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DEPT OF TRANSPORTATION

From: Chief of Naval Operations
To: Chief, Dockets, U.S. Department of Transportation
Subj: COMMENTS ON STANDARDS FOR LIVING ORGANISMS IN SHIP'S
BALLAST WATER DISCHARGED IN U.S. WATERS
Encl: (1) U.S. Navy Comments on U.S. Coast Guard Proposed
Rulemaking for Ballast Water Discharges

1. Enclosure (1) forwards comments from the U.S. Navy and is provided in response to your request for comments on the Advanced Notice of Proposed Rulemaking for "Standards for Living Organisms in Ship's Ballast Water Discharged in U.S. Waters".

2. My point of contact is Mr. James Rudroff, CNO N452C, at (703) 602-8794, DSN 332-8794, fax (703) 602-5364, and email address: rudroff.james@hq.navy.mil.

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By direction

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NAVY COMMENTS ON USCG ADVANCED NOTICE OF PROPOSED RULEMAKING FOR BALLAST WATER DISCHARGES

General Comment and Recommendation

The U.S. Coast Guard's proposed rulemaking for ballast water discharges will not apply to vessels of the armed forces, including those of the United States Navy. Future ballast water requirements for such vessels are being addressed through the Uniform National Discharge Standards (UNDS) process in those instances in which ballast water has been identified as a discharge incidental to the operation of a vessel requiring the use of a Marine Pollution Control Device (MPCD). In accordance with 33 U.S.C. § 1322, MPCD performance standards, including those for ballast water, will be jointly established by the Environmental Protection Agency and the Department of Defense and must take into consideration 1) the nature of the discharge; 2) the environmental effects of the discharge; 3) the practicality of using the marine pollution control device; 4) the effect that installation or use of the marine pollution control device would have on the operation or operational capability of the vessel; 5) applicable United States law; 6) applicable international standards; and 7) the economic costs of the installation and use of the marine pollution control device. The Navy recommends that the USCG apply similar considerations in establishing domestic ballast water treatment standards for commercial vessels.

Specific Comments

The Navy has the following specific comments in response to the ANPR:

1 **G1**. Essentially requires "no discharge" of anything larger than bacteria and proposes that bacterial discharges meet contact recreation standards.

Navy: Attainment of this goal would require some kind of treatment to destroy/remove all organisms larger than bacteria. The goal needs to include the word "viable" after 'No discharge of...', otherwise one may think that removal of dead organisms would also be required.

G1 proposes bacterial standards equivalent to those in place for contact recreation. These standards may provide reasonable protection against introduction of human pathogens. The E. coli and Enterococcus indicators are not necessarily related to presence or absence of natural aquatic pathogens, such as those for shellfish. Human pathogens are more easily treated, because they generally require higher temperatures for growth and are stressed in natural waters. Therefore, their inactivation is not necessarily correlated with inactivation of aquatic bacteria.

This treatment standard also does not address viruses.

Enclosure (1)

The Navy technical community does not believe this is an attainable goal. It will require either chemical treatment or large amounts of energy to achieve and will not be affordable.

2. **G2.** Treatment to drinking water standards. This goal would require "disinfections" of the ballast water and insure that certain hazardous constituents were removed.

Navy: The main problem with this approach is that water that meets drinking water standards does not meet receiving water quality standards for many coastal waters. Drinking water can contain mg/L levels of Cl, Cu, Fe, etc. Water quality criteria mostly limit these constituents in the ug/L range. This would also be an energy intensive approach.

Viruses are limited in drinking water standards and if included, would make this goal very stringent.

G2 is a treatment goal, rather than a discharge goal (as in G1). Therefore, it will protect against transfer of bacteria only to the extent that the treatment is performed right before discharge. In other words, by not specifying WHEN treatment is done, it does not protect against grow-out.

The Navy technical community does not believe this is an attainable goal. It will require either chemical treatment or large amounts of energy to achieve and will not be affordable.

3. **G3.** This goal reflects the current directive of NISA in that any treatment is as effective as BWE.

