State of California
AIR RESOURCES BOARD

Final Statement of Reasons for Rulemaking
Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER ADOPTION OF AMENDMENTS TO REGULATIONS REGARDING EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES APPLICABLE TO 1995 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, MEDIUM-DUTY VEHICLES, AND HEAVY-DUTY VEHICLES

Public Hearing Date: February 10, 1994
Agenda Item No.: 94-2-1

I. GENERAL

This rulemaking was initiated by the publication on December 23, 1993, of a notice of public hearing to consider amendments to the Air Resources Board (ARB) regulations regarding evaporative emission standards and test procedures for 1995 and subsequent model-year passenger cars (PCs), light-duty trucks (LDTs), medium-duty vehicles (MDVs), and heavy-duty vehicles (HDVs). A Staff Report: Initial Statement of Reasons for Proposed Rulemaking (the Staff Report) was also made available for public inspection on December 23, 1993. The Staff Report, which is incorporated by reference herein, contained the text of the regulatory amendments as initially proposed by the staff, along with an extensive description of the rationale for the proposal. The proposed action consisted of amendments to section 1976, Title 13, California Code of Regulations (C.C.R.), and the incorporated "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles" (the Test Procedures).

On February 10, 1994, the Board conducted a public hearing at which it received written and oral comments on the regulatory proposal. At the conclusion of the hearing, the Board approved regulatory amendments by adopting Resolution 94-7. As approved, the amendments included a number of modifications to the originally proposed text, reflecting suggestions made by the staff at the February 10, 1994 hearing. In the resolution, the Board directed the Executive Officer to incorporate the approved modifications into the originally proposed text with such conforming amendments as may be appropriate. In accordance with Government Code section 11346.8(c), the Resolution directed the Executive Officer to then make the modified regulatory text available to the public for a supplemental comment period of 15 days. He was thereafter directed either to adopt the modified regulations with such additional modifications as may be appropriate in light of the comments received, or to present them to the Board for further consideration if he determined such an action was warranted by the comments.

The modified texts of the regulation and the Test Procedures were made available for a 15-day comment period by issuance of a "Notice of Public Availability of Modified Text," Mail-out #94-25, on June 21, 1994. These texts included a few conforming modifications that were made by the Executive Officer subsequent to adoption of the resolution, and that were specifically identified in the 15-day Notice. Written comments were received from one commenter. After considering these comments, the Executive Officer issued Executive Order G-94-56 amending section 1976 and the incorporated Test Procedures.

The amended Test Procedures are incorporated by reference in Title 13, C.C.R. section 1976(c). The Test Procedures in turn incorporate certification test procedures pertaining to evaporative emissions that have been adopted by the U.S. Environmental Protection Agency (U.S.EPA) and are contained in Title 40, Code of Federal Regulations, Part 86.

Title 13, C.C.R. section 1976(c) identifies the incorporated ARB document by title and date. The ARB document is readily available from the ARB upon request and was made available to the public as an attachment to the Staff Report. The Code of Federal Regulations is published by the Office of the Federal Register, National Archives and Records Administration, and is therefore reasonably available to the affected public from a commonly known source.

The Test Procedures are incorporated by reference because it would be impractical to print them in the California Code of Regulations. Existing ARB administrative practice has been to have test procedures incorporated by reference rather than printed in the California Code of Regulations. These procedures are highly technical and complex. They include "nuts and bolts" engineering protocols and have a very limited audience. Because the ARB has almost never printed test procedures in the California Code of Regulations, the affected public is accustomed to the incorporation format. The ARB's test procedures as a whole are extensive and it would be both cumbersome and expensive to print these lengthy, technically complex procedures with a limited audience in the California Code of Regulations. Printing portions of the ARB's test procedures in the California Code of Regulations when the bulk of the test procedures are incorporated by reference would be unnecessarily confusing to the affected public.

