18, 2004~~ July 13, 2005.

2.1. Add the following sentence to the introductory paragraph: Except as otherwise noted, references in this subsection to heavy-duty engines or HDEs shall include medium-duty engines as defined in Section I.2.B of these test procedures.

2.2 Subparagraphs (a) and (a)(1). [No change.]

2.2.1 Amend subparagraph (a)(2) as follows: 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 of this part as amended in part II of these test procedures, except as noted in §86.007-23(c)(2) or superseding sections.

2.2.2. Delete subparagraph (a)(3). [For guidance see Subpart N, §86.1360-2007 of these test procedures].

2.2.3. Delete subparagraph (a)(4)(i) through (a)(4)(v ~~vi~~). [For guidance see Subpart N, §86.1370-2007 of these test procedures]

2.3 Subparagraphs (b)(1)(i) through (b)(1)(iii). [No change.]

2.3.1 Delete subparagraph (b)(1)(iv). [For guidance see Subpart N, §86.1370-2007 of these test procedures]

2.3.2 Subparagraphs (b)(2)(i). [No change.]

2.3.3 Delete subparagraph (b)(2)(ii). [For guidance see Subpart N, §86.1370-2007 of these test procedures]

2.3.4 Subparagraph (b)(3) and (b)(4). [No change.]

2.4 Subparagraph (c). [No change.]

2.5. Amend subparagraph (d) as follows: Every manufacturer of new motor vehicle engines subject to the standards prescribed in title 13, CCR, §1956.8 (a), §1956.8 (h), and this section shall, prior to taking any of the actions prohibited by California Health & Safety Code section 43211 or as specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart I or N as amended in part II of these test procedures to ascertain that such test engines meet the requirements of paragraphs (a), (b), (c), and (d) of this section.

2.6 Subparagraphs (e) through (h). [No change.]

B. California provisions.

1. Urban Bus Standards.

1.1 The exhaust emissions from new 2004 through 2006 model year heavy-duty engines (other than diesel-fueled, dual-fuel and bi-fuel heavy-duty engines) used in urban buses shall not exceed the standards set forth in 40 CFR §86.004-11(a)(1), above.

1.2 The exhaust emissions, as measured under transient operating conditions, from 2004 through 2006 model year diesel-fueled, dual-fuel and bi-fuel heavy-duty engines used in urban buses shall not exceed:

2004 – 2006 Heavy-Duty Diesel-Fuel, Dual Fuel, and Bi-Fuel Urban Bus Engine Exhaust Emission Standards* (grams per brake horsepower-hour or g/bhp-hr)				
NOx¹	NMHC or NMHCE	CO³	PM²	HCHO⁴
0.5 (0.2 g/megajoule)	0.05 (0.02 g/megajoule)	5.0 (1.9 g/megajoule); [7.0 (2.6 g/megajoule)]	0.01 (0.004 g/megajoule)	0.01(0.004 g/megajoule)

¹ Oxides of Nitrogen (NOx). This standard is for certification testing and selective enforcement audit

testing. As an option, manufacturers may choose to meet the NOx standard with a base engine that is certified to the standards in §86.004-11(a)(1), (October 6, 2000), equipped with an aftertreatment system that reduces NOx to 0.5 g/bhp-hr and PM to 0.01 g/bhp-hr. The NMHC, CO, and formaldehyde standards above shall still apply. Manufacturers shall be responsible for full certification, durability, testing, and warranty and other requirements for the base engine. For the aftertreatment system, manufacturers shall not be subject to the certification durability requirements, or in-use recall and enforcement provisions, but are subject to warranty provisions for functionality.

2 Particulates. This standard is for certification testing, selective enforcement audit testing, and in-use testing. As an option, manufacturers may choose to meet the PM standard with an aftertreatment system that reduces PM to 0.01 g/bhp-hr. Manufacturers shall be responsible for full certification, durability, testing, and warranty and other requirements for the base engine. For the aftertreatment system, manufacturers shall not be subject to the certification durability requirements, or in-use recall and enforcement provisions, but are subject to warranty provisions for functionality.

3 Carbon monoxide. The 5.0 g/bhp-hr (1.9 grams per megajoule) standard is for certification testing and selective enforcement audit testing, and the 7.0 g/bhp-hr (2.6 grams per megajoule) standard is for in-use testing.

4 Formaldehyde. This standard is for certification testing, selective enforcement audit testing and in-use testing.

1.3 The exhaust emissions from new 2007 and subsequent model year heavy-duty engines used in urban buses shall not exceed the following standards:

2007 and Subsequent Heavy-Duty Diesel Urban Bus Engine Exhaust Emission Standards* (grams per brake-horsepower-hour or g/bhp-hr)				
NOx	NMHC or NMHCE	CO	PM	HCHO
0.20 (0.075 g/megajoule)	0.05 (0.02 g/megajoule)	5.0 (1.9 g/megajoule)	0.01 (0.004 g/megajoule)	0.01 (0.004 g/megajoule)

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5. **Standards for Medium-Duty Engines.** A manufacturer of heavy-duty engines used in medium-duty vehicles may choose to comply with the following standards as an alternative to the primary emission standards and test procedures specified in title 13, CCR, §1961. A manufacturer that chooses 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 title 13, CCR, §2139(c).

The exhaust emissions from new 2004 and subsequent model heavy-duty diesel engines used in ultra-low emission and super-ultra-low emission medium-duty diesel vehicles shall not exceed:

Exhaust Emission Standards for 2004 – 2006 Model Medium-Duty ULEVs and SULEVs
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Vehicle Emission Category	NOx + NMHC	CO	PM	HCHO	
ULEV ¹ Option A	2.5 (with a 0.5 cap on NMHC)	14.4	0.10	0.05 <u>0</u>	
ULEV ¹ ; Option B	2.4	14. <u>4</u>	0.10	0.05 <u>0</u>	
Exhaust Emission Standards for 2007 and Subsequent Model Medium-Duty ULEVs and SULEVs					
Vehicle Emission Category	NOx	NMHC or NMHCE	CO	PM	HCHO
ULEV ¹	See 40 CFR §86.007-11(a)(1)(i) <u>0.20</u>	See 40 CFR §86.007-11(a)(1)(ii) <u>0.14</u>	See 40 CFR §86.007-11(a)(1)(iii) <u>15.5</u>	See 40 CFR §86.007-11(a)(1)(iv) <u>0.01</u>	0.01 <u>0.050</u>
SULEV ¹	<u>0.10</u>	0.07	7.7	0.005	0.005 <u>0.025</u>

¹ Emissions averaging may be used to meet these standards using the requirements for participation averaging, banking and trading programs, as set forth in Section I.15 of these test procedures.

