Ballast Water Frequently Asked Questions
(Updated July 2017)

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Ballast Water Management - Frequently Asked Questions
(Revised July 2017)

Coast Guard BWM Regulations and the IMO BWM Convention

1. *How are the Coast Guard ballast water management (BWM) regulations and IMO BWM Convention different?*

The main difference between the Coast Guard BWM (ballast water management) regulations and the International Maritime Organization (IMO) BWM Convention is in the equipment testing and verification protocols. In 2005, as updated in 2008, the IMO released G8 Guidelines for the type approval of ballast water management systems (BWMS) by flag administrations. These recommendatory guidelines are applied differently by flag administrations, and the guidelines do not require type-approval testing to be conducted by an organization independent of the manufacturer. In contrast, U.S. type-approval testing procedures are mandatory, detailed, and specify testing that is independent from manufacturers.

It is important to note the ballast water discharge standards in the Coast Guard regulations and the IMO BMW Convention are the same. As noted here, the testing requirements to prove a BWMS meets the discharge standards are different.

2. *Now that the BWM Convention is ratified, are the Coast Guard and IMO working together on measures to maximize U.S. alignment before it enters into force?*

The Coast Guard is committed to protecting U.S. waters from invasive species and supports a strong national and international solution that does not disrupt the continuous flow of maritime trade which drives the global economy. In this spirit, the Coast Guard will continue to work with its domestic and international partners to identify and highlight the differences between the Coast Guard BWM regulations and the IMO BWM Convention. The Coast Guard will also continue to participate in BW related discussions at the IMO. However, it is important to note that the United States is currently not a party to the BWM Convention. After the BWM Convention enters force (currently September 2017), the Coast Guard BWM regulations will not change.

3. *What differences are there between the Coast Guard's BWM program and Canada's BWM program?*

The primary difference between the United States and Canada's BWM programs is that Canada's is derived from the IMO BWM Convention, and the U.S., a non-signatory, is established pursuant to domestic law (NANPCA/NISA). Both countries support a strong, environmentally sustainable, Great Lakes economy. In 2012, the Coast Guard's BWM regulations went into effect, and in 2013, EPA issued its revised Vessel General Permit. These implement enforceable requirements on certain vessels that operate in waters of the United States, including the Great Lakes, to meet a ballast

water discharge standard and manage other discharges incidental to the normal operation of a vessel. The Coast Guard, EPA, and Transport Canada maintain an ongoing dialog to identify and resolve differences in their respective regulatory requirements to manage ballast water and other potentially harmful discharges from vessels.

4. *Has Canada ratified the IMO Convention?*

Canada ratified the Convention in April 2010, but the U.S. government is not a signatory. This has resulted in 3 similar, but different ballast water regimes – Coast Guard, EPA, and Canada (IMO) – on BWM requirements (e.g., Canada requires treatment and exchange for vessels arriving from beyond the EEZ), vessel extension provisions, and applicability to certain ships.

In-water Survey vs. Drydocking

1. *Is an "in-water survey" (also known as "underwater inspection in lieu of drydocking" (UWILD)) considered the "first scheduled drydocking"?*

No, an in-water survey/UWILD is not considered the "first scheduled drydocking." Clarifying guidance on this issue is provided in: 1) CG-OES Policy Letter, No. 13-01, Revision 2, Section 5.: ORIGINAL COMPLIANCE DATE & FIRST SCHEDULED DRYDOCKING, or 2) Marine Safety Information Bulletin (MSIB) #13-15. Both documents may be found on the Coast Guard's Homeport website. https://homeport.uscg.mil/mycg/portal/ep/channelView.do?channelId=-18366&channelPage=%2Fep%2Fchannel%2Fdefault.jsp&pageTypeId=13489

33 CFR 151.Subparts C and D - Ballast Water Management

1. *What is the Coast Guard ballast water discharge standard (BWDS)? (33 CFR 151.2011 and .2030)*

The Coast Guard's Standards for Living Organisms in Ships' Ballast Water Discharged in U.S. Waters established a ballast water discharge standard (BWDS) for allowable concentration of living organisms in ship's ballast water discharged in waters of the U.S. Vessels employing a Coast Guard-approved BWMS must meet the following BWDS by a certain date (see next FAQ):

(1) For organisms greater than or equal to 50 micrometers in minimum dimension: discharge must include fewer than 10 organisms per cubic meter of ballast water.

(2) For organisms less than 50 micrometers and greater than or equal to 10 micrometers: discharge must include fewer than 10 organisms per milliliter (mL) of ballast water.

(3) Indicator microorganisms must not exceed:

i. For Toxicogenic *Vibrio cholerae* (serotypes O1 and O139): a concentration of less than 1 colony forming unit (cfu) per 100 mL.
ii. For *Escherichia coli*: a concentration of fewer than 250 cfu per 100 mL.
iii. For intestinal enterococci: a concentration of fewer than 100 cfu per 100 mL.

2. *What is the implementation schedule for approved BWM methods? (33 CFR 151.1512 and .2035)*

As set forth in the following table, the BWM regulation establishes an implementation schedule based on vessel construction dates and ballast water capacity.

