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State of California
AIR RESOURCES BOARD

Notice of Public Availability of Modified Text

**PUBLIC HEARING TO CONSIDER ADOPTION OF NEW CERTIFICATION TESTS AND STANDARDS TO CONTROL EMISSIONS FROM AGGRESSIVE DRIVING AND AIR-CONDITIONER USAGE FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES UNDER 8,501 POUNDS GROSS VEHICLE WEIGHT RATING**

Public Hearing Date: July 24, 1997
Public Availability Date: September 15, 1997
Deadline for Public Comment: September 30, 1997

At a public hearing held July 24, 1997, the Air Resources Board (ARB or the Board) considered adoption of new certification tests and standards to control emissions from aggressive driving and air-conditioner usage from motor vehicles under 8,501 pounds gross vehicle weight rating. The amendments proposed in this rulemaking modified sections 1960.1 and 2101, Title 13, California Code of Regulations (CCR) and two ARB test procedures that are incorporated by reference in those sections: "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" and "California New Vehicle Compliance Test Procedure." The proposed amendments are described in detail in the Staff Report (Initial Statement of Reasons for Proposed Rulemaking) released on May 27, 1997.

At the hearing, the Board approved the originally proposed amendments with several modifications. The modifications, which were suggested by staff at the hearing, were limited in nature and were generally designed to clarify the intent of the original proposal. The first modification affected the limitations on the use of lean-on cruise strategies. Two additional conditions were included in which lean-on cruise strategies are permitted. Another modification is to require a manufacturer to submit an "Alternative or Equivalent Phase-in Schedule" before or during the first year implementation of the proposed regulations, if the manufacturer intends to use such a schedule. Other minor modifications were proposed to improve the clarity of the regulations.

Appended as Attachment I to this notice is a copy of Board Resolution 97-34, which sets forth the Board's action. Included with the resolution is Attachment D, which describes the modifications to the original proposal suggested by the staff and approved by the Board. The resolution directed the Executive Officer to incorporate into the approved amendments the modifications described in Attachment D, with such other conforming modifications as may be

appropriate, and to make the modified regulatory language available to the public for a supplemental 15-day comment period.

The modified regulatory language made available with this notice includes one additional conforming modification, not presented at the hearing, to a separate test procedure document. On page 17 of the Staff Report, staff indicated that it was not proposing that the Supplemental Federal Test Procedure be included in assembly-line testing. In order to effectuate this limitation, the additional modification amends the "California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" (and title 13, California Code of Regulations, section 2062, which incorporates the Assembly-Line Test Procedures by reference) to provide that demonstration of compliance with the Supplemental Federal Test Procedure standards is exempt from quality audit testing.

Attachment II to this notice is the text of the proposed amendments to sections 1960.1, 2062, and 2101, title 13, California Code of Regulations, with the modifications to the original proposed language clearly indicated. Attachment III contains the modified portions of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," with the modifications to the original proposed language also clearly indicated. The last Attachment IV is the modified portion of the "California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

In accordance with section 11346.8 of the Government Code, the Board directed the Executive Officer to make the modified amendments available to the public for a supplemental written comment period of 15 days. He is then directed either to adopt the amendments with such additional modifications as may be appropriate in light of the comments received, or to present the regulations to the Board for further consideration if warranted in light of the comments. Written comments on these proposed modifications must be submitted to the Clerk of the Board, Air Resources Board, P.O. Box 2815, Sacramento, California 95812, no later than the deadline for public comment identified above, for consideration by the Executive Officer prior to final action. Only comments relating to the modifications described in this notice will be considered by the Executive Officer.

Sincerely,

Robert H. Cross, Chief
Mobile Source Control Division

Attachments

ATTACHMENT I

State of California
AIR RESOURCES BOARD

Resolution 97-34

July 24, 1997

Agenda Item No.: 97-6-1

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the Board) to adopt standards, rules and regulations and to do such acts as may be necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, in section 43000 of the Health and Safety Code, the Legislature has declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State, and sections 39002 and 39003 of the Health and Safety Code charge the Board with the responsibility of air pollution control from motor vehicles;

WHEREAS, sections 43013, 43101, and 43104 of the Health and Safety Code authorize the Board to adopt emission standards and test procedures to control air pollution caused by motor vehicles;

WHEREAS, section 43018 of the Health and Safety Code directs the Board to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of state ambient air quality standards at the earliest practicable date;

WHEREAS, section 39667 of the Health and Safety Code directs the Board to consider the revision of emission standards for vehicular sources to achieve the maximum possible reduction in public exposure to toxic air contaminants and provides that standards for new motor vehicles shall be based on the most advanced technology feasible;

WHEREAS, the determination of a manufacturer's compliance with the ARB's exhaust emission standards for passenger cars, light-duty trucks, and medium-duty vehicles is based on the results of vehicle testing under a test procedure which is known as the Federal Test Procedure (FTP) and is also used in emission testing for compliance with the exhaust emission standards of the U.S. Environmental Protection Agency (U.S. EPA);

WHEREAS, the current FTP, which is intended to represent a typical urban commuter trip, was developed based on driving characteristics surveyed in 1970 and has not been modified since it was first used for motor vehicle certification in 1975;

WHEREAS, current dynamometer systems on which the FTP is conducted can only handle acceleration rates up to 3.3 miles per hour per second, and thus limit the FTP to modest acceleration rates;

WHEREAS, the FTP does not accurately simulate the real-world emission impact of air-conditioner usage; while the air-conditioner is not turned on during the FTP, its load on the engine is simulated by increasing the power absorption of the dynamometer load by 10 percent; in several recent test programs air-conditioner usage resulted in significant increases in exhaust emissions, including increases in oxides of nitrogen emissions of more than 90 percent;

WHEREAS, an extensive 1992 study showed that approximately 28 percent of the current light-duty vehicle miles recorded were traveled during speeds or acceleration rates that are higher than those represented by the FTP, and another U.S. EPA test program showed that exhaust emissions from light-duty vehicles increase significantly during higher speed or acceleration regimes not covered by the FTP;

WHEREAS, on October 22, 1996, the U.S. EPA promulgated a final rule adopting two supplemental test procedures, collectively referred to as the SFTP, which consist of the SC03 air-conditioner test and a high-speed, high-acceleration test known as the US06 test; the rule also requires the use of improved dynamometer systems that can handle the greater acceleration rates in the US06 test;

