

**INTERNATIONAL MARITIME ENVIRONMENTAL
& SAFETY ASSOCIATES**

**REPORT TO ST. LAWRENCE SEAWAY
DEVELOPMENT CORPORATION
REGARDING**

BALLAST WATER TYPE APPROVAL PROCESS

AND

**OBSTACLES ASSOCIATED WITH INSTALLATION OF
NON-COAST GUARD TYPE APPROVED BALLAST
WATER MANAGEMENT SYSTEMS**

JANUARY 9, 2012

GARY CROOT (CDR, USCG RET.)

PRESIDENT
IMESA, INC.
9 SANDY BROOK DRIVE
DURHAM, NH 03824
603-397-5126
WWW.IMESACORP.COM

EXECUTIVE SUMMARY

Time Required for USCG Type Approval of Ballast Water Management Systems (BWMS)

Under a “Best Case” Scenario, the minimum time that will be required to complete all of the steps in the USCG Type Approval process from the date the USCG Interim Final Rule (IFR) becomes effective is approximately 2 years, 4 months. This estimate assumes there are no logistical or scheduling delays during any step of the process (see Enclosure (1)). Factoring in these inevitable delays, under the “Most Likely” Scenario it will take between 32 – 36 months for the first applicant to receive USCG Type Approval. This is consistent with information gathered from foreign Administrations and system vendors. In the “Worst Case” Scenario (see Enclosure (2)) the timeframe could approach four years, although that scenario is unlikely and would represent the “perfect storm” of delays and complications.

While the proposed U.S. Type Approval process shares the same framework as the Ballast Water Management Convention’s G-8 Guidelines, there are significant differences which will likely require most BWMSs to undergo new land-based testing in accordance with the Environmental Technology Verification (ETV) Protocol, as well as new shipboard testing in accordance with procedures similar to the Coast Guard’s Shipboard Technology Evaluation Program (STEP). Additionally, there are several U.S. environmental statutes which must be complied with before the Coast Guard can issue a Type Approval Certificate.

Interim (Pre-Type Approval) BWMS

Irrespective of the date on which the Coast Guard’s proposed ballast water regulations become effective (and the associated implementation schedule), there will be a lengthy period of time during which there will be no U.S. Type Approved BWMSs available. During this two to three year period, nothing prohibits a foreign or U.S. flagged vessel owner from installing a BWMS which has not received U.S. Type Approval in accordance with the Coast Guard’s Proposed Interim Final Rule. However, unless the vessel is enrolled in STEP (there are only 6 vessels enrolled at present), the installed BWMS cannot be used to satisfy the ballast water management requirements under both current USCG rules (33 CFR 151 Subparts C and D) or the proposed rules. Therefore, such vessels would not only still be required to conduct ballast water exchange or salt water flushing in accordance with those regulations., but if the vessel owner attempted to use such BWMS for its intended purpose, the owner would be violating Coast Guard regulations. Furthermore, no U.S. flagged vessel owner could install a system unless and until the system had been evaluated to ensure it met regulatory requirements or class society rules pertaining to electrical, mechanical, piping and safety requirements. Given the costs and legal and practical issues associated with installing an interim BWMS, and the limited benefits derived therefrom, it is unlikely that vessel owners would voluntarily install such systems except under limited circumstances.

Compliance By New-Build Vessels with the VGP2¹

It is not possible for owners of new vessels as defined by the EPA (constructed after January 1, 2012) to comply with the proposed implementation schedule which requires all new vessels to be

¹ VGP2 refers to the Draft National Pollutant Discharge Elimination System (NPDES) General Permits for Discharges Incidental to the Normal Operation of a Vessel published in the Federal Register on December 8, 2011. It is the next iteration of the first VGP which was issued by the EPA in December 2008 and which expires on December 18, 2013.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

delivered with a BWMS which has been tested in accordance with the ETV Protocol. As noted above, it will take a minimum of 20 months before a BWMS has completed testing in accordance with the Protocol. Therefore, vessel owners who will be receiving new build ships before 2015 will be unable to comply with the VGP2 because no BWMSs meeting the EPA's own requirements will be available. Furthermore, since it will take approximately 30 months, and more likely 36 months, from the effective date of the IFR before any BWMSs are Type Approved by the Coast Guard, vessel owners will not voluntarily install systems until mid to late 2015 at the earliest. Legal issues associated with establishing a standard and timeline prior to finalization and implementation of the VGP2 aside, new vessel owners face significant uncertainty when trying to decide how to comply with a retroactive requirement.