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16. Prohibition of defeat devices. ~~§86.0004-16 January 18, 2004~~ July 13, 2005. [No change.]

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21. Application for certification. [§86.xxx-21]

A. Federal provisions.

1. **§86.004-21** October 6, 2000. Amend as follows:

- 1.1 Subparagraphs (a) through (l). [No change.]
- 1.2 Delete subparagraph (m).
- 1.2 Subparagraph (n). [No change.]

2. **§86.007-21** ~~October 6, 2000~~ July 13, 2005. Amend as follows:

- 2.1 Subparagraphs (a) through (l). [No change.]
- 2.2 Delete subparagraph (m).
- 2.3 Subparagraph (n). [No change.]
- 2.4 Amend subparagraph (o) as follows: For 2005 and subsequent model year diesel heavy-duty engines, the manufacturer must provide the following additional information pertaining to the supplemental steady-state test conducted

under § 86.1360-2007:

2.4.1 ~~Amend s~~ Subparagraph (o)(1) as follows: Weighted brake-specific emissions data (i.e., in units of g/bhp-hr), calculated according to § 86.1360-2007(e)(5) and (6), for all pollutants for which an emission standard is established in § 86.004-11(a); [No change]

2.4.2 Amend S ~~subparagraphs (o)(2) through (o)(6). [No change.]~~ as follows: For engines subject to the MAEL (see §86.1360-2007B.1), brake specific gaseous emission data for each of the 12 non-idle test points (identified under §86.1360-2007(b)(1)) and the 3 selected test points (identified under §86.1360-2007(b)(2));

2.4.3 Amend subparagraph (o)(3) as follows: For engines subject to the MAEL (see §86.1360-2007B.1), concentrations and mass flow rates of all regulated gaseous emissions plus carbon dioxide;

2.4.4 Subparagraph (o)(4) and (o)(5). [No change.]

~~2.4.3 5~~ Amend subparagraph (o)(7 6) as follows: For engines subject to the MAEL (see §86.1360-2007B.1), A a statement that the engines will comply with the weighted average emissions cap and interpolated values comply with the emission testing caps specified in §86.1360-2007B.1 for the useful life of the engine. The manufacturer also must maintain records at the manufacturer's facility which contain a detailed description of all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Executive Officer upon request.

2.4.6 Subparagraph (o)(7). [Reserve.]

2.5 Amend subparagraph (p) as follows:

2.5.1. (1) The manufacturer must provide a statement in the application for certification that the diesel heavy-duty engine for which certification is being requested will comply with the applicable Not-To-Exceed Limits specified in §86.1370-2007A.1.4 when operated under all conditions which may reasonably be expected to be encountered in normal vehicle operation and use. The manufacturer also must maintain records at the manufacturer's facility which contain all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Executive Officer upon request.

2.5.2. Subparagraph (p)(2). [No change.]

2.5.3. Amend subparagraph (p)(3) as follows: For each engine model and/or horsepower rating within an engine family for which a manufacturer is applying for a NTE deficiency(ies) under the provisions of §86.1370-2007B.3, the manufacturer's application for an NTE deficiency(ies) must include a complete description of the deficiency, including but not limited to: the specific description of the deficiency; what pollutant the deficiency is being applied for, all engineering efforts the manufacturer has made to overcome the deficiency, what specific operating conditions the deficiency is being

requested for (i.e., temperature ranges, humidity ranges, altitude ranges, etc.), a full description of the auxiliary emission control device(s) which will be used to maintain emissions to the lowest practical level; and what the lowest practical emission level will be.

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28. Compliance with emission standards. §86.xxx-28 January 18, 2001.

A. Federal provisions.

1. **§86.004-28.** January 18, 2001. Amend as follows:
 - 1.1 Subparagraphs (a) through (c)(4)(i) [No change.]
 - 1.2 Amend subparagraph (c)(4)(ii) as follows: [No change, except that diesel-cycle smoke testing shall only apply to petroleum-fueled diesel-cycle engines.]
 - 1.3 Subparagraph (c)(4)(iii)(A) [n/a; Otto-cycle engines.]
 - 1.4 Subparagraph (c)(4)(iii)(B): [No change, except that the exhaust emission results for formaldehyde exhaust emission results for methanol-fueled engines and vehicles, ultra-low emission vehicles and super-ultra-low emission vehicles shall also be adjusted by the appropriate deterioration factor (through addition or multiplication as the case may be.)]
 - 1.5 Amend subparagraph (c)(4)(iii)(B)(3) as follows: For petroleum-fueled diesel cycle HDEs only: [No change to remainder of paragraph.]
 - 1.6 Subparagraphs (c)(iv) through (i). [No change.]

B. California provisions.

1. Deterioration factor for exhaust emissions.

1.1 Additive deterioration factor. Except as specified in paragraph B.1.2 of this section, use an additive deterioration factor for exhaust emissions. An additive deterioration factor for a pollutant is the difference between exhaust emissions at the end of the useful life and exhaust emissions at the low-hour test point. In these cases, adjust the official emission results for each tested engine at the selected test point by adding the factor to the measured emissions. If the factor is less than zero, use zero. Additive deterioration factors must be specified to one more decimal place than the applicable standard.

1.2 Multiplicative deterioration factor. Use a multiplicative deterioration factor if good engineering judgment calls for the deterioration factor for a pollutant to be the ratio of exhaust emissions at the end of the useful life to exhaust emissions at the low-hour test point. For example, if you use aftertreatment technology that controls emissions of a pollutant proportionally to engine-out emissions, it is often appropriate to use a multiplicative deterioration factor. Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one. A multiplicative deterioration factor may not be appropriate in cases where testing variability is significantly greater than engine-to-engine variability.

Multiplicative deterioration factors must be specified to one more significant figure than the applicable standard.