Implementation Schedule for Approved Ballast Water Management Methods			
Vessel's ballast water capacity (in cubic meters)		Date constructed	Vessel's compliance date
New vessels	All	On or after Dec. 1, 2013	On Delivery
Existing vessels	Less than 1,500	Before Dec. 1, 2013	First scheduled drydocking* after Jan. 1, 2016
	1,500-5,000	Before Dec. 1, 2013	First scheduled drydocking* after Jan. 1, 2014
	Greater than 5,000	Before Dec. 1, 2013	First scheduled drydocking* after Jan. 1, 2016

**Drydocking means hauling out of a vessel or placing a vessel in a drydock or slipway for an examination of all accessible parts of the vessel's underwater body and all through-hull fittings – 46 CFR 71.50-1.*

3. *May a vessel avoid installation of a BWMS by its implementation date if it will not discharge ballast water within 12 nm of the US?*

Yes, vessels that do not discharge ballast water into waters of the United States are not required to install a BWMS (33 CFR 151.2025(a)(4)).

Waters of the United States means waters subject to the jurisdiction of the United States as defined in 33 CFR § 2.38, including the navigable waters of the United States. For 33 CFR part 151 subparts C and D, the navigable waters include the territorial sea as extended to 12 nautical miles from the baseline, pursuant to Presidential Proclamation No. 5928 of December 27, 1988." 33 CFR 151.1504

4. *Does the definition of the term "Exclusive Economic Zone" encompass the joint US EEZ and the Canadian EEZ and, if so, how does this affect the BWM requirements for vessels transiting from Canada across the EEZ, within 200 nm of land, to a port or place in the US, including the Great Lakes?*

Yes, the definition of the term "Exclusive Economic Zone" encompasses the joint US EEZ and the Canadian EEZ (see 33 CFR 151.1504 and 16 USC 4702).

For the Great Lakes, commercial vessels over 1600 GRT that operate between the Anticosti Island boundary and the EEZ prior to entering the Great Lakes are "seagoing vessels" and therefore must meet the requirements of 33 CFR 151.2025. For vessels operating solely within the Great Lakes and the Canadian EEZ, and that are less than or equal to 1,600 gross register tons or less than or equal to 3,000 gross tons ITC, the ballast water management requirements in 33 CFR 151.2025 do not apply since 33 CFR 151.2015 (d)(1) provides an exemption for these vessels.

5. *What does the term "exclusively" in 33 CFR 151.2015(c) and 33 CFR 151.2015(d)(3) mean for vessels that operate or take on and discharge ballast water "exclusively" in one Captain of the Port (COTP) Zone?*

In 33 CFR 151.2015 (d)(3) the term "exclusively" refers to the uptake and discharge location of ballast water. If a vessel takes up and discharges ballast water solely in one COTP zone, and then operates outside of that COTP zone, the vessel is exempt from the BWM requirements of 33 CFR 151.2025. The vessel is still required to meet the reporting and recordkeeping requirements of 33 CFR 151.2060 and .2070 respectively. If a vessel takes up ballast water outside of the COTP zone in which it otherwise exclusively takes up and discharges ballast water, the vessel is no longer eligible for this exemption until it has cleaned the ballast water system, including removal of all residual sediments.

Example scenarios:
a. Vessel operates only in one COTP zone (does not cross into other COTP zones) and has never had water from another COTP zone in its ballast water system – exemption under 33 CFR 151.2015(c) applies.

b. Vessel operates as in (a) above, but then transits to another COTP zone – exemption under 33 CFR 151.2015(c) no longer applies. Vessel must meet reporting and recordkeeping requirements and, if ballast water is discharged, must meet BWM requirements. Vessel can re-establish "exclusive" status in the new COTP zone by thoroughly cleaning the ballast water system and by limiting operation to the new COTP zone.

c. Vessel operates between two or more COTP zones, but only takes up and discharges ballast water in one specific COTP zone – exemption under 33 CFR 151.2015 (d)(3) applies. The vessel must keep appropriate records and submit BWM reports for all arrivals, but it is not required to meet the BWM requirements prior to discharge.

d. Vessel operates as in (c) above, but then needs to discharge ballast water in a different COTP zone than where it was taken up - exemption under 33 CFR 151.2015 (d)(3) no longer applies. The vessel must: 1) keep appropriate records, 2) submit BWM reports for all arrivals, AND 3) meet the BWM requirements prior to discharge for all discharges. Vessel can re-establish "exclusive" status by cleaning the ballast water system and then taking up and discharging water only in one specific COTP zone.

e. In order to establish "exclusivity" after engaging in ballasting operations within several COTP zones, a vessel operator must clean the vessel's ballast water system, including removal of all residual sediments from the vessel's ballast tanks.

6. *If the ballast water in Question 5(a) does not need to be exchanged/treated, can the vessel continue to load and discharge ballast water in the same location without conducting any management activities (exchange or treatment) (e.g., if the ship goes into standby status in that port or place for a year, can vessel crew continue to load and discharge ballast water as necessary to allow access to the vessel's ballast tanks for surveys, repairs, etc.)?*

Yes. The vessel must follow the nonindigenous species reduction practices of 33 CFR 151.2050.

Ballast Water Management Requirements

1. *Will vessels currently required to conduct ballast water exchange be required to install BWMS?*

Vessels may continue to conduct ballast water exchange until the Implementation Schedule date specified in 33 CFR 151.2035(b). Ballast water exchange is a ballast water management method until the vessel's compliance date in accordance with 33 CFR 151.2025(a)(3). After a vessel's compliance date, the vessel is required to meet the ballast water discharge standard (BWDS) and use one of the acceptable methods listed in 33 CFR 151.2025.

