



Santa Barbara County  
Air Pollution Control District

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June 20, 2002

Margaret Borushko  
United States Environmental Protection Agency  
National Vehicle and Fuels Emission Laboratory  
2000 Traverwood  
Ann Arbor, MI 48105

Subject: Docket A-2001-11; Marine Engine Rulemaking

Dear Ms. Borushko:

The Santa Barbara County Air Pollution Control District (APCD) Board of Directors appreciates the opportunity to review and comment on EPA's proposed rulemaking for new marine compression-ignition engines.

The proposed rulemaking offers EPA an opportunity to make an important contribution to the health of coastal residents throughout the United States and to do so in the most cost-effective manner available, thereby reducing the economic impact on coastal areas, which will otherwise face the burden of additional emission reduction requirements.

Emissions from marine shipping engines, especially the large Category 3 (above 30 liters per cylinder) engines that power container ships traversing our coastline, represent a significant source of pollution being generated offshore of Santa Barbara County. In fact, our most recently adopted 2001 Clean Air Plan estimates that the Nitrogen Oxide (NOx) emissions from marine shipping are comparable to the amount of NOx produced onshore from all cars, trucks, and buses. We also anticipate that the emissions from this source will increase dramatically (by 68 percent) by 2015. For these reasons, we believe that it is critical for EPA to take effective action to reduce the emissions and associated impacts from this significant source. We support aggressive standards for new marine engines, and we also ask EPA to continue to explore creative ways to provide incentives for emission reductions from existing fleets.

**Clerk of the APCD Board:**

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Air Pollution Control Officer

*Our Vision: Clean Air*

We have a compelling interest in this rulemaking for the following reasons:

- ♦ Marine shipping is the largest uncontrolled source of NOx emissions in our county and in most coastal areas of the nation;
- ♦ Marine shipping emissions are growing rapidly and, if uncontrolled, pose a long-term threat to our ability to meet and maintain health-based standards; and,
- ♦ Failure to reduce emissions from marine shipping will require coastal areas to compensate for these offshore emissions at much greater cost.

There are several important principles that we believe should form the basis of this important regulation.

**Proposed Rulemaking needs to apply to both U.S. and foreign flagged ships.**

Foreign flagged vessels dominate the emissions picture offshore Santa Barbara County and, undoubtedly, other coastal areas as well. Our analysis shows that approximately 85 percent of the large container ships that traverse our coastline are foreign flagged. In the rulemaking, it is assumed that because of US cabotage laws, foreign flagged ships account for only 20 percent of trips and emissions in US coastal areas. We believe that this is incorrect and request that it be reevaluated. Since the proposed rulemaking does not apply to foreign flagged ships, we believe that the rule will have little impact on achieving health-based air quality goals in Santa Barbara or elsewhere. We request that EPA promulgate emission standards for new engines that would apply to both foreign and U.S. flagged ships.

Section 213 of the Clean Air Act requires EPA to regulate all non-road vessels that are significant contributors to ozone levels in nonattainment areas. Specifically, Section 213(a)(2) requires that EPA make a determination as to whether this test is met. While EPA may forego such regulation if, in the Administrator's judgment, this test is not met, it must be based on the evidence on the record. EPA has clearly found that U.S. flagged vessels meet the test under Section 213. Given the preponderance of foreign flagged vessels along California's coast, it seems entirely inconsistent for EPA to find that foreign flagged vessels do not meet the same test, unless EPA believes they are specifically exempt from regulation. To our knowledge, the Clean Air Act does not expressly exempt engines on foreign vessels from regulation, though it exempts certain other mobile source categories from regulation. Therefore, we believe EPA has a duty to include foreign flagged vessels in the proposed regulation. We request that EPA promulgate emission standards for new engines that would apply to both foreign and U.S. flagged ships.