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35. Labeling. §86.xxx-35.

A. Federal Provisions

1. **§86.001-35** ~~January 18, 2004~~ April 6, 1994.

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2. **§86.007-35** ~~January 18, 2004~~ July 13, 2005.

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PART II. TEST PROCEDURES

**Subpart I - Emission Regulations for New Diesel-Fueled Heavy-Duty Engines;
Smoke Exhaust Test Procedure**

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

- 86.1301-90 Scope; applicability. ~~April 11, 1989~~ July 13, 2005.
86.1302-84 Definitions. November 16, 1983.
86.1303-84 Abbreviations. November 16, 1983.
86.1304-90 Section numbering; construction. ~~October 6, 2000~~ July 13, 2005.
86.1305-2004 Introduction; structure of subpart. October 6, 2000.
86.1305-2010 Introduction; structure of subpart. July 13, 2005.

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- 86.1313-98 Fuel specifications. February 18, 2000.
1. Subparagraph (a) [n/a]
 2. Amend subparagraph (b) Diesel test fuel as follows:
 - 2.1 Subparagraph (b)(1) [No change.]
 - 2.2 Add the following language to subparagraph (b)(2): For 2004 through 2005 model-year medium-duty diesel-fueled engines, 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 N98-2, or the specifications listed below, the Executive Officer shall conduct exhaust emission testing with the diesel fuel meeting the specifications elected by the manufacturer. The manufacturer shall submit evidence to the Executive Officer demonstrating to the Executive Officer's satisfaction that the test fuel will be the predominant in-use fuel. Such evidence could include such things as copies of signed contracts from customers indicating the intent to purchase and use the test fuel as the primary fuel for use in the engines or other evidence acceptable to the Executive Officer.

<u>Fuel Property</u>	<u>Limit</u>	<u>Test Method ^a</u>
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 <u>C</u> , 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.

2.3 (3) Add the following language to subparagraph (b)(3): For 2004 and 2005 model-year medium-duty diesel-fueled engines, diesel fuel representative of commercial diesel fuel which will be generally available through retail outlets shall be used in service accumulation.

3. Subparagraphs (c), (d) and (e). [For guidance see §86.1313-94, above.]

86.1313-04 Fuel specifications. January 18, 2001. [n/a]

86.1313-2007 Fuel specifications. January 18, 2001.

1. Subparagraph (a) [n/a]
2. Subparagraph (b) heading and (b)(1) [No change]
3. Reletter subparagraph §86.1313-2007(b)(2) as (b)(2)(A) and add the following:

(b)(2)(B) Diesel fuel having the specifications listed below may be used in exhaust emission testing as an option to the specifications in Table N07-2. If a manufacturer

elects to use this option, the Executive Officer shall conduct exhaust emission testing with diesel fuel having the specifications listed below.

<u>Fuel Property</u>	<u>Limit</u>	<u>Test Method</u> ^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, ppm	7-15	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 <u>C</u> , 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.

4. Subparagraph (b)(3) [No change]

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86.1321-90 Hydrocarbon analyzer calibration. July 13, 2005.

86.1321-94 Hydrocarbon analyzer calibration. ~~September 5, 1997~~ July 13, 2005.

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86.1333-2010 Transient test cycle generation. July 13, 2005.

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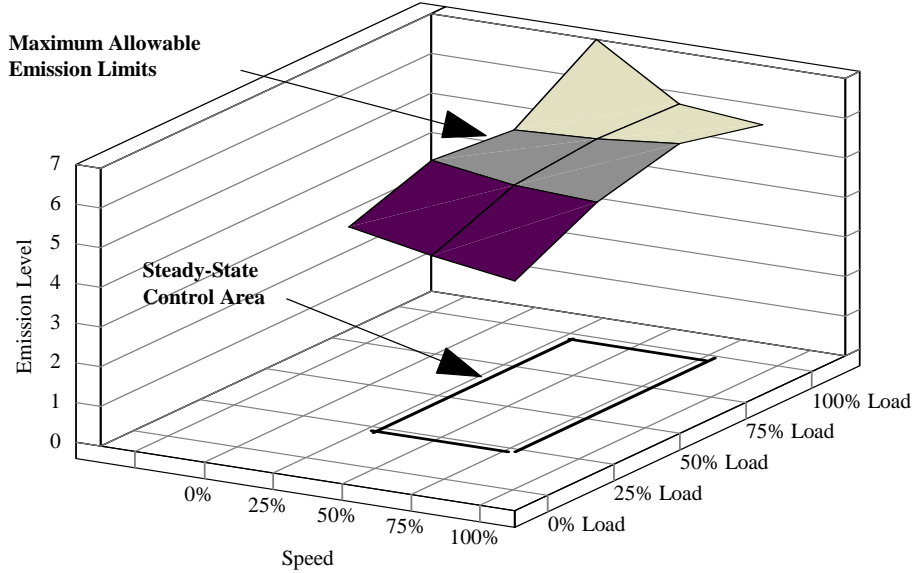
86.1360-2007 Supplemental ~~steady-state~~ emission test; test cycle and procedures.

January 18, 2004 July 13, 2005.

A. Federal provisions

1. Introductory paragraph. [No change.]
2. Amend subparagraph (a) as follows: Applicability. This section applies to 2005 and subsequent model year heavy duty diesel engines.
3. Amend subparagraph (b) as follows:
 - 3.1 Amend § subparagraph (b)(1) as follows: The ramped-modal procedures described in §86.1362-2007 apply to 2007 and subsequent model year heavy duty diesel engines. See B.1. of this section for the procedures applicable to 2005 and 2006 model year engines.
 - 3.1.1 ~~(b)(1)(i). Test cycle. [No change.]~~
 - 3.1.2. ~~— Add subparagraph (b)(1)(ii) as follows: For 2007 and subsequent model years, upon Executive Officer approval, the manufacturer may use mode lengths other than those listed in subparagraph (b)(1)(i) of this section.~~
 - 3.2. Subparagraph (b)(2): [No change.]
4. ~~Amend sSubparagraph (c) as follows:— Determining engine speeds. (1) The engine speeds A, B, and C, referenced in the table in paragraph (b)(1) of this section, and speeds D and E must be determined as follows: [No change to remainder of subparagraph.] [Reserve.]~~
5. Subparagraph (d) Determining the control area. [No change.]
6. Subparagraph (e) ~~Test requirements.~~ [No change Reserve.]
7. Amend subparagraph (f) as follows: Maximum allowable emission limits.
 - (1) For gaseous emissions, the 12 non-idle test point results and the four-point linear interpolation procedure specified in paragraph (g) of this section for intermediate conditions, shall define Maximum Allowable Emission Limits for purposes of paragraph B.1 of this section except as modified under paragraph (f)(3) of this section. [No change to remainder of paragraph.]