2. *Prior to its implementation date, can a coastal vessel which never goes outside the EEZ conduct ballast water exchange within the EEZ?*

The regulations require ballast water exchange to occur more than 200 miles from shore. Vessels on voyages that do not go beyond 200 miles from shore may claim a route exemption and not perform ballast water exchange.

3. *Do the Coast Guard's regulations apply to deck barges that operate outside of 200nm? Are deck barges required to install a BWMS?*

The Coast Guard's regulations apply to unmanned deck barges towed more than 200 miles offshore if the barge has ballast tanks and operates in waters of the U.S. Coast Guard regulations in 33 CFR 151.2025 provide several acceptable options for managing ballast water. Although installing and operating a CG approved BWMS is an acceptable option in these regulations, a BWMS is not technically required as there are other options available. If, despite all efforts, compliance with the requirement under 33 CFR 151.2025(a) is not possible, the barge owner/operator may apply for an extension to the vessel's compliance date (see 33 CFR 151.2036).

4. *Are BWM plans required to be approved by the Coast Guard?*

The Coast Guard does not "approve" BWM plans developed under 33 CFR 151.2050(g). The Coast Guard will review these plans during the course of normal Port State Control Exams and vessel inspections.

5. *What are the BWM requirements for MODUs?*

33 CFR 151 subpart D does not apply to mobile offshore drilling units (MODUs) that operate exclusively beyond the US Territorial Sea (i.e., beyond 12 nm from the U.S. baseline). If a MODU enters waters of the U.S. (e.g., weather avoidance, repairs, maintenance, etc.) and has ballast water onboard, it must comply with the applicable portions of 33 CFR 151.

In the case of self-elevating MODUs, also known as jack-ups, jack-up rigs, or self-elevating units, "pre-load" tanks may be filled with water to control or maintain the vessel's trim, draught, stability, or stresses of the vessel. In this case, the pre-load water is considered to be ballast water, and any discharge of this water into waters of the U.S. must be managed in accordance with the ballast water regulations. If the pre-load water meets the definition of ballast water, it is recommended the MODU's BWM plan include a procedure to clean the pre-load tanks before taking up, and subsequently discharging, the pre-load water into U.S. waters.

6. *Can a MODU arriving from outside waters of the U.S. with potable water in the pre-load tanks discharge the water into waters of the U.S.?*

It depends on where the potable water was sourced. If the water is from a U.S. public water system, as defined in 40 CFR 141.2, the potable water may be discharged into the waters of the U.S. (Note – tanks must have been previously cleaned, including removal of residual sediments, and not subsequently have had ambient water introduced.) If the potable water is from a non-U.S. water system it must be managed using an approved management method (see 33 CFR 151.2025) before discharging it into waters of the U.S.

33 CFR 151.2026 - Alternate Management System (AMS)

1. *Does the Coast Guard have a preferred AMS application submission model?*

There is no approved application template for organizing an AMS application. On the Coast Guard Homeport website an AMS checklist is posted that accompanies the AMS Policy Letter (also available on the Coast Guard Homeport website). Applicants are encouraged to use the checklist and structure their applications in a manner that supports expeditious review.

2. *What will be the basis for denial of a request for AMS determination?*

Requests for AMS determination are evaluated on a case-by-case basis. To be eligible for AMS determination, the BWMS manufacture must include the information listed in 33 CFR 151.2026. Included in the requirements for AMS approval, the BWMS must have been type approved by a foreign Administration pursuant to the standards set forth in the IMO Ballast Water Management Convention. Type approval dossiers that do not conform to the procedures and criteria in the G8 and G9 guidelines adopted by the IMO will be at risk of denial of AMS status. Further information is available in CG-OES Policy Letter No. 12-01, available at Coast Guard Homeport website, http://homeport.uscg.mil/ballastwater , under the Ballast Water Management Program, Alternative Management Systems (AMS) section.

3. *Is an AMS determination the same as type-approval*?

No, an AMS determination is an interim measure that allows foreign administration approved BWMS, installed prior to the availability of Coast Guard type-approved BWMS and before the vessel's compliance date as specified in table 33 CFR 151.2035(b), to be used on a vessel for up to 5-years after the vessel would otherwise be required to comply with the BWDS. Under the Coast Guard regulations, AMS may not be installed if a type approved system is available for a given class or type of vessels, or for a specific vessel.

4. *To what extent will changes to a BWMS which has been type approved by a foreign administration be permitted when applying for AMS determination? Will the conditions at 162.060-16 "changes to an approved BWMS" apply?*

The regulations in 162.060 only apply to BWMS submitted to the MSC for evaluation and approval as a Coast Guard type approved BWMS and do not apply to AMS. With regard to BWMS which have previously received designation as an AMS, and for which manufacturers propose to make modifications to the AMS, the procedures set forth in 33 CFR 151.2026 should be followed, including submission of a description of the modifications. Prior to submission of either a new request for AMS designation, or submission of a request for approval of modifications to an existing AMS, manufacturers must receive approval from the foreign administration with jurisdiction.