The Test Procedures incorporate portions of the Code of Federal Regulations because the ARB requirements are substantially based on the federal regulations. Manufacturers typically certify vehicles and engines to both the federal and state emissions standards and test procedures. Incorporation of the federal regulations by reference makes it easier for manufacturers to know when the two sets of requirements are identical and when they differ.

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

The Board has further determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by the Board.

II. SUMMARY OF MODIFICATIONS

This section summarizes the modifications made to the originally proposed regulatory text, and explains the rationale for the modifications. Most of the modifications resulted from informal comments to the staff from vehicle manufacturers.

A. Modifications to Both Section 1976 and the Test Procedures

1. Under the original proposal, MDVs with a Gross Vehicle Weight Rating (GVWR) of 6,000-8,500 lbs. would continue to be subject to the preexisting standard of 2.0 grams per test (g/test) for the three-day diurnal plus hot soak test. The Board modified the standard to 2.5 g/test for MDVs that are within this GVWR range and have fuel tanks of 30 gallons or greater. This modification is consistent with the federal standards and was made to assure that the standard is technologically feasible for this harder-to-control subset of vehicles. The weight category was also slightly revised to start at 6,001 GVWR to make the classification consistent with other categories. (Section 1976(b)(1)(B); Test Procedures section 1.a.ii.)

For the same reason, the Board also revised the new supplemental test standard for this subset of MDVs from 2.5 g/test to 3.0 g/test. (Section 1976(b)(1)(C); Test Procedures section 1.a.iii.)

2. The listing of motor vehicles that are exempt from the evaporative emissions standards was clarified to include compressed natural gas (CNG) vehicles. Although these vehicles had not been expressly listed as exempt, they have been intentionally excluded from the listing in section 1 of the Test Procedures of vehicles that are subject to the standards. (Section 1976(b)(1); Test Procedures section 1.)

3. The references to incomplete MDVs having a GVWR of 8,501-14,000 lbs. were clarified to expressly state the applicable standards and test procedures. (Section 1976(b)(1)(B), note 4; Test Procedures section 1.a.ii., note 4.)

4. The Board eliminated the originally proposed revision which would have provided that, for the enhanced test procedures, the standards for alcohol-fueled vehicles be expressed in terms of total hydrocarbon plus the hydrocarbon component of alcohol rather than as organic material hydrocarbon equivalent (OMHCE). Proposed references for the supplemental test procedures were similarly changed. These modified provisions are consistent with the federal requirements and are technically correct. (Section 1976(b)(1)(B), note 1 and 1976(b)(1)(C), note 1; Test Procedures section 1.a.ii., note 1 and 1.a.iii. note 1.)

5. A few other provisions were clarified or reformatted without resulting in substantive changes.

B. Modifications to the Test Procedures Only

1. A definition of "small volume manufacturer" was added for the purposes of the Test Procedures and section 1976. (Test Procedures section 2.) See comment 5 below and the agency response.

2. A modification was made to allow manufacturers of 1995 and subsequent model-year vehicles to comply with the requirement to conduct evaporative emission testing of the exhaust durability data vehicle (section 4.c.i. or 4.c.ii) by conducting the evaporative durability requirements of section 4.c.iii. on an on-road vehicle simulating the complete useful life, and by demonstrating compliance with the evaporative emission standards with the exhaust durability data vehicle at the end of the useful life. The manufacturer is allowed to conduct unscheduled maintenance at the end of the useful life for the aforementioned optional durability procedure if the exhaust emissions control system is not affected and an engineering evaluation is conducted. This gives manufacturers additional flexibility in meeting the requirements. (Test Procedures section 4.c.)

3. In order to reduce test-to-test variations, the Test Procedures were modified to include a calibration procedure for the hot soak enclosure. (Test Procedures section 4.e.(e)(2)(v).)

4. A modification was made to allow the manufacturer to heat the fuel to the ambient temperature prior to the start of the profile generation. By using this option, fuel temperature lag (versus ambient temperature) would be eliminated and a more representative profile would be generated. (Test Procedures section 4.f.(d)(2).)

