sustainableshipping

April 20, 2011

Available online at SustainableShipping.com, an online news and information resource dedicated to marine transportation and the environment.

"The question industry should ask IMO about ballast water"

Dennis King* and Patrick Hagan
University of Maryland Center for Environmental Science
Maritime Environmental Resource Center

Most observers expect IMO ballast water regulations that will require most merchant ships to install and use "certified" on-board ballast water treatment (BWT) systems to be ratified in 2012 and be implemented in 2013.

In 2009 we collected data from BWT system vendors and others and estimated that the typical cost of purchasing and installing a certified BWT systems will be about $1 million per ship, with some smaller ships paying less and some larger ships that require more than one BWT unit paying more.

The basis of this cost estimate and our preliminary estimates of capital and operating costs by ship class and size and type of BWT system are available in a 2009 University of Maryland, Maritime Environmental Resource Center (MERC) discussion paper titled: A Preliminary Analysis of Ballast Water Treatment Costs (available from the MERC website under reports at http://www.maritime-enviro.org/reports/Reports.html).

Based on that cost analysis, a separate analysis of the number, size, age, and ballast water capacity of ships in the global merchant fleet, and the tiered IMO implementation schedule, we developed a preliminary estimate of the size and likely pattern of development of the global BWT system market.

We estimated that full compliance with proposed IMO ballast water regulations will require about 68,000 existing ships to purchase and install BWT systems. Using an average cost of $ 1million per ship, this puts the value of the global BWTS market at about $68 billion (US).

Assuming full compliance by the existing merchant fleet, an estimate of 2,000 new ships entering the fleet each year, and the tiered IMO implementation schedule, we estimate that the global BWTS market will spike during years 2012 to 2015 with over 10,000 existing ships per year (30 per day) installing BWT systems, and will then drop sharply in 2016, when we assume all existing vessels are in compliance and the annual market is supported only by newly built ships.

The basis of this, and the size and pattern of development of global BWTS markets for various ship type/size/age

*Corresponding author at: dking@umces.edu/410-326-7212

categories is available in a 2010 MERC discussion paper titled: A Preliminary Overview of Global Ballast Water Treatment Markets (available from the MERC website under reports at http://www.maritime-enviro.org/reports/Reports.html).

The actual size and pattern of development of the global BWTS market, of course, will be determined by when and how IMO ballast water regulations are enforced.

Detecting violations by actually sampling ballast water is likely to be prohibitively costly and too time consuming to detect actual violations during a ship's port stay.

Instead, port inspectors may need to detect potential violators when they arrive in port using indirect measures, such as inspecting ship logbooks or examining on board BWT systems, or records of it use, or retrieving information from sensors that indicate if the BWT system has been operating properly or if conditions in ballast water tanks meet certain standards.

The problem with these indirect methods is that they don't detect actual violations; they predict likely violations.

To put the potential economic impacts of the situation in perspective the shipping industry should be asking IMO ballast water regulators one important question.

What will arriving ships that need to deballast to take on cargo be required to do if it is determined that they have ballast water on board that is not likely to meet IMO standards?

The enforcement options are clear; the ship could be:
a) Allowed to discharge ballast water and take on cargo and accept a warning, pay a fine, or face some other sanction.
b) Prohibited from discharging ballast water and taking on cargo until ballast water can be properly treated on board to meet discharge standards.
c) Required to discharge ballast water into a barge-based or shore-side reception facility where it can be treated properly to meet standards before being discharged.
d) Forced to leave port and perform a ballast water exchange 200 miles offshore before returning to deballast.
e) Directed to have ballast water sampled and tested before being allowed to discharge and face (a), (b), (c), or (d) above if it does not meet discharge standards.

The first option, (a) is the only one that involves the ship being allowed to discharge ballast water that has been determined to have a high likelihood of not meeting discharge standards.

That option seems unlikely in many situations and the economic implications of any of the other options could be enormous for three reasons. First, certified BWT systems involve very new and barely proven technologies that are bound to fail some times. Most ships, therefore, will be at risk of eventually facing one or more of the above mentioned enforcement actions.

Second, all of the enforcement actions mentioned above, and even negotiating about which one is "fair", will involve significant loss of sea time costing ships from thousands to tens of thousands of

dollars per hour and hundreds of thousands per day.

And, third, the potential delays in cargo handling and transport and related costs to importers and exporters and related impacts on markets, insurance rates, and other factors will have rippling adverse economic impacts and uncertain implications for shipping and interport competition.

The focus of attention on IMO ballast water regulations has been discharge standards, certification of BWTS technologies, and compliance verification, but will soon need to shift to whether global BWTS markets, which are still in their infancy, will be able to mature fast enough to allow widespread compliance.

From the shipping industry perspective, however, uncertainty about BWTS markets and the potential cost of purchasing and installing a certified BWTS may be far less important than uncertainty about the reliability of BWT systems and the costs and liabilities associated with ships arriving in port and being identified as likely violators.