5. *May a vessel that has been fitted with an AMS employ that system instead of conducting ballast water exchange prior to the vessel's original or extended ballast water discharge standard compliance date?*

Yes. Under 33 CFR 151.2025(a)(3), a vessel may use an AMS instead of performing ballast water exchange so long as the AMS was installed prior to the original or extended date that the vessel is required to comply with the ballast water discharge standard. A vessel may then employ the AMS for no longer than 5 years after the vessel's original or extended ballast water discharge standard compliance date.

Ballast Water Extension Program

1. *How does Coast Guard grant ballast water (BW) extensions now that Coast Guard type-approved BWMS are available?*

U.S. regulations allow the Coast Guard to grant a BW extension to a vessel's compliance date if the master, owner, operator, agent or person in charge (collectively "owner/operator") documents that, despite all efforts, compliance with one of the approved ballast water management methods, including installation of a Coast Guard type-approved BWMS, is not possible. Now that type-approved BWMS are available, any owner/operator requesting an extension must provide the Coast Guard with an explicit statement supported by documentary evidence (e.g., a delay in commercial availability) that installation of the type approved system is not possible for purposes of compliance with the regulatory implementation schedule.

While this statement may justify that a type-approved BWMS is not available, there are other ways that vessels can comply with U.S. BWM regulations. These include:

- Temporarily use a foreign Administration type-approved BWMS that has been accepted by the Coast Guard as an AMS (5-year limitation) if installed in compliance with 33 CFR Part 151
- Use of ballast water obtained exclusively from a U.S. public water system
- Discharge of ballast water to a reception facility
- No discharge of unmanaged ballast water inside 12 nm"

For further information, please see Coast Guard Marine Safety Information Bulletin 14-16 (issued December 2, 2016) and Marine Safety Information Bulletin 003/17 (issued March 6, 2017)which provide information concerning:

- The BW extension program;
- Vessel compliance dates; and
- Use of AMS.

These MSIBs can be found on the Coast Guard Homeport website.

2. *The BWM regulations state that requests for BW extensions must be submitted no later than 12 months before the scheduled compliance date listed in 33 CFR 151.2035(b). Does this mean the "keel-laying" date, the delivery date of the vessel, the first scheduled dry-docking date, or the date when the vessel will begin operating in U.S. waters*?

The compliance date for new build vessels is the delivery date of the vessel. The compliance date for existing vessels is based on the vessel's first scheduled dry-docking date after the date specified in table 33 CFR 151.2035(b).

New build and existing vessels are classified by the construction date. The definition of "Constructed" (33 CFR 151.2005(b)) explains how to determine the "construction date" of the vessel:
(1) The keel of a vessel is laid;
(2) Construction identifiable with the specific vessel begins;
(3) Assembly of the vessel has commenced and comprises at least 50 tons or 1 percent of the estimated mass of all structural material, whichever is less; or
(4) The vessel undergoes a major conversion.

33 CFR 151.2050 - Sediment and Fouling Organisms

1. *What is the enforcement date for the requirement to incorporate fouling maintenance and sediment removal procedures into existing ballast water management plans?*

The effective date to incorporate fouling maintenance and sediment removal procedures into ballast water management plans was June 21, 2012 (see generally 33 CFR 151.2050 and 151.2050(g)(3) specifically).

2. *33 CFR 151.2050(g)(3) requires that the ballast water management plan include fouling maintenance and sediment removal procedures. If vessels already have these procedures as part of their normal operating procedures in sufficient detail to meet the requirements of this section, can the BWM plan incorporate the procedures by reference?*

Referencing other operational documents in the BWM plan is sufficient. All referenced documents must be onboard and available for examination by the Coast Guard.

3. *Can sediment from ballast tanks be disposed of within the EEZ and, if so, at what minimum distance?*

Sediment should be disposed of as far from shore as practicable, but must be outside 12 nautical miles (nm), and in accordance with the Coast Guard's "Guidance on Verification of Fouling Maintenance and Sediment Removal Procedures", 5 Nov 2012 available at the Coast Guard Homeport website. (See also, Navigation and Vessel Inspection Circular 07-04, Change-1 (NVIC 07-04, CH1), Encl. 2.) (https://www.uscg.mil/hq/cg5/nvic/pdf/2004/NVIC_07-04_CH-1.pdf)

Ballast Water Management Reporting and Recordkeeping (BWMRR) (33 CFR 151.2060 & 151.2070

1. *Are vessels that use only ballast water sourced from a U.S. public water system subject to the BWMRR requirements?*

Vessels employing this BWM method are subject to applicable requirements of 33 CFR 151 subparts C and D, including the reporting and recordkeeping requirements.

2. *Is there an alternative to the BWMRR requirements under 33 CFR 151.2060?*

The BWM regulations allow owners/operators to propose alternative methods of reporting (33 CFR 151.2065) for vessels other than those entering the Great Lakes or Hudson River after operating outside the U.S. Exclusive Economic Zone or the Canadian equivalent. The Coast Guard may approve a written request for alternative methods if they are at least as effective as those required in 151.2060, and compliance with 151.2060 is economically or physically impractical. The Coast Guard Environmental Standards Division (CG-OES-3) will approve or disapprove a request within 30 days of receipt. More information on equivalent reporting is available at the National Ballast Information Clearinghouse (NBIC) website.
http://invasions.si.edu/nbic/

3. *Instead of carrying an invoice for dock water/municipal water taken on in ballast tanks, is it acceptable for vessels to make an entry in the ship's log detailing the time, date, location, etc. of municipal water loaded?*

33 CFR 151.2025 (a)(2) requires a receipt, invoice or other documentation from the U.S. public water system (PWS) operator indicating the water came from that system. Other acceptable documentation could include a letter from the PWS, a formal stamp or notation in the vessel's logbook from the PWS, or some other formal means of documentation from the PWS.

