Comments of the

World Shipping Council

Before the

Environmental Protection Agency

In the matter of

Advance Notice of Proposed Rulemaking

Regarding

Control of Emissions from New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder

EPA-HQ-OAR-2007-0121

February 27, 2008

I. Introduction

Effectively addressing vessel air emissions through a new international regulatory regime is an important issue facing the shipping industry and the communities affected by vessel air emissions. The international liner shipping sector of the industry, whose vessels regularly call at many urban ports facing air quality issues, recognizes the need for effective action by the International Maritime Organization ("IMO") to strengthen and unify current vessel air emission standards.

The World Shipping Council ("WSC" or "Council") represents the ocean carriers carrying the vast majority of the world's liner shipping cargo. WSC Members, listed in Annex 1 of these comments, transport more than 90% of the world's ocean-borne containerized cargo, or roughly 100 million TEUs annually, and are responsible for a substantial percentage of the world's port calls. For example, according to U.S. government statistics, containerships made more than 19,000 calls at U.S. ports in 2006 – 30 percent of all U.S. vessel calls.

The Advance Notice of Proposed Rulemaking (ANPRM) issued by the Environmental Protection Agency (EPA) in Docket ID No. EPA-HQ-OAR-2007-0121 notes that the approach taken in the paper submitted by the U.S. government to the IMO for amending international engine and fuel standards forms the basis for the programs outlined in the ANPRM. The ANPRM also correctly notes: "Globally harmonized regulation of ship emission is generally recognized to be the preferred approach for addressing air emissions from ocean-going vessels." (page 31)

The Council fully supports the approach proposed by the U.S. government at the IMO to strengthen the current emission standards in the MARPOL Annex VI Treaty, and it commends EPA for its leadership at the IMO in this regard.

The Council supports the following objectives for these international vessel air emission negotiations:

1. Development of uniform, international rules that are widely adopted and respected. Ships are instrumentalities of international commerce and need consistent international rules governing vessel emissions. WSC opposes the establishment of different regulatory approaches by individual national, regional or local governments. The industry needs an effective, predictable, international regulatory system.

It would be a significant problem for the industry if there is not an international regime that effectively addresses these issues and if there is a plethora of different national and regional regulations. We note that the California Air Resources Board has gone on record as supporting the U.S. proposal at the IMO, stating that "equally effective international regulation of ship emissions would be a better solution." We further note that the American Association of Port Authorities also supports the U.S. efforts at the IMO to develop effective international standards on this issue.

2. The regime should recognize the need to establish more stringent air emission standards near populated coastal zones with serious air quality issues than on the high seas and other areas. Regional coastal or port area air emission requirements established under consistent IMO methodology must be able to meet the environmental needs of the most affected and concerned port areas, including Hong Kong, U.S. West Coast, and certain European ports, all of whom have established or are considering unilateral measures to address the issue because of local air quality concerns. These stricter standards needed for these identified coastal zones do not need to be required in all coastal areas or on the high seas.

3. The industry should be able to operate with no more than two different fuel standards -- one low-sulfur distillate fuel standard for certain, defined coastal areas that meets those areas' environmental needs, and a residual fuel standard for the open ocean. One low sulfur distillate fuel standard is needed that would be acceptable in all defined "SECA-like" coastal areas.[1] More than two different fuel standards would be very difficult to implement for vessel operators, and would cause confusion in the marine fuel refining market

4. Avoid a requirement to use only distillate fuel globally. First, the oil refining industry is unlikely to be able to produce such quantities of marine distillate fuel without enormous difficulty, at best. The maritime industry as a whole burns approximately 400 million tons of residual fuel a year. To refine that volume of residual fuel into distillate would be an enormous undertaking for the refining industry.

   Second, the proposal to require the use of distillate fuel everywhere would be enormously expensive.

   Third, converting all marine fuel to distillate would produce a substantial increase in greenhouse gas (CO_2) emissions by refineries as a result of additional refining processes.

[1] SOx Emission Control Areas or "SECAs" are internationally agreed areas of the sea where ships are required to burn low sulfur fuel as a result of demonstrated environmental air quality needs of nearby populations.

