

Ballast water Moving towards a de facto standard

In the March 23, 2012 Federal Register, the U.S. Coast Guard published its long-awaited amendments to its regulations on ballast water management by establishing a standard for the allowable concentration of living organisms in ballast water discharged from vessels in U.S. waters. The regulations, "Standards for Living Organisms in Ships Ballast Water Discharged in U.S. Waters," becomes effective on June 21, 2012.



ZEBRA MUSSEL INVASION

Coast Guard involvement with ballast water issues dates back almost 30 years to the arrival of the zebra mussel in the Great Lakes in the 1980's, and the enactment of the Nonindigenous Prevention and Control Act of 1990 (NANPCA), which established the Coast Guard's jurisdiction over ballast water. The National Invasive Species Act of 1996 (NISA) reauthorized and amended NANPCA, addressed the role of ballast water in the transportation of nonindigenous species (NIS), and directed the Coast Guard to develop a ballast water management (BWM) program that would incorporate mid-ocean ballast water exchange (BWE).

INTERNATIONAL COOPERATION

When the Coast Guard determined that the solution to the U.S. NIS problem would require international cooperation, it sought International Maritime Organization (IMO) support, and lead efforts that resulted in the adoption of IMO voluntary BWE guidelines in 1997, and to the adoption of the "International Convention for the Control and Management of Ship's Ballast Water" (the Convention) in 2004. The Convention includes mandatory living organism guidelines and a phase-in schedule to provide uniform

standards for the international maritime community. While the Convention was opened for ratification in February 2004 and is not yet in force, it is expected that the required national and fleet ratification tests will be achieved during 2012.

The Coast Guard instituted a NISA self-policing voluntary BWE program in 1998. However, vessel operators frequently failed to submit ballast reports to the Coast Guard. This continued even after the BWE reports became mandatory in 2004, causing the Coast Guard to conclude that additional measures were needed to protect U.S. waters. NISA requires that any BWM program that the Coast Guard approves in lieu of BWE must be at least as effective as BWE in preventing or reducing the introduction of NIS into U.S. waters—and the Regulations are intended to comply with this requirement.

The mandated biological discharge standards are identical to the D-2 standards in IMO's "International Convention for the Control and Management of Ship's Ballast Water." The Convention standards were intended to provide a uniform international discharge standard. With the Coast Guard's adoption of the Convention standard, this standard will become a de facto global stan-

dard, coordinating the international effort to reduce the risks of invasive aquatic species.

The Regulations apply to all vessels, both U.S. flag and foreign, that are currently required to conduct ballast water exchanges prior to entering U.S. waters, and to all vessels above 3,000 gross tons that transit between Coast Guard Captain of the Port Zones.

Vessels entering the Great Lakes or the Hudson River ecosystems will be required to continue with ballast water exchanges and must also treat ballast water using an approved ballast water management system that satisfy the Regulation's ballast discharge standards.

The Regulations will not, under NISA, preempt implementation of more onerous ballast discharge standards by individual states, nor will they necessarily match the Vessel General Permit (VGP) rules that will be issued at the conclusion of the current Environmental Protection Administration (EPA) VGP rulemaking. However, the issue of uniform national BWM standards is addressed in H.R. 2838, legislation that has now passed the House. And, one can speculate that EPA will make some effort to tailor its final VGP rules to match the approaches that the Regulations have taken.

The Regulations for ballast water discharge standards are contained in Title 33 of the Code of Federal Regulations (CFR) Part 151. The Coast Guard is also amending its regulations for engineering equipment by establishing an approval process for ballast water management systems. The Regulations for the approval of ballast water treatment equipment are contained in Title 46 CFR, Part 162.

The requirements for the discharge standards ballast water capacity phase-

REGULATION & IMPLEMENTATION AT A GLANCE

Vessel Category	Ballast Water Capacity	Date Constructed	Vessels' Compliance Date
New Vessels Existing Vessels	All	On or after Dec. 1, 2013	On delivery
	Less than 1,500 m ³	Before Dec. 1, 2013	First Scheduled Drydocking after Jan. 1, 2016
	1,500 – 5,000 m ³	Before Dec. 1, 2013	First Scheduled Drydocking after Jan. 1, 2014
	Greater than 5,000 m ³	Before Dec. 1, 2013	First Scheduled Drydocking after Jan. 1, 2016

in are similar to the ones adopted by the Convention through 2016; the new construction implementation is almost two years apart, with the Convention at January 1, 2012 and the Coast Guard at December 1, 2013.