4. *Are the BWMRR requirements (effective Feb 22, 2016) applicable to FPSO's operating on the US Outer Continental Shelf?*

Under the BWMRR final rule, if the FPSO's are operating within 12 nm of the US baseline, then the BWMRR applies. However if the FPSOs are outside 12nm, then the BWMRR rule does not apply.

5. *Do ballast water reports need to be retained on board the vessel?*

Pursuant to 33 CFR 151.2070(a), the master, owner, operator, agent, or person in charge of a vessel bound for a port or place in the United States, unless specifically exempted by § 151.2015, must ensure the maintenance of written or digital records that include the information required to be reported by § 151.2060, including the sediment information in .2060(a)(1). The recordkeeping requirement may be met by maintaining a copy of the report filed with the NBIC. These records may be stored on digital media but must be readily viewable by the Coast Guard during an inspection.

6. *How do I know NBIC received my BWM reporting form?*

The NBIC website is designed to provide immediate confirmation of receipt of the ballast water management reporting form. Vessel operators can print a hardcopy of the receipt or download to a file (or both) for recordkeeping purposes.

7. *What BWMRR regulations apply to MODUs?*

For applicability purposes of 33 CFR 151 Subpart D, specifically section 151.2010: Unless exempted in 151.2010 or 151.2015, this subpart applies to all vessels, U.S. and foreign, equipped with ballast tanks, that operate in the waters of the United States' and are bound for ports or places in the United States are require to comply with 33 CFR 151.2025 and .2060.

8. *What BWMRR regulations apply to inland towing vessels?*

Non-seagoing vessels (i.e., vessels that operate exclusively within the boundary line established by 46 CFR part 7, including vessels that navigate exclusively on inland waters) are exempt from the ballast water management requirements in 33 CFR 151.2025 (see 33 CFR 151.2015(c) & (d)). Non-seagoing vessels are required to comply with 33 CFR 151.2050 (Additional requirements - nonindigenous species reduction practices), 33 CFR 151.2060 (Reporting Requirements) and 33 CFR 151.2070 (Recordkeeping Requirements).

9. *Can a downloaded BWM reporting form in PDF format be sent via personal email to nbic@ballastreport.org?*

Yes, NBIC will accept the BWM report form as a conventional email attachment. From the NBIC website, the vessel owner/operator may download and save a .pdf of the BWM reporting form. Using Adobe Reader version 9 or later, the form may be used as a template for subsequent reports.

10. *In the event an original BWM reporting form contains erroneous information, may a vessel owner/operator/agent submit an amended/corrected form to NBIC?*

Yes. If a corrected form needs to be submitted, please choose "Corrected Form" either on the .pdf form or in the Web App.

11. *May a vessel submit its BWM reporting form more than 24 hours prior to arrival?*

Yes, the BWM reporting regulations (33 CFR 151.2060) do not preclude a vessel from submitting its report 24 hours prior to arrival.

12. *Would BWMRR regulations apply to vessels which operate within a single COTP Zone and have ballast tanks (carry potable water in tanks which helps with*

stability) or take on potable water and do not discharge any water? If those vessels fall under the reporting requirements, are there gross tonnage cut-offs?

Yes, the BWMRR requirements apply. There are no gross tonnage cutoffs for the Annual Ballast Water Summary report.

13. Do the BWMRR requirements apply to large recreational yachts?

33 CFR 151 Subpart D, including the BWMRR requirements, do not apply to recreational vessels.

Note - The regulation does not define recreational vessels. Some vessels that are represented as large recreational yachts may operate commercially and, therefore, are not recreational. For example, large yachts that may be time chartered or voyage chartered to a client are commercial vessels and are not recreational. In such cases, these vessels must comply with 33 CFR 151 Subpart D in its entirety, unless some other exemption in Subpart D applies. See 33 CFR 151.2015 and 33 CFR 151.2015, Table 1.

Enforcement and Compliance

1. *Are Coast Guard ballast water management requirements part of the Foreign Tank Vessel Exam Book (FTVEB) used by Coast Guard inspectors during port State control exams?*

Yes, the BWM requirements are reflected in the FTVEB, as well as other exam books as appropriate.

2. *Will BWMS be regularly tested for compliance once they are installed on board vessels?*

Coast Guard will assess BWM compliance by vessels during inspections of domestic vessels and port State control examinations of foreign vessels. Assessment of a vessel's compliance with the BWM requirements is multi-faceted, and may include testing samples of ballast water. Proper documentation; crew knowledge; system installation, maintenance, and operation; and discharge quality are all subject to evaluation during compliance assessments. The Coast Guard has the authority to take and test samples of ballast water for compliance with the BWDS.