5. Ensure that future engine and any after-treatment technology standards can be commercially met by engine and technology manufacturers in the time frames specified, and that such equipment can be certified as compliant with the standards.

6. The industry must be provided sufficient time to implement the new standards.

Having reviewed the various proposals and progress made to date at the IMO on this issue, as well as the regulations that have emerged or may emerge at national and local government levels, it is the judgment of the World Shipping Council that the approach proposed at the IMO by the U.S. government would meet the above objectives. It would provide an environmentally effective regulatory system sufficient to meet the needs of urban port areas with significant air quality concerns. It would establish a predictable, international regulatory mechanism for both fuel and engine standards. It would avoid undue disruption of world oil refining capacity. It would avoid the creation of a significant CO_2 greenhouse gas "penalty" in addressing NOx, SOx and PM emissions.

While we commend the U.S. Government agencies for their leadership at the IMO in addressing these issues, we also join them in recognizing that some adjustment to the U.S. proposal at the IMO may be warranted, and in fact would be welcomed if the resulting product is an effective international regime, the Council wishes to again express its support for the U.S. government proposed approach at the IMO to address vessel air emissions.

Regarding the specific issues raised in the ANPRM, we offer the following additional comments.

II. NOx Engine Standards

The U.S. proposal at the IMO would create four categories of engine standards that would apply to the reduction of NOx emissions.

Existing Engines (pre-2000): The U.S. has proposed that those pre-2000 large displacement engines that can be reasonably retrofitted to meet Annex VI Tier 1 standards by use of in-engine adjustments (i.e., valve exchange and injector adjustment) should be retrofitted. The U.S. submittal proposed that this requirement would start in 2012.

The ANPRM requests comment on requiring engines on these vessels to be retrofitted to meet the Tier 1 standard, stating: *"Specifically, these engines would need to be modified to reduce NOx emissions by 20 percent from their existing baseline emission rate. Alternatively, we request comment on requiring vessel operators to perform a*

specific action, such as a valve or injector change, that would be known to achieve a particular NOx reduction. In this case, the certification and compliance provisions would be based on the completion of this action rather than achieving a specified emission reduction. Therefore we are requesting comment on excluding engines installed on a vessel prior to 1985 from this requirement. We request comment on what generation of engines can be retrofitted to achieve NOx reductions."

WSC supports the approach of requiring vessel operators to perform a specific action for existing engines to demonstrate compliance, recognizing that engine manufacturers will need to identify which pre-2000 engines are appropriate for valve and fuel injection improvements.

WSC supports excluding engines installed on a vessel prior to 1990 as agreed by the recent IMO Sub-committee on Bulk Liquids and Gases (BLG), and any other existing engine that the manufacturer demonstrates cannot reasonably comply, from such a retrofit requirement.

The ANPRM specifically requests "*comment on potential emission reductions beyond the Tier 1 NOx standards that may be achieved through traditional in-cylinder technology and what the impact of the low NOx designs would be on fuel consumption, maintenance, and on PM exhaust emissions."* We defer to the technical expertise of the engine manufacturers regarding what levels of emission reductions are reasonable to expect for the various types of engines they manufacture.

Tier 1 Engines: (2000-2010 engines) Current, established IMO Annex VI standards apply. WSC supports this.

Tier 2 Engines: The U.S. has proposed that as of January 1, 2011 new engine standards for large engines should reduce NOx emissions by an amount in a range of 15-25% below Tier 1 limits. Those reductions, which would be achieved through in-engine design changes, are consistent with those agreed at the recent BLG meeting. The ANPRM requests comments on this proposal.

So long as there is reasonable confidence from engine manufacturers that they can meet the new standard by the proposed date, WSC can support this approach.

Tier 3 Engines: The U.S. has proposed that engines installed in ships with large marine engine propulsion systems, constructed after January 1, 2016, should be able to meet NOx emission standards in the defined, SECA-type coastal areas that are 80% lower than the Tier 2 levels. The U.S. proposal recognizes that this cannot be achieved by new engine standards alone and will require after-treatment technology to be installed as part of the vessel's engine system. The ANPRM requests comment on setting a NOx standard 80 percent below the Tier 2 standards in the 2016 timeframe.