Figure 1
Maximum Allowable Emission Limits
 Sample - For Illustration Only



(2) If the weighted average emissions, calculated according to paragraph (e)(6) of this section, for any gaseous pollutant is equal to or lower than required by paragraph B.1 of this section, each of the 13 test values for that pollutant shall first be multiplied by the ratio of the applicable emission standard (under paragraph B.1 of this section) to the weighted average emissions value, and then by 1.10 for interpolation allowance, before determining the Maximum Allowable Emission Limits under paragraph (g)(2) of this section.

(3) [No change.]

8. Subparagraph (g) Calculating intermediate test points. [No change.]

9. ~~Subparagraph (h): Test fuel specifications. [No change.]~~

10. ~~Subparagraph (i) General requirements: [No change.]~~

B. California provisions

1. **Emission testing caps and procedures for the 2005 and subsequent model years.**

1.1 Testing to determine whether an engine meets the applicable emission limits when measured over the supplemental emission test is performed according to section 86.1363-2007. The weighted average exhaust emissions, as determined according to 86.1363-2007(g) under paragraph (e)(5) and (6) of this section pertaining to the supplemental steady-state test cycle, for each regulated pollutant shall not exceed 1.0 times the applicable emission standards specified in Part I.11 of these test procedures or FELs specified in §86.007-11(a)(1).

1.2 For engines not having a NO_x FEL less than 1.5 g/bhp-hr, gaseous exhaust emissions shall not exceed the steady-state interpolated values determined by the Maximum Allowable Emission Limits (for the corresponding speed and load), as determined under subparagraph (g) of this section, when the engine is operated in the steady-state control area defined under subparagraph (d) of this section, during steady-state engine operation.

1.3 For engines with a NO_x FEL less than 1.5 g/bhp-hr, the Maximum Allowable Emission Limit requirements, as determined under Sec. 86.1360-2007(f), do not apply.

1.4 The emission caps specified in this section shall be rounded to the same number of significant figures as the applicable standards in Part I.11 of these test procedures using ASTM E29-93a.

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86.1362-2007 Steady-state testing with a ramped-modal cycle. July 13, 2005.

86.1363-2007 Steady-state testing with a discrete-mode cycle. July 13, 2005.

86.1370-2007 Not-To-Exceed test procedures. January 18, 2004 July 13, 2005.

A. Federal provisions.

1. Amend subparagraph (a) as follows: General. The purpose of this test procedure is to measure in-use emissions of 2005 and subsequent model year heavy-duty diesel engines while operating within a broad range of speed and load points (the Not-To-Exceed Control Area) and under conditions which can reasonably be expected to be encountered in normal vehicle operation and use. Emission results from this test procedure are to be compared to the Not-To-Exceed Limits specified in paragraph (d)(1) of this section. The Not-To-Exceed Limits specified in paragraph (d)(1) of this section do not apply for engine starting conditions specified in subparagraph A.1.7 of this section. Tests conducted using the procedures specified in §1901 are considered valid Not-to-

Exceed tests (Note: duty cycles and limits on ambient conditions do not apply for Not-To-Exceed tests).

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B. California provisions.

1. Ambient operating regions.

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5. Submission of NTE deficiencies and limited testing region information. Manufacturers are not required to provide engine information exclusively related to in-use testing as part of initial certification. However, upon request from ARB, the manufacturers must provide the information which clearly identifies parameters defining all NTE deficiencies described under subparagraph B.3. of this section and parameters defining all NTE limited testing regions described under 86.1370-07(b)(6) and (7) that are requested. When requested, deficiencies and limited testing regions must be reported for all engine families and power ratings in English with sufficient detail for us to determine if a particular deficiency or limited testing region will be encountered in the emission test data from the portable emission-sampling equipment and field-testing procedures referenced in 86.1375. Such information is to be provided within 60 days of the request from ARB.

86.1372-2007 Measuring smoke emissions within the NTE zone. October 6, 2000.

This section contains the measurement techniques to be used for determining compliance with the filter smoke limit or opacity limits in §86.1370-2007 (d)(3)(i). [No change to remainder of section.]

86.1375-2007 Equipment Specifications for Field Testing. June 14, 2005. [No change.]

86.1380-2004 Load response test. October 6, 2000. [Delete]

Subpart S – General Compliance Provisions for Control of Air Pollution From New and In-Use Light-Duty Vehicles, Light-Duty Trucks, and Complete Otto-Cycle Heavy-Duty Vehicles.

86.1863-07 Optional chassis certification for diesel vehicles. June 17, 2003.

1. Amend subparagraph (a) as follows: A manufacturer may optionally certify heavy-duty diesel vehicles weighing 14,000 pounds GVWR or less to the emission standards specified in title 13, CCR, §1961. Such vehicles must meet all applicable requirements of the “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in title 13, CCR, §1961 (d).

2. Amend subparagraph (b) as follows: Diesel vehicles optionally certified under this section are subject to the OBD requirements of title 13, CCR, §1968.2.

3. Subparagraphs (c) to (g). [No change.]

Subpart T - Manufacturer-Run In-Use Testing Program for Heavy-Duty Diesel Engines

86.1901 What testing requirements apply to my engines that have gone into service? June 14, 2005.

86.1905 How does this program work? June 14, 2005.

1. Subparagraphs (a) through (f). [No change.]
2. Amend subparagraph (g) as follows: For any communication related to this subpart, contact the On-Road Heavy-Duty Diesel Section Manager, Mobile Source Control Division, Air Resources Board, 9528 Telstar Avenue, El Monte, CA 91731.

