UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH
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Docket Management Facility
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U.S. Department of Transportation, Room PL-401
400 Seventh Street, SW
Washington, D.C. 20590-0001

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DEPT OF TRANSPORTATION

Dear Dr. Everett:

The National Oceanic and Atmospheric Administration welcomes the opportunity to provide comments on the U.S. Coast Guard Advanced Notice of Proposed Rulemaking, "Standards for Living Organisms in Ship's Ballast Water Discharged in U.S. Waters," published in the Federal Register on March 4, 2002.

We at NOAA take very seriously our responsibilities as stewards of our country's aquatic resources, including fisheries, marine sanctuaries, and marine endangered species, and are grateful to the Coast Guard for responding to the threat to these resources posed by invasive species introduced in ballast water. The following comments deal with specific questions posed in the Advance Notice of Proposed Rulemaking.

Q1. Should the Coast Guard adopt Goal 1, 2, or 3?
NOAA supports goal 1 as the final ballast water discharge standard. However, NOAA has concerns in regards to *Enterococci* and *Escherichia coli*. If it is intended that these bacteria be used as surrogates for all bacteria the appropriateness of their use needs to be determined. If the intent is to use surrogates then we need to be sure that they are fairly common bacteria, that addressing these organisms will also mean that other organisms will be successfully eliminated, that both saltwater and freshwater organisms are addressed, and that both aerobic and anaerobic bacteria are addressed. NOAA is specifically concerned about the transport of potential pathogens. Although it is not certain the degree of risk that ballast water discharges pose to transporting of bacterial pathogens, there is some evidence of ballast water transport of, and subsequent human infection by, pathogenic *Vibrio* bacteria *V. alginolyticus, V. cholerae, and V. parahaemolyticus*. Transport of all

potential pathogens should be considered in setting a final discharge standard. In cases where no practical preventive measures are currently available, the standard should be flexible enough to incorporate new pathogen standards when technology to meet those standards is developed.

Q2. Should the Coast Guard adopt any of the standards, S1-S4 as an interim BWT standard?
In general NOAA supports the setting of an interim standard with some conditions. First NOAA, would like a final standard, and the date of transition from interim to final standard, to be issued at the same time the interim standard, is issued. NOAA feels that this will expedite technology development towards the final standard.

NOAA endorses the approach taken under S4, however feels that although 50 microns is likely to address most zooplankton, it does not adequately protect against all phytoplankton known to have serious impacts. As an example, Australian studies have shown that toxic dinoflagellates can be transported in ballast water. The United States alone currently has several known species of toxic phytoplankton that episodically or periodically bloom. Among these harmful algal bloom (HAB) species are *Aureococcus anophagefferens* (2-5 microns) which cause brown tides, *Pfisteria piscicida* (5-15 microns) which has caused massive fish kills and human health impacts, *Pseudo-nitzschia* sp. (35-100 microns) which produces domoic acid causing amnesic shellfish poisoning, *Alexandrium* sp. (20-50 microns) which causes paralytic shellfish poisoning, and *Gymnodinium breve* (10-18 microns) which cause red tides.

Harmful algal blooms impact fisheries, aquacultural industry, coastal recreation, NOAA protected resources such as marine mammals, subsistence users of marine resources, and human health every year. For instance, on the West Coast of the United States, the threat of HABs has routinely caused the closure of commercial and recreational shellfish harvesting beds and aquaculture operations. In addition, there is some indication that there has been an increase in the frequency, duration, and distribution of HABs and their associated biotoxins over the last few decades. At least one study has shown that these increases cannot be fully explained by increased monitoring, greater attention by the scientific community, or by consumer awareness. Although there is not enough information to answer the question clearly, NOAA feels that the final ballast water discharge

standard should protect our coastal economy, resources and human health against further impacts.

NOAA strongly supports the final standard being a discharge standard rather than a standard based on kill/removal rates. Because the ultimate goal is to prevent the introduction of invasive species, the focus should be on the end point. At anything less than total mortality, a kill/removal rate is dependent on the numbers of organisms uploaded. For example, even though there are guidelines against loading ballast in areas of algal blooms, if ballast should be loaded when there are millions of cells per liter, a 95% kill/removal rate may not be sufficient to prevent a successful introduction. Also, NOAA feels strongly that a kill/removal rate is unenforceable due to the fact that sampling would be required at the beginning of the voyage and the end.

If a 95% percent kill/removal standard were to be used, the standard input should not be based on the highest observed natural concentration of organisms. The natural concentration of aquatic organisms can vary immensely, and if areas with extremely high concentrations of organisms for the basis of the standard, even a 95% reduction requirement could allow the discharge of more organisms than might be found in untreated ballast water taken up from a location with more commonly occurring concentrations. More important, it could allow the discharge of enough organisms to create an unacceptably high risk of species introduction. If a percent kill/removal standard is used, the value of that percent standard and the standard intake organism concentration values used need to be determined in concert, to assure that the concentration of organisms allowed to be released yields an acceptably small risk of invasion.

NOAA believes that ballast water exchange is not an appropriate starting point from which to set a discharge standard, other than for determining alternative technologies to be "as effective as ballast water exchange" to meet the requirements of NISA (33 USC 4711(b)-(c)). The effectiveness of ballast water exchange in eliminating organisms will vary depending on such things as the type of ship and the configuration of the tanks. Furthermore, ballast water exchange as currently performed does not adequately address issues such as ships with no ballast on board (NOBOBs), or resting stages of organisms.

Q3. Information on the effectiveness of current technologies to meet any of the possible standards.
Several different approaches (including heat, UV irradiation, separation by filtration or centrifugation, treatment with ozone, chlorine or other chemicals) have been tested on small numbers of vessels. Some of these technologies have been shown the ability to achieve some of the less stringent (and less protective) standards under controlled experimental conditions, These technologies show promise in being able to meet these less stringent standards in actual field use after proper optimization and marinization, although no system has yet been sufficiently tested and proven to be able to meet any of the standards consistently on numerous vessels over a range of operating conditions and over a reasonable length of time.

In order to meet the most stringent standards currently under discussion, continued technology development must be encouraged.

Q4. General comments on how to structure any cost-benefit or cost-effectiveness analysis that evaluates the above four possible standards.
While NOAA does not have specific information that could contribute to a cost-benefit analysis, we think that such an analysis should consider several things, including the additional costs to be borne by the shipping industry if each State sets its own standard. Other costs that should be considered are the potential losses to the fishery and aquaculture industries from the introduction of nonindigenous disease, predator or competitor species, and fouling organisms. Also of concern, although difficult to evaluate, are the potential public health costs, impacts on recreational fisheries, boating, and other uses of our marine and estuarine waters. An additional concern of NOAA is the potential impact introducing ANS has on sensitive marine and estuarine environments over which we have stewardship, such as National Marine Sanctuaries and National Estuarine Research Reserves. While these impacts are indeed difficult to quantify, the cost of these impacts must be factored in when considering the establishment of discharge standards.

Q5. What impact would the above four standards have on small businesses that own and operate vessels?
NOAA has no data or information to respond substantively to this question.

Q6. What potential environmental impacts would the goals or standards carry?

Chemical and thermal treatment may pose some environmental impacts if the discharged ballast water retains chemicals or heat. Onshore treatment facilities could have negative environmental impacts if wetlands or adjacent upland are disturbed. Nevertheless, based on the documented harmful effects and economic cost resulting from ANS introductions, we believe that the environmental impacts resulting from implementing properly designed ballast water treatment standards would be less damaging to an ecosystem than the introductions of ANS.

Sincerely,

David L. Evans