State of California
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER THE ADOPTION OF EMISSION STANDARDS AND TEST PROCEDURES FOR NEW 2003 AND LATER SPARK-IGNITION INBOARD AND STERNDRIVE MARINE ENGINES

Public Hearing Date: July 26, 2001
Agenda Item No.: 01-6-2

I. GENERAL

Introduction and Background

The Staff Report: Initial Statement of Reasons for Rulemaking ("staff report"), entitled "Public Hearing to Consider Adoption of Emission Standards and Test Procedures for New 2003 and Later Spark-Ignition Inboard and Sterndrive Marine Engines", released June 8, 2001, is incorporated by reference herein.

Following a public hearing on July 26, 2001, the Air Resources Board (the Board or ARB) by Resolution 01-23 adopted provisions for emission standards, certification, environmental/consumer labeling, and other related requirements to the California regulation governing spark-ignition inboard and sterndrive engines. Resolution 01-23 is incorporated by reference herein. The Board adopted the regulatory language as proposed, with some minor modifications that included modifications to the emission standards for 2003 model year and later inboard and sterndrive engines and to the phase-in schedule for the catalyst-based emission standards, which begins with the 2007 model year. Other modifications included making some of the on-board diagnostic features contingent on Executive Officer findings of necessity, specifying the responsibility for environmental/consumer label placement, and other non-substantive clarifying corrections to the regulation.

This regulatory action made 2003 and later inboard and sterndrive engines subject to the provisions found in Title 13 of the California Code of Regulations (CCR), Sections 2440-2446. With 2009 and later inboard and sterndrive engines, the in-use compliance testing and recall provisions found in CCR Sections 2111-2140 and 2147 shall also apply.

The non-catalyst based emission standard for 2003-2008 model year inboard and sterndrive engines was raised from 15 to 16 grams per kilowatt-hour (g/kW-hr) of hydrocarbons plus oxides of nitrogen ($HC+NO_x$). This change better characterizes emissions from current production and achieves the intent of

"capping" the exhaust emissions. To offset possible increases to the emissions inventory because of this change, the phase-in rates for engines complying with the catalyst-based standards (5 g/kW-hr HC+NO_x) were modified to provide greater benefits sooner. For model years 2007-2009, the original 10%-50%-100% implementation schedule was adjusted forward to 45%-75%-100% of the manufacturer's annual sales.

The requirements for the on-board diagnostic systems were revised to provide manufacturers more flexibility with respect to component monitoring strategies and fault code/communication formatting, while still maintaining the desired effectiveness. The misfire monitoring requirement is subject to Executive Officer approval and shall be based on the need to protect the catalyst.

The regulation also was revised to limit the engine manufacturer's responsibility for engine and environmental labels on watercraft. Due to concerns of maintaining engine label visibility, the engine manufacturers may attach engine and environmental labels to engine parts that are potentially (but not necessarily likely) removable by the ultimate purchaser. The engine manufacturers also shall supply all the required labels to the watercraft/original equipment manufacturers (*i.e.*, boat builders) along with appropriate instructions. The boat builders will be responsible for attaching the appropriate labels on the hulls of their watercraft.

Incorporation by Reference of Test Procedures

Besides the documents incorporated by reference above, the regulation also incorporates by reference the "California Exhaust Emission Standards and Test Procedures for 2001 Model Year and Later Spark-Ignition Marine Engines." The longstanding ARB administrative practice has been to have the test procedures incorporated by reference rather than printed in the CCR because these procedures are highly technical and complex. They include the "nuts and bolts" engineering protocols required for certification of inboard and sterndrive marine engines and have a very limited audience. Because the ARB has never printed complete test procedures in the CCR, the affected public is accustomed to the incorporation format utilized therein. 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 CCR. Printing portions of the ARB's test procedures that are incorporated by reference would be unnecessarily confusing to the affected public. Copies of these incorporated documents are available through the Internet at:

http://www.arb.ca.gov/regact/marine01/marine01.htm

For those without Internet access or those who require a hardcopy version, written requests for these documents can be directed to:

California Air Resources Board
Off-Road Controls Section
(Attention: Maggie Dawson)
9528 Telstar Avenue
El Monte, CA 91731

Economic and Fiscal Impacts

The Board has determined that the proposed regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other nondiscretionary costs or savings to local agencies. However, ARB may incur additional implementation or enforcement costs at some future time.

The Board has made an initial determination that adoption of the proposed regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states. With the implementation of catalyst-based emission standards and on-board diagnostic controls, inboard and sterndrive engine manufacturers will be affected directly. There are about ten inboard and sterndrive engine manufacturers making engines for boats sold in California, three of which comprise over 90 percent of all sales. Although none of these manufacturers are located in California, some have small operations within the state.

Any increased costs are likely to be passed on by the engine manufacturers to the consumer. ARB staff estimates this cost to be $750 to $1,200 per boat. The average inboard motor boat now sells for about $28,000. Being a discretionary product, the demand for inboard and sterndrive boats is based on factors other than cost. Also, these new vessels will most likely be more fuel-efficient and environmentally benign; thus, making them more desirable to consumers.

The Board has determined that there will be no, or an insignificant cost impact on representative private persons or businesses resulting from the proposed action.

The Board has initially assessed that the proposed regulatory action will not affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within California, or the

expansion of businesses currently doing business within California. An assessment of the economic impacts of the proposed regulatory action can be found in the staff report.

Consideration of Alternatives

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.

Post-hearing Activity

At the conclusion of the hearing, the Board approved the originally proposed regulation with the modifications described. In accordance with section 11346.8 of the Government Code, the Board, in Resolution 01-23, directed the Executive Officer to make the text of the modified regulatory text available to the public for a supplemental written comment period of 15 days. The Executive Officer was 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 regulation to the Board for further consideration if warranted in light of the comments.

The text of the Board-approved modifications with the modified text clearly indicated, was made available for a supplemental 15-day comment period in a "Notice of Public Availability of Modified Text," issued January 3, 2002.