WHEREAS, the U.S. EPA final rule also establishes emission standards for gasoline and diesel fuel vehicles when tested under the SFTP, to be phased-in beginning in the 2000 model year; the federal SFTP standards are set at levels appropriate for vehicles subject to the federal "Tier 1" FTP exhaust emission standards that apply at least through the 2003 model year, and are equivalent to California's 1994 model-year exhaust emission standards;

WHEREAS, the motor vehicle industry and ARB staff have conducted a series of test programs, involving tests on over sixty vehicles during 1995 to 1997, to develop SFTP emission standards for California's low-emission passenger cars, light-duty trucks, and medium-duty vehicles under 8,501 pounds gross vehicle weight rating (GVWR);

WHEREAS, the staff has proposed regulatory amendments which would, for gasoline, diesel, and hybrid (gasoline and diesel) electric passenger cars, light-duty trucks, and medium-duty vehicles under 8,501 lbs. GVWR, establish (1) high-speed, high acceleration and air-conditioner supplemental test procedures that are in all respects identical to the SFTP adopted by U.S. EPA, and (2) 4,000-mile SFTP emission standards that, for low-emission, ultra-low-emission and super-ultra-low-emission vehicles, are substantially more stringent than the Federal SFTP standards;

consistent with the federal requirements, the proposed tests and standards do not apply to alternative fuel vehicles;

WHEREAS, under the staff proposal passenger cars and light-duty trucks would be subject to the SFTP standards under a phase-in schedule of 25 percent compliance in the 2001 model year, 50 percent in the 2002 model year, 85 percent in the 2003 model year, and 100 percent in 2004 and subsequent model years, and medium-duty vehicles would be subject to a later phase-in schedule of 25 percent, 50 percent and 100 percent beginning in the 2003 model year;

WHEREAS, the staff proposal includes various other related elements, including SFTP standards for California "Tier 1" and transitional-low-emission vehicles that are identical to the Federal SFTP standards, specifications of new improved dynamometer systems for SFTP and FTP testing, identical to those adopted by the U.S. EPA, and application of new vehicle audit requirements to confirm compliance with the SFTP emission standards beginning in the 2002 model year;

WHEREAS, the staff proposal consists of amendments to sections 1960.1 and 2101, title 13, California Code of Regulations, as set forth in Attachment A hereto, to the incorporated "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as set forth in Attachment B hereto, and to the "California New Vehicle Compliance Test Procedure," as set forth in Attachment C hereto;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project which may have significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of Chapter 3.5 (commencing with section 11340), Part 1, Division 3, Title 2 of the Government Code;

WHEREAS, the Board has considered the effect of the proposed amendments on the economy of the state;

WHEREAS, the Board finds that:

> Adoption of the proposed supplemental test procedures is necessary and appropriate to measure exhaust emissions under common driving conditions outside the FTP, such as aggressive driving and air-conditioner usage, which can contribute to substantial emission increases;
>
> Adoption of supplemental test procedures that are identical to the federal supplemental test procedures will continue to permit manufacturers to put a vehicle through one set of

tests to demonstrate compliance with the California and Federal standards and will assure that manufacturers will be able to use the same equipment for California and Federal testing;

The proposed SFTP emission standards will significantly reduce the combined emissions of non-methane hydrocarbon and oxides of nitrogen from low-emission, ultra-low-emission and super-ultra-low-emission vehicles during aggressive driving and air-conditioner usage;

Based on the test programs conducted by ARB staff and the motor vehicle industry, the proposed SFTP emission standards are technologically feasible; at least 70 percent of low-emission, ultra-low-emission and super-ultra-low-emission vehicles are expected to comply with only software modifications, typically consisting of a rich-bias calibration, and the remaining vehicles are expected to be able to comply through the use of catalyst hardware modifications;

Establishment of SFTP standards at 4,000 miles is appropriate because it allows the standards to be derived from the very low SFTP emissions achieved by the optimized low-mileage vehicles in the joint ARB/industry test programs; some deterioration in SFTP emissions will be expected over 50,000 and 100,000 miles, but gross deterioration should be avoided by the existence of 50,000 and 100,000 mile FTP emission standards and by the use of On-board Diagnostics II systems;

The proposed new dynamometer system specifications are necessary to conduct the proposed high-speed, high-acceleration test and to more accurately simulate actual road load forces; and

Beginning the new vehicle audit testing requirements in the second year of the SFTP phase-in for passenger cars and light-duty trucks will allow time during the first year implementation to evaluate the accuracy of testing new vehicles at essentially zero mileage to determine compliance with the proposed 4,000 mile standards; and

WHEREAS, the Board further finds that:

Adoption of the proposed tests and standards will result in estimated statewide reactive organic gases plus oxides of nitrogen emission reductions of 115 tons per day in 2010, and of 133 tons per day in 2020 when fleet turnover will be largely complete;

The air quality impacts of aggressive driving and air-conditioner operation were not included in the 1994 State Implementation Plan, and the projected emission reductions associated with implementation of the proposed tests and standards thus do not directly affect the State Implementation Plan; and

The best estimate of the projected costs to comply with the proposed amendments is $43.2 to $57.9 million annually, or $28.80 to $38.60 per vehicle; the estimated cost-effectiveness is $890 to $1,200 per ton, or $0.44 to $0.60 per pound, which compares favorably to the typical cost-effectiveness values for current air pollution control measures.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves amendments to sections 1960.1 and 2101, title 13, California Code of Regulations, as set forth in Attachment A hereto, to the incorporated "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as set forth in Attachment B hereto, and to the incorporated "California New Vehicle Compliance Test Procedure," as set forth in Attachment C hereto, with the modifications set forth in Attachment D hereto.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to incorporate into the approved amendments the modifications described in Attachment D hereto, with such other conforming modifications as may be appropriate, and then to adopt the modified amendments, after making the modified regulatory language available for public comment for a period of 15 days, provided that the Executive Officer shall consider such written comments regarding the modified text as may be submitted during this period, shall make modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if he determines that this is warranted.

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations adopted herein will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

BE IT FURTHER RESOLVED that the Board hereby finds that separate California emission standards and test procedures are necessary to meet compelling and extraordinary conditions.