3. *How do Coast Guard and EPA coordinate compliance for vessel discharges?*

The Coast Guard and EPA signed a Memorandum of Understanding (MOU) on 14 Feb 2011 to better coordinate efforts to prevent illegal discharges of pollutants from more than 61,000 commercial ships based in the U.S. and more than 9,000 foreign ships operating in waters of the U.S. The MOU is a framework for improving EPA and Coast Guard cooperation on data tracking, training, monitoring, verifying compliance,

and industry outreach. Of note, the MOU specifies the Coast Guard will not enforce the state BW provisions certified under Sec. 401 of the Clean Water Act.

4. *How will U.S. flag vessels demonstrate ballast water management compliance to Port State authorities in non-US ports?*

Until the BWM Convention enters into force, U.S. flag vessels have to comply with the national laws and regulations of non-U.S. Port States.

Once the BWM Convention enters into force, U.S.-flag vessels in a foreign port will have to comply with that Port State's national laws and regulations, and must also comply with the Convention if the port state is signatory to it. U.S. flag vessels must have an approved BWM Plan that meets the Convention's requirements as well as meeting the requirements in 33 CFR 151.2050(g). The Plan must include vessel actions for implementing the mandatory BWM requirements and practices.

5. *Does the Coast Guard or EPA give compliance waivers from the BWM regulations based on the sailing area of a vessel? In other words, is a vessel allowed to operate within a limited sailing or trading area without complying with the BWM regulations if the vessel operates exclusively in that trading area?*

Questions related to EPA compliance and enforcement policies under the VGP should be referred to the EPA. Generally, there is no "waiver" available to a non-recreational vessel equipped with ballast tanks that would allow it to discharge unmanaged ballast water into waters of the U.S. However, certain exemptions are available to vessels which may limit the applicability of all or some of the BWM regulatory requirements (see 33 CFR 151.2015 – Exemptions; 33 CFR 151.2040 - Discharge of ballast water in extraordinary circumstances).

6. *What steps must a vessel owner/operator take when destined for a port or place in the US and the vessel's BWMS stops operating properly, or the vessel's BWM method is unexpectedly unavailable?*

33CFR151.2040 provides that if the vessel's installed BWMS stops operating properly during a voyage, or the vessel's BWM method is unexpectedly unavailable, the vessel owner/operator must report the problem to the nearest COTP as soon as practicable. The vessel may continue to the next port of call, subject to the directions of the COTP.

Owners/operators are advised the BWM report to NBIC does not substitute for notification to the COTP in the event a BWMS stops operating properly, or the vessel's BWM method is unexpectedly unavailable.

Vessel owners/operators are encouraged to include "contingency plans" as part of the vessel's BWM plan. The contingency plan describes how, in consultation with the COTP, ballast water will be managed if the BWMS stops operating properly, or the vessel's BWM method is unexpectedly unavailable.

46 CFR 162.060-10 - BWMS Approval Procedures

1. *Can a manufacturer submit testing proposals or requests for alternatives with the Letter of Intent (LOI)?*

No, the purpose of an LOI is to notify the Coast Guard that testing is planned. Testing proposals must be coordinated with the independent laboratory (IL). Requests for alternatives must be submitted by the manufacturer or IL in accordance with § 162.060-10(b)(1).

2. *Can a manufacturer use more than one IL to carry out the test program?*

Yes. A manufacturer may use the services of more than one IL to conduct the required tests; however, the Coast Guard requires that a single IL coordinate and oversee all testing and reporting for each application. The coordinating IL must evaluate test reports generated by labs not under its purview for compliance with the approval regulations. The coordinating IL may reject test reports upon a finding that the testing failed to comply with IL quality assurance requirements and/or regulations.

3. *What documentation is required to establish a third party consultant as the point of contact for a manufacturer?*

A letter from the manufacturer to MSC which identifies the designated point of contact for the manufacturer regarding the type approval application is acceptable. The designated point of contact must be identified in the LOI.

4. *Can a manufacturer or IL seek waiver from testing requirements with a 10(b)(1) request?*

No. The regulations do not allow for a waiver of test requirements. However, manufacturers and ILs may request approval of alternatives as equivalent to the requirements. 10(b)(1) requests must include the justification for any proposed changes and contain full descriptions of any proposed alternative tests.

5. *Can a manufacturer apply for type approval with multiple filters?*

Yes. The Coast Guard has developed a standard procedure for testing alternate filters:

A. The manufacturer must first conduct testing in accordance with 46 CFR 162.060 on the BWMS system with a primary filter of their choosing.

B. A design study must be completed by the manufacturer to assess the similarities between the primary filter and all alternate filters proposed. The IL will review the information provided to assess equivalence to the original filter and compatibility with the overall BWMS. This design study should include comparisons of the following:

i. General arrangement of the system and filter interface.
ii. Filter mesh type, rating, material, and design specification (ASME, ISO, etc.)
iii. Rated minimum and maximum filter flow of each filter as identified by the manufacturer.
iv. Minimum and maximum filter operating pressures of each filter
v. Differential pressure of the clean filter at maximum flow rate
vi. Differential pressure set point to initiate the cleaning/back flush cycle
vii. Filter flow characteristics which note the effects of cleaning cycles on throughput and any other unique characteristics of the component
viii. Effective filtration area
ix. Filtration velocity (Flow rate per square meter of effective filtration area)
x. Backflush process characteristics (frequency, mode, etc.)

