UPDATED INFORMATIVE DIGEST

AMENDMENTS TO THE CURRENT INBOARD AND STERNDRIVE BOAT REGULATIONS

Sections Affected: Amendment of title 13, California Code of Regulations (CCR), Division 3, Chapter 2, Article 2.1, sections 2111 and 2112; Chapter 9, Article 4.7, sections 2441, 2442, 2444.2, 2445.1, 2445.2 and 2446; and the incorporated "California Exhaust Emission Standards and Test Procedures for 2001 Model Year and Later Spark-Ignition Marine Engines."

Background: Health and Safety Code sections 43013 and 43018 direct the Air Resources Board (Board or ARB) to achieve the maximum feasible and cost effective emission reductions from all mobile source categories, including marine pleasurecraft engines, through the setting of emission control and other requirements.

On July 26, 2001, the Board amended the spark-ignition marine regulations (title 13, CCR, section 2440 et. seq.) to include inboard and sterndrive engines. Those amendments included the adoption of two sets of exhaust standards and the incorporation of on-board diagnostics for inboard and sterndrive engines. The first set of standards capped combined hydrocarbon and oxides of nitrogen (HC+NOx) emissions at 16.0 grams per kilowatt-hour (g/kW-hr) for all 2003 through 2006 model year engines. This is equivalent to California's most stringent exhaust standard for engines used in personal watercraft and outboard boats. The second set of standards required the phase-in of a catalyst-based 5.0 g/kW-hr HC+NOx standard for model years 2007 through 2009. The percentages of phase-in engines that are required to meet the 5.0 g/kW-hr HC+NOx standard is 45 percent for 2007, 75 percent for 2008, and 100 percent for 2009 and later model years. Additionally, the incorporation of a marine version of on-board diagnostics (OBD-M) was required for the phase-in engines beginning in 2007.

On October 24, 2004, staff presented to the Board its status review of the 2001 Inboard/Sterndrive rulemaking at its meeting at the San Joaquin Valley Unified Air Pollution Control District in Fresno, California. There the marine industry expressed concerns regarding the timeframe for introducing engines meeting the 5.0 g/kW-hr HC+NOx standard and demonstrating the compliance of engines with rated power levels greater that 373 kW (500 horsepower). They also requested a revision to the OBD-M requirements such that the catalyst monitoring portion would be postponed until the 2012 model year. As this was a non-regulatory update to the Board, no Board action was taken. However, the Board requested staff to continue following industry's progress in developing the technology to comply with the 5.0 g/kW-hr HC+NOx standard, and, if necessary, to return to the Board to propose reasonable relief provisions.

On November 17, 2005, the Board conducted a public hearing to consider the staff's proposal to further amend California's existing pleasurecraft regulations through the

adoption of an alternative implementation schedule and other compliance relief provisions. At the conclusion of the hearing, the Board adopted Resolution 05-57, in which the Board approved the adoption of the proposed regulations with the modifications presented by staff at the hearing and directed staff to work with industry to finalize the regulatory package through use of the 15-day modified text process.

Staff's revised proposed regulations and test procedures, with the modified text clearly indicated, were made available to the public for a 15-day comment period on August 11, 2006. Several written comments were received during the comment period. Staff has responded to all comments received during the regulatory process, including those submitted in response to the notice of August 11, 2006, in its Final Statement of Reasons regarding this rulemaking.

Description of Regulatory Action: On November 17, 2005, the Board amended California's existing pleasurecraft regulations by incorporating provisions that provide industry with additional lead-time for complying with the 5.0 g/kW-hr HC+NOx exhaust standard, while preserving the emission benefits of the existing regulation. The amendments allow engine manufacturers to choose from two implementation options to comply with the Inboard/Sterndrive standards. This has the potential to reduce the cost of compliance to the industry by giving each manufacturer an opportunity to choose a deployment strategy best suited to its production roll-out plan. The first option proposed by staff allows manufacturers to comply with the existing Inboard-Sterndrive regulations. The second option allows manufacturers to replace the current 2007-2009 phase-in of the 5.0 g/kW-hr HC+NOx standard with full compliance by all engines in 2008, one year earlier than currently required. Manufacturers certifying to the second option are also required to achieve additional reductions of HC and/or NOx in 2007 to offset any loss of emission benefits in that year.

The amendments also allow recreational marine engine manufacturers to comply with the 5.0 g/kW-hr HC+NOx standard for engines with rated power above 373 kW by averaging emissions with those of engines less than or equal to 373 kW, which separately need to meet the fixed 5.0 g/kW-hr HC+NOx standard. Furthermore, industry is allowed a choice to certify engines with power ratings greater than 485 kW (650 horsepower) by either providing actual emissions test data or by opting to use a default value of 30.0 g/kW-hr HC+NOx. These changes have the potential to reduce the cost of compliance for large engines without reducing the emission benefits of the current regulation.