86.1908 How must I select and screen my in-use engines? June 14, 2005.

1. Amend subparagraph (a) as follows:
 - 1.1 Subparagraph (a)(1) through (a)(8). [No change.]
 - 1.2 Amend subparagraph (a)(9) as follows: The vehicles have not exceeded the applicable useful life, in miles or years as defined in title 13, CCR, section 2112; you may otherwise not exclude engines from testing based on their age or mileage.
 - 1.3 Subparagraph (a)(10). [No change.]
2. Subparagraph (b) through (d). [No change.]

86.1910 How must I prepare and test my in-use engines? June 14, 2005.

86.1912 How do I determine whether an engine meets the vehicle-pass criteria? June 14, 2005.

86.1915 What are the requirements for Phase 1 and Phase 2 testing? June 14, 2005.

86.1917 How does in-use testing under this subpart relate to the emission-related warranty in Section 207(a)(1) of the Clean Air Act? June 14, 2005.

1. Amend subparagraph (a) as follows: An exceedance of the NTE found through the in-use testing program under this subpart is not by itself sufficient to show a breach of warranty under title 13, CCR, section 2036. [No change to remainder of paragraph.]
2. Amend subparagraph (b) as follows: To the extent that in-use NTE testing does not reveal such a material deficiency at the time of sale in the design or manufacture of an engine compared with the certified engine, or a defect in the

materials and workmanship of a component or part, test results showing an exceedance of the NTE by itself would not show a breach of warranty under title 13, CCR, section 2036.

86.1920 What in-use testing information must I report to EPA? June 14, 2005.

1. Amend subparagraph (a) as follows: Send us electronic reports using an approved information format to Chief, Emission Research and Regulatory Development Branch, Mobile Source Control Division, Air Resources Board, 9528 Telstar Avenue, El Monte, California, 91731. If you want to use a different format, send us a written request with justification.

2. Subparagraphs (b) to (c). [No change.]

3. Amend subparagraph (d) as follows: Send us an electronic notification at inuse@arb.ca.gov describing any voluntary vehicle/engine emission evaluation test you intend to conduct ... [No change to remainder of paragraph.]

4. Amend subparagraph (e) as follows: Send us an electronic notification at inuse@arb.ca.gov within 15 days after your initial review of the test data for a selected engine family indicates that three engines in Phase 1 testing have failed to comply with the vehicle-pass criteria. [No change to remainder of paragraph.]

5. Subparagraphs (f) and (g). [No change.]

86.1925 What records must I keep? June 14, 2005.

86.1930 What special provisions apply from 2005 through 2007? June 14, 2005.

86.1935 What special provisions may apply as a consequence of a delay in the accuracy margin report for portable emission measurement systems? June 14, 2005.

Appendix I to Part 86 - Urban Dynamometer Schedules.

(f)(2) EPA Engine Dynamometer Schedule for Heavy-Duty Diesel Engines.
December 10, 1984.

Appendix I to Subpart T – Sample Graphical Summary of NTE Emission Results

PART 1065 – ENGINE-TESTING PROCEDURES.

Subpart A – Applicability and General Provisions

1065.1 Applicability. July 13, 2005.

1. Amend subparagraph (a) as follows:

1.1. Introductory paragraph. [No change.]

1.2. Amend subparagraph (a)(1) as follows: Model year 2010 and later heavy-duty highway engines we regulate under title 13, CCR, §1956.8. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 86, subpart N, according to §1065.10, as modified by these test procedures.

1.3. Subparagraphs (a)(2) through (a)(4). [n/a]

2. Subparagraph (b). [n/a]

3. Subparagraph (c) through (g). [No change.]

1065.2 Submitting information to EPA under this part. July 13, 2005.

1. Subparagraphs (a) through (d). [No change.]

2. Amend subparagraph (e) as follows: See title 13, CCR, section 91011 for provisions related to confidential information. Note that according to this section, emission data shall not be identified as confidential.

1065.5 Overview of this part 1065 and its relationship to the standard-setting part. July 13, 2005.

1065.10 Other procedures. July 13, 2005.

1065.12 Approval of alternate procedures. July 13, 2005.

1065.15 Overview of procedures for laboratory and field testing. July 13, 2005.

1065.20 Units of measure and overview of calculations. July 13, 2005.

1065.25 Recordkeeping. July 13, 2005.

Subpart B – Equipment Specifications

1065.101 Overview. July 13, 2005.

1065.110 Work inputs and outputs, accessory work, and operator demand. July 13, 2005.

1065.120 Fuel properties and fuel temperature and pressure. July 13, 2005.

1065.122 Engine cooling and lubrication. July 13, 2005.

1065.125 Engine intake air. July 13, 2005.

1065.127 Exhaust gas recirculation. July 13, 2005.

- 1065.130 Engine exhaust. July 13, 2005.
- 1065.140 Dilution for gaseous and PM constituents. July 13, 2005.
- 1065.145 Gaseous and PM probes, transfer lines, and sampling system components. July 13, 2005.
- 1065.150 Continuous sampling. July 13, 2005.
- 1065.170 Batch sampling for gaseous and PM constituents. July 13, 2005.
- 1065.190 PM-stabilization and weighing environments for gravimetric analysis. July 13, 2005.
- 1065.195 PM-stabilization environment for in-situ analyzers. July 13, 2005.

Subpart C – Measurement Instruments

- 1065.201 Overview and general provisions. July 13, 2005.
- 1065.202 Data updating, recording, and control. July 13, 2005.
- 1065.205 Performance specifications for measurement instruments. July 13, 2005.

Measurement of Engine Parameters and Ambient Conditions

- 1065.210 Work input and output sensors. July 13, 2005.
- 1065.215 Pressure transducers, temperature sensors, and dewpoint sensors. July 13, 2005.

Flow-Related Measurements

- 1065.220 Fuel flow meter. July 13, 2005.
- 1065.225 Intake-air flow meter. July 13, 2005.
- 1065.230 Raw exhaust flow meter. July 13, 2005.
- 1065.240 Dilution air and diluted exhaust flow meters. July 13, 2005.
- 1065.245 Sample flow meter for batch sampling. July 13, 2005.
- 1065.248 Gas divider. July 13, 2005.

CO and CO₂ Measurements

- 1065.250 Nondispersive infra-red analyzer. July 13, 2005.