C. Three sequential, replicate biological efficacy (BE) land-based tests meeting ETV challenge conditions shall be conducted on the BWMS with each alternate filter at each salinity for which the manufacturer is requesting type approval. These results shall be compared to the results of the BE tests conducted using the primary filter.

D. Operating and Maintenance (O&M) testing shall be conducted, in accordance with the ETV protocol, on the BWMS with all alternate filters. O&M testing shall consist of a minimum 50 hours.

E. Component testing, following the requirements of 46 CFR 162.060-30, shall be conducted on any electrical or electronic component of the alternate filters which has not already been subject to environmental testing.

F. Once complete, the IL shall evaluate the information obtained from the steps above to conclude equivalent performance of the alternate filters. The IL may add criteria as needed to evaluate overall equivalence and compatibility. The IL shall include the results of the design study and all other associated testing, along with a recommendation for approval/disapproval of the alternate filters, with the final test report required by 46 CFR 162.060-34.

6. *What does the Coast Guard require for approval of BWMS that are evaluated by scaling analysis in lieu of testing?*

Due to the complexity of BWMS and the different methods employed to meet the BWDS, the Coast Guard has determined that a standard procedure for scaling is not practical. Scaling of systems will be evaluated on a case-by-case basis taking into account the unique nature of each system.

Scaling of all tests (including mathematical and computational fluid dynamics modeling) must be clearly identified in the Experimental Design section of the Test Plan. The IL must ensure the test plan, including any scaling, meets the requirement for testing in 46 CFR 162.060. The manufacturer is responsible for completing the scaling study and submitting to the IL for review. The IL is responsible for validating the assumptions, modeling, and quality of empirical data when evaluating the scaling study.

A scaling study should include a thorough review of system design, system performance, mathematical and computational fluid dynamics (CFD) model components, justifications, and decisions, along with the results of both the land-based (LB) and shipboard (SB) testing. The numerical model must be calibrated to experimental data to validate the modeling method. If calibration shows the model does not represent experimental results, then the model must be updated to reduce fit error with the experimental data. Additionally, a sensitivity analysis must be supported with conclusions on numerical model accuracy and the impact of varying parameters between the models.

The MSC will make final determination on the acceptance of testing and numerical modeling during its review of the type approval application.

7. *On what basis will the Coast Guard include hold time conditions on the type approval certificate?*

The test plan must identify the operational requirements of the BWMS, which would include hold time limitations as presented in the manufacturer's performance claim. Hold time, along with all other operational parameters, are specified by the manufacturer. While regulations require test hold times of at least 24 hours, LB and SB testing provide the flexibility of testing across a range of hold times. If hold time limitations are identified by the manufacturer or observed by the IL, the type approval certificate will include hold time as an operational limitation based on test results. If hold time is not identified by the manufacturer or IL as a limitation, then the test plan must incorporate a means to evaluate lesser hold times. The type approval certificate may be issued with hold time limitations as specified by the manufacturer or recommended by the IL.

8. *Is it possible to type-approve BWMS with lower flow rates than the rates specified in the ETV Protocol, for example: systems with 10-30 m^3/hr flow rates?*

Yes, if the smaller unit is part of a series, this could be addressed by 162.060-26(f). A smaller unit that is not part of a series could be tested at a lower rate, provided an IL can test at the lower rate, but in all other respects in accordance with 162.060. If no IL can test at the lower rate, the manufacturer may propose an alternative under 162.060-10(b)(1).

9. *What does the Coast Guard mean by the term "novel" in 46 CFR 162.060-1 which states: "The Coast Guard advises applicants that applications containing novel processes or active substances may encounter significantly longer reviews during these (NEPA, ESA and/or other environmental statutes) evaluations"?*

The Coast Guard's objectives include promoting the development of innovative BWM technologies that are practicable for shipboard use, rather than specifying which technologies should be developed into commercial products. However, some technologies may not have been previously evaluated for acceptability in treating water to remove or kill organisms, and hence may need to be evaluated in greater detail for the potential of their operations or discharges to impact ships, crew, or the marine environment. If you have specific questions about the potential use of novel processes, please contact the MSC at msc@uscg.mil .

10. Can a containerized BWMS be used for SB type-approval testing?

Containerized BWMS may be used during SB type approval testing. However, the containerized arrangement should be consistent with the configuration of its intended final use.

11. How much change is allowable in a type-approved BWMS before additional testing and evaluation is required? For example, can the electronics be upgraded to reflect advances in technology without having to go through type approval testing again?

Any proposed change to a type-approved BWMS must be reviewed by the Coast Guard prior to making the change. Changes are dealt with on a case-by-case basis. Equivalencies to established standards and justification supporting proposed changes must be provided in accordance with 46 CFR 162.060-16. Failure to secure Coast Guard review and acceptance of a change will void the type approval.

12. Will the Coast Guard issue certificates and type-approval numbers for each unit of a type approved BWMS that is manufactured?

The Coast Guard will issue a specific certificate and type approval number for each BWMS model.

The certificates list: https://cgmix.uscg.mil/Equipment/EquipmentSearch.aspx

Copies of the type approval certificates are available online here

13. Will Coast Guard specify limits and conditions on the type approval certification, and if so, how will these limits and conditions be determined by the Coast Guard?