BALLAST WATER TYPE APPROVAL TIMELINE

The following timelines and scenarios assume that the Type Approval² process contained in the Coast Guard's proposed Interim Final Rule (IFR) will be approved without significant change during the OMB interagency review period.

U.S. Type Approval Process Overview

The U.S. Type Approval process uses the same framework as the Ballast Water Management (BWM) Convention³ G-8 Guidelines. However, the specifics of the process are significantly different. U.S. Type Approval consists of four elements: 1) Land-based biological testing; 2) Shipboard biological and physical testing; 3) Environmental testing; and 4) Mechanical/electrical/engineering verification.

1. Land-based testing. In September, 2010, the Generic Protocol for the Verification of Ballast Water Treatment Technology (hereinafter referred to as the ETV Protocol) was approved and signed by the EPA. The Coast Guard has incorporated the Protocol by reference into the regulations as the manner by which land-based biological efficacy testing must be completed. Testing conducted in support of a foreign Administration type approval using the G-8 Guidelines will not likely suffice for this testing. Depending upon the rigor with which the testing was conducted and the sample volumes, some data may be accepted by the Coast Guard in support of an application for U.S. Type Approval in accordance with the ETV Protocol.

2. Shipboard testing. In the last 18 months, the Coast Guard has made significant changes to the shipboard testing requirements for its Shipboard Technology Evaluation Program (STEP) to ensure the program can provide greater statistical and scientific certainty regarding the data collected during shipboard testing. The shipboard testing requirements in the proposed rule are very similar to the requirements of STEP.⁴ As with land-based testing, the U.S. requirements are significantly different than the G-8 requirements. However, in contrast to land-based testing, there is a higher likelihood that some data generated in support of a foreign Administration type approval would be accepted by the U.S.

3. Environmental testing. Also known as the "shake, rattle and roll" test, this testing is common for all sensitive mechanical and electrical equipment intended for operation on vessels and follows the BWM Convention G-8 guidelines, as well as other accepted national and international standards. If this testing was conducted in support of another Administration's type approval process at a recognized facility capable of conducting such tests, the BWMS manufacturer would not likely have to repeat these tests for U.S. Type Approval.

4. Mechanical/electrical/engineering verification. All components of a BWMS must meet widely accepted national or international standards for materials and construction. This is

² Type Approval has been capitalized when referring specifically to U.S. Type Approval or the U.S. Type Approval process so as to differentiate between other type approvals which refer to other processes and evaluations.

³ The full name of the Convention is the International Convention for the Control and Management of Ships' Ballast Water and Sediments

⁴ The Coast Guard and EPA have initiated a working group to develop ETV protocols for shipboard testing. While the land-based protocols took nearly seven years to complete, the shipboard protocols should not take nearly as long, however, they will not be completed prior to publication of the Final Rule.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

occasionally done by a marine engineering firm, but more frequently by a classification society and roughly equates to the classification society's "type approval". As with the environmental testing, data and reports submitted in support of another Administration's type approval could be used to satisfy this requirement.

All of the above testing must be completed under the auspices of an Independent Laboratory (IL). The IL is responsible for ensuring appropriate QA/QC is conducted at all of the facilities at which testing occurs (test facilities). The IL may be a test facility or it may simply be an administrative body which oversees the testing. IL's are not unique to the BWMS Type Approval process; any piece of equipment requiring Coast Guard type approval must use ILs for the testing. The regulations governing ILs are well-established, as are the QA/QC requirements. There is no requirement that an IL or any of the test facilities be located in the U.S.