II. SUMMARY OF COMMENTS AND AGENCY RESPONSE

At the July 26, 2001 hearing, oral testimony was received from representatives from the National Marine Manufacturers' Association (NMMA), the Manufacturers of Emission Controls Association (MECA), the U.S. Coast Guard, and the Bluewater Network. Of the entities providing oral testimony, three submitted written comments as well. Additional written comments were received by the hearing date from private citizens Eric Fahey and Trish Osborne, Mercury Marine, Ford Power Products, and the California Technology, Trade and Commerce Agency.

Set forth below is a summary of each objection or recommendation made regarding the specific regulatory actions proposed, together with an explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change.

A. Harmonization with the United States Environmental Protection Agency (U.S. EPA)

1. **Comment:** We strongly urge ARB and U.S. EPA to work together jointly to develop one set of standards for the whole country. Having California-only and 49-state standards would be costly, and have no or little air quality benefit to justify the expense. The compliance costs would be spread over fewer engines, thus the per-engine impact on the customer will be high. (Ford Power Products)

Agency Response: U.S. EPA and ARB have been cooperating in this effort by means of feasibility testing, researching the available technologies, determining the industry's ability to incorporate emission control technology, and negotiating with the industry. We expect the ultimate standards that U.S. EPA will set nationally will be the same as the 2007 standards adopted by the Board.

B. The 2003 Model Year Standards

2. **Comment:** The engine manufacturers claim that the proposed cap level of 15 g/kW-hr $HC+NO_x$ is too low, that it will result in labor and expenses to recalibrate, and that it will result in higher HC and CO emissions and higher fuel consumption as compared to lean calibrations. (NMMA)

Agency Response: Staff set the proposed level (15 g/kW-hr $HC+NO_x$) at the historical rich calibration test level. Recently, in response to the proposed European standards, some manufacturers have leaned the air-fuel mixtures on their U.S. engine sales in order to offer a "one calibration fits all" approach. The lean European calibration results in lower HC and CO emissions, but at the expense of higher NO_x emissions such that the NO_x increases outweigh the HC

reductions. Also other manufacturers claim that our historical composite value of 15 g/kW-hr is mistakenly low, that current calibrations result in 16 g/kW-hr or 17 g/kW-hr HC+NO_x in order to run smoothly.

Staff proposed in the 15-day changes to raise the 2003 standard to 16 g/kW-hr for HC+NO_x while accelerating the phase-in schedule for the 2007 catalyst-based standards to offset any loss.

C. Catalyst based standards

3. **Comment:** The engine manufacturers ask that there be explicit relief from the requirements in the regulations for installing catalysts in case the cooperative testing and development program does not show progress by the 2003 Technology Review time. (NMMA)

Agency Response: The proposed 2007 standards envision the use of three-way catalysts and closed-loop electronic air-fuel control on boat engines. Staff recognizes that some development and adaptation work will have to be done to successfully transfer this technology from automobiles to boats. The ARB and U.S. EPA have cooperated with NMMA in demonstrating and evaluating catalyst/feedback control on boat engines in the laboratory. To address concerns about possible catalyst damage in the marine environment, boat testing was also conducted (on water) to analyze the causes of water ingestion. Staff is planning and organizing a cooperative in-boat demonstration and durability study to evaluate the manufacturers' concerns about catalyst reliability and safety. The results should be available by the first Technology Review for inboard and sterndrive gasoline engines, scheduled for 2003.

Staff believes that the two development efforts to date have been successful in solving previously unsolved problems, and that the future efforts will be similarly successful. Staff does not agree that specific regulatory language be added in the regulations to void or delay the standards automatically based on poor progress in these test efforts. Staff believes that sufficient care or flexibility is afforded by providing the test program to the industry, and by scheduling the Technology Reviews. Upon presentation of the results of boat testing, the Board may consider and direct staff to modify the regulations appropriately.

4. **Comment:** Ford does not support the slow phase-in of catalyst engines in 2007 and 2008. Ford suggests 100% of engines be required to comply in 2008. There will be little incentive for Ford to introduce complying engines earlier than the required schedule because of the price differential for its cleaner products. (Ford Power Products)

Agency Response: Although the early introduction of catalyst-equipped engines would certainly generate additional air quality benefits, certain

manufacturers would be unable to convert all their production engines in a single model year. The phase-in will provide the flexibility necessary for manufacturers to comply. The phase-in will also provide flexibility to boat builders who may need to modify the engine compartments of their boats to accommodate catalyst-equipped engines. However, an "incentive" for early catalyst introduction may be considered during the Technology Review in 2003.

5. **Comment:** We support the proposed regulation. Closed loop, three-way catalyst control is a well-proved technology. The special challenges of adapting this technology to engines in boats can be addressed by properly designed and engineered systems. We strongly support the consumer and environmental label requirements. We look forward to participating in the development effort for this technology. (MECA)

Agency Response: Staff appreciates MECA's support and acknowledges their contributions to the testing to date.

6. **Comment:** We reiterate our concern with excessive heat build-up in the engine compartments of boats due to the presence of catalysts. (U.S. Coast Guard)

Agency Response: In a laboratory setting, ARB has undertaken the effort to test and prove the feasibility and safeness of catalysts on boat engines. The catalysts were surrounded by water jackets. ARB performed an extensive set of "cooldown" experiments, with and without cooling water being present, to quantify the worst-case heat buildup. With water flowing there were no exceedances of the American Boat and Yacht Council's "touch" criterion of 200°F. Without water or natural convection we noticed that an engine in an engine compartment, with or without catalysts, rises in temperature within the first ten to fifteen minutes then cools off in a matter of hours.

ARB staff believes catalysts do not pose a danger, and that the water jacketing strategy will adequately protect against overheating, as it does with other components on a vessel. The in-boat testing, in which the U.S. Coast Guard is a participant, will also provide additional assurances.

D. On-board Diagnostics

7. **Comment:** The development of catalyst systems for boat engines will be a major undertaking for our industry, straining resources. The development or adaptation of an on-board diagnostics system for these catalysts promises to be an equally herculean task. We ask that these requirements be scaled back and postponed. (NMMA)

Agency Response: The on-board diagnostics (OBD) requirements were included in order to assure long-term efficacy of the catalysts, oxygen sensors, and air-fuel control systems for these engines in marine usage. The proposed equipment and software requirements were based on the minimum necessary to ensure safety and durability of components. The requirements are similar to but highly reduced from automotive practice. Additionally, lead-time was provided: the requirements were not to have been implemented until 2007, and were expected to be available off-the-shelf. In addition, technology reviews were scheduled before the Board in 2003 and 2005 to evaluate progress prior to implementation of the rule.