5. A statement was added providing that methanol measurements will not be required during the emissions test sequence if methanol-fueled vehicles are not being tested. This assures that unnecessary methanol data does not have to be reported. (Test Procedures section 4.g.i.)

6. To make compliance with the procedures more practical, the Board modified the cold soak period preceding the vehicle preconditioning to a minimum of six hours, and eliminated the initial fuel drain and fill and vehicle soak for vehicles performing consecutive tests with the same fuel specifications. (Test Procedures section 4.g.i.B.)

7. The requirement for preloading of the canister in the two-day diurnal sequence has been deleted, consistent with the federal test procedure. (Test Procedures section 4.g.iii.E.)

8. A modification allows up to six hours to stabilize the fuel liquid and vapor temperatures to 105°F before the running loss test, and requires stabilization for one hour. This makes it easier to follow the procedures and assures greater uniformity in testing. (Test Procedures section 4.g.vii.)

9. The Board added a requirement that fuel tank vapor temperature must match the on-road vapor profile throughout the entire running loss test, and that the vapor pressure is no more than ± 5°F of the corresponding on-road temperatures. This will help assure that the test results are more accurate and consistent. (Test Procedures sections 4.g.viii.A.VIII and 4.g.viii.B.IV.)

10. The vapor temperature requirement during the running loss test was delayed until the 1996 model year in order to allow adequate lead time for development. (Test Procedures section 4.g.viii.A.VIII. and 4.g.viii.B.IV.)

11. A provision was added allowing transitory pressure events that exceed the 10 inches of water requirements during the running loss test if they do not cause the pressure to exceed 10 inches of water during in-use operation. This will help avoid the unnecessary disqualification of test results. (Test Procedures sections 4.g.viii.A.X. and 4.g.viii.B.V.)

12. A modification allows manufacturers, upon prior written approval of the Executive Officer, to use the federal procedures for the following requirements: (1) the carry-across of three-day diurnal plus hot soak deterioration factors (DFs) to the two-day DFs, (2) the loading procedures for evaporative systems with multiple canisters, and (3) the correction factors for the running loss profile. Approval is granted if the manufacturer demonstrates to the satisfaction of the Executive Officer that the alternative methodology will not adversely affect in-use evaporative emissions. This will afford manufacturers greater flexibility to use the federal procedures. (Test Procedures section 4.k.)

13. Minor clarifications were made to various other provisions.

The amended regulation and Test Procedures include a few nonsubstantial modifications to the text made available with the 15-day notice on June 21, 1994. One modification updates and corrects the "Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks" reference in section 1976(d). Another modification conforms the test procedure summary in section 4.g.i. of the Test Procedures with the Test Procedure specifications. Finally, two nonsubstantive modifications to the Test Procedures were made in response to comments received during the 15-day comment period. First, section 4.g.iii.E.II.2 was modified to provide expressly that the manufacturer may cool the fuel prior to the canister loading procedure in the supplemental test sequence. (See Comment 15 below and the agency response.) The second modification conforms the "Canister Purge and Load" diagram in Figures 4 and 5 to the specifications in the test procedures, paragraph 4.g.iii.E. (See Comment 13 below and the agency response.)

III. SUMMARY OF COMMENTS AND AGENCY RESPONSE

During the 45-day public comment period, the Board received written comments from the American Automobile Manufacturers Association (AAMA), the Association of International Automobile Manufacturers, Inc. (AIAM), American Honda Motor Co., Inc. (Honda), the Engine Manufacturers Association (EMA), and Rover Group (Rover). At the public hearing, oral comments were provided by AAMA and AIAM. During the 15-day public comment period following the hearing, written comments were received from Ford Motor Company (Ford).

AAMA and AIAM generally supported the proposed amendments and the modifications suggested by the staff at the hearing. Their statements of support are not summarized below. We also do not summarize comments made by Ford that the company expressly requested be considered in future rulemakings rather than in this rulemaking.