Hydrocarbon Measurements

- 1065.260 Flame ionization detector. July 13, 2005.
- 1065.265 Nonmethane cutter. July 13, 2005.
- 1065.267 Gas chromatograph. July 13, 2005.

NO_x Measurements

- 1065.270 Chemiluminescent detector. July 13, 2005.

1065.272 Nondispersive ultraviolet analyzer. July 13, 2005.

O₂ Measurements

1065.280 Paramagnetic and magnetopneumatic O₂ detection analyzers. July 13, 2005.

Air-to Fuel Ratio Measurements

1065.284 Zirconia (ZrO₂) analyzer. July 13, 2005.

PM Measurements

1065.290 PM gravimetric balance. July 13, 2005.

1065.295 PM inertial balance for field-testing analysis. July 13, 2005.

Subpart D – Calibrations and Verifications

1065.301 Overview and general provisions. July 13, 2005.

1065.303 Summary of required calibration and verifications. July 13, 2005.

1065.305 Verifications for accuracy, repeatability, and noise. July 13, 2005.

1065.307 Linearity verification. July 13, 2005.

1065.308 Continuous gas analyzer system-response and updating-recording verification. July 13, 2005.

1065.309 Continuous gas analyzer uniform response verification. July 13, 2005.

Measurement of Engine Parameters and Ambient Conditions

1065.310 Torque calibration. July 13, 2005.

1065.315 Pressure, temperature, and dewpoint calibration. July 13, 2005.

Flow-Related Measurements

1065.320 Fuel-flow calibration. July 13, 2005.

1065.325 Intake-flow calibration. July 13, 2005.

1065.330 Exhaust-flow calibration. July 13, 2005.

1065.340 Diluted exhaust flow (CVS) calibration. July 13, 2005.

1065.341 CVS and batch sampler verification (propane check). July 13, 2005.

1065.345 Vacuum-side leak verification. July 13, 2005.

CO and CO₂ Measurements

1065.350 H₂O interference verification for CO₂ NDIR analyzers. July 13, 2005.

1065.355 H₂O and CO₂ interference verification for CO NDIR analyzers.

July 13, 2005.

Hydrocarbon Measurements

- 1065.360 FID optimization and verification. July 13, 2005.
- 1065.362 Non-stoichiometric raw exhaust FID O₂ interference verification. July 13, 2005.
- 1065.365 Nonmethane cutter penetration fractions. July 13, 2005.

NO_x Measurements

- 1065.370 CLD CO₂ and H₂O quench verification. July 13, 2005.
- 1065.372 NDUV analyzer HC and H₂O interference verification. July 13, 2005.
- 1065.376 Chiller NO₂ penetration. July 13, 2005.
- 1065.378 NO₂-to-NO converter conversion verification. July 13, 2005.

PM Measurements

- 1065.390 PM balance verifications and weighing process verification. July 13, 2005.
- 1065.395 Inertial PM balance verifications. July 13, 2005.

Subpart E – Engine Selection, Preparation, and Maintenance

- 1065.401 Test engine selection. July 13, 2005.
- 1065.405 Test engine preparation and maintenance. July 13, 2005.
- 1065.410 Maintenance limits for stabilized test engines. July 13, 2005.
- 1065.415 Durability demonstration. July 13, 2005.

Subpart F – Performing an Emission Test in the Laboratory

- 1065.501 Overview. July 13, 2005.
- 1065.510 Engine mapping. July 13, 2005.
- 1065.512 Duty cycle generation. July 13, 2005.
- 1065.514 Cycle-validation criteria. July 13, 2005.
- 1065.520 Pre-test verification procedures and pre-test data collection. July 13, 2005.
- 1065.525 Engine starting, restarting, and shutdown. July 13, 2005.
- 1065.530 Emission test sequence. July 13, 2005.
- 1065.545 Validation of proportional flow control for batch sampling. July 13, 2005.

1065.550 Gas analyzer range validation, drift validation, and drift correction. July 13, 2005.

1065.590 PM sample preconditioning and tare weighing. July 13, 2005.

1065.595 PM sample post-conditioning and total weighing. July 13, 2005.

Subpart G – Calculations and Data Requirements

1065.601 Overview. July 13, 2005.

1065.602 Statistics. July 13, 2005.

1065.610 Duty cycle generation. July 13, 2005.

1065.630 1980 international gravity formula. July 13, 2005.

1065.640 Flow meter calibration calculations. July 13, 2005.

1065.642 SSV, CFV, and PDP molar flow rate calculations. July 13, 2005.

1065.645 Amount of water in an ideal gas. July 13, 2005.

1065.650 Emission calculations. July 13, 2005.

1065.655 Chemical balances of fuel, intake air, and exhaust. July 13, 2005.

1065.659 Removed water correction. July 13, 2005.

1065.660 THC and NMHC determination. July 13, 2005.

1065.665 THCE and NMHCE determination. July 13, 2005.

1065.667 Dilution air background emission correction. July 13, 2005.

1065.670 NOx intake-air humidity and temperature corrections. July 13, 2005.

1065.672 Drift correction. July 13, 2005.

1065.675 CLD quench verification calculations. July 13, 2005.

1065.690 Buoyancy correction for PM sample media. July 13, 2005.

1065.695 Data requirements. July 13, 2005.

Subpart H – Engine Fluids, Test Fuels, Analytical Gases and Other Calibration Standards

1065.701 General requirements for test fuels. July 13, 2005.

A. Federal provisions.

1. Subparagraph (a) [No change.]

2. Amend subparagraph (b) as follows: *Fuels meeting alternative specifications. We may allow you to use a different test fuel if you show us and we find that using it does not affect your ability to comply with all applicable emission standards using commercially available fuels.*

3. Subparagraph (c) [No change.]

4. Amend subparagraph (d) as follows: *Fuel specifications. The fuel parameters specified in this subpart depend on measurement procedures*

that are incorporated by reference.