As a result of NMMA's comments, staff modified the proposal to make the provisions of OBD less complex overall, and to make misfire monitoring contingent on a finding of necessity or appropriateness by the Executive Officer. The agency is embarking on a joint research effort to develop and prove the safety and reliability of catalyst systems in boats. By the 2003 and 2005 Technology Reviews, staff expects that the technology will be well proved and developed.

8. **Comment:** The Board should consider excluding the requirement for installation of OBD from the regulation. Staff has not made the case for its necessity. No such systems exist for boats. All the performance projections are made from automobile experience. The proposed system only notifies of malfunction, there is no requirement to correct the malfunction, thus, it is doubtful that any emissions benefit will accrue. This system is the major contributor to the incremental per-engine cost due to this rule, and it is likely that these costs are underestimated in that they do not account for the high rate of replacement needed for the marine environment. Canceling or even delaying the requirements for the OBD system would be a reasonable, less burdensome alternative. (California Technology, Trade and Commerce Agency)

Agency Response: The requirement for OBD systems on inboard and sterndrive engines is a cost-effective method of ensuring that emission control system malfunctions are brought to the attention of vessel operators and repaired in a timely manner. Many emission-related malfunctions, including those of the catalyst system, might not significantly affect engine operability, and as a result, might not be readily apparent to the vessel operator without the aid of a diagnostic tool. The OBD system is intended to alert the vessel operator as soon as a malfunction is identified and to minimize the impact that the malfunction would otherwise have on emissions if left unattended. Furthermore, OBD systems will alert vessel operators when emission-related systems and components are no longer operating acceptably due to age and/or deterioration, and may possibly be used to identify an unsafe condition in the unlikely event that exhaust temperature becomes excessive.

At this time, the repair of malfunctions identified by the OBD system is not mandatory. However, it is highly likely that any malfunction identified by the OBD system during the warranty period will be repaired. Boat owners are also likely to take advantage of the early detection of malfunctions beyond the warranty period to ensure their boats continue to remain reliable and safe.

As for the estimated cost of the OBD system for inboard boat engines: the estimated costs for this rule are, on a California-only sales basis, $288 for the catalyst and electronic feedback hardware, $183 for the OBD system, $480 for emission control system R&D, and $280 for manufacturer and dealer markup. Of these four items, OBD is the least costly. In addition the OBD estimate is based on the highly conservative charge of $50 per catalyst to split the catalyst into two sections. This charge is about 60% of the total OBD charge.

Staff modified the 15-day notice to significantly streamline the certification requirements for many of the OBD monitors to address concerns regarding the development and/or transference of OBD technology to a water environment. Also, misfire monitoring is now being proposed as a conditional requirement dependent on the necessity to protect the catalyst system. The provision to delay the requirement for malfunction indication for oxygen sensors, catalyst, and fuel-system malfunctions until the 2009 model year is intended to provide engine manufacturers with substantial lead-time for perfecting the required monitoring strategies. Although this might temporarily reduce the effectiveness of OBD systems in alerting vessel operators of these malfunctions, fault codes will still be stored in non-volatile computer memory should a malfunction occur. Engine manufacturers will be able to gain valuable experience during these exempted years by accessing these codes from field vessels and evaluating the effectiveness of catalyst and OBD designs without concern for false detections from overly aggressive calibrations. False detections have the potential to undermine consumer confidence in both the engine manufacturer and in the OBD system.

9. **Comment:** On the proposed OBD requirements, it is important for the Board and staff to realize that any marine OBD system will be substantially different from automotive OBD systems. Thus the marine industry with its limited resources will have to develop something new, which might have little similarity to already developed automotive systems. We suggest that, if the cooperative test program shows that misfire is a problem, that then and only then should the Executive Officer be empowered to require this monitoring. (NMMA)

Agency Response: Staff has incorporated these changes in the Notice of Modified Text (15-day notice).

E. Labeling

10. **Comment:** Engine manufacturers have little control over which state the boats are finally sold in. Consequently there should not be liability accruing to the manufacturers for application of the wrong consumer label (star-label) on the boat hull by the boat manufacturer or the boat dealer. (NMMA)

Agency Response: The Board generally agreed regarding the engine manufacturers' liability. Staff proposed in the 15-day changes that engine manufacturers apply engine and environmental labels directly to the engines. In addition, the engine manufacturers are required to supply labels for the boat hull and instructions to the boat manufacturers. Ultimately, the boat manufacturers are responsible to properly place the environmental label on the hull.

11. **Comment:** We want to make sure that consumer labels are placed on the hull of the boats as well as on the engine. We believe there is a groundswell of environmentally conscious boaters to whom this would be an enormous benefit and encouragement. (Bluewater Network)

Agency Response: The Board shared the commenter's emphasis on, and value of, providing the consumers with information about the relative emission-cleanliness of these engines. Industry's concern with this provision was that the engine makers had little control over the actions of the boat builders, who would apply the label to the hulls. Staff modified the regulation language in 15-day changes to split the absolute liability for labeling between the boat builders and the engine manufacturers. This would preserve the requirement for both an engine label and a hull "star" label, but allow the engine maker's liability to be limited to furnishing labels to the boat maker with instructions on placement. (See the response to comment 10).

12. **Comment:** "Hang-tag" Environmental Labels. The language in the outboard regulation for non-permanent consumer labels requires that the tags be visible only "at the time of sale." We are concerned that the information on the hang-tags, which is more comprehensive than on the "star" label, is not available to the consumer prior to sale, during the show-room floor display stage. (Bluewater Network).

Agency Response: The intent for this requirement, when approved by the Board in 1998 at the public hearing for outboard engines, was that the non-permanent hang-tags be visible to the consumer while shopping for a boat or engine. Staff believes it is ultimately to the boat-seller's and engine-seller's advantage to display this information to consumers as widely as possible on their showroom floor, to advertise that they are offering a more valuable product. Staff proposed in the 15-day changes to clarify the "at time of sale" language to read "when offered for sale" for inboard and sterndrive engines.