Each marine engine manufacturer decides for itself which compliance option to use. If any manufacturer determines that compliance with the existing regulation (Option 1) is more economically advantageous than the new option adopted in these amendments, that manufacturer may continue to comply with the existing regulation. Therefore, the amendments are not expected to impact implementation costs in a negative manner, but will likely benefit engine manufacturers by providing them with additional lead-time to comply with the 5.0 g/kW-hr HC+NOx exhaust standard. A full description of the amendments can be found in the "Staff Report: Initial Statement of Reasons," with the

other regulatory documents for this rulemaking, at http://www.arb.ca.gov/regact/boatregs/boatregs.htm.

The amended compliance schedule showing all implementation options is summarized in Table 1 below.

Table 1
Inboard-Sterndrive Marine Engine Compliance Schedule

MODEL YEAR	RATED POWER [kilowatts]	COMPLIANCE OPTION[1]	DURABILITY [hours / years]	EXHAUST STANDARD NMHC[2]+NOx [grams per kilowatt-hour]	EXHAUST STANDARD TYPE[3]	SUPPLEMENTAL MEASURE[4]
2003 - 2006	kW ≤ 373	N/A	N/A	16.0	AVE	None
2007	kW ≤ 373	OPT 1	N/A	16.0 (55%)	AVE	None
			480 / 10	5.0 (45%)	FIXED	
		OPT 2	N/A	14.0	FIXED	Low-Permeation Fuel Line Hoses
2008	kW ≤ 373	OPT 1	N/A	16.0 (25%)	AVE	None
			480 / 10	5.0 (75%)	FIXED	
		OPT 2	480 / 10	5.0	FIXED	Low-Permeation Fuel Line Hoses
2009 and later	kW ≤ 373	N/A	480 / 10	5.0[6]	FIXED	Carryover[7]
	373 < kW ≤ 485		150[5] / 3	5.0[6]	AVE	
	kW > 485		50[5] / 1	5.0[6]	AVE	

Notes:
1. Once a manufacturer has chosen an option, that option must continue to be used exclusively across product lines
2. The non-methane component of hydrocarbon
3. Corporate averaging (AVE) may be used to demonstrate compliance with the exhaust emission standard, except where a FIXED standard is required
4. Supplemental measures may be different than shown, but must provide equal and verifiable emission reductions to those indicated
5. For the purpose of durability testing, engine components that have been approved with an hourly warranty period shorter than the full hourly durability period per § 2445.1 (c)(3)(C)4. may be replaced at the specified warranty interval
6. All engines ≤ 373 kW must meet a 5.0 g/kW-hr NMHC+NOx capping standard. For engines > 373 kW, the standard may be met by sales-averaging with engines equal to or less than 373 kW
7. The same or better supplemental emission control hardware used to meet the standard in 2007 must be used every model year thereafter

Additionally, the recreational marine regulation was amended to provide hourly durability and warranty periods in addition to existing yearly periods, and to provide more appropriate durability and warranty periods for the higher power engines. Higher power engines are subject to accelerated wear as a result of being designed for maximum performance during racing rather than for typical consumer boating activities such as water skiing and fishing. As a result, engines with rated power greater than 373 kilowatts must now remain durable for 150 hours or up to 3 years, and the most powerful engines, those with rated power greater than 485 kilowatts, must remain durable for 50 hours or up to 1 year.

The Board also adopted other non-substantive modifications to the recreational marine regulations and test procedures to clarify or simplify existing language.

Comparable Federal Regulations

In August 2002, the United States Environmental Protection Agency (U.S. EPA) announced a proposed rulemaking aimed at controlling evaporative emissions from spark-ignition marine engines (including inboards, sterndrives, personal watercraft, and outboards). However, the proposal did not address exhaust emission standards for inboard and sterndrive engines. Staff has since been told by U.S. EPA that it intends to promulgate exhaust emission standards equivalent to those required by California, U.S. EPA would also include an evaporative emission standard. Staff anticipates a final federal rule sometime in late 2006 or early 2007 and the implementation of the standards after some period of lead-time beyond that date.

Benefits of the Proposal

The amendments do not require manufacturers to generate additional emission benefits, nor do they permit a decrease from existing benefits. The current and proposed amended regulations are expected to reduce HC+NOx emissions by 56.8 tons per day, in 2020. Staff expects no net change in implementation costs from those identified in the 2001 rulemaking, because an engine manufacturer may continue to comply with the existing regulation. Presumably, a manufacturer would choose the proposed option only if it was within its financial interests to do so. Therefore, the existing regulation remains an upper bound for cost-effectiveness, which is a favorable $2.08 to 3.39/lb HC+NOx reduced. The amendments benefit manufacturers by providing additional flexibility, and may benefit consumers if the flexibility results in reduced prices.