Comments Received During the 45-Day Public Comment Period and at the Hearing

1. Comment: In the interest of providing a workable framework for operating in the next few years, we request that the Board adopt specific language providing adequate discretion for the Executive Officer in interpreting the testing requirements. We propose that the following language be added to Section 1 of the Test Procedures:

The Executive Officer shall approve alternative procedures if a manufacturer can provide evidence that a significant technical issue(s) exists with the adopted procedure or a manufacturer can provide evidence that the effectiveness of the evaporative emission system is not diminished.

It is critical to provide flexibility that recognizes the underlying intent, not just the letter of the regulation, to assure that a smooth transition is made between the technical staff and the certification groups. We believe providing the Executive Officer the flexibility to allow revised and improved testing is also essential to the timely completion of manufacturers' certification plans and test data during the phase-in of these control systems. As the remaining technical issues are resolved, it may be appropriate to consider a final set of revisions to the regulations at some later date. Our proposed language quoted above will allow this to be done at the Executive Officer's discretion. (AAMA)

Agency Response: In this rulemaking we have sought to address and resolve the many specific technical concerns raised to date by vehicle manufacturers and other interested parties regarding the enhanced evaporative emissions program. The Test Procedures as amended in this rulemaking also allow manufacturers to use alternative methods with advance Executive Officer approval for a variety of specifications including equipment configurations, determination of the running loss profile generation, and running loss test procedure.

Moreover, under the amended Test Procedures the Executive Officer has the same authority as the U.S.EPA Administrator to allow alternative test procedures for vehicles where he or she determines the vehicles are not susceptible to satisfactory testing by the prescribed procedures.

The additional language sought by AAMA is extremely open-ended. It would permit a broad range of changes to the formally adopted Test Procedures with little regulatory guidance and without adherence to the notice and comment requirements of the California Administrative Procedure Act (APA). As such, the requested language could well result in an "underground regulation" process in contravention of the APA. We believe the Test Procedures as amended in this rulemaking provide adequate flexibility for the practical implementation of the regulatory requirements, and that substantial changes to the Test Procedures should only be made in accordance with the prescribed rulemaking process.

2. Comment: An objective of the test procedure changes has been to align California's evaporative testing procedures with the U.S.EPA's procedures. Many changes that are being proposed by staff help to accomplish this objective, though some differences still remain. After today, we will have two almost identical test procedures; but manufacturers must still develop and certify to two separate and very lengthy procedures. Industry, U.S.EPA and the ARB need to continue to work together to establish a common procedure. (AAMA)

Our members worked closely with U.S.EPA in the development of the Agency's test procedure. While not in total agreement with all aspects of U.S.EPA's rulemaking, we endorse the concept of having essentially one test procedure apply nationwide to reduce complexity in the design and production of motor vehicles for sale in the United States. (AIAM)

Some of the differences which will remain between the California and the federal test conditions and equipment requirements could increase manufacturers' burden and result in a greater number of tests and test vehicles even if the same control systems and designs are applied for both California and federal vehicles. (Honda)

Agency Response: In this rulemaking we have eliminated many of the technical differences between the ARB and the U.S.EPA test procedures. As a result, the test equipment, testing protocol, and emission calculations are all identical. However, several differences remain between the California and federal test procedures. A number of these differences address manufacturers' technical concerns and allow for increased test-to-test repeatability. For example, in accordance with the manufacturers' request, the Board is allowing a 30-second exceedance of the 10 inches of water limit in the fuel tank pressure during the beginning of the running loss test was approved by the Board. (Test Procedures, section 4.g.viii.A.X.) This allowance addresses manufacturers' technological concern of controlling the fuel tank pressure during open-loop operation when the engine is started. Manufacturers have solicited the U.S.EPA to include many of these amendments in the federal test procedure, and the U.S.EPA has responded by initiating a technical amendment of the test procedures.

The other remaining differences between the two sets of test procedures generally result from the specific needs of the California program. These differences include the use of California Phase 2 gasoline certification fuel and the higher California 105°F test temperature, and are discussed in the Staff Report. They are necessary in light of the severe ozone conditions in California and interaction with other California emission control programs.