13. **Comment:** On the issue of liability for placing star labels on boat hulls, we will accept staff's proposed changes to allow engine manufacturers to supply labels and instructions to the boat makers, and for the engine manufacturers to place the engine labels on a removable but visible location on the engine, and for the star labels to be placed on the engine as well as the hull. (NMMA)

Agency Response: Staff has incorporated these changes in the 15-day notice.

14. **Comment:** We ask the Board to continue requiring "star labels" visible on the hulls of these boats (Bluewater Network)

Agency Response: This will continue to be the case. (See the response to comment 11 above.)

15. **Comment:** We ask that the Board clarify that non-permanent consumer "hang-tags" be visible to the consumer on the show-room floor before sale as well as at the point of sale. (Bluewater Network)

Agency Response: The proposed 15-day modified language clarifies this. (See the response to comment 12 above.)

F. Emission System Warranty

16. **Comment:** §2445.1(c)(1), (2), and (3), defects warranty requirements. The proposed language specifies a 2-year warranty period for 2003-2008 model engines and a 3-year period for 2009 and later model engines. We suggest 2 years or 110 hours whichever comes first for 2003-2008, and 3 years or 165 hours whichever comes first for 2009 and later. This is based on our California usage survey, which indicated about 55 hours per year average usage and is in agreement (within error bars) with ARB's Systems Applications International mail survey of 1993. We would like to also specify our warranty period in terms of hours, as allowed for outboards and personal watercraft in (g)(2)(A) and (g)(2)(B). Our engine control modules (ECMs) accumulate operating hours: we would like them to be able to qualify in (g)(2)(B). In §2445.2 we would like to add "or a certain number of hours" to the warranty statement language. (Mercury Marine)

Agency Response: On the warranty periods for emission-related parts, the Agency is opposed to considering hours of use. There is still some question about how many hours a boat is used each year. We note that the industry warranties (except for racing engines) are given in terms of years, not hours. Moreover, not all boats have hour-meters to verify age.

17. **Comment:** §2445.1(g)(1), (g)(2)(A), (g)(2)(B), and (g)(2)(C), exclusions from warranty coverage. We would like to exclude parts incorrectly installed by the boat builder in the exclusion language in (g)(1). We would suggest adding language about the boat builder's responsibility. (Mercury Marine)

Agency Response: On the issue of warranty exclusion for damage or improper work by the boat builders (third parties to the warranty arrangement) staff suggests that the engine manufacturers work out a contractual arrangement for these claims. We believe agreements like this are in force at present. This is analogous to the present-day situation in which a boat builder installs an engine and blocks a cooling line or inadvertently drills a hole in the oil pan, etc.

18. **Comment:** Similarly, engine manufacturers should not be responsible for emission parts warranty claims caused by the boat manufacturer. (NMMA)

Agency Response: On the issue of warranty claims, staff does not agree that the engine manufacturers be relieved of liability for engine or emission parts. Staff considers that the relationship between engine maker and original equipment manufacturers have been well defined and differentiated in the small-off-road engine and off-road diesel engine areas, and that contractual means between the boat makers and engine makers exists today to cover this situation.

G. In-Use Compliance Testing

19. **Comment:** §2444.1(a), applicability of in-use testing requirements. The proposed language, a holdover from the outboard regulation, subjects all certified engines to the manufacturer-funded in-use testing program. The second sentence of the applicability subsection does not adequately separate sterndrives and inboards from this requirement. §2444.1(b)(2), (b)(2)(A), and (b)(2)(B) have requirements for in-use testing at the manufacturer's expense. We understood that inboards and sterndrives would be exempt from this. §2444.1(b)(3)(F) requires the manufacturer to procure a fleet for in-use testing. We understood that inboards and sterndrives would be exempt from this requirement. (Mercury Marine)

Agency Response: It is the Agency's intent that manufacturers of inboards and sterndrives not be subject to the in-use testing program required of outboards and personal watercraft. In the 15-day notice, the Agency clarified that the section only applies to outboards and personal watercraft, and that inboards and sterndrives are subject to the ARB-led in-use testing program of §2139 and 2140.

H. Selective Enforcement Audit (SEA) Testing

20. **Comment:** §2446(a), applicability of production-line testing and selective enforcement audit requirements. The proposed language subjects all certified engines to production-line testing. The third sentence of the applicability subsection does not adequately separate inboards and sterndrives from this requirement. §2446(d)(3)(A) mentions a production-line test requirement for inboards and sterndrives. We thought we were exempt from this. §2446(d)(3)(B), (C), and (D) mention quarterly reporting. We thought we were exempt from this. (Mercury Marine)

Agency Response: It is staff's intent that inboard and sterndrive manufacturers not be subject to production-line testing and quarterly reporting that is required of outboard and personal watercraft manufacturers in §2446(b) or (c). It is staff's intent that inboard and sterndrive manufacturers only be subject to the sampling and testing procedures in §2446(d) and (e) for selective enforcement audits. The inboard and sterndrive manufacturers, like the outboard manufacturers, are subject to the requirements of §2446(d) and (e), which deal with the actual testing and the remedies in case of test failure.

Staff modified in the 15-day change package the applicability section, §2446(a), to make it clear that all of §2446 applies to outboards and personal watercraft, and only §2446(d) and (e) (with regards to SEA) apply to inboards and sterndrives.

21. **Comment:** In §2446(d)(4), Notification of failure of tests. Is the equipment manufacturer to be notified by the boat builder or the engine manufacturer? (Mercury Marine)

Agency Response: Regarding subsection (d)(4), this notification is triggered by test failure. The engine manufacturer for whom the Executive Order of the failed engine was issued is the entity that shall be notified by ARB, because permission to sell the engine in California would be in jeopardy. The engine manufacturer would be responsible for notifying boat builders and other entities that sell their product.