**Proposed engine standards need to go beyond Annex VI NOx standards.**

The parties to MARPOL adopted the IMO Annex VI NOx standards in 1997. Since the NOx standards will be retroactive once adopted, virtually all engine manufacturers build engines that already meet these standards and some have developed even cleaner engines. We believe that the proposed Tier 1 standards should be considered as the baseline from which to propose technology forcing new Tier 2 and Tier 3 standards. Our research shows that existing NOx reduction technologies are available that can provide from 20 to 50 percent reductions. We suggest that the rule go beyond existing technology and set standards similar to EPA's Tier 2 and Tier 3 off-road future-effective standards, which range from 4 to 6.4 g/kW-hr. We understand



that there will be technological challenges in meeting stricter standards, but technology forcing standards with periodic technical review would encourage technology advancement for new marine engines in contrast to EPA's proposal, which would provide no regulatory encouragement for technological advancement. Adopting these Tier 2 and 3 standards for new marine engines for both US and foreign flagged ships will provide for much needed, cost-effective long-term emission reductions from this category.

**Proposed rulemaking needs to identify and encourage incentive programs to reduce air emissions from existing fleet.**

While we request that EPA take concerted action to set aggressive technology forcing standards for new Category 3 engines, we ask that EPA explore a variety of incentive-based approaches to reduce emissions from the existing fleet (both US and foreign flagged). Fleet turnover for vessels that use Category 3 engines is very slow. In addition, our local data show that a significant number of the ships that traverse our coastline on a regular basis were built in 1990 or later, which means that they will continue to emit at current levels well into the future.

Achieving reductions from this existing fleet is very important to us in attaining and maintaining our health-based clean air standards, and we would like to work closely with EPA and other stakeholders to evaluate potential incentive based approaches (above and beyond the proposed Blue Cruise Program) to clean up the existing fleet. We also encourage EPA to join with other agencies to provide funding for programs to demonstrate retrofit technologies. California's Carl Moyer Program has been very successful in reducing emissions from vehicles, smaller vessels, and stationary engines while creating productive partnerships with engine operators. This approach should be evaluated for its applicability to ocean-going vessels.

Another incentive approach that we believe holds promise is differential port fees. If port fees were reduced for low-emitting vessels and increased for high-emitting vessels (while keeping overall port revenue neutral), a potentially important incentive could be created for ship operators to purchase ships with clean engines and to consider retrofit of existing, high-polluting ships. We understand that the approach has been used successfully in Scandinavia.

**Proposed rulemaking needs to set fuel sulfur limit requirements for both U.S. and foreign flagged ships.**

Another very important factor for EPA to consider is the setting of sulfur limits for residual fuel. Annex VI specifies a maximum sulfur content of 45,000 ppm (4.5 percent) with provisions for areas to designate oxides of sulfur (SOx) emission control areas within which ships must either use a fuel with a maximum sulfur content of 15,000 ppm (1.5 percent) or use exhaust gas cleaning systems to reduce SOx emissions. Reductions of SOx and particulate matter (PM) emissions are directly related to the sulfur content of fuels and EPA should take aggressive action to either set a 15,000 ppm (1.5 percent) or less sulfur content standard for U.S. and foreign flagged ships that applies to ships in U.S. waters, or work with the International Maritime Organization in the MARPOL process to have a 15,000 ppm (1.5 percent) sulfur standard apply to all Category 3 engines worldwide. In addition, in U.S. waters within 175 nautical miles of shore, EPA should consider adopting marine fuel sulfur content limits that mirror the current off-road limits of 5,000 ppm or the more stringent on-road sulfur limit of 500 ppm.



**Proposed rulemaking must keep international scope of problem in mind.**

EPA must actively pursue international agreements that will result in standards beyond those proposed by Annex VI and be mindful of the international implications of proposing no change from the Annex VI standards, which are already being complied with. The proposed rulemaking can set the stage for international efforts to reduce emissions from ocean-going vessels or it can endorse the status quo, thereby missing a crucial opportunity. Also, the chance does exist that the Annex VI standards do not come into effect because they do not gain approval of the required 15 member nations comprising at least 50 percent of the world's shipping tonnage. If that occurs, the proposed EPA rulemaking applied to both US and foreign flagged ships will become the default international basis for ship emissions control.