3. Comment: An alternative phase-in schedule should be allowed. For example, instead of having to have each category of vehicles meet the 10 percent phase-in for the 1995 model year, a manufacturer should be allowed to have 15 or 20 percent of its combined production meet the enhanced requirements. This could allow a manufacturer, who may have virtually 40 percent of its passenger car fleet brought in because it has picked a high-profile vehicle to control, the opportunity to have more time to work out the controls for trucks. Maybe the emission benefits of separately grouping vehicles to determine compliance could be calculated and used as a worst-case scenario in which the emission benefits of the alternative schedule would be compared. (AIAM)

Agency Response: As originally adopted, the regulation required manufacturers to comply with the phase-in percentages of (1) PCs and (2) LDTs, MDVs, and HDVs. One of the amendments to the regulation in this rulemaking will allow an alternative phase-in percentage grouping of (1) PCs and LDTs and (2) MDVs and HDVs; this is more consistent with that of other Board regulations. We believe these methods provide sufficient flexibility to manufacturers.

In addition, both alternative methods will encourage the development of evaporative emission technology for heavier vehicles, which is generally more technologically challenging. If all vehicle classes were grouped together to determine compliance, the manufacturer may choose to improve systems for lighter vehicles during the phase-in period rather than develop the more difficult systems for heavier vehicles. In addition, the emission benefits associated with heavier vehicles are generally greater than those of lighter vehicles. Therefore, in order to ensure a steady development of technology for all vehicle classes and to ensure that the emission benefits associated with the original regulations are realized, it is appropriate to require these heavier vehicles to comply with the phase-in percentages separate from the lighter PCs and/or LDTs.

4. Comment: ARB staff has acknowledged that the proposed regulation is not intended to require evaporative testing for CNG-fueled vehicles. In fact, the proposal does not mention CNG-fueled vehicles at all. Nevertheless, we believe it would be beneficial to clarify the matter by specifically mentioning this exclusion. (EMA)

Agency Response: We agree. Express exemption language for CNG-fueled vehicles has been added in section 1976(b)(1) and in the fifth paragraph of section 1 of the Test

Procedures. This is consistent with the existing requirements; while CNG-fueled vehicles were not listed among the exempt category of vehicles, they were excluded from the list of vehicles subject to the evaporative emission requirements in section 1976(b) and the first paragraph in section 1 of the Test Procedures.

5. Comment: The regulations for enhanced evaporative emission control include a provision to delay the requirements for small volume manufacturers until the final year of the phase-in, when all vehicles produced by all manufacturers must meet the more stringent evaporative controls. However, the definition of small volume manufacturer in the evaporative emission regulations is not the same as that used in other recently established technology-forcing ARB motor vehicle regulations such as the Low Emission Vehicles/Clean Fuels (LEV) Regulations and the On-Board Diagnostics (OBD) Regulations. In those regulations, the criteria for small volume manufacturer status is that of a three-year rolling average being under 3000 units. We recommend that the ARB adopt a definition of small volume manufacturer in the enhanced evaporative emission requirements that is consistent with the LEV and OBD regulations. (Rover)

Agency Response: We agree. The definition of small volume manufacturer in section 2 of the Test Procedures has been modified to cover any vehicle manufacturer with California sales less than or equal to 3000 new vehicles per model year based on the average number of vehicles sold by the manufacturer in the previous three consecutive years.

6. Comment: We strongly suggest that both U.S.EPA and ARB accept the carry-across of durability data from systems designed to meet the other organization's requirements. (Honda)

Agency Response: The anticipated emissions benefits of this program will not be realized if the enhanced evaporative emission control systems are not sufficiently durable. As set forth in section 4.c. of the Test Procedures, the ARB's durability procedures for vehicles certified to the enhanced test procedures identify a specific testing protocol and specific requirements that the manufacturer must use in generating exhaust and evaporative deterioration factors. This approach helps assure that the deterioration factors accurately reflect the in-use deterioration of the vehicle throughout its useful life. The federal regulations allow the manufacturer to develop its own protocol for determining exhaust and evaporative deterioration factors, subject to the requirement that the testing be designed and conducted in accordance with good engineering practice. If a manufacturer develops its durability program in accordance with the durability protocol specified in the California Test Procedures, and demonstrates to U.S.EPA that the test program reflects good engineering practice, both the California and federal requirements would be fulfilled and carry-across of the data is allowed. However, we do not believe it is appropriate at this time to accept durability data that are generated in tests that do not follow the California test protocol. (See also the response to Comment 2.)