BE IT FURTHER RESOLVED that the Board finds that the California emission standards and test procedures as adopted herein will not cause the California requirements to be inconsistent with section 202(a) of the Clean Air Act and raise no new issues affecting previous waiver determinations of the Administrator of the Environmental Protection Agency pursuant to section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the regulations to the U.S. EPA with a request for a waiver or confirmation that the regulations are within the scope of an existing waiver of federal preemption pursuant to section 209(b) of the Clean Air Act, as appropriate.

I hereby certify that the above is a true and correct copy of Resolution 97-34, as adopted by the Air Resources Board.

_____

Pat Hutchens, Clerk of the Board

**Resolution 97-34**

July 24, 1997

Identification of Attachments to the Resolution

**Attachment A:** Proposed amendments to sections 1960.1 and 2101, title 13, California Code of Regulations, as set forth in Appendix 4 to the Staff Report.

**Attachment B:** Proposed amendments to the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as set forth in Appendix 5 to the Technical Support Document.

**Attachment C:** Proposed amendments to the "California New Vehicle Compliance Test Procedure," as set forth in Appendix 6 to the Technical Support Document.

**Attachment D:** Staff's Suggested Changes to the Original Proposal, distributed at the hearing on July 24, 1997.

Attachment D

FOR CONSIDERATION BY THE AIR RESOURCES BOARD AT THE PUBLIC HEARING ON THE PROPOSED ADOPTION OF NEW CERTIFICATION TESTS AND STANDARDS TO CONTROL EMISSIONS FROM AGGRESSIVE DRIVING AND AIR-CONDITIONER USAGE FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES UNDER 8,501 POUNDS GROSS VEHICLE WEIGHT RATING

Presented at the July 24, 1997 Board Hearing

Staff's Suggested Modifications to the Original Proposal

This document shows the ARB staff's suggested modifications to the originally proposed amendments. Only those portions of the amendments containing the suggested modifications are included.

The originally proposed regulatory language is shown in underline, and the text to be removed is shown in ~~strikeout~~. The suggested modifications are shown in **bold double-underline** to indicate additions to the original proposal and **~~bold strikeout~~** to indicate deletions. All proposed modifications will be made available to the public for a 15-day comment period.

**Suggested Modifications to Title 13, California Code of Regulations, Sections 1960.1 and 2101**

1. Amend the second paragraph of section 1960.1(q) note (7), and the identical second paragraph of section 1960.1(r) note (5), to read as follows:

> A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. **~~With~~ Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

2. Amend section 1960.1(q) note (8), and the identical section 1660.1(r) note (9), to read as follows:

> *"Lean-On-Cruise" Calibration Strategies.* **~~"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.~~**

**In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph~~, for the purposes of improving fuel economy or other purposes~~. ~~A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters) shall not be used.~~ **"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

3. Amend section 1960.1(r) note (10) a. to read as follows:

| | *Percentage* | |
|---|---|---|
| *Model Year* | *PC, LDT~~1~~* | *MDV* |
| 2001 | 25 | NA |
| 2002 | 50 | NA |
| 2003 | 85 | 25 |
| 2004 | 100 | 50 |
| 2005 and subsequent | 100 | 100 |

4. Amend section 2101(b) to read as follows:

(b) If the vehicles are selected for compliance testing, the selection and testing of vehicles and the evaluation of data shall be made in accordance with the "California New Vehicle Compliance Test Procedures," adopted by the state board on June 24, 1976 and last amended ~~**June 24, 1996**~~ _____. Testing of passenger cars and light-duty-trucks certified to the low-emission and ultra-low-emission exhaust standards to determine compliance with the Supplemental Federal Test Procedure emission standards shall commence in the 2002 model year. Motorcycles scheduled for compliance testing shall be selected, tested, and evaluated in accordance with the "California New Motorcycle Compliance Test Procedures," adopted by the state board on June 30, 1977, and amended November 24, 1981.

**Suggested Modifications to the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"**

1. Amend portions of section 3.*l*. note (7), and identical portions of section 3.m. note (5), to read as follows:

. . . A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. ~~**With**~~ **Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off. . . .

2. Amend section 3.*l*. note (8), and the identical section 3.m. note (9), to read as follows:

"Lean-On-Cruise" Calibration Strategies. ~~**"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.**~~ **In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph~~**, for the purposes of improving fuel economy or other purposes**~~. ~~**A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine**~~

~~operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters) shall not be used.~~ **"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emissions control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emissions control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

3. Amend section 3.m. note (10) a. to read as follows:

| | Percentage | |
|---|---|---|
| Model Year | PC, LDT~~1~~ | MDV |
| 2001 | 25 | NA |
| 2002 | 50 | NA |
| 2003 | 85 | 25 |
| 2004 | 100 | 50 |
| 2005 and subsequent | 100 | 100 |

4. Amend section 4.b.2. to read as follows:

In paragraph 86.000-23:

2. Amend subparagraph (*l*) by substituting the following for the initial paragraph:

(*l*) Additionally, manufacturers certifying vehicles shall submit for each model year 2001 through 2004 passenger car and light-duty truck engine family, and for each model year 2003 through 2005 medium-duty vehicle engine family, the information listed in paragraphs (*l*)(1) and (2). **If applicable, manufacturers shall also submit "Alternative or Equivalent Phase-in Schedules" before or during calendar year 2001 for passenger cars and light-duty trucks and calendar year 2003 for medium-duty vehicles.**

ATTACHMENT II

Modifications to Sections 1960.1, 2062 and 2101, Title 13, California Code of Regulations

The originally proposed regulatory amendments are show in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the version amended on July 24, 1996. The entry "[No Change]" following a section means that amendments to that section are not being proposed. The suggested modifications proposed and adopted by the Board on July 24, 1997 are shown in **bold double-underline** to indicate additions to the original proposal and **~~bold strikeout~~** to indicate deletions.

Amend title 13, California Code of Regulations, section 1960.1, to read as follows:

**Section 1960.1. Exhaust Emission Standards and Test Procedures - 1981 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles**.

(a) through (j) [No Change]

(k) The test procedures for determining compliance with these standards are set forth in "California Exhaust Emission Standards and Test Procedures for 1981 through 1987 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on November 23, 1976, as last amended May 20, 1987, and in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on May 20, 1987, as last amended ~~July 24, 1996~~ _____, both of which are incorporated herein by reference.