**Proposed rulemaking must consider the most cost-effective way to achieve emission reductions.**

In complying with the Clean Air Act and other health-protective legislation, most coastal areas in our nation have no choice but to reduce emissions of the very pollutants emitted by Category 3 vessels: nitrogen and sulfur oxides and particulate matter. There is no question about whether the emission reductions possible from Category 3 vessels should be obtained; the only question is whether they will be obtained from these vessels or elsewhere. Emission reductions from Category 3 vessels are far more cost-effective than virtually any other strategy, including the strategy of shifting the burden to onshore industry. In addition, the expected rapid increase in ocean-going trade will stimulate an increase in new vessel construction. It is more cost effective to ensure that the large numbers of new vessels likely to be commissioned in the next ten years are built to be as low emitting as possible than to encourage retrofit of these vessels once built.

We appreciate the opportunity to review and comment on this proposed rulemaking and look forward to working closely with EPA in developing regulations and incentives to help reduce emissions from this significant source. Text-specific comments are attached. If you have any questions or comments, please contact our Air Pollution Control Officer Doug Allard (805-961-8853), or Tom Murphy (805-961-8857) or Ray McCaffrey (805-961-8826) of his staff.

Sincerely,



DeWayne Holmdahl, Chair  
Santa Barbara County Air Pollution Control District

enc.: Attachment: Text-Specific Comments

cc: Douglas W. Allard  
Larry Allen, SLOAPCD  
Dick Baldwin, VCAPCD  
Cynthia Marvin, CARB  
Dave Jesson, USEPA

**Attachment: Text-Specific Comments on 40CFR94**  
**Control of Emissions of Air Pollution from New Marine Compression-Ignition**  
**Engines At or Above 30 Liters/Cylinder**

Page 37550 Item I.A, 2<sup>nd</sup> column, end 2<sup>nd</sup> full paragraph: Text relating to Santa Barbara emissions reads: "These emissions are expected to increase to 62 percent by 2015." This should read: "These emissions are expected to increase by 68 percent by 2015." The same text should also be amended on page 37563.

Page 37560 Item II.C.1: In-port inventories were developed for nine specific ports using port activity data. Emission estimates for other ports were then developed by matching each of these ports to one of the nine specific ports based on port activity characteristics. It is unclear whether the activity data included ship registry as one of the parameters used to associate specific and "other" ports. It appears that the use of this method could lead to biases in the data, particularly for port activity in relation to vessel registry data. That is, if one of the nine specific ports had a majority of U.S. flagged vessels, the assumption would be that the port it is related to would also have a predominance of U.S. flagged vessels. As such, a majority of the emissions would be from U.S. flagged ships. We would recommend the development of national in-port inventories based on activity data from various marine exchanges throughout the country.

Page 37560 Item II.C.1: We believe that emissions data from ships out to 175 nautical miles would provide the most complete emission inventory data from which to assess the magnitude of emissions offshore California since we are subject to prevailing winds that will bring these pollutants onshore.

Pages 37563 Item II.C.3: The text suggests that the relatively high marine vessel emissions in Santa Barbara County are due to the proximity of the shipping lanes to the coastline and to the meteorology of the area. The marine vessel inventory for Santa Barbara County is relatively high not because of the proximity of the shipping channels to the coast, nor is it high because of the meteorology of the area. The NO<sub>x</sub> emissions for Santa Barbara are high due to the number of foreign and U.S. flagged ships transiting through the Santa Barbara Channel and to the length of the coastline and, therefore, the time it takes for ships to transit through the county.