7. Comment: A single calibration procedure for test equipment maintenance should be adopted by both the ARB and the U.S.EPA to reduce unnecessary testing burden. (Honda)

Agency Response: The amendments to the Test Procedures adopted in this rulemaking include alignment of the U.S.EPA and ARB calibration procedures for the diurnal enclosure, the hot soak enclosure, and the running loss enclosure. The amended diurnal enclosure and hot soak enclosure procedures are identical to the federal procedures except for the enclosure ambient temperatures. The ARB Test Procedures specify testing temperatures as high as 105°F while the federal procedures require temperatures only up to 95°F. Therefore, the ARB calibration procedures correspond to the higher California testing temperatures to ensure that at elevated temperatures the test equipment are within specifications. The rationale for the higher ARB test temperatures is explained on pages 12-13 and 21-22 of the Staff Report. Manufacturers have requested that U.S.EPA make technical amendments to the federal test procedures to accept the ARB test since the ARB calibration procedures are worst-case. (See also response to Comment 2.)

In addition to the difference in the testing temperatures discussed above, the calibration procedure for the running loss enclosure requires calibration with a vehicle and its engine running inside the enclosure. The federal test procedures do not require such a calibration. The ARB requirement is necessary to ensure that the contribution of hydrocarbon emissions from the instrumentation or the sampling equipment is minimal during the running loss test.

8. Comment: The proposed regulation allows the initial fuel temperature for the running loss test to be less than 105°F if the manufacturer is able to provide data justifying a lower initial temperature during a 105°F ambient temperature day. However, Honda is very concerned that we shall be unable to encounter such hot days at places where all required data to justify the lower temperature can be acquired. Climatological data from July 1986 to June 1989 in California indicate that there would be very few opportunities to encounter a 105°F day.

Honda believes that heat insulation applied around the vehicle fuel tank is one of the most effective means to control evaporative emissions from in-use vehicles by reducing fuel temperatures. If we have no opportunity to demonstrate a lower initial temperature during a 105°F day, we must consider other control techniques which might be more expensive while removing the insulation materials. Honda requests ARB to allow the testing needed for the justification of lower initial fuel temperatures to be conducted in the laboratory. For example, the initial temperature could be demonstrated by showing the maximum fuel temperature during the diurnal test cycle and/or other engineering evaluation. (Honda)

Agency Response: Since evaporative emissions are highly dependent on temperature, vehicles with mechanisms such as insulated fuel tanks which would keep the fuel cooler than the ambient temperature on hot summer days could have lower generation of evaporative

emissions. As a result, these vehicles would have decreased levels of evaporative emissions released into the atmosphere. As an incentive to encourage manufacturers to develop these mechanisms, the Test Procedures currently allow the manufacturer to conduct the running loss test at lower fuel temperatures than the required 105°F starting fuel temperature if it can provide data to justify the lower temperatures on a 105°F ambient temperature day. In order to obtain a realistic profile of the fuel tank temperature, the vehicle must be tested on days where the ambient temperature is 105°F or greater.

Currently, manufacturers are using track facilities in California, Arizona, and other areas where summer ambient temperatures reach 105°F and higher. There may be limited events of these high temperatures and manufacturers may need to take advantage of these days when they occur. However, requiring real world data is critical in ensuring that actual emissions benefits are realized with these mechanisms.