Navy: The problem, of course, is that we don't know how effective BWE really is. Once BWE efficacy has been established, then this would be the preferable goal. It is attainable and would probably have the least resistance in the shipping industry. This goal also broadens the range of technologies that may be applied to various class vessels and sizes. The down side is how will one compare their technology side-by-side with BWE? That can become an expensive undertaking. Further, the fact that some BWE studies have found quite variable (39% to 99.9%) removal figures would confuse the comparison results.

4. **S1** - Achieve at least 95% removal, kill or inactivation of a representative species from each of six representative taxonomic groups.

Navy: S1 does not address bacteria or viruses. The proposal to use "the highest expected natural concentration of organisms in the world" as a basis for the 95% reduction seems difficult to quantify. Does this mean the 95% will be

based on concentrations observed during spawning? Highest reported concentrations and average expected concentrations are really different.

5. **S2** - Remove, kill, or inactivate all organisms larger than 100 microns in size.

Navy: S2 does not address bacteria or viruses.

The Navy technical community does not believe this is an attainable standard.

6. **S3** - Remove 99% of all coastal (plankton) inclusive of all life stages and 95% of all photosynthetic organisms, and treat enterococci and E. coli to 35 per 100 ml and 126 per 100 ml respectively.

Navy: S3 does not address viruses. For bacteria, grow-out is again an issue, since it is a treatment standard and not a discharge standard. Additionally, this standard provides protection against human pathogens, but not aquatic ones.

The Navy technical community does not believe this is an attainable standard.

7. **S4** - Discharge no organisms greater than 50 microns in size and treat to meet federal criteria for contact recreation.

Navy: S4 does not address viruses. For bacteria, grow-out is again an issue, since it is a treatment standard and not a discharge standard. Additionally, this standard provides protection against human pathogens, but not aquatic ones.

The Navy technical community does not believe this is an attainable standard.

8. **Q1.** Should the USCG adopt a goal for BWT?

Navy: If a goal must be adopted, then G3 is the most preferred or least objectionable and has the greatest chance of being accepted. G1 and G2 are too stringent and may not be economically reasonable on ship owners. Further, they may limit the treatment to chemical or heat technology, which may present other environmental problems.

9. **Q2** - Should the Coast Guard adopt any of the standards as an interim BWT standard?

Navy: No. There is not enough scientific evidence to base the standards on. Any standard (interim or otherwise) must be attainable with current technology and it must be affordable (reasonable) to the ship owners. To date, none of the technologies that have been demonstrated are fully effective. A combination of technologies may be required. That will increase cost and lower reliability. In

addition, the test protocols, representative species, and measures of effectiveness have not been established.

10. **Q3** - Please provide information on the effectiveness of current technologies to meet any of the possible standards?

Navy: Since the test protocols, representative species, and measures of effectiveness have not been established, no technologies have demonstrated effectiveness to meet any of the possible standards. However, some of the current approaches (e.g. chemical disinfections) may be practical and attainable to meet S1, but have some negative environmental effects and may have some negative material effects (BW tank corrosion). UV at effective doses may work but is questionable with larger organisms. Physical methods such as filtration and separation are not very effective nor do they produce consistent results. Heat treatment may work but may be very costly in terms of energy usage. Use of excess ship heat may pose safety issues (using exhaust gases) and expensive ship alterations (installation of heat coils or exchangers in ballast tanks).

11. **Q4** - General comments on how to structure any cost benefit or cost effectiveness analysis that evaluates the above four possible standards.

Navy: The Navy recommends a risk analysis process be developed and used as a means to gauge the possible effects of varying ANS standards. This risk analysis should take into consideration a number of factors include ship routes, ecological risk of invasion, economic impact of such of an invasion and economic impact to the shipping industry. The Australian risk assessment process is a good model for such a risk analysis protocol. In addition, the seven screening criteria established for the UNDS process would be useful in evaluating possible standards.

12. **Q5** - What impact would the above four standards have on small businesses that own and operate vessels?

Navy: The Navy has no information on the potential impacts on small businesses.

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

Navy: While the impact to the environment might be positive in reducing invasions of non-indigenous species the affects and risks of such invasions as compared to the cost associated with reducing the risk has never been quantified, so the overall cost-to-benefit affect is not known. Any standard that is set **MUST** be attainable in an affordable manner.