(*l*) through (p) [No Change]

(q) The Supplemental Federal Test Procedure (SFTP) exhaust emission levels from new 2001 and subsequent model passenger cars and light-duty trucks, other than low-emission vehicles, ultra-low-emission vehicles, and zero-emission vehicles, shall not exceed:

**SFTP EXHAUST EMISSION STANDARDS FOR 2001 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS AND LIGHT-DUTY TRUCKS OTHER THAN LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND ZERO-EMISSION VEHICLES**

(grams per mile)[4,5,6,7,8,9,10]

| *Vehicle Type*[1] | *Loaded Vehicle Weight (lbs.)* | *Durability Vehicle Basis (mi)* | *Fuel Type* | *NMHC*[2] *+ NOx*[1] *Composite*[3] | *A/C*[1] *Test* | *CO*[1] *US06*[1] *Test* | *Composite Option*[3] |
|---|---|---|---|---|---|---|---|
| PC | All | 50,000 | Gasoline | 0.65 | 3.0 | 9.0 | 3.4 |
| | | | Diesel | 1.48 | NA | 9.0 | 3.4 |
| | | 100,000 | Gasoline | 0.91 | 3.7 | 11.1 | 4.2 |
| | | | Diesel | 2.07 | NA | 11.1 | 4.2 |
| LDT | 0-3750 | 50,000 | Gasoline | 0.65 | 3.0 | 9.0 | 3.4 |
| | | | Diesel | 1.48 | NA | 9.0 | 3.4 |
| | | 100,000 | Gasoline | 0.91 | 3.7 | 11.1 | 4.2 |
| | | | Diesel | 2.07 | NA | 11.1 | 4.2 |
| LDT | 3751-5750 | 50,000 | Gasoline | 1.02 | 3.9 | 11.6 | 4.4 |
| | | | Diesel | NA | NA | NA | NA |
| | | 100,000 | Gasoline | 1.37 | 4.9 | 14.6 | 5.5 |
| | | | Diesel | NA | NA | NA | NA |

(1) *Abbreviations.*
"PC" means passenger car.
"LDT" means light-duty truck.
"NMHC+NOx" means non-methane hydrocarbon plus oxides of nitrogen emissions.
"CO" means carbon monoxide emissions.
"A/C" means air-conditioning.

"US06" means the test cycle designed to evaluate emissions during aggressive and microtransient driving.

(2) *Non-Methane Hydrocarbon Emissions.* For PCs and LDTs certified to the FTP exhaust standards in section 1960.1(f)(2), hydrocarbon emissions shall be measured in accordance with the "California Non-Methane Hydrocarbon Test Procedures" as last amended May 15, 1990, which is incorporated herein by reference. For PCs and LDTs certified as transitional low-emission vehicles, hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions by Flame Ionization Detection) of the "California Non-Methane Organic Gas Test Procedures" as incorporated by reference in section 1960.1(g)(1), note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent."

(3) *Composite Standards.* Compliance with the composite standards shall be demonstrated using the calculations set forth in the section 86.164-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, which is incorporated herein by reference.

(4) *SFTP*. SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in section 86.159-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in section 86.160-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the SC03 cycle. These sections of the Code of Federal Regulations are incorporated herein by reference.

(5) *Applicability to Alternative Fuel Vehicles.* These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

(6) *Air to Fuel Ratio Requirement.* With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

(7) *A/C-on Specific Calibrations*. A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NOx emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NOx effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. ~~**With**~~ **Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

"Open-loop" or "commanded" air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, "closed-loop biasing," defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy. In addition, "transient" air-fuel enrichment strategy (or "tip-in" and "tip-out" enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy.

(8) *"Lean-On-Cruise" Calibration Strategies.* ~~**"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.**~~ **In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph~~**, for the purposes of improving fuel economy or other purposes**~~. ~~**A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air**~~

~~**charge temperature, and any other parameters) shall not be used.**~~ **"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

(9) *Phase-In Requirements.* For the purposes of this section 1960.1(q) only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of PCs and LDTs from 0-5750 pounds loaded vehicle weight certified to the FTP exhaust standards of section 1960.1(f)(2) and certified as transitional low-emission vehicles sold in California. As an option, a manufacturer may elect to have its total PC and LDT fleet defined, for the purposes of this section 1960.1(q) only, as the total projected number of the manufacturer's PCs and LDTs, other than zero-emission vehicles, certified and sold in California.

a. Manufacturers of PCs and of LDTs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet according to the following phase-in schedule.

| *Model Year* | *Percentage of PC and LDT Fleet* |
|---|---|
| 2001 | 25 |
| 2002 | 50 |
| 2003 | 85 |
| 2004 and subsequent | 100 |

b. Small volume manufacturers of PCs and LDTs shall certify 100% of their PC and LDT fleet in the 2004 and subsequent model years.

(10) *Single-Roll Electric Dynamometer Requirement.* For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), must be used for all types of emission testing to determine compliance with the associated emission standards.

(r) The Supplemental Federal Test Procedure (SFTP) standards in this section represent the maximum SFTP exhaust emissions at 4,000 miles +/- 250 miles or at the mileage determined by the manufacturer for emission-data vehicles in accordance with the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k). The SFTP exhaust emission levels from new 2001 and subsequent model low-emission vehicles and ultra-low-emission vehicles in the passenger car and light-duty truck class, and new 2003 and subsequent low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles in the medium-duty class, shall not exceed:

**SFTP EXHAUST EMISSION STANDARDS FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE PASSENGER CAR, LIGHT-DUTY TRUCK, AND MEDIUM-DUTY VEHICLE CLASSES**

(grams per mile)[6,7,8,9,10,11]

| | | *US06 Test*[1] | | *A/C Test*[1,5] | |
|---|---|---|---|---|---|
| *Vehicle Type*[1] | *Loaded Vehicle Weight (lbs.)*[2] | *NMHC*[4] *+ NOx*[1] | *CO*[1] | *NMHC*[4] *+ NOx*[1] | *CO*[1] |
| PC | All | 0.14 | 8.0 | 0.20 | 2.7 |
| LDT | 0-3750 | 0.14 | 8.0 | 0.20 | 2.7 |
| LDT | 3751-5750 | 0.25 | 10.5 | 0.27 | 3.5 |
| MDV | 3751-5750 | 0.40 | 10.5 | 0.31 | 3.5 |
| MDV | 5751-8500[3] | 0.60 | 11.8 | 0.44 | 4.0 |

(1) *Abbreviations.*
"PC" means passenger car.
"LDT" means light-duty truck.
"MDV" means medium-duty truck.
"NMHC+NOx" means non-methane hydrocarbon plus oxides of nitrogen emissions.
"CO" means carbon monoxide emissions.
"US06" means the test cycle designed to evaluate emissions during aggressive and microtransient driving.
"A/C" means air-conditioning.