Variables, Assumptions and Constraints Affecting the Timeline

"Best Case" Scenario (Enclosure (1))

Enclosure (1) is a "Best Case" timeline for conducting all of the steps required for Type Approval of a BWMS. The timeline assumes a start date for the process of Nov. 2011 which is the date on which the OMB-mediated inter-agency review commenced. It also assumes that there are no logistical or scheduling delays involved during any point in the process. Given those assumptions, the total time required to complete the steps in the Type Approval process is 840 days or 2 years, 4 months. This is consistent with – but on the lower end of the range of – data from other Administrations and BWMS manufacturers who have gone through a type approval process. But this timeline does not take into account scheduling delays and conflicts which are inevitably going to occur as BWMS manufacturers attempt to get their BWMS tested at the limited number of test facilities throughout the world. Scheduling delays and conflicts are one of a number of variables which could extend the timeline by as much as 6 to 9 months or more.

This "Best Case" timeline describes the pathway and schedule for the *first* BWMS to be processed. *If* adequate throughput is available (i.e., an adequate number of test facilities, ILs, and other reviewers are available to process multiple applications), subsequent applications should roughly follow the same schedule and could be completed simultaneously. However, for BWMS manufacturers who want to conduct testing at a true fresh water test facility, only GSI located in Superior, WI is capable of conducting the testing. Therefore, for vessels wishing to trade into the Great Lakes, simultaneous land-based testing of BWMS is problematic, as GSI has historically tested four or fewer systems per year and would not likely be able to conduct significantly more than that.

Assumptions

1. Candidates wishing to become ILs will immediately begin preparing their applications upon publication of the IFR. Therefore, it is assumed there will be very little lag time between the date the Coast Guard establishes and publishes the criteria for IL designation and the submission of the first applications for IL designation.
2. Once ILs are designated by the Coast Guard, it is assumed the BWMS manufacturer will experience minimal delays in waiting for a test facility to become available for any of the four elements of Type Approval.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

3. The Type Approval applicant has not completed any testing acceptable to the Coast Guard in support of a foreign Administration type approval and therefore must conduct all testing for all four elements of the Type Approval.
4. BWMS manufacturers will conduct testing at GSI for fresh water and one additional salinity regime necessitating a second land-based test facility be used.
5. The shipboard testing element will commence after the planning phase of land-based testing is completed. The BWMS manufacturer must identify a test platform (vessel) and have the system installed prior to commencement of testing.
6. The BWMS tested uses an active substance and therefore requires FIFRA registration and NEPA evaluation. FIFRA compliance for systems using active substances will likely be widely variable and highly unpredictable, dependent, in part, on the applicant's familiarity with the EPA and the FIFRA process. The timeline predicts six months – which is optimistic – and forecasts the process will commence after the Planning Phase of land-based testing when presumably most of the data required for FIFRA application have been generated. The Best Case Scenario predicts that the above assumption is accurate *or* the BWMS does not use an active substance *or* FIFRA approval is not required because the active substance is generated by a “device”.
7. The Coast Guard has completed the Programmatic Environmental Impact Statement (PEIS) or Programmatic Environmental Assessment (PEA) for systems using solely physical means for removing organisms (e.g., filtration and UV treatment) and for systems using sodium hypochlorite.
8. The U.S. Fish and Wildlife Service and NOAA Fisheries Service conduct an expedited Endangered Species Act consistency review.

Most Likely Scenario

It is important to remember that the “Best Case” timeline includes only the estimated times required to complete each step of the process with minimal built-in delays (for example, 30 days to move the BWMS from one test location to another). It does not include logistical and scheduling delays which are likely to be encountered. Therefore, although the time estimated to complete all of the steps is approximately 28 months, it is more likely that the actual time to complete the process will be in the neighborhood of 32 – 36 months. This is consistent with information gathered from foreign Administrations that have conducted type approval and BWMS manufacturers who have completed the type approval process for foreign Administrations.

Worst Case Scenario (Enclosure 2)

In the Worst Case Scenario, the total time to complete the Type Approval process would be nearly four years. This scenario is one in which the BWMS manufacturer does a poor job of scheduling the different stages and elements of testing and is delayed by government agency review of the data and process. Although it is unlikely that this scenario would play out, it has been included as Enclosure (2) to illustrate how these individual delays could affect the process as a whole. For example, the Worst Case Scenario predicts that the FIFRA application process is not started until after land-based testing is completed *and* the process takes 18 months, resulting in a nearly 2 year delay. Although the likelihood of the Worst Case Scenario coming to fruition is low, the likelihood that a system which requires FIFRA approval will be completed according to the timeline is equally low.