Page 37563 Item II.C.4: It is stated in the text that an analysis of port call data shows that U.S. flagged vessels only account for 6.4% of port calls to U.S. ports. It is also suggested that emissions from U.S. flagged ships dominate the in-port inventory due to U.S. cabotage law. Additionally, it is also stated in the text that USACE data indicates that more than 80 percent of the non-port emissions are from U.S. flagged ships. If U.S. flagged ships account for only 6.4% of calls to U.S. ports, then it does not seem reasonable that U.S. ships would dominate in-port emissions. It also seems unlikely that more than 80% of the non-port emissions are from U.S. flagged ships.

Data from the Marine Exchange at the Port of Los Angeles/Long Beach show that in year 2000 about 85% of the ships transiting the coast of California and using the Port of LA/LB are of foreign registry. Data from Port Hueneme in Ventura County also show a high percentage of



foreign flagged ships (more than 80%) using the port. Logically, this would suggest that foreign flagged ships dominate both in-port and non-port emissions, at least in California. We believe that foreign flagged ships dominate marine vessel emissions and, therefore, should be subject to the same standards as U.S. flagged ships.

Page 37567 Item III.C.2. Many of the vessels transiting offshore our County are foreign flagged vessels; of the 150 ships that we estimate to have the highest NOx emissions offshore Santa Barbara County in calendar year 2000, only 13 were U.S. flagged ships. To achieve significant emissions reductions, we support applying the proposed regulation to both U.S. flagged and foreign flagged vessels.

Page 37567 Item IV.A, discussion of CAA Section 213d: Does this cost analysis consider the cost results of how an emissions control requirement might affect the ability to compete for business of a ship subject to the requirement (e.g., a U.S. flagged ship) versus one not subject to the requirement (e.g., a foreign flagged ship)? Or does the analysis only consider the “cost of applying such” control “technology within the period of time available to the manufacturers?”

Page 37568 Item IV.A.1: Are ship engine emissions-test data available that show that the same engines burning residual fuel and then burning distillate fuel under similar operating conditions create emissions that vary only by differences that can be calculated from the nitrogen and sulfur contents of the fuels?

Page 37577 Item B.5: The terms “rebuilt completely at one time” and “first engine rebuild” need to be better defined. Our understanding of large ship engines indicates that major maintenance is performed every two to three years, with some components (e.g., cylinders, pistons or injectors) replaced with equivalent new components. It is very seldom, over a 20 to 30-year time frame, that a large ship engine is completely rebuilt at one time. As we understand it, ships are more often scrapped before this type of rebuild.

Page 37578 Item V.B.9: Two conditional requirements are shown for engine adjustments: (1) readjusting the engine’s parameters within its certified range, and (2) confirming that emissions are within the range of emissions to which the engine is certified. What is the need for Item 1? If condition (2) is satisfied (i.e., the ship engines emissions are compliant with rule requirements), and the owner-operator is confident that the engine is not being operated in a way that might affect the manufacturer’s warranty, there appears to be no need for item (1). In addition, provisions should be made for the engine manufacturer or the ship owner-operator to petition EPA for changes to the original certification parameters if new parameter sets are discovered over time during actual operation that meet the emissions standards. (Note: similar text appears on page 37579 at the end of the 3<sup>rd</sup> column.)

Page 37579 Item V.B: Statements such as “we would not allow adjustments that damaged the engine or its emissions controls or otherwise prevented the engine from being able to comply with our regulations” indicate that EPA will be present and responsible for ship engine operations, which is not possible. The focus should be more on emissions limits, compliance requirements within the appropriate physical boundaries, and test methods and documentation,

with less emphasis on ship owner-operator and manufacturer commitments and actual engine operations.

Page 37581 Item V.C.2: Would there be any relief from testing on residual fuel if a ship owner-operator committed to operating on only distillate fuel within the 175 nm zone?

Page 37581 Item V.C.2: Are ship engine emissions test data available that show that the same engines burning residual fuel and then burning distillate fuel under similar operating conditions create emissions that vary only by differences that can be calculated from the nitrogen and sulfur contents of the fuels? If not, our preference is that ship engines undergo post-parameter adjustment or maintenance compliance tests when operating on the fuel they typically use inside the 175 nautical mile zone.