22. **Comment:** In §2446(d)(5)(E) does the reference to paragraph (d)(1) pull inboards and sterndrives into this requirement? In §2446(e)(5)(B) you make two other citations, §2446(b)(3)(D) and §2446(c)(2)(A)(iv). Wouldn't it be easier just to write that information in the sentence instead of making us look at those? (Mercury Marine)

Agency Response: Regarding the reference to subsection (d)(1) in Subsection (d)(5)(E), on suspension or revocation of Executive Orders, staff believes it is meant to refer to the production-line testing effort in general. The tie to inboards and sterndrives is explicit in (a), applicability of SEA to inboards and sterndrives,

and (e)(5)(B), the definition of failure, triggering notification or suspension of Executive Orders. The commenter is correct, however, in that Subsection (e)(5)(B) needs to have this explicit tie, so staff proposed as part of the 15-day notice to add in "or whose test results for a regulated pollutant exceed the emission standards" to the list of qualifications for failure.

23. **Comment:** The terms "subsection (b)" and "paragraph (b)" are used interchangeably in this section. It's confusing. (Mercury Marine)

Agency Response: The inconsistency of referring both to subsection (b) and paragraph (b) is well taken. The references have all been changed to "subsection (b)."

24. **Comment:** Is §2446(d)(5) regarding suspension of Executive Orders triggered only by failing a production-line test or can it be triggered by a failure during a selective enforcement audit? (Mercury Marine)

Agency Response: Regarding the triggers for remedial action on the part of ARB, any test failures will trigger the notifications and actions of subsections (d)(4) and (d)(5).

I. Sales Reporting

25. **Comment:** §2442(b)(3), Requirement for sales reporting to ARB for purposes of sales-weighted averaging. The proposed language would require California sales data to be reported each year. We currently do not have the ability to determine which of our products ends up in boats sold in California. Could we report our national sales multiplied by a California-specific fraction? (Mercury Marine)

Agency Response: Staff revised §2442(b)(3) to allow reporting of total or national production rather than California-specific production. The agency will apply a fraction, provided by the engine manufacturer, to this number to get the California share.

26. **Comment:** We would also suggest that the registering agencies document engine serials as part of the registration database. (Mercury Marine)

Agency Response: The agency may consider the suggestion during the Technology Review in 2003.

J. Definitions and Exemptions

27. **Comment:** §2440(a)(3), Applicability, and in §2441(a)(48) Definitions. We suggest you add the descriptions to the competition exemption which are mentioned in the staff report of "exhibiting features which make non-competition use unlikely, such as superchargers, frequent maintenance intervals and the absence of reverse gear." (Mercury Marine)

Agency Response: §2440(a)(3) reads that engines in boats used solely for competition are exempt from the proposed regulation. The definition used in the proposed regulations was largely from the U.S. EPA marine diesel regulation (40 CFR Part 94) and the preamble to the final rulemaking (64 FR 73304). In the preamble U.S. EPA explained that they wanted to limit the exemption only to those boats that are used by a racer for his/her livelihood, thus emission controls would interfere or impede with that endeavor. They mentioned in the preamble two criteria for the competition exemption: 1) possessing the features and characteristics of a racing boat; and, 2) being registered with a sanctioned racing event or association. The first criterion is rather subjective. The second is quite restrictive. We presume that the boats registered with the racing organization as competitive entries will have all the unique racing equipment; thus, ARB will rely on the second criterion, registration with sanctioned event or organization, as its primary identifier for boats qualifying for the exemption.

In the staff's proposed regulations, the applicability section §2440(a)(3) contained language for the engine manufacturers exempting "engines produced specifically for competition." This was modified in the 15-day notice to "engines produced to be used solely for competition." Definition §2441(a)(48) then describes "used solely for competition" as having all the equipment inherent to racing. The last sentence in the applicability section clarifies that the exemption only extends to boats that are registered with the racing organizations. It will be incumbent on the engine manufacturers to ensure that competition engines sold to boat builders are installed in those boats that are manufactured for use only in sanctioned racing events.

28. **Comment:** §2441(a)(49), Definition of useful life. The proposed language says "16 years for inboard and sterndrive engines." We think this should refer to the boat's life, not the engine's. (Mercury Marine)

Agency Response: Regarding the definition of useful life, the agency considers this moot. The regulations apply to the emissions from the engine, not from the boat. It is, therefore, the engine's life that is the basis in determining the useful life, not the boat's.

29. **Comment:** §2441(a)(50), Definition of warm-up cycle. The proposed language would define a warm-up cycle, for purposes of OBD, as having to reach 160°F engine jacket temperature. We know that some of our products are sold

with a 140°F thermostat, thus would never reach the condition in the definition. (Mercury Marine)

Agency Response: Regarding the definition of "warm-up cycle" we have incorporated the suggestion. The former definition §2441(a)(50) was renumbered §2441(a)(28) "marine warm-up cycle" with the upper temperature definition of 140°F.

K. Carbon Monoxide Standards

30. **Comment:** We are concerned about carbon monoxide (CO) emissions. We urge the Board to adopt CO capping standards beginning in 2007 with the introduction of catalyst-controlled engines. We urge the Board to research and develop the proper achievable levels during the cooperative test program prior to the 2003 Technology Review. (Bluewater Network).

Agency Response: The U.S. EPA and ARB did not set CO standards in the outboard rulemaking. The focus was on ozone control during the peak usage months of summer; thus, HC and NO_x were the pollutants of concern. During summer, CO levels are not problematic for air quality compliance. Moreover, great CO reductions will occur as the 2007 standards are implemented. On the basis of laboratory testing with catalysts, we noticed approximately 50% reduction from uncontrolled levels.

The Board directed staff to review data from the cooperative test program and report in the 2003 technology review whether CO standards would be necessary and what would be appropriate levels.

31. **Comment:** We reiterate our concern with exhaust CO leakage concerns due to having to frequently make and break exhaust component connections. (U.S. Coast Guard).

Agency Response: The Coast Guard has noted in the past that CO leakage into enclosed spaces in boats has been a frequent cause of injury or death, thus is in general concerned about new components in exhaust lines which might leak. ARB has countered that the components and catalysts tested in our lab and boat testing have used the same type of joints as present practice, and that no leaks beyond a few liquid water leaks have been noted. The ARB counters that CO concentrations will be greatly reduced due to the use of catalysts beginning in 2007.

32. **Comment:** We ask that the Board consider or research Carbon Monoxide standards for these boats for the 2003 Technology Review. (Bluewater Network)

Agency Response: The staff will quantify CO emission reductions during the cooperative testing. Staff will report on this at the 2003 Technology Review.