APPROVED EQUIPMENT ON U.S. OR FOREIGN-FLAGGED VESSELS

There is significant confusion regarding the terms *approved* and *type approved* particularly as they relate to ballast water management systems. To better understand these nuanced differences and how the terms are interwoven and affect BWMS selection as well as Convention and regulatory implementation, a description of the terms and their usage follows.

Classification Society Approval

All vital equipment⁵ on board a vessel must be approved by the vessel's classification society prior to installation. Depending on the complexity of the equipment and installation, the classification society will also inspect the equipment after installation to ensure it is installed in accordance with the classification society rules. In the case of a BWMS, the classification society will review the design of the BWMS and determine if it meets the classification society's rules for piping, electrical installation, general engineering, and general safety. If the classification society determines that the BWMS meets its rules and is safe for installation on board vessels, they will approve the system for use on vessels which the society classes⁶. Note that this approval – which is sometimes referred to as type approval by some societies – does not evaluate the biological efficacy of the system, nor does it evaluate the potential chemical constituents of the effluent. It is simply a determination that the equipment is safe for installation and operation on board a vessel under its class.

Flag Administration Type Approval

Flag Administrations are responsible for ensuring vessels which fly their flag are in compliance with all of the international Conventions to which the Administration is signatory. As part of this responsibility, the Administration is required to ensure that equipment on those ships meets the requirements of the specific Conventions. In the case of the Ballast Water Management Convention, this means the Flag Administration must approve BWMSs as meeting the requirements of the Convention. The G-8 Guidelines are the framework for this approval which is formally known as type approval. However, each Administration may interpret the G-8 Guidelines differently. In order to receive a type approval certificate from a Flag Administration, the BWMS must meet the basic requirements for biological efficacy and effluent toxicity. In addition, Administrations will require that BWMS meet national, international or class society standards for safe materials and construction (i.e., meet a class society's standards for approval).

Complicating matters, although the Flag Administration is responsible for ensuring compliance with international Conventions for their flag vessels, they will often delegate responsibility for ensuring compliance to a classification society. In the case of the Ballast Water Management Convention, several Administrations have delegated this authority to one or more classification societies. For example, Norway has delegated authority to issue a Type Approval Certificate to the class society Det Norske Veritas (DNV). So, DNV may issue an approval certificate to a BWMS indicating it meets their class society rules, as well as a Type Approval Certificate (on behalf of the Norwegian Administration) indicating it meets the requirements of the Ballast Water Management Convention.

⁵ Vital equipment is any equipment which is critical to the safety of the vessel. Vital equipment ranges from piping and electrical systems to firefighting and lifesaving systems.

⁶ A class society may further refine the type approval by approving equipment as safe for wet locations, safe for hazardous environments, etc. This can be important for BWMS which are intended to be used on tank vessels.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

Obviously, this overlap can create significant confusion on behalf of some shipowners, as well as some BWMS manufacturers.

Convention Certificates

As part of each Administration's responsibility for compliance with international conventions, Administrations issue Certificates to their flagged vessels indicating the vessel and all of its pertinent equipment is in compliance with the convention. All other signatory Administrations are required to accept these Certificates as prima facie evidence that the vessel holding the Certificate complies with all aspects of the Convention. For example, for MARPOL Annex I (Prevention of Oil Pollution) a vessel will have a MARPOL Annex I certificate stating the vessel is in compliance with all aspects of the Convention. The vessel will also have a Type Approval Certificate for its oily water separator (OWS) stating the OWS meets the specific requirements of MARPOL Annex I. Further confusing matters, Administrations may delegate authority for one or both of these functions to one or more classification societies. So, for example, a Liberian flagged vessel may have a MARPOL Annex I Certificate issued by American Bureau of Shipping (on behalf of the Liberian government) and a Type Approval Certificate for its OWS issued by DNV (on behalf of the Liberian government). The same scenario for BWMSs will likely occur once the Ballast Water Management Convention comes into force.