(2) For MDVs, "Loaded Vehicle Weight" shall mean "Test Weight," which is the average of the vehicle's curb weight and gross vehicle weight.

(3) Vehicles with a gross vehicle weight rating over 8,500 pounds are exempted from the requirements of this subsection.

(4) *Non-Methane Hydrocarbon Emissions.* Hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions by Flame Ionization Detection) of the "California Non-Methane Organic Gas Test Procedures" as incorporated by reference in section 1960.1(g)(1), note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent."

(5) *A/C-on Specific Calibrations*. A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NOx emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NOx effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. ~~**With**~~ **Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

"Open-loop" or "commanded" air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, "closed-loop biasing," defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy. In addition, "transient" air-fuel enrichment strategy (or "tip-in" and "tip-out" enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy.

(6) *SFTP*. SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in section 86.159-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in section 86.160-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the SC03 cycle. These sections of the Code of Federal Regulations are incorporated herein by reference.

(7) *Applicability to Alternative Fuel Vehicles.* These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

(8) *Air to Fuel Ratio Requirement.* With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

(9) *"Lean-On-Cruise" Calibration Strategies.* **~~"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.~~ In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph**~~, for the purposes of improving fuel economy or other purposes~~**. **~~A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters) shall not be used.~~ "Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

(10) *Phase-In Requirements***.** For the purposes of this 1960.1(r) section only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of low-emission and ultra-low-emission PCs and LDTs from 0-5750 pounds loaded vehicle weight sold in California. Each manufacturer's MDV fleet shall be defined as the total projected number of low-emission, ultra-low-emission, and super-ultra-low-emission MDVs less than 8501 pounds gross vehicle weight rating sold in California.

a. Manufacturers of PCs, LDTs, and MDVs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet, and a minimum percentage of their MDV fleet, according to the following phase-in schedule.

| | *Percentage* | |
|---|---|---|
| *Model Year* | *PC, LDT~~1~~* | *MDV* |
| 2001 | 25 | NA |
| 2002 | 50 | NA |
| 2003 | 85 | 25 |
| 2004 | 100 | 50 |
| 2005 and subsequent | 100 | 100 |

b. Manufacturers may use an "Alternative or Equivalent Phase-in Schedule" to comply with the phase-in requirements. An "Alternative Phase-in" is one that achieves at least equivalent emission reductions by the end of the last model year of the scheduled phase-in. Model-year emission reductions shall be calculated by multiplying the percent of vehicles (based on the manufacturer's projected California sales volume of the applicable vehicle fleet) meeting the new requirements per model year by the number of model years implemented prior to and including the last model year of the scheduled phase-in. The "cumulative total" is the summation of the model-

year emission reductions (e.g., a four model-year 25/50/85/100 percent phase-in schedule would be calculated as: (25%*4 years) + (50%*3 years) + (85%*2 years) + (100%*1 year) = 520). Any alternative phase-in that results in an equal or larger cumulative total than the required cumulative total by the end of the last model year of the scheduled phase-in shall be considered acceptable by the Executive Officer under the following conditions: 1) all vehicles subject to the phase-in shall comply with the respective requirements in the last model year of the required phase-in schedule and 2) if a manufacturer uses the optional phase-in percentage determination in section 1960.1(q) note (9), the cumulative total of model-year emission reductions as determined only for PCs and LDTs certified to this section 1960.1(r) must also be equal to or larger than the required cumulative total by end of the 2004 model year. Manufacturers shall be allowed to include vehicles introduced before the first model year of the scheduled phase-in (e.g., in the previous example, 10 percent introduced one year before the scheduled phase-in begins would be calculated as: (10%*5 years) and added to the cumulative total).

c. Small volume manufacturers of PCs, LDTs, and MDVs shall certify 100% of their PC and LDT fleet in 2004 and subsequent model years, and 100% of their MDV fleet in 2005 and subsequent model years.

(11) *Single-Roll Electric Dynamometer Requirement.* For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), must be used for all types of emission testing to determine compliance with the associated emission standards.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104, and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, and 43204 - 43205.5, Health and Safety Code.

Amend title 13, California Code of Regulations, section 2062 to read as follows:

**Section 2062. Assembly-Line Test Procedures - ~~1988~~ 1998 and Subsequent Model Years.**

New 1998 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles, subject to certification and manufactured for sale in California, except for zero-emission vehicles and medium-duty vehicles certified according to the optional standards and test procedures of section 1956.8, Title 13, California Code of Regulations, shall be tested in accordance with the "California Assembly-Line Test Procedures for 1998 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles~~.~~," adopted June 24, 1996, **as last amended _____,** which is incorporated herein by reference. These test procedures shall also apply to federally certified light-duty motor vehicles, except as provided in "Guidelines for Certification of 1983 and Subsequent Model-Year Federally Certified Light-Duty Motor Vehicles for Sale in California," adopted July 20, 1982, as last amended July 12, 1991, which is incorporated herein by reference.

NOTE: Authority cited: Sections 39515, 39600, 39601, 43013, 43018, 43101, 43104 and 43210, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43204, 43210, 43211, and 43212, Health and Safety Code.

Amend title 13, California Code of Regulations, section 2101 to read as follows:

**Section 2101. Compliance Testing and Inspection - New Vehicle Selection, Evaluation, and Enforcement Action.**

(a) [No Change]

(b) If the vehicles are selected for compliance testing, the selection and testing of vehicles and the evaluation of data shall be made in accordance with the "California New Vehicle Compliance Test Procedures," adopted by the state board on June 24, 1976 and last amended **~~June 24, 1996~~** _____. Testing of passenger cars and light-duty-trucks certified to the low-emission and ultra-low-emission exhaust standards to determine compliance with the Supplemental Federal Test Procedure emission standards shall commence in the 2002 model year. Motorcycles scheduled for compliance testing shall be selected, tested, and evaluated in accordance with the "California New Motorcycle Compliance Test Procedures," adopted by the state board on June 30, 1977, and amended November 24, 1981.