L. Requirements for pre-2003 Models

33. **Comment:** Would this regulation affect boats sold before 2003? Would pre-2003 boats have to be emission tested to be registered or used? What would be the required emission standards for the old, pre-2003 boats? These old boats were built for performance and were probably not emissions-efficient or optimized. We do not agree with the requirement for boat testing. (Eric Fahey and Trish Osborne)

Agency Response: The proposed inboard and sterndrive boat emission regulations, like the outboard regulations before them, only affect sales of new boats or engines. The manufacturers are responsible for conducting emission tests and certifying the performance of their engines before the engines are installed into a boat or transported to a dealer for sale. There are no requirements for boat owners to conduct such activities, whether they own pre- or post-2003 model year boats.

III. MODIFICATIONS TO THE ORIGINAL PROPOSAL – NOTICE OF MODIFIED TEXT

At the hearing, the Board approved the amended sections 2440 through 2446, Title 13, CCR, the incorporated test procedures, and some conforming amendments to sections 2111, 2112, Appendix A to Article 2.1, and 2139. The following is a description of the modifications included in the 15-day notice, by section number. Additional background and justification for these modifications are provided in the respective sections discussed in Part II, above.

REGULATIONS--In-use Vehicles, Voluntary and Influenced Recalls

§2111 Applicability

Subsection (a)(4) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

§2112 Definitions

Subsection (l)(23) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

Appendix A to Article 2.1

The opening paragraph of Appendix A and title of subsection I were modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

REGULATIONS—In-use Vehicle Enforcement Test Procedures

§2139 Testing

Subsection (h) was modified to say “inboard and sterndrive,” in conformance with the style of the regulation.

REGULATIONS—Spark-ignition Marine Engines

§2440 Applicability

Subsection (a)(3) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation, and to change the language “produced specifically for competition” to “to be used solely for competition,” for the exclusion of competition engines.

§2441 Definitions

Subsection (a)(5) “calculated load value” was struck in lieu of the modifications of the OBD requirements in §2444.2. The subsequent definitions were ordinally renumbered.

Subsection (a)(14) “engine manufacturer” was added to identify this entity. The subsequent definitions were ordinally renumbered.

Subsection (a)(24) “inboard engine” was modified to add the words “four-stroke,” which had been inadvertently struck in the original proposal.

Subsection (a)(28) “marine warm-up cycle” was added. This term was replaced the definition of “warm-up cycle.” The subsequent definitions were ordinally renumbered.

Subsection (a)(32) “nonconformity” or “noncompliance” was modified to read “for purposes of section 2444.1” instead of “for purposes of section 2444,” to distinguish it from the new section 2444.2.

Subsection (a)(41) “small-volume manufacturer” was struck.

Subsection (a)(43) “sterndrive engine” was modified to add the words “four-stroke,” which had been inadvertently struck in the original proposal.

Subsection (a)(49) “useful life” was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

Subsection (a)(50) “warm-up cycle” was struck. This definition was replaced by “marine warm-up cycle” in Subsection (a)(28). The subsequent definitions were ordinally renumbered.

§2442 Emission Standards

Subsection (b) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

In Table 2, the 2003 to 2008 emission standard was changed from 15 g/kW-hr to 16 g/kW-hr $HC+NO_x$. Note 2 was modified to specify the acceptable methods by which engine manufacturers could determine their California sales volume. Note 3 was changed to read “45%” of sales is to comply in 2007, rather than 10%. Note 4 was merged into Note 3 and was changed to read “75%” of sales is to comply in 2008, rather than 50%. Note 3 was also modified to specify the acceptable methods by which engine manufacturers could determine their California sales volume.

Table 3 (Emission Standards for Small-Volume Manufacturers) was struck in its entirety.

Subsection (b)(1) was changed to read “inboard and sterndrive,” in conformance with the style of the regulation.

Subsection (b)(3) was modified to read “manufacturer shall submit the total number of engines produced for sale in California” instead of “manufacturer shall submit California sales data.”

§2443.1 Emission Control Labels—Model Year 2001 and Later Spark-Ignition Marine Engines

Subsection (b)(1) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

Subsection (c)(1) was modified to read “that satisfy the requirements of Subsection (c)(2)(A) or (c)(2)(B), as applicable” instead of “that satisfy the requirements of Subsection (c)(2).” This allows differentiation between the requirements for outboards or personal watercraft (Subsection (A)) and inboards and sterndrives (Subsection (B)).

Subsection (c)(2)(A) was renamed from (c)(2), and the words “Personal Watercraft and Outboard Engines” were added to clarify that the existing language is only for personal watercraft and outboards.

Subsection (c)(2)(B) was added for inboards and sterndrives. It allows the engine label to be installed on a non-permanent part as long as it is visible, and requires a unique identification number for the label.

The title of subsection (d) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation. Subsection (d)(1) was modified to strike the words “e.g., block or crankcase” from the required engine label location for competition engines. Also the words “or watercraft assembly (as applicable)” were struck from the alternative label location.

Subsection (d)(2) was modified to strike the words “and must not be affixed to any engine (or watercraft, as applicable) part that is likely to be replaced during the engine’s (or watercraft’s, as applicable) useful life, or that is not integral to the engine’s operation” from the location of the required engine label for competition engines. The words “must not be affixed to any engine (or watercraft, as applicable) component that is easily detached from the engine” were struck and replaced with “must contain the unique identification number that has been assigned to the engine, pursuant to subsection (a) of this section” in the further description of the engine label location for competition engines.

The title of Subsection (g) “Supplemental Engine Label Content and Location”, the following words were added “for Personal Watercraft and Outboard Engines only.” This makes this language not applicable to inboards and sterndrives.

§2443.2 Consumer/Environmental Label Requirements.

Subsection (b)(1) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

Subsection (c)(2) was modified to reflect the distinct requirements for inboards and sterndrives. The words “sterndrive and inboard” were struck from the portion relevant to and outboards and personal watercraft. The following sentence was added: “For inboard and sterndrive engines, a label must be affixed to the engine and a label must also be affixed two or three inches to the right or left of the required location of the California Assigned Vessel Number displayed on the port side of the hull.” This allows for different requirements for inboards than for personal watercraft, and allows more flexibility in locating the star labels.