If the test was conducted in a laboratory, it would be difficult to ascertain if the conditions the vehicle experienced would be representative of the conditions in-use on a hot summer day. Factors such as solar heating, asphalt heating, and wind cooling would contribute to differences between in-use and laboratory data. Therefore, the requirement to provide real data on a 105°F ambient temperature day has been retained.

9. Comment: As the prior record indicates, AAMA still remains concerned about the methodology for measuring running loss emissions. (AAMA)

Agency Response: We believe this comment pertains to concerns that the enclosure method of determining running loss emissions may not be technically feasible due to safety considerations. These concerns are addressed in the Staff Report on pages 17 and 18. As discussed in the Staff Report, staff requested safety inspections from the California Occupational Safety and Hazard Consultant Services and the State Fire Marshal. Both inspections confirmed that the facility would be safe to use with a robot driver or with additional safety precautions for use with a human driver. We understand that, subsequent to these comments, the AAMA Evaporative Emissions Panel determined that the running loss enclosure is acceptable, and that using a robot driver for the test would afford significantly lower costs and lack of risk to personnel compared to the use of a human driver.

Comments Received During the 15-Day Comment Period

10. Comment: Because the changes identified in the "Notice of Public Availability of Modified Text" are needed to certify Ford's 1995 model motor vehicles, it is critical that the amendments be adopted in a timely manner. Ford respectfully requests an expedited review by OAL. Ford is relying on several of the amendments to certify two engine families for the 1995 model year. If these families are not certified to the enhanced evaporative procedures, Ford cannot comply with the 10 percent phase-in requirement. We understand that because the amendments identified in the 15-day notice are not expected to become effective for several months, ARB intends to issue an Executive Order for the affected engine families which is

conditional upon the amendments becoming effective by a fixed date. By finalizing the regulations in a timely fashion, unnecessary expenditures by both the ARB and Ford would be avoided. (Ford)

Agency Response: We recognize Ford's concern that the process be expedited and the amendments be finalized. The ARB has issued Executive Orders for the engine families in question, conditioned on the amendments becoming effective by January 31, 1995. In light of this, we are not formally requesting that OAL take expedited action, but we are requesting that the amendments be effective immediately upon filing with the Secretary of State.

11. Comment: The Ford comments recommending revisions to the proposed amendments prior to final adoption pertain primarily to corrections/oversights and do not alter the regulatory requirements substantially. For this reason, Ford believes that the suggested changes should not trigger a new 15-day review/comment period. Because finalization of these amendments is critical to the 1995 model-year certification, we request that ARB hold the comments for future consideration if the ARB does not agree with Ford's assessment that the changes are non-substantial. (Ford)

Agency Response: We concur with Ford's comments on the mislabeling of the diagram for the cold soak and canister loading in Figures 4 and 5, the canister loading via repeated heat builds, and the emission calculations. As discussed in the responses below, we have made the requested revisions on the first two of these items, since the revisions are nonsubstantial. However, we have concluded that implementation of the emission calculations comment would require a second 15-day notice. Accordingly, as requested, we are not making the modification on this item at the present time.

12. Comment: In the modified text of the Test Procedures, a new paragraph was added in Section 4.e.(e)(2)(v) describing the calibration procedure for a hot soak enclosure. The procedure allows the hot soak calibration to be conducted in accordance with the diurnal procedure specified in paragraph (e)(1), but with a 4-hour retention check at 105°F. The four-hour retention check is unnecessary because the diurnal enclosure already specifies a 24-hour retention check with temperature cycling. This is a worst-case procedure and an additional 4-hour retention check should not be required. (Ford)

Agency Response: The modified Test Procedures text requires the hot soak enclosure calibration to be conducted at 105°F for four hours. The diurnal enclosure calibration consists of a 24-hour cycle with temperatures ranging from 65°F to 105°F; the enclosure ambient temperature must be maintained at 105°F for only one hour during the 24-hour cycle. During high temperatures, the potential for leakage of hydrocarbons from the enclosure is greatly increased. Therefore, the four-hour hot soak enclosure calibration of 105°F is worst-case and has been retained.