(c) through (d) [No Change]

NOTE: Authority cited: Sections 39600, 39601 and 43104, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 43000, 43106, 43202, 43210, 43211 and 43212, Health and Safety Code.

ATTACHMENT III

State of California
AIR RESOURCES BOARD

**PROPOSED**

# CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1988 AND SUBSEQUENT MODEL PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

Adopted: May 20, 1987
Amended: December 20, 1989
Amended: January 22, 1990
Amended: December 26, 1990
Amended: July 12, 1991
Amended: August 12, 1992
Amended: October 23, 1992
Amended: May 28, 1993
Amended: September 17, 1993
Amended: September 22, 1993
Amended: September 22, 1994
Amended: June 24, 1996
Amended: July 24, 1996
Amended: _____

The originally proposed regulatory amendments are show in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the version amended on July 24, 1996. The suggested modifications proposed and adopted by the Board on July 24, 1997 are shown in **bold double-underline** to indicate additions to the original proposal and **~~bold strikeout~~** to indicate deletions. Only those portions of the document in which modifications have been made to the originally proposed amendments are shown.

The numbering convention employed in this document, in order of priority, is: 1.a.1.i.A. The numbering system employed in the Code of Federal Regulations is also used within references to the Code of Federal Regulations and is denoted, in order of priority, as: (a)(1)(I)(A).

Code of Federal Regulations sections numbered in the form of 86.000-x apply starting with the 2000 model year and accordingly follow those numbered 86.099-x.

*l.* The Supplemental Federal Test Procedure (SFTP) exhaust emission levels from new 2001 and subsequent model passenger cars and light-duty trucks, other than low-emission vehicles, ultra-low-emission vehicles, and zero-emission vehicles, shall not exceed:

**SFTP EXHAUST EMISSION STANDARDS FOR 2001 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS AND LIGHT-DUTY TRUCKS OTHER THAN LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND ZERO-EMISSION VEHICLES**

(grams per mile)[4,5,6,7,8,9,10]

| Vehicle Type[1] | Loaded Vehicle Weight (lbs.) | Durability Vehicle Basis (mi) | Fuel Type | NMHC[2] + NOx[1] Composite[3] | CO[1] | | |
|---|---|---|---|---|---|---|---|
| | | | | | A/C[1] Test | US06[1] Test | Composite Option[3] |
| PC | All | 50,000 | Gasoline | 0.65 | 3.0 | 9.0 | 3.4 |
| | | | Diesel | 1.48 | NA | 9.0 | 3.4 |
| | | 100,000 | Gasoline | 0.91 | 3.7 | 11.1 | 4.2 |
| | | | Diesel | 2.07 | NA | 11.1 | 4.2 |
| LDT | 0-3750 | 50,000 | Gasoline | 0.65 | 3.0 | 9.0 | 3.4 |
| | | | Diesel | 1.48 | NA | 9.0 | 3.4 |
| | | 100,000 | Gasoline | 0.91 | 3.7 | 11.1 | 4.2 |
| | | | Diesel | 2.07 | NA | 11.1 | 4.2 |
| LDT | 3751-5750 | 50,000 | Gasoline | 1.02 | 3.9 | 11.6 | 4.4 |
| | | | Diesel | NA | NA | NA | NA |
| | | 100,000 | Gasoline | 1.37 | 4.9 | 14.6 | 5.5 |
| | | | Diesel | NA | NA | NA | NA |

(1) **Abbreviations.**

"PC" means passenger car.

"LDT" means light-duty truck.

"NMHC+NOx" means non-methane hydrocarbon plus oxides of nitrogen emissions.

"CO" means carbon monoxide emissions.

"A/C" means air-conditioning.

"US06" means the test cycle designed to evaluate emissions during aggressive and microtransient driving.

(2) **Non-Methane Hydrocarbon Emissions.** For PCs and LDTs certified to the FTP exhaust standards in Section 3.f., hydrocarbon emissions shall be measured in accordance with the "California Non-Methane Hydrocarbon Test Procedures", as last amended May 15, 1990. For PCs and LDTs certified as transitional low-emission vehicles, hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions by Flame Ionization Detection) of the "California Non-Methane Organic Gas Test Procedures" as incorporated by reference in Section 3.g., note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent."

(3) **Composite Standards.** Compliance with the composite standards shall be demonstrated using the calculations set forth in the 40 CFR 86.164-00.

(4) **SFTP.** SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in 40 CFR 86.159-00 over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in 40 CFR 86.160-00 over the SC03 cycle.

(5) **Applicability to Alternative Fuel Vehicles.** These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

(6) **Air to Fuel Ratio Requirement.** With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

(7) **A/C-on Specific Calibrations.** A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NOx emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NOx effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. ~~**With**~~ **Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

"Open-loop" or "commanded" air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, "closed-loop biasing," defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy. In addition, "transient" air-fuel enrichment strategy (or "tip-in" and "tip-out" enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy.

(8) **"Lean-On-Cruise" Calibration Strategies.** ~~**"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.**~~ **In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph~~**, for the purposes of improving fuel economy or other purposes**~~. ~~**A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters) shall not be used.**~~ **"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

(9) **Phase-In Requirements.** For the purposes of this Section 3.*l.* only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of PCs and LDTs from 0-5750 pounds loaded vehicle weight certified to the FTP exhaust standards of Section 3.f. and certified as transitional low-emission vehicles sold in California. As an option, a manufacturer may elect to have its total PC and LDT fleet defined, for the purposes of this Section 3.*l.* only, as the total projected number of the manufacturer's PCs and LDTs, other than zero-emission vehicles, certified and sold in California.

a. Manufacturers of PCs and of LDTs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet according to the following phase-in schedule.

| Model Year | Percentage of PC and LDT Fleet |
|---|---|
| 2001 | 25 |
| 2002 | 50 |
| 2003 | 85 |
| 2004 and subsequent | 100 |

b. Small volume manufacturers of PCs and LDTs shall certify 100% of their PC and LDT fleet in the 2004 and subsequent model years.