The title of subsection (c)(4) was revised to limit the existing requirements to outboards and personal watercraft.

A new Subsection (c)(5) and subparagraphs (A) and (B) were added to specify the label responsibilities for inboard and sterndrive engines. Subsection (c)(5)(A) assigns responsibility for engine labeling to the engine manufacturer. Subsection (c)(5)(B) assigns responsibility for boat hull labeling to the original equipment manufacturer (boat builder), although the engine manufacturer is responsible for providing the labels with appropriate instructions.

Subsection (h) on penalties for mislabeling was modified to strike the comma after the word “distribution.” Also, the words “or watercraft/original equipment manufacturer that was responsible for label placement” were added to include boat builders involved in inappropriate label application.

§2443.3 Environmental Label/Consumer Notification Requirements

Subsection (a) was modified to read “inboard and sterndrive,” in conformance with the style of the regulation.

Subsection (b) was modified to clarify the requirements for inboards and sterndrives. The most notable distinction is the language, “when offered for sale to consumers,” instead of “at time of sale.” The intent is to make sure that hang tags are in plain view for the consumer before a purchase has transacted.

§2444.1 In-use Compliance Testing and Recall Regulations—Model-year 2001 and Later Spark-ignition Marine Engines.

Subsection (a) (applicability) was modified to limit the section's applicability to personal watercraft and outboard engines only. A sentence was added at the end to clarify the CCR Sections for which inboards and sterndrives are subject.

§2444.2 On-board Engine Malfunction Detection System Requirements—Model-year 2007 and Later Spark-ignition Inboard and Sterndrive Marine Engines.

In the preamble to the section, the requirement that the OBD system at a minimum meet the automotive requirements of 13 CCR §1968 was struck. Language allowing equivalency determinations by the Executive Officer was added.

In subsection (a)(1) on general requirements, the descriptions of the various monitors to be included was added and the definition of comprehensive component was added.

Subsection (a)(2) was added *in toto*. It allows the Executive Officer to delay misfire monitoring requirements pending a determination from the cooperative in-boat testing program.

Subsection (a)(3) was added anew. It precludes from the requirements emission control malfunctions which prevent engine-start.

Newly renumbered subsection (a)(5) deals with the performance requirements for audible or visible malfunction alert devices. Subsection (a)(5)(A) on audible alert, is simplified regarding the self-test requirements, and the severe misfire signal language is struck. Subsection (a)(5)(B) on visible alert had the severe misfire signal language struck.

Newly renumbered subsection (a)(6) deals with the malfunction thresholds for the important emission control systems. The threshold is no longer tied to a certain emissions exceedance, and the thresholds are left to the manufacturer to set with Executive Officer review.

Newly renumbered subsection (a)(7) deals with the modes of operation under which diagnostics are run. The last six sentences of the paragraph were struck, making the requirement only to be "representative of typical in-use operation."

Newly renumbered subsection (a)(8) deals with the exemption of the phase-in years of 2007 and 2008. The new language leaves the requirements of audio/visual catalyst malfunction indication to be optional, but requires a system to record trouble codes.

Newly renumbered subsection (a)(9) deals with the use of statistical analysis to determine malfunctions. The language specifying the frequency of sampling for these methods was struck.

Newly renumbered subsection (a)(10) deals with the addition of new emission control strategies to the list of required systems to be monitored. The new language requires notification and plan submittal only, not prior approval by the Executive Officer.

Newly renumbered subsection (a)(11) deals with the conditions under which the diagnostic systems may be disabled. The new language changes the cold disablement temperature from 20°F to 40°F and the elevation disablement criterion from 8000 ft to 6500 ft..

Old subsection (a)(10) on positive crankcase ventilation and jacket-water thermostat monitoring was struck.

A new subsection (a)(13) was added dealing with compliance extensions by the Executive Officer.

Subsection (b) deals with the specific requirements of the various required monitors. Subsection (b)(1) is on catalyst monitoring. Subsection (b)(2) was on misfire monitoring, but was struck in its entirety. Newly renumbered subsection (b)(2) is on fuel-system (electronic air-fuel control) monitoring. Newly renumbered subsection (b)(3) is on oxygen sensor monitoring. Newly renumbered subsection (b)(4) is on comprehensive component monitoring. A new subsection (b)(5) was added on misfire monitoring.

Clause (b)(1)(A)(i) on purpose and scope of catalyst monitoring was modified to "ensure that catalyst performance is not compromised" rather than "ensure proper conversion of HC and NOx."

Clause (b)(1)(B)(i) on catalyst malfunction criteria was revised to reflect catalyst temperature criteria determined by the engine manufacturer. Clauses (b)(1)(B)(ii) and (iii) on alternative malfunction thresholds based on exhaust concentrations and externally heated catalysts were struck. A new clause (b)(1)(B)(ii) was added allowing oxygen storage monitoring as an alternative to temperature monitoring.

Subsection (b)(1)(C) on catalyst monitoring conditions was modified to allow the engine manufacturer to choose the conditions when monitoring occurs.

Subsection (b)(2) on misfire monitoring was struck *in toto*. A new subsection appears as (b)(5).

Newly renumbered subsection (b)(2) on fuel-system (air-fuel controller) monitoring was changed to strike clause (b)(2)(D)(iii) on notification and trouble code storage regarding the collateral data to be stored with the fuel-system fault code.

Newly renumbered subsection (b)(3) deals with oxygen sensor monitoring. Clause (b)(3)(A)(i) on purpose and scope was modified to be more specific to oxygen monitoring. Clause (A)(iv) on heated oxygen sensors was struck *in toto*. Subsection (b)(3)(B) on malfunction criteria was modified to delete references to exceeding standards as a criteria of malfunction, and language referring to the manufacturer's criteria was inserted. Clause (b)(3)(B)(ii) on heated oxygen sensors was struck. Clause (b)(3)(C)(i) on oxygen sensor monitoring conditions was rewritten to allow manufacturers to determine the proper operating limits. Subclauses a through d were struck and replaced with two (a and b), which provide guidelines for the manufacturer in defining the operating limits. Clause (b)(3)(C)(ii) was changed to apply only to primary oxygen sensors. Clauses (b)(3)(C)(iii) and (iv) on secondary oxygen sensors and heated oxygen sensors were struck. Subsection (b)(3)(E) on non-lambda oxygen sensors was struck in its entirety.