The Council believes that this is an aggressive proposal designed to apply advanced technology to achieve significantly enhanced NOx emission results in those sensitive coastal areas that are determined and agreed to need additional protection.

To the extent that engine and after-treatment technology manufacturers are reasonably confident with the U.S. government assertion that new IMO standards can be met within the prescribed time frame, the WSC can support this approach. Vessel operators are dependent upon these manufacturers to provide the necessary technical expertise to assist governments in deciding what standards and implementation time frame are reasonable, and to certify their products' compliance with the standards.

Vessel operators' compliance with the standards should be measured by the acquisition and utilization of certified engines and after-treatment technology.

Water Based Technologies: The ANPRM requests comment on "*the potential NOx reductions achievable from water-based technologies and what the impact on other pollutants or fuel consumption may be.*"

Initial testing of water emulsification technology by one WSC Member line indicates that, while an ocean vessel can operate on emulsified fuel, there are significant technical challenges with the technology that still need attention, and emission benefits cannot be assessed with confidence without further testing.

III. PM and SOx Standards

In order to address particulate matter (PM) and sulfur oxide (SOx) vessel emission issues, the U.S. proposal to the IMO calls for specific performance-based PM and SOx limits within certain defined coastal areas that could be met either by exhaust gas cleaning technology or by the use of low-sulfur distillate fuel.

WSC generally supports the U.S. IMO proposal, and offers the following additional comments in response to the ANPRM

Geographical Zones for Higher Standards

The EPA proposal envisions more stringent emission standards in defined areas near the coast. The ANPRM states that these zones would be determined through "air quality modeling" (page 46). The WSC supports such an approach and very much welcomes the ANPRM's clarification that the zones would be based on scientific air quality modeling. The U.S. government paper to the IMO had been misunderstood by some to call for such protected coastal zones to be established uniformly around coastal states' 200 mile Exclusive Economic Zones.

Thus, for example, we would expect a designated zone to be established in an area adjacent to Southern California to address that area's air quality needs, but that would not imply that a similar zone be applied adjacent to the Aleutian Islands in Alaska.

The Council also wishes to support the statement in the ANPRM that: *"An*

important advantage of a geographic approach for PM and SOx control, as well as the Tier 3 standards, is that it would result in emission reductions that are important for health and human welfare while reducing the costs of the program since ships will not be required to comply with the limits while they are operating across large areas of the open sea."

Sulfur Limits in Distillate Fuel

The specific sulfur content in the distillate fuel standard is to be determined. The proposal by the U.S government is 0.1-0.2%. WSC has no objection to a 0.1% or a 0.2% standard for near-shore SECA type areas, so long as fuel meeting the standard is reasonably available. 0.2% or lower sulfur fuel is used by a number of WSC lines in certain areas today on a voluntary basis.

The sulfur content chosen needs to meet governments' environmental objectives. WSC believes that a sulfur standard in this range, while significantly lower than some proposals at the IMO, is necessary to ensure that the IMO standards are embraced by governments around the world as environmentally adequate.

The only obvious condition WSC sees as necessary is that fuel meeting this standard is reasonably available from refiners on a global basis by the proposed implementation date. If the IMO can act promptly and provide refiners with a clear and uniform global standard and date, refiners should be in a much better position to provide the necessary supply of fuel.

Finally, we wish to note that the experience to date from WSC Member lines confirms the statement in the ANPRM that "switching from residual fuel to distillate fuel … can be done safely and efficiently, although the higher price of distillate fuel may limit this approach to near-coast and port areas." (page 8)

Scrubber Technology

The ANPRM notes that EPA's proposal for a PM standard and a SOx standard would provide ship owners *"a variety of mechanisms to achieve the standard, including fuel switching or the use of emission scrubbers." The ANPRM also requests "comment on allowing vessel operators the option to comply with the standards by simply using a distillate fuel with a maximum allowable sulfur level, such as 1,000 ppm. Under this option, no exhaust emission testing would be required to demonstrate compliance with the standard."*

The Council fully supports giving vessel operators a choice of how to comply with the standards and fully supports allowing compliance to be achieved by use of a specific low-sulfur fuel.