(10) **Single-Roll Electric Dynamometer Requirement.** For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in 40 CFR 86.108-00, must be used for all types of emission testing to determine compliance with the associated emission standards.

m. The Supplemental Federal Test Procedure (SFTP) standards in this Section represent the maximum SFTP exhaust emissions at 4,000 miles +/- 250 miles or at the mileage determined by the manufacturer for emission-data vehicles, according to 40 CFR 86.090-26 as modified by these test procedures. The SFTP exhaust emission levels from new 2001 and subsequent model low-emission vehicles and ultra-low-emission vehicles in the passenger car and light-duty truck class, and new 2003 and subsequent low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles in the medium-duty class, shall not exceed:

**SFTP EXHAUST EMISSION STANDARDS FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE PASSENGER CAR, LIGHT-DUTY TRUCK, AND MEDIUM-DUTY VEHICLE CLASSES**

(grams per mile)[6,7,8,9,10,11]

| | | US06 Test[1,5] | | A/C Test[1,6] | |
|---|---|---|---|---|---|
| Vehicle Type[1] | Loaded Vehicle Weight (lbs.)[2] | NMHC[4] + NOx[1] | CO[1] | NMHC[4] + NOx[1] | CO[1] |
| PC | All | 0.14 | 8.0 | 0.20 | 2.7 |
| LDT | 0-3750 | 0.14 | 8.0 | 0.20 | 2.7 |
| LDT | 3751-5750 | 0.25 | 10.5 | 0.27 | 3.5 |
| MDV | 3751-5750 | 0.40 | 10.5 | 0.31 | 3.5 |
| MDV | 5751-8500[3] | 0.60 | 11.8 | 0.44 | 4.0 |

(1) **Abbreviations.**
"PC" means passenger car.
"LDT" means light-duty truck.
"MDV" means medium-duty truck.
"NMHC+NOx" means non-methane hydrocarbon plus oxides of nitrogen emissions.
"CO" means carbon monoxide emissions.
"US06" means the test cycle designed to evaluate emissions during aggressive and microtransient driving.
"A/C" means air-conditioning.

(2) For MDVs, "Loaded Vehicle Weight" shall mean "Test Weight," which is the average of the vehicle's curb weight and gross vehicle weight.

(3) Vehicles with a gross vehicle weight rating over 8,500 pounds are exempted from the requirements of this subsection.

(4) **Non-Methane Hydrocarbon Emissions.** Hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions

by Flame Ionization Detection) of the "California Non-Methane Organic Gas Test Procedures" as incorporated by reference in Section 3.g., note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent."

(5) **A/C-on Specific Calibrations.** A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NOx emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NOx effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific "open-loop" or "commanded enrichment" air-fuel enrichment strategies (as defined below), which differ from A/C-off "open-loop" or "commanded enrichment" air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. ~~**With**~~ **Other than** these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

"Open-loop" or "commanded" air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, "closed-loop biasing," defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy. In addition, "transient" air-fuel enrichment strategy (or "tip-in" and "tip-out" enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an "open-loop" or "commanded" air-fuel enrichment strategy.

(6) **SFTP.** SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in 40 CFR 86.159-00 over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in 40 CFR 86.160-00 over the SC03 cycle.

(7) **Applicability to Alternative Fuel Vehicles.** These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

(8) **Air to Fuel Ratio Requirement.** With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

(9) **"Lean-On-Cruise" Calibration Strategies. ~~"Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, unless such strategies are also substantially employed during the SFTP.~~ In the Application for Certification, the manufacturer shall state whether any "lean-on-cruise" strategies are incorporated into the vehicle design.** A "lean-on-cruise" air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph**~~, for the purposes of improving fuel economy or other purposes~~**. **~~A/C-on "lean-on-cruise" strategies which differ from A/C-off "lean-on-cruise" strategies for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters) shall not be used.~~ "Lean-on-cruise" air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:**

**1. Such strategies are substantially employed during the FTP or SFTP, or**

**2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or**

**3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware.**

**If the manufacturer proposes to use a "lean-on-cruise" calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration.**

**The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.**

(10) **Phase-In Requirements.** For the purposes of this Section 3.m. only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of low-emission and ultra-low-emission PCs and LDTs from 0-5750 pounds loaded vehicle weight sold in California. Each manufacturer's MDV fleet shall be defined as the total projected number of low-emission, ultra-low-emission, and super-ultra-low-emission MDVs less than 8501 pounds gross vehicle weight rating sold in California.

a. Manufacturers of PCs, LDTs, and MDVs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet, and a minimum percentage of their MDV fleet, according to the following phase-in schedule.

| | Percentage | |
|---|---|---|
| Model Year | PC, LDT~~1~~ | MDV |
| 2001 | 25 | NA |
| 2002 | 50 | NA |
| 2003 | 85 | 25 |
| 2004 | 100 | 50 |
| 2005 and subsequent | 100 | 100 |

b. Manufacturers may use an "Alternative or Equivalent Phase-in Schedule" to comply with the phase-in requirements. An "Alternative Phase-in" is one that achieves at least equivalent emission reductions by the end of the last model year of the scheduled phase-in. Model-year emission reductions shall be calculated by multiplying the percent of vehicles (based on the manufacturer's projected California sales volume of the applicable vehicle fleet) meeting the new requirements per model year by the number of model years implemented prior to and including the last model year of the scheduled phase-in. The "cumulative total" is the summation of the model-year emission reductions (e.g., a four model-year 25/50/85/100 percent phase-in schedule would be calculated as: (25%*4 years) + (50%*3 years) + (85%*2 years) + (100%*1 year) = 520). Any alternative phase-in that results in an equal or larger cumulative total than the required cumulative total by the end of the last model year of the scheduled phase-in shall be considered acceptable by the Executive Officer under the following conditions: 1) all vehicles subject to the phase-in shall comply with the respective requirements in the last model year of the required phase-in schedule and 2) if a manufacturer uses the optional phase-in percentage determination in Section 3.*l.*, note (9), the cumulative total of model-year emission reductions as determined only for PCs and LDTs certified to this Section 3.m. must also be equal to or larger than the required cumulative total by end of the 2004 model year. Manufacturers shall be allowed to include vehicles introduced before the first model year of the scheduled phase-in (e.g., in the previous example, 10 percent introduced one year before the scheduled phase-in begins would be calculated as: (10%*5 years) and added to the cumulative total).

c. Small volume manufacturers of PCs, LDTs, and MDVs shall certify 100% of their PC and LDT fleet in 2004 and subsequent model years, and 100% of their MDV fleet in 2005 and subsequent model years.

(11) **Single-Roll Electric Dynamometer Requirement.** For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in 40 CFR 86.108-00, must be used for all types of emission testing to determine compliance with the associated emission standards.