Newly renumbered subsection (b)(4) deals with comprehensive component monitoring. Subsection (b)(4)(A), purpose and scope, was modified to restrict the list of required components to be monitored to just those which are computer-sensed. Renumbered clause (b)(4)(A)(ii) was limited to just the components in the list, and not to any modules and solenoids sending input to the computer. Fuel injectors were added to the list. Renumbered clause (b)(4)(A)(iii) on coolant temperature sensor monitoring was modified to allow the manufacturers to disable the sensor if it would lead to false faults. Old clause (b)(4)(A)(ii) on output components was struck in its entirety. Subsection (b)(4)(B) on malfunction criteria was changed to read "lack of continuity or when manufacturer-specified out-of-range values occur." In clause (b)(4)(C)(ii) the language about output devices was struck. In Subsection (b)(4)(D) the conditions under which the audible/visible alarm is activated were simplified. Subsection (b)(4)(E) about any other monitors was struck in its entirety.

Newly renumbered subsection (b)(5) deals with misfire monitoring. It was moved and revised from subsection (b)(2) above. In Subsection (b)(5)(B), the malfunction criteria is based on the manufacturer-determined catalyst overheat temperature, not the exceedance of the emission standards. In clause (b)(5)(D)(i), storage of misfire fault codes, the language does not now require the audible or visible alert device to sound when the first incident of misfire is detected. The alert device must sound or activate on the next start-cycle and remain activated. The requirements for fault storage and alert activation on the second start cycle in old clause (b)(2)(D)(ii) were struck. The requirements for ancillary data storage with the fault code in old clause b(2)(D)(iii) were struck.

Subsection (c) deals with alert device protocol. Subsection (c)(1) was modified to remove the sentence requiring that the audible or visible alert device flash or beep intermittently on misfire detection. It is to remain activated continuously like all other faults.

Subsection (e) on readiness/function codes was struck entirely.

Subsection (f) on stored engine conditions was struck entirely.

Subsection (g) on certification documentation was renumbered (e). In newly renumbered subsection (e)(2), the system logic table contents, subparagraphs (G) (fault storage protocol) and (I) (rationality check criteria) were struck. Subsection (e)(5) on alert device details was struck from the certification documentation requirements. Subsection (e)(6) was struck on misfire severity data versus catalyst damage. Subsection (e)(7) on electrically heated catalyst heat up rate was struck. Subsection (e)(8) on deterioration/catalyst efficiency data was struck. Subsection (e)(9) regarding the detection criteria for reduced catalyst efficiency was struck. Subsection (e)(10) on a list of all inputs and outputs for the engine control module was struck.

Old subsection (i) regarding the format of fault codes and the layout of connectors for scan-tools was renumbered subsection (g) and reworded to allow industry and the ARB to develop marine-specific protocols instead of the automotive-based ones now required. Subsections (g)(1), (2), (3), and (4) which were listings of the automotive standards were struck.

Old subsection (j) on signal access port and function, including subsections (j)(1), (2), and (3) was struck.

Old subsection (k) on implementation schedule was renumbered subsection (h). In clause (h)(3)(A)(i) on deficiency fines, the language was relaxed to incur a fine on the third deficiency, not the second. In Subsection (h)(3)(B) the deficiency fine was reduced from $50 to $25, and the maximum fine per engine was lowered from $500 to $250.

§2446 2001 and Later Model-year Production-line Test Procedures and Selective Enforcement Auditing Regulations for Spark-ignition Marine Engines.

In subsection (a), applicability, language was added clarifying that the whole section applies to and outboard and personal watercraft engines, but that only subsections (d) and (e) are applicable to inboard and sterndrive engines. Subsection (e) is the selective enforcement audit procedures.

In subsection (d) on the test procedures applicable to all production-line and selective enforcement audit testing, changes were made to Subsection (d)(3)(A), regarding engine preparation. The words “or selective enforcement audit test”

were added to the prohibition on first-time test engine. In Subsection (d)(3)(B) it was made clear that the manufacturers' break-in period must be provided to the Executive Officer for either production-line testing or selective enforcement audit testing. In Subsection (d)(3)(C) the words "Engine manufacturers must report to the Executive Officer in the quarterly report for all production-line testing, or as required by the Executive Officer for selective enforcement audit testing," replaced "Engine manufacturers must report to the Executive Officer in the quarterly report," to clarify that quarterly reports are only required for inboards and sterndrives during a selective enforcement audit. Similar clarifying language was added to Subsection (d)(3)(D).

In subsections (d)(5)(A) and (e)(5)(B), the language "or whose test results for a regulated pollutant exceed the emission standards" was added to the criteria for defining a failed test result. Since inboards and sterndrives are excluded from subsections (b) and (c), this language, though the same as in (b)(3)(D) and (c)(2)(A)(iv), needed to be added for clarity.

TEST PROCEDURES – Spark-Ignition Marine Engines

In the Test Procedures for Spark-Ignition Marine Engines, subsection (3) under Section 1. General Applicability was modified to change the language "produced specifically for competition" to "to be used solely for competition," for the exclusion of competition engines.

In Section 9. Exhaust Emission Standards for 2001 and Later Spark-Ignition Marine Engines, subsection (b) was modified to read "inboard and sterndrive," in conformance with the style of the regulation. In Table 2, the 2003 to 2008 emission standard was changed from 15 g/kW-hr to 16 g/kW-hr $HC+NO_x$. Note 2 was modified to specify the acceptable methods by which engine manufacturers could determine their California sales volume. Note 3 was changed to read "45%" of sales is to comply in 2007, rather than 10%. Note 4 was merged into Note 3 and was changed to read "75%" of sales is to comply in 2008, rather than 50%. Note 3 was also modified to specify the acceptable methods by which engine manufacturers could determine their California sales volume.

Table 3 (Emission Standards for Small-Volume Manufacturers) was struck in its entirety.

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSE – FIRST NOTICE OF MODIFIED TEXT

The modified text was made available on January 3, 2002. The comment period ended January 18, 2002. Two comment letters were received by the Clerk of the Board; one from NMMA, the other from Mercury Marine. Both entities were wholly supportive of the modified regulations.