Foreign Flagged Vessels

For virtually all international Conventions, the U.S. views the possession of Flag Administration-issued Convention Certificates and class society issued equipment approval certificates as prima facie evidence that the vessel is in compliance with those Conventions and international standards. Therefore, if a vessel has an OWS on board with a valid MARPOL Annex I Certificate, the Coast Guard accepts that the OWS – and, in fact, the entire vessel – complies with the Convention.

In the case of the Ballast Water Management Convention – which has yet to come into force – the Coast Guard would adopt the same approach regarding the permissibility of the equipment (i.e., the Coast Guard would accept that the equipment is safe to operate in U.S. waters). However, unless the vessel was enrolled in STEP the vessel could not use the BWMS to comply with existing ballast water exchange requirements. In other words, despite having a BWMS on board, the vessel would not be able to use the BWMS to treat its ballast water and would have to continue to conduct ballast water exchange until that BWMS had been Type Approved. Furthermore, if the BWMS used an active substance which had not been registered with FIFRA, the discharge of treated ballast would not be permissible. Therefore, there would be no benefit to the vessel owner to install a BWMS which had not yet been Type Approved by the Coast Guard. The cost – and risk – to the vessel owner would be enormous inasmuch as any system installed – at a cost exceeding \$1 mil – would not be guaranteed to be Type Approved by the Coast Guard. The only conceivable circumstance under which a vessel owner would install a non U.S. Type Approved BWMS would be to evaluate a particular system or technology for fleet-wide installation once Type Approved. However, these instances would be very few and far between.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

U.S. Flagged Vessels

The U.S. Coast Guard is the agency responsible for execution of Flag Administration responsibilities on U.S. flagged vessels. In the unlikely event that the U.S. becomes party to the Ballast Water Management Convention, the Coast Guard would issue Convention Certificates to all U.S. flagged vessels traveling on international routes. If the U.S. does not become party to the Convention, then the Coast Guard would issue an equivalency Certificate, indicating the vessel is in compliance with all aspects of the Convention, thus allowing U.S. flagged vessels to trade in countries which are signatory to the Convention.

Irrespective of Convention status, any installations on U.S. inspected vessels must be approved by the Coast Guard. For example, many Lakers are installing high sea suction for their ballast systems to reduce the amount of sediments during ballast water uptake. Prior to installation, the vessel owner must submit plans detailing the piping to be used; valve, flange and coupling design specifications; hull penetrations and valves; and any other critical equipment. This equipment and design must be approved by the Coast Guard (or its designee, such as ABS) prior to installation and operation.

Cost of BWMS

In its NPRM, the Coast Guard estimated the cost of an installed BWMS to range from approximately \$400K to \$1.5 mil⁷. These estimates received significant criticism during the public comment period with many industry experts estimating the costs to be twice or three times that amount. Given the age of the data and discussions with BWMS vendors, vessel owners and others, the minimum cost of an installed BWMS is more likely to be in the neighborhood of \$1 mil but could be triple that amount or more for ballast water systems which require multiple BWMS to be installed. This represents a significant capital investment for the vessel owner. Conversations with vessel owners indicate that they normally amortize capital investments of this magnitude over ten to twelve years for each vessel. *Therefore, with the rare exception of vessel owners who install BWMS to evaluate them for fleet-wide application, or who receive some other financial incentive, vessel owners will not voluntarily install a BWMS which does not have U.S. type approval.* These same vessel owners have also stated that obtaining loans for unapproved BWMSs will be problematic given the great uncertainty regarding whether or not BWMSs which have not been Type Approved by the U.S. will ultimately be able to be used to comply with U.S. Coast Guard requirements.

EPA VGP2 Internal Conflicts

New Vessels Constructed After January 1, 2012

The VGP2 requires new vessels⁸ constructed after January 1, 2012, to have a BWMS installed upon delivery. It is likely that the first vessels meeting this definition will be delivered on or about September 2012, meaning they would have to choose a system and begin the installation not later than June 2012.