13. Comment: In the flow diagrams for the two-day diurnal sequence (Figures 4 and 5), the box labelled "Cold Soak Parking Canister Purge & Load" is mislabeled. The two-day diurnal sequence does not specify a purge of the vehicle canister during preconditioning. The word "purge" should be omitted. (Ford)

Agency Response: We concur with this comment. The flow diagram was mislabeled to include a purge of the canister in the two-day diurnal sequence. The word "purge" has been deleted in the sequence in order to conform the diagram to the amended Test Procedure text. This modification does not affect any substantive requirement in the Test Procedures.

14. Comment: With the Board-approved amendments, ARB now will allow the use of a fixed volume enclosure for diurnal testing, as do the U.S.EPA test procedures. Along with the allowance of a fixed volume enclosure, ARB modified its equations in calculating hydrocarbon (HC) mass and has matched the U.S.EPA calculations. Ford agrees that for a fixed volume enclosure, the calculations in the modified text are appropriate because enclosure volume remains constant. However, for a variable volume enclosure, the original equations are more appropriate because volume of the enclosure does not remain constant due to barometric pressure changes.

With a variable volume enclosure, the Standard Temperature and Pressure (STP) volume is constant due to the fact that the trapped atmospheric mass cannot change during the test. For a variable volume enclosure, the STP volume at the beginning is the same as the volume at the end, and there is no mass of HC in or out of the enclosure as specified in the modified equations.

U.S. EPA is in the process of adopting technical amendments for its enhanced evaporative emissions procedure. Ford will request that U.S.EPA adopt the "old" ARB calculation method for variable volume enclosures. To avoid differences in federal and California test procedures, Ford recommends that the ARB add language to section 4.k. of the Test Procedures allowing the use of the U.S.EPA calculation for HC mass. (Ford)

Agency Response: The modified emission calculations made available with the 15-day notice are consistent with the current federal calculation method for evaporative emission determination. The originally proposed equations for emission calculations are simplified versions of the modified equations. The modifications to the equations allow for variations in the temperature and the pressure during emission measurements before and after the test.

Regardless of whether the enclosure is variable volume or fixed volume, there may still be variations in the temperature and pressure during the measurements due to the enclosure ambient temperature tolerances allowed. In accordance with the Ideal Gas Law, these variations in the temperature and pressure would also result in variations in the volume. In the modified equations, however, the volume is assumed to remain constant, partly because hydrocarbon sampling is conducted at a consistent temperature and because volume is difficult

to measure during testing. Thus, the modified equations which allow for pressure and temperature variations but not for volume changes would not result in the most accurate quantification. Although the impact on emissions measurements should be relatively insignificant, Ford correctly asserts that this inconsistency should be corrected. Specifically, Ford recommends that since volume changes during testing are difficult to obtain, the modified equations should not only exclude variations in volume but also exclude variations in temperature and pressure.

The changes to the Test Procedures requested by Ford would necessitate a second 15-day notice. Ford has specifically asked that the ARB not incorporate any of Ford's proposed modifications at this time if we conclude the modification would require a second 15-day notice. Accordingly, we are not including this modification, but will consider it at a future rulemaking.

We note that the variables for hydrocarbons in and out of the enclosure were included for the fixed volume calculations and would be zero for variable volume enclosure calculations since there is no in or out flow of a variable volume enclosure.

15. Comment: In the canister loading procedure via repeated heat builds, the amendments provide that the fuel can be dispensed at 60°F ± 12°F, but the heat build is to start at 65°F within one hour. The proposed modifications allow the fuel to be artificially heated to 65°F, but do not allow for cooling of the fuel to 65°F if dispensed at a higher temperature (66-72°F). The language needs to be modified to allow the fuel to be cooled as well. (Ford)

Agency Response: We concur with this comment. The Test Procedures have been modified to explicitly include cooling of the fuel in the canister loading for the two-day diurnal sequence. This modification is a clarification which does not affect any requirement in the Test Procedures.