5. Subparagraph (e) [No change.]

B. California provisions.

1. Methanol Fuel.

1.1 Exhaust emission test fuel. For diesel alcohol vehicles and hybrid electric vehicles which use diesel alcohol engines, methanol or ethanol fuel used for exhaust and evaporative emission testing shall meet the specifications set forth in title 13, CCR, section 2292.1 (Specifications for M-100 Fuel Methanol) or section 2292.3 (Specification for E-100 Fuel Ethanol) as modified by the following:

<u>Specification</u>	<u>Limit</u>
<u>M-100 Fuel Methanol</u>	
<u>Methanol</u>	<u>98.0 ± 0.5 vol. percent</u>
<u>Ethanol</u>	<u>1.0 vol. Percent (max.)</u>
<u>Petroleum fuel meeting the specifications of 40 CFR 86.1313-98</u>	<u>1.0 ± 0.1 vol. percent</u>
<u>E-100 Fuel Ethanol</u>	
<u>Ethanol</u>	<u>98.0 ± 0.5 vol. percent</u>
<u>Methanol</u>	<u>1.0 vol. Percent (max.)</u>
<u>Petroleum fuel meeting the specifications of 40 CFR 86.1313-98</u>	<u>1.0 ± 0.1 vol. percent</u>

1.2 Mileage accumulation fuel. For diesel alcohol vehicles and hybrid electric vehicles which use diesel alcohol engines, methanol or ethanol fuel used for service accumulation shall meet the applicable specifications set forth in title 13, CCR, section 2292.1 (Specifications for M-100 Fuel Methanol) or section 2292.3 (Specification for E-100 Fuel Ethanol).

1.3 The specification range of the fuels to be used under this section 1 shall be reported in accordance with §86.094-21.

1.4 Fuel additives and ignition improvers intended for use in alcohol 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.

2. Mixtures Of Petroleum and Methanol Fuels for Flexible Fuel Vehicles.

2.1 Exhaust emission test fuel for emission-data and durability-data vehicles. For diesel alcohol vehicles and hybrid electric vehicles which use diesel alcohol engines, methanol or ethanol fuel used for exhaust emission testing shall meet the applicable specifications set forth in title 13, CCR, section 2292.2 (Specifications for M-85 Fuel Methanol) or section 2292.4 (Specifications for E-85 Fuel Ethanol) as modified by the following:

<u>Specification</u>	<u>Limit</u>
<u>M-85 Fuel Methanol</u>	
<u>Petroleum fuel meeting the specifications of 40 CFR §86.1313-98</u>	<u>13-16 vol. percent</u>
<u>Reid vapor pressure</u>	<u>8.0-8.5 psi, using common blending components from the gasoline stream.</u>
<u>E-85 Fuel Ethanol</u>	
<u>Petroleum fuel meeting the specifications of 40 CFR §86.1313-98</u>	<u>15-21 vol. percent</u>
<u>Reid vapor pressure</u>	<u>8.0-8.5 psi, using common blending components from the gasoline stream.</u>

2.2 Mileage accumulation fuel. For flexible fuel diesel alcohol vehicles and hybrid electric vehicles that use diesel alcohol engines, petroleum fuel shall meet the applicable specifications in §86.1313-98(a) or (b), as modified by these test procedures, and methanol or ethanol fuel shall meet the applicable specifications set forth in title 13, CCR, section 2292.2 (Specifications for M-85 Fuel Methanol) or section 2292.4 (Specification for E-85 Fuel Ethanol). Mileage accumulation procedures shall be subject to the requirements set forth in §§ 86.001-26 and 86.1831-01(a) and (b) and are subject to the prior approval of the Executive Officer. A manufacturer shall consider expected customer fuel usage as well as emission deterioration when developing its durability demonstration.

2.3 Evaporative emission test fuel for emission-data and durability-data vehicles. For diesel alcohol vehicles and hybrid electric vehicles which use diesel alcohol engines, a blend of methanol or ethanol fuel used for evaporative emission testing shall meet the applicable specifications set forth in title 13, CCR, section 2292.2 (Specifications for M-85 Fuel Methanol) or section 2292.4 (Specifications for E-85 Fuel Ethanol) and gasoline meeting the specifications of 86.1313-94 (a)(1), as modified by these test procedures, such that the final blend is composed of either 35 volume percent methanol (1.0 volume percent of total blend) for methanol-fueled vehicles or 10 volume percent ethanol (1.0 volume percent of total blend) for ethanol-fueled vehicles. Alternative alcohol-gasoline blends may be used in place of M35 or E10 if demonstrated to result in equivalent or higher evaporative emissions, subject to prior approval of the Executive Officer.

2.4 The specification range of the fuels to be used in this section 2 shall be reported in accordance with §86.094-21.

2.5 Fuel additives and ignition improvers intended for use in alcohol 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.

3. Identification of New Clean Fuels to be Used in Certification Testing. Any person may petition the state board to establish by regulation certification testing specifications for a new clean fuel for which specifications for the new clean fuel are not specifically set forth in paragraph §86.1313-98 as amended herein. Prior to adopting such specifications, the state board shall consider the relative cost-effectiveness of use of the fuel in reducing emissions compared to the use of other fuels. Whenever the state board adopts specifications for a new clean fuel for certification testing, it shall also establish by regulation specifications for the fuel as it is sold commercially to the public.

(a) If the proposed new clean fuel may be used to fuel existing motor vehicles, the state board shall not establish certification specifications for the fuel unless the petitioner has demonstrated that:

(1) Use of the new clean fuel in such existing motor vehicles would not increase emissions of NMHC, NOx, and CO, and the potential risk associated with toxic air contaminants, as determined pursuant to the procedures set forth in the "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels," as adopted September 17, 1993. In the case of fuel-flexible vehicles or dual-fuel vehicles that were not certified on the new clean fuel but are capable of being operated on it, exhaust and evaporative emissions

from the use of the new clean fuel shall not increase compared to exhaust and evaporative emissions from the use of gasoline that complies with Title 13, Division 3, Chapter 5, Article 1, California Code of Regulations.

(2) Use of the new clean fuel in such existing motor vehicles would not result in increased deterioration of the vehicle and would not void the warranties of any such vehicles.

(b) Whenever the state board designates a new clean fuel pursuant to this section, the state board shall also establish by regulation required specifications for the new clean fuel sold commercially in California.