We note, however, that, while we support having the option of using treatment technologies in lieu of low-sulfur fuel as a way to meet the standard, significant

uncertainties presently exist about the use of such technologies. Operational questions about scrubbers continue to exist. Scrubber waste water discharge standards remain a question. Residue reception facilities remain a question. Accordingly, we expect that the preferred option for the foreseeable future for many operators is likely to be the use of low-sulfur fuel.

Fuel Availability

The ANPRM states: *"We believe that properly designed ships would be able to operate on distillate fuel either under a fuel-switching strategy or for extended use. We request comment on the practical implications of operating ships on either lower sulfur residual or distillate fuel for extended use."*

While the Council does not wish to minimize the operational significance or the cost of switching fuel from residual to distillate, WSC Members' experience is that it can be done, and that compliance with the low-sulfur near shore regime anticipated in the EPA proposal is practical.

WSC Member carriers wish to note, however, that when the fuel is switched to the low-sulfur distillate, the engine's lube oils may need to be changed, depending on the length of time the engine will be operating on distillate. They wish to further note that, once the fuel switch is made, it will take some time for the engine's fuel system to have no significant trace of the residual fuel. This is simply an unavoidable aspect of the fuel switch. Thus we seek clarification that compliance with a requirement to burn a low-sulfur distillate in a particular geographic area would be measured by recording that the switch from use of residual to distillate fuel took place prior to entry into the defined zone.

WSC members also note that low-sulfur distillate fuel is presently available in sufficient quantities to meet the industry's operating requirements on the U.S. West Coast (applicable under both California auxiliary engine regulations and industry voluntary practices) and in the European Sulfur Emission Control Areas (SECAs). However, we note that the industry has no market experience with the availability of low-sulfur fuel in a regime that would require its use on a much more extensive basis. So long as adequate lead time is provided, we would expect that refiners could provide sufficient supplies of low-sulfur fuel for use in proposed SECAs.

On-Off Technologies

The ANPRM notes: *"EPA could elect to set geographically-based NOx and PM standards, with one limit that would apply when ships are operated within a specified distance from U.S. coasts, and another that would apply when ships are operated outside those limits…. If EPA were to adopt such an approach, we would need to determine the areas in which ships would have to comply with the standards. We are currently exploring this issue through the air quality modeling for our proposed*

standards. There are other issues associated with such an approach, including: the technological feasibility of by-pass systems and their impacts on the emission control systems when they are not in use; the level of the standard that would apply when the system is turned off; and how compliance would be demonstrated. There may also be additional certification requirements for ships equipped with such systems…. We request comment on all aspects of this alternative, especially with regard to how such systems could be designed to ensure no loss of emission reductions."

As noted earlier, the Council supports the U.S. government's proposal to the IMO and in the ANPRM to establish geographically based NOx and PM standards based on scientific air quality monitoring. The Council notes that, once such zones are defined, vessel operators will need to ensure that they are operationally in compliance when entering the defined zones. While we understand the ANPRM's question about compliance, different regulatory requirements in different defined zones of the ocean is not an unusual ocean management issue. It occurs with fishery management, vessel traffic management, marine sanctuary restrictions, etc. A requirement to record fuel switching and operation of any after-treatment in the vessel log, combined with vessel AIS transponder transmissions to the Coast Guard, should provide the necessary compliance information. Willful acts to not comply would be a violation of law, for which the government has adequate enforcement capabilities.

IV. Conclusion.

WSC supports the proposals contained in this ANPRM, which are consistent with the United States' proposal for amendments of MARPOL Annex VI at the IMO. We support the NOx reduction proposals for new and existing engines and the SOx and PM emission standards. We support the concept of Emission Control Areas as the most effective way to reduce these emissions in the port and coastal areas that are the most affected. We urge EPA to pursue these proposals at the upcoming meeting of the IMO Marine Environmental Protection Committee and to continue to seek prompt U.S. ratification of MARPOL Annex VI. Air pollution from ships is a critical international problem which requires an effective global solution.