⁷ The economic data in the Regulatory Flexibility Analysis was based on studies conducted in 2007.

⁸ EPA adopts the widely accepted definition of new vessel construction date as the date at which: 1) the keel is laid; 2) construction identifiable with the specific vessel begins; 3) assembly of the vessel has begun comprising at least 50 tons or 1% of the estimated mass of all structural material of the vessel, whichever is less; or 4) the vessel undergoes a major conversion.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

The EPA correctly points out that numerous studies conducted by, among others, the Science Advisory Board, the Great Lakes Ballast Water Collaborative, the Coast Guard and Wisconsin DNR have concluded that presently existing technologies can only treat ballast water to the IMO standard (which is equivalent to the Coast Guard Phase 1 Standard and the standard adopted in the VGP2). Therefore, EPA concludes, the IMO Standard is the appropriate Technology Based Effluent Limit (TBEL) using the Best Available Technology Economically Achievable (BAT) criteria. At 2.2.3.5.2 in the VGP2, in Table 6, EPA identifies when, for each size class vessel, there should be adequate numbers of BWMSs available to meet the demands of that size class. However, this ignores several commercial and practical realities.

1. While there is general agreement that technologies and systems exist to meet the IMO standard, one could logically conclude that the EPA was correct in establishing the IMO Standard as the TBEL standard. However, at 2.2.3.5.1.1, EPA further defines the requirements for meeting the BAT standard as “utilizing a ballast water treatment system. . . which has shown to be effective by testing in accordance with the EPA-ETV protocol for the verification of ballast water treatment technology conducted by an independent third party laboratory, test facility or test organization.” Therefore, in order for a new vessel to be in compliance with the VGP2, the vessel owner would have to conduct new land-based testing. According to the timeline in Enclosure (1), that process will take approximately 600 days⁹ (1 year, 8 months). Even in the best case scenario, if the EPA waived the requirement for an accepted IL, and the testing was conducted at only one facility (salinity), the testing process alone will take almost one year (330 days). Given that the first vessels required to have ETV-compliant BWMS will need to start the installation in June 2012, clearly, no systems will be available to meet that deadline.¹⁰
2. Even if the EPA chose to waive the requirement for BWMSs to undergo testing in accordance with the ETV protocols and accepted foreign Administration type approval certification, vessel owners would still face the problem of installing BWMSs which have not been U.S. Type Approved. The substantial risks associated with this have been discussed previously.
3. The new vessel requirements precede the effective date of the VGP2. Even if BWMSs were available which had been type approved by the Coast Guard, vessel owners would have no guarantee that the requirements in the Draft VGP2 will be finalized in the Final VGP2. For example:

A new vessel owner with an expected delivery date of September 2012, wishing to be environmentally proactive, decides to install a BWMS which has been type approved by a foreign Administration, with some of the land-based testing occurring at U.S. test facilities. Furthermore, the BWMS has been installed on a ship which is enrolled in STEP. At significant expense, but with the intent of complying with the VGP2, the BWMS is installed in accordance with the VGP2 timeline and requirements. Two months after the vessel is delivered, EPA releases the Final VGP2 which establishes a discharge standard ten times more stringent than proposed, with the same timelines, leaving the vessel owner with a \$1+ million piece of unusable equipment.

⁹ Designation of ILs will take 210 days, while land-based testing at two salinities (facilities) will take 390 days.

¹⁰ Complicating matters for vessels trading in the Great Lakes, the fresh water testing would have to be completed at GSI. Given that GSI doesn't start testing until Spring, no systems could conduct true fresh water testing in time to meet the deadline.