In paragraph 86.088-21 and 86.090-21:

4. Amend subparagraph (b)(4)(iii)(C)(1) and (C)(2) to read:

(1) A statement of maintenance and procedures consistent with the restrictions imposed under subparagraph 86.085-25(a)(1), necessary to assure that the vehicles (or engines) covered by a certificate of conformity in operation in normal use to conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(2) A statement that the vehicles sold comply with the California high-altitude emission requirements as specified in Section 11.b. (High Altitude Requirements) in these procedures.

In paragraph 86.096-21, 86.098-21, and 86.000-21:

5. Delete subparagraph (l).

b. Required Data

In paragraph 86.085-23, 86.087-23, 86.088-23, 86.091-23, ~~and~~ 86.094-23, 86.095-23, 86.096-23, 86.098-23, and 86.000-23 :

1. Amend (c)(1) by adding the following paragraph which reads:

For all TLEVs, LEVs, and ULEVs certifying on a fuel other than conventional gasoline, manufacturers shall multiply the NMOG exhaust certification level for each emission-data vehicle by the appropriate reactivity adjustment factor listed in Section 13.a. of these test procedures or established by the Executive Officer pursuant to Appendix VIII of these test procedures to demonstrate compliance with the applicable NMOG emission standard. For all TLEVs, LEVs, and ULEVs certifying on natural gas, manufacturers shall multiply the NMOG exhaust certification level for each emission-data vehicle by the appropriate reactivity adjustment factor listed in Section 13.a. of these test procedures or established by the Executive Officer pursuant to Appendix VIII of these test procedures and add that value to the product of the methane exhaust certification level for each emission-data vehicle and the appropriate methane reactivity adjustment factor listed in Section 13.a. of these test procedures or established by the Executive Officer pursuant to Appendix VIII of these test procedures to demonstrate compliance with the applicable NMOG emission standard. Manufacturers requesting to certify to existing standards utilizing an adjustment factor unique to its vehicle/fuel system must follow the data requirements described in Appendix VIII of these test procedures. A separate formaldehyde exhaust certification level shall also be provided for demonstrating compliance with emission standards for formaldehyde.

In paragraph 86.000-23:

2. Amend subparagraph (*l*) by substituting the following for the initial paragraph:

(*l*) Additionally, manufacturers certifying vehicles shall submit for each model year 2001 through 2004 passenger car and light-duty truck engine family, and for each model year 2003 through 2005 medium-duty vehicle engine family, the information listed in paragraphs (*l*)(1) and (2). **If applicable, manufacturers shall also submit "Alternative or Equivalent Phase-in Schedules" before or during calendar year 2001 for passenger cars and light-duty trucks and calendar year 2003 for medium-duty vehicles.**

c. Test Vehicles and Test Engines; Assigned Deterioration Factors (DFs)

In paragraphs 86.085-24, 86.090-24, 86.092-24, 86.094.24, ~~and~~ 86.095-24, 86.096-24, 86.098-24, and 86.000-24:

1. Amend subparagraph (a)(1) by adding the following additional statement:

(a)(1) The vehicles or engines covered by an application for certification will be divided into groupings of engines which are expected to have similar emission characteristics throughout their useful life. Each group of engines with similar emission characteristics shall be defined as a separate engine family. For 1995 and subsequent model-year vehicles or engines, all engines classified in the same engine family shall be certified to identical exhaust emission standards.

2. Delete subparagraph (b) (Emission-data vehicle selection provisions)

REPLACE WITH:

(b) Emission-data vehicles shall be selected according to the provisions of Appendix II. Selection shall be based on highest sales volume and will require only two emission-data vehicles for certification testing per engine family. For vehicles certified to the SFTP exhaust emission standards, if air conditioning is projected to be available on any vehicles within the engine family, the selection of engine codes will be limited to selections which have air conditioning available and would require that any vehicle selected under this Section has air conditioning installed and operational. (For fifty-state families, the reference in the federal procedures to configuration or sales shall mean California configurations and sales rather than total family configurations and sales.) The Executive Officer will accept data from

ATTACHMENT IV

State of California
AIR RESOURCES BOARD

**PROPOSED**

# CALIFORNIA ASSEMBLY-LINE TEST PROCEDURES FOR 1998 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

Adopted: June 24, 1996
**Amended:** _____

The proposed regulatory amendments are shown in **bold double-underline** to indicate additions and ~~**bold strikeout**~~ to indicate deletions compared to the version adopted June 24, 1996. Only Section A.1., 2., and 3. are shown, and the only proposed amendment is to Section A.2.

Proposed 15-day changes
Date of Release: September 15, 1997
Board Hearing: July 24, 1997

CALIFORNIA ASSEMBLY-LINE TEST PROCEDURES FOR 1998
AND SUBSEQUENT MODEL-YEAR PASSENGER CARS,
LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

## A. GENERAL PROVISIONS

### 1. APPLICABILITY

These test procedures, adopted pursuant to Section 43210 of the California Health and Safety Code (H & SC), are applicable to all new 1998 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles subject to certification and manufactured for sale in California, except for zero-emission vehicles and medium-duty vehicles certified according to the optional standards and test procedures of section 1956.8, Title 13, California Code of Regulations (CCR).

### 2. COMPLIANCE

The procedures specify two types of tests: (1) an inspection test to be applied to every vehicle before sale; and (2) a quality-audit test according to the "CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1988 AND SUBSEQUENT MODEL PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES," for vehicles selected in accordance with paragraph C.1. of these procedures. Demonstration of compliance with cold temperature carbon monoxide standards **and the Supplemental Federal Test Procedure non-methane hydrocarbon plus oxides of nitrogen and carbon monoxide standards** shall be exempt from quality-audit testing. A vehicle is in compliance with these assembly-line test procedures when that vehicle is in compliance with the inspection test requirements and that vehicle's engine family is in compliance with the quality-audit test requirements. Since quality-audit evaluations occur less frequently than the inspection tests, a vehicle that passes the inspection test may be presumed to be in compliance with the full assembly-line procedures pending meeting the quality-audit evaluation of that vehicle's engine family.

### 3. ACCESS

Air Resources Board (ARB) personnel and mobile laboratories shall have access to vehicle assembly plants, distribution facilities, and test facilities for the purpose of vehicle selection, testing, and observation. Scheduling of access shall be arranged with the designated manufacturer's representative and shall not unreasonably disturb normal operations.