For BWM equipment installed prior to the Coast Guard Regulations implementation date, the Coast Guard may issue a five-year certificate for the use of an Alternative Management System (AMS) to foreign Type-Approved equipment that demonstrates equivalent performance to that with Coast Guard Type-Approved equipment. Once the Coast

Guard has issued a Type Approval certificate, AMS certification will no longer be possible for vessels for which the Coast Guard Type Approved system is deemed suitable. Title 46 CFR Part 162.060 sets out the requirements for submittals from Type Approval testing by a foreign administration.

SELECTION AND INSTALLATION OF BWM SYSTEMS

The vessel owner's attention must now turn to the selection of BWM systems and the timing of the installation. The Science Advisory Board Study that was submitted to the EPA in July 2011

(SAB Study) listed only five BWM technologies that met the IMO D-2 discharge standard that is now adopted in the Coast Guard Regulations: 1. De-oxygenation + cavitation; 2. Filtration + chlorine dioxide; 3. Filtration + UV; 4. Filtration + UV + Ti O₂; and 5. Filtration + electro chlorination.

Once the Convention and Regulations build dates requirements are taken into account, and a Coast Guard system approval appears assured, an owner's selection from among these alternatives will depend upon the circumstances of the vessel's operation and the configura-

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tion of the vessel itself, denying effective BWM treatment in certain vessel configurations and operating circumstances while allowing it in others.

In new construction, necessary spaces, ballast pump capacity, adequate electrical support and other needs can be planned and accommodated. In post-delivery installations during a class required 5th year or other dry docking, a very different situation will exist. And, an owner may find itself effectively system constrained, and with installation costs substantially in excess of that which would have been incurred in new construction.

THE GREAT LAKES

The Great Lakes have become one of the most seriously NIS impacted ecosystems in the world, with the majority of the NIS believed to have resulted from vessels in international trade discharging ballast water containing NIS native to East Asian and Caspian Sea regions from colonies that had become established in fresh and brackish waters in the Baltic Sea and lower Rhine River.

It was the NIS infestations on the Great Lakes that brought the role of ballast water to the attention of U.S. and Canadian government authorities. And, it was the failure of compliance with what were first voluntary, and later mandatory, BWE regime efforts that forced the move to BWM systems technologies, and a systems compliance approach.

The SAB Study that was submitted to the EPA in July 2011 listed only five BWM technologies that met the IMO D-2 discharge standard that is now adopted in the Coast Guard Regulations. The circumstances of the Great Lakes low salinity, cold water and substantial microorganism communities, when combined with short voyage times, substantial ballast flow rates and uncoated ballast tanks, may prevent the use of any of these as a means of effective BWM treatment for most of the bulk vessel configurations in service in the Great Lakes St. Lawrence Seaway system.

In a series of actions since the mid-1980s the Coast Guard and Transport Canada have worked together with the Great Lakes Seaway Development and

Management Corporations to craft effective BWE/BWM requirements, which are the most stringent in the world. In 2011, 100 percent of the vessels bound for the Great Lakes Seaway from outside the U.S. and Canadian Exclusive Economic Zones received ballast water management exams on each Seaway transit. All 7,203 ballast tanks, during 396 vessel transits were assessed. And, it has been said that the currently in effect "mid-ocean" Great Lakes Gulf of St. Lawrence ballast exchange and salt water flushing regimes have achieved an apparent 100 percent success record with "no known introductions" since 2006.

The Regulations quite properly provide that BWE must be continued for vessels entering the Great Lakes and Hudson River systems. So, while it may seem ironic, the protection of the Great Lakes from NIS may for now at least continue to depend upon the rigorous enforcement of a carefully developed BWE regime, rather than upon some new technology.

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