Vessels Entering the Great Lakes

Under VGP2, for vessels entering the Great Lakes from beyond 200 nautical miles, in addition to requiring ballast water treatment in accordance with the proposed schedule, these vessels must also conduct ballast water exchange or salt water flushing. While intuitively it makes sense that exchange plus treatment will reduce the number of organisms introduced into the Great Lakes more than treatment alone, there have been no studies to conclusively demonstrate this, nor does EPA in either the VGP2 itself or the Fact Sheet provide any evidence in support of this conclusion. Therefore, the EPA has no basis upon which to establish treatment plus exchange as either a TBEL or a Water Quality Based Effluent Limit (WQBEL). Furthermore, the EPA has not considered the other environmental effects of essentially requiring a BWMS to be run twice as frequently for vessels trading in the Great Lakes¹¹. For example:

Systems which use a filtration plus ultra-violet treatment process have to UV treat on both uptake and discharge. For most routine voyages, a vessel employing a filter +UV system would have to operate the UV lamps on both uptake and discharge, i.e., at the beginning of the voyage and at the end. However, once the BWMS Convention comes into force, vessels which will be required to conduct BWE in addition to treatment would need to treat at the beginning and end of their voyage, but also would be required to treat during uptake and discharge for the BWE, thus doubling the number of times the system would be required to be run. As a result, generators would be required to be run twice as frequently, resulting in twice the air emissions. For vessels using BWMS which use active substances, the amount of active substances discharged would be doubled.

EPA VGP2 Conflicts with Existing and Proposed Coast Guard Regulations

Use of non U.S. Type Approved BWMS.

VGP2 expressly allows vessels which have non U.S. Type Approved BWMSs to use such systems to comply with the Permit. Additionally, the VGP2 states that such vessels are not required to meet the exchange and flushing requirements. In other words, the VGP2 allows vessel owners to operate their vessels in contravention of existing and proposed Coast Guard regulations, and potentially, the BWM Convention.

CONCLUSION

Irrespective of the implementation dates proposed and/or adopted in the Coast Guard's proposed rulemaking, the EPA's proposed implementation dates leave the ship owners in a situation where they cannot possibly comply with the VGP2 requirements due to the non-existence of mandated equipment, specifically, BWMSs which have satisfactorily completed land-based testing using the ETV Protocol. The fact that the requirements are scheduled to be implemented before the VGP2 is finalized only exacerbates the situation and provides greater uncertainty for the vessel owner.

The requirement to conduct BWE plus treatment for vessels entering the Great Lakes has no scientific basis, and the EPA admits as much in their Fact Sheet. Neither the SAB Report nor the NAS Report support a conclusion that BWE plus treatment is an appropriate TBEL or QBEL standard. Moreover, EPA has not considered the negative environmental impacts associated with doubling the amount of air emissions resulting from operating generators and treatment equipment.

¹¹ At 4.4.3.9.4.2 on page 127 of the VGP Fact Sheet, EPA requests information on the potential impacts of requiring treatment plus BWE.

INTERNATIONAL MARITIME ENVIRONMENTAL & SAFETY ASSOCIATES

INDEX TO ACRONYMS

ABS	American Bureau of Shipping
BWDS	Ballast Water Discharge Standard
BWM	Ballast Water Management
BWMP	Ballast Water Management Plan
BWMS	Ballast Water Management (treatment) System(s)
CZMA	Coastal Zone Management Act
DNV	Det Norske Veritas (Norwegian classification society)
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETV	Environmental Technology Verification program
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
IACS	International Association of Classification Societies
IL	Independent Laboratory
IMO	International Maritime Organization
NANPCA	National Aquatic Nuisance Prevention and Control Act of 1990
NEPA	National Environmental Policy Act
NISA	National Invasive Species Act of 1996
OMB	Office of Management and Budget
QA/QC	Quality Assurance/Quality Control
QBEL	Water Quality Based Effluent Limit
STEP	Shipboard Technology Evaluation Program
TBEL	Technology Based Effluent Limit
VGP2	VGP2 refers to the Draft National Pollutant Discharge Elimination System (NPDES) General Permits for Discharges Incidental to the Normal Operation of a Vessel published in the Federal Register on December 8, 2011. It is the next iteration of the first VGP which was issued by the EPA in December 2008 and which expires on December 18, 2013.