1065.703 Distillate diesel fuel. July 13, 2005.

1. Subparagraph (a) [No change.]

2. Delete subparagraph (b) and replace with the following:

(b)(1) Use the ultra low sulfur grade test fuel as specified in Table 1 of §1065.703.

(b)(2) Diesel test fuel having the specifications listed below in the table may be used in exhaust emission testing as an option to the specifications in Table 1 of §1065.703. If a manufacturer elects to use this option, the Executive Officer shall conduct exhaust emission testing with diesel fuel having the specifications listed below.

<u>Diesel Fuel Specification</u>	<u>Limit</u>	<u>Test Method</u> ^a
<u>Natural Cetane Number</u>	<u>47-55</u>	<u>D613-86</u>
<u>Distillation Range, °F</u>		<u>Title 13 CCR, §2282(g)(3)</u>
<u>IBP</u>	<u>340-420</u>	
<u>10% point</u>	<u>400-490</u>	
<u>50% point</u>	<u>470-560</u>	
<u>90% point</u>	<u>550-610</u>	
<u>EP</u>	<u>580-660</u>	
<u>API Gravity, degrees</u>	<u>33-39</u>	<u>D287-82</u>
<u>Total Sulfur, ppm</u>	<u>7-15</u>	<u>Title 13 CCR, §2282(g)(3)</u>
<u>Nitrogen Content, ppmw</u>	<u>100-500</u>	<u>Title 13 CCR, §2282(g)(3)</u>
<u>Total Aromatic Hydrocarbons, vol.%</u>	<u>8-12</u>	<u>Title 13 CCR, §2282(g)(3)</u>

<u>Polycyclic Aromatic Hydrocarbons, wt.% (max.)</u>	<u>1.4</u>	<u>Title 13 CCR, §2282(g)(3)</u>
<u>Flashpoint, °F (max)</u>	<u>130</u>	<u>D 93-80</u>
<u>Viscosity @ 40°C, centistokes</u>	<u>2.0-4.1</u>	<u>D 445-83</u>

^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.

3. Subparagraph (c) [No change.]

1065.705 Residual fuel. [Reserved]

1065.710 Gasoline. July 13, 2005. [n/a]

1065.715 Natural gas. July 13, 2005.

1. Delete subparagraph (a) and replace with the following:

(a)(1) **Exhaust emission test fuel.** For dedicated, dual-fueled or hybrid electric vehicles which use natural gas, fuel used for exhaust and evaporative emission testing shall meet the specifications listed in title 13, CCR, section 2292.5 (Specifications for Compressed Natural Gas) as modified by the following:

<u>Specification</u>	<u>Limit</u>
<u>Compressed Natural Gas Certification Test Fuel</u>	
<u>Methane</u>	<u>90.0 ± 1.0 mole percent</u>
<u>Ethane</u>	<u>4.0 ± 0.5 mole percent</u>
<u>C₃ and higher hydrocarbon content</u>	<u>2.0 ± 0.3 mole percent</u>
<u>Oxygen</u>	<u>0.5 mole percent maximum</u>
<u>Inert gases (CO₂ + N₂)</u>	<u>3.5 ± 0.5 vol. percent</u>

(a)(2) **Mileage accumulation fuel.** For dedicated, dual-fueled or hybrid electric vehicles which use natural gas, fuel used for service accumulation shall meet the specifications listed in title 13, CCR, section 2292.5 (Specifications for Compressed Natural Gas).

(a)(3) The specification range of the fuels to be used in this section (a) shall be reported in accordance with §86.094-21.

2. Subparagraph (b) [No change.]

1065.720 Liquefied petroleum gas. July 13, 2005.

1. Delete subparagraph (a) and replace with the following:

(a)(1) **Evaporative and exhaust emission test fuel.** For dedicated, dual-fueled or hybrid electric vehicles which use liquefied petroleum gas, fuel used for exhaust and evaporative emission testing shall meet the specifications listed in title 13, CCR, section 2292.6 (Specifications for Liquefied Petroleum Gas) as modified by the following:

<u>Specification</u>	<u>Limit</u>
<u>Liquefied Petroleum Gas Certification Test Fuel</u>	
<u>Propane</u>	<u>93.5 ± 1.0 volume percent</u>
<u>Propene</u>	<u>3.8 ± 0.5 volume percent</u>
<u>Butane and heavier components</u>	<u>1.9 ± 0.3 volume percent</u>

(a)(2) **Mileage accumulation fuel.** For dedicated, dual-fueled or hybrid electric vehicles which use liquefied petroleum gas, fuel used for service accumulation shall meet the specifications listed in title 13, CCR, section 2292.6 (Specifications for Liquefied Petroleum Gas).

(a)(3) The specification range of the fuels to be used in this section (a) shall be measured in accordance with ASTM D2163-91 and reported in accordance with §86.094-21.

2. Subparagraph (b) [No change.]

1065.740 Lubricants. July 13, 2005.

1065.745 Coolants. July 13, 2005.

1065.750 Analytical gases. July 13, 2005.

1065.790 Mass standards. July 13, 2005.

Subpart I –Testing with Oxygenated Fuels

1065.801 Applicability. July 13, 2005.
1065.805 Sampling system. July 13, 2005.
1065.845 Response factor determination. July 13, 2005.
1065.850 Calculations. July 13, 2005.

Subpart J – Field Testing and Portable Emission Measurement Systems

1065.901 Applicability. July 13, 2005.
1065.905 General provisions. July 13, 2005.
1065.910 PEMS auxiliary equipment for field testing. July 13, 2005.
1065.915 PEMS instruments. July 13, 2005.
1065.920 PEMS calibrations and verifications. July 13, 2005.
1065.925 PEMS preparation for field testing. July 13, 2005.
1065.930 Engine starting, restarting, and shutdown. July 13, 2005.
1065.935 Emission test sequence for field testing. July 13, 2005.
1065.940 Emission calculations. July 13, 2005.

Subpart K – Definitions and Other Reference Information

1065.1001 Definitions. July 13, 2005.

1. Amend the definition of “Designated Compliance Officer” as follows:
Designated Compliance Officer means the Executive Officer of the Air
Resources Board or a designee of the Executive Officer.

1065.1005 Symbols, abbreviations, acronyms, and units of measure. July 13, 2005.
1065.1010 Reference materials. July 13, 2005.