Type Approval Timeline-Best Case Scenario

ID	Task Name	Duration	Start	Finish	Predecessors	Timeline											
						2011	2012				2013				2014		
						Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	
1	Final Rule Released from DHS to OMB	0 days	Fri 11/11/11	Fri 11/11/11		11/11											
2	Interagency Review period and release of FR	3 mons	Fri 11/11/11	Sun 2/5/12	1												
3	Public Comment for FR, ROD, EIS	1 mon	Sun 2/5/12	Mon 3/5/12	2												
4	Designate Independent Labs	210 days	Mon 3/5/12	Mon 9/24/12	3												
5	Establish criteria for IL designation	120 days	Mon 3/5/12	Fri 6/29/12													
6	ID critical performance measures for IL designation	2 mons	Mon 3/5/12	Wed 5/2/12													
7	Determine accrediting authority for performance measures	2 mons	Wed 5/2/12	Fri 6/29/12	6												
8	IL candidates draft and submit application	1 mon	Fri 6/29/12	Sat 7/28/12	7												
9	Review IL Applications and conduct QA oversight	2 mons	Sat 7/28/12	Mon 9/24/12	8												
10	Conduct Land-Based Testing	390 days	Mon 9/24/12	Sun 10/6/13	4												
11	Planning Phase	90 days	Mon 9/24/12	Thu 12/20/12													
12	Vendor submits technical data package to TO/VO	0 days	Mon 9/24/12	Mon 9/24/12													
13	TO/VO prepares TQAP and submits to EPA UWMB	1 mon	Mon 9/24/12	Tue 10/23/12	12												
14	EPA reviews TQAP	2 mons	Tue 10/23/12	Thu 12/20/12	13												
15	EPA approves TQAP	0 days	Thu 12/20/12	Thu 12/20/12	14												
16	Verification Phase	135 days	Fri 1/18/13	Tue 5/28/13	11FS+1 mon												
17	Verification tests completed iaw ETV Chapter 5-Fresh Water	1 mon	Fri 1/18/13	Sat 2/16/13													
18	Verification tests completed iaw ETV Chapter 5-Brackish or Salt Water	1 mon	Sun 3/17/13	Mon 4/15/13	17FS+1 mon												
19	TO assembles test data package	1.5 mons	Mon 4/15/13	Tue 5/28/13	18,17												
20	Data Assessment & Reporting Phase	135 days	Tue 5/28/13	Sun 10/6/13	16												
21	TO compiles Verification Report & Statement (VR, VS)	1.5 mons	Tue 5/28/13	Thu 7/11/13													
22	VO reviews VR & VS and submits to EPA	1 mon	Thu 7/11/13	Fri 8/9/13	21												
23	EPA reviews VR & VS	2 mons	Fri 8/9/13	Sun 10/6/13	22												
24	EPA approves VR & VS	0 days	Sun 10/6/13	Sun 10/6/13	23												
25	Conduct Shipboard Testing	480 days	Thu 12/20/12	Fri 3/28/14	11												
26	Identify Vessel Owner	2 mons	Thu 12/20/12	Sat 2/16/13													
27	Complete engineering and design work incl class society approval	4 mons	Sat 2/16/13	Wed 6/12/13	26												
28	Install BWMS on vessel	0.5 mons	Thu 7/25/13	Fri 8/9/13	27FS+1.5 mons												
29	Conduct Testing	6 mons	Fri 8/9/13	Wed 1/29/14	28												
30	Compile Data and Submit	2 mons	Thu 1/30/14	Fri 3/28/14	29												
31	Conduct Environmental (shake/rattle/roll) testing	2 mons	Mon 9/24/12	Wed 11/21/12	4												
32	Conduct mechanical/electrical/engineering evaluation	2 mons	Mon 9/24/12	Wed 11/21/12	4												
33	Conduct FIFRA compliance	6 mons	Thu 12/20/12	Wed 6/12/13	11												
34	Conduct NEPA Evaluation	6 mons	Sun 10/6/13	Fri 3/28/14	10												
35	Conduct CZMA consistency review	6 mons	Sun 10/6/13	Fri 3/28/14	10												
36	Conduct ESA consistency review	6 mons	Sun 10/6/13	Fri 3/28/14	10												
37	Conduct VGP discharge compliance testing	2 mons	Sun 10/6/13	Mon 12/2/13	10												
38	Issue Type Approval Certificate	2 mons	Sat 3/29/14	Sun 5/25/14	25,33,34,35,36,37												