Applicable limits and conditions for BWMS type approval will be specified on the type approval certificate. Limits and conditions are determined on a case-by-case

basis during the approval process per §162.060-10(g). As an example, the Coast Guard has issued limits and conditions relative to salinity ranges, system volume and whether or not a system is suitable for installation within a hazardous location.

14. What must be included in a proposal for an alternative examination, test, or evaluation under 46 CFR 162.060-10(b)(1)?

Every proposal for an alternative examination, test or evaluation must address the required elements described in the regulation. Each proposal must explain why the requirement is not practicable or applicable. It must also explain how the proposed examination, test or evaluation is equivalent to the requirement. Finally, the proposal must fully describe the proposed method and contain full descriptions of the proposed alternative tests including detailed instructions on how the method is performed.

46 CFR 162.060-12 – Use and Acceptance of Existing Test Data

1. *Does Coast Guard have any guidance on acceptability of existing data?*

Guidance on acceptability of existing data, beyond what is provided in 46 CFR 162.060-12, can be found under the Type Approval section on the Coast Guard Homeport website.

46 CFR 162.060-14 – Information Requirements for the BWMS Application

1. *How does the Coast Guard define marine portable tanks as referenced in §162.060-14(A)(5)?*

Marine Portable Tanks are defined in 46 CFR Part 64.

2. *Is there a standard format for the application package for type approval?*

No, there is no prescribed format. Applications must meet the requirements of §162.060-14. Note however, the Test Report and Operation, Maintenance, and Safety Manual (OMSM) must be formatted in accordance with § 162.060-34 and § 162.060-38, respectively. The Coast Guard has developed a BWMS Type Approval Review Checklist as guidance to cross reference between the approval requirements of 46 CFR 162.060-10(f) and the required application documentation of 162.060-14. The checklist can be found under the Type Approval section at the Coast Guard Homeport website.

Although not required, experience has shown that use of the MSC checklist with column b. completed may help facilitate and expedite the review of a type approval application.

The BWMS application package may be submitted electronically to msc@uscg.mil

46 CFR 162.060-16 – Changes to an Approved BWMS

1. *Can parameter or component changes be made to an approved BWMS?*

The manufacturer of a BWMS that is approved by the Coast Guard must notify MSC of any change in design or intended operational conditions unless those changes are done in accordance with the OMSM. Changes requiring notification include deviations from the software code, hardware components, and design parameters as listed on the type approval certificate and associated OMSM. In accordance with 46 CFR 162.060-16(c), the Coast Guard may require additional testing and/or evaluations to be completed.

2. *Can parameter or component changes be made during the testing phase prior to approval?*

Generally, changes cannot be made once the test program has commenced. The manufacturer should first coordinate with the IL to determine the significance of the change and impacts on the overall BWMS performance. MSC will review these requests on a case by case basis to determine if the test program needs to be restarted.

3. *Is it permissible to change a manufacturer's performance claim during type approval testing? For example, a BWMS is designed for, and starts testing with, a UVT of 45%; after testing is underway, the manufacturer proposes to change the UVT limit to 50% and continue without restarting the test from the beginning.*

Each proposed variance from the original/approved test parameters should be submitted to the MSC for review. Only conservative changes are allowed. This means a limit may be changed during testing to make it more restrictive, but not more permissive. For example, any test that was run successfully at 45% UVT provides support for the claim that the system would be effective at 50% or higher. The opposite situation would not be true - an early test at 50%, under a claim of efficacy down to 50%, would not support a later mid-testing claim that the system would be effective at a lower UVT such as 45%. If an invalid test (for example, UVT during test was below the manufacturer's claim) provided some indication that the system would not be effective at conditions outside the claimed limits, these test results must be included in the test report, as they provide useful evidence to support the final system operating limits.

46 CFR 162.060-20 – Design and Construction Requirements

1. *What are the "recognized national or international standards" for BWMS design and construction criteria?*

There are several options for conformance to recognized standards, which include:

a. Existing federal regulations found in 46 CFR Subchapters F and J (required if seeking approval for installation on U.S. flagged ships);
b. Rules of a Recognized Classification Society, as defined in 46 CFR Part 8;
c. Appropriate application of a standard published from certain standards organizations (ANSI, ASME, ASTM, IEC, IEEE, ISO, NEC, NEMA, SAE, UL)

2. *If a manufacturer offers an explosion proof option, does component testing need to be completed on it, or will it be addressed as a design modification?*

This issue will be addressed on a case-by-case basis with due consideration to the specific circumstances.

3. *Will the Coast Guard type approve a BWMS, intended for installation in hazardous locations, with electrical equipment certified with ATEX certification?*

Yes. The BWMS may be approved for installation on foreign flagged vessels subject to approval from the vessel's Flag Administration. A BWMS may only be approved for installation on U. S. flagged vessels if the system complies with 46 CFR 111.105.

4. *Does the Coast Guard have a policy on parts replacement and/or repair during type approval testing?*

Yes. Replacement/repair is permitted during type approval testing provided the replacement parts are identical. This means that the replacement part shall be from the same part supplier with the same part/model number as the original. Part replacement/repair must be conducted by the IL (land based testing) or vessel crew (shipboard testing) in accordance with the OMSM. The replacement of parts can also be done by qualified service personnel, but this must be supervised by the IL. It is expected that the IL will make a determination on the validity of the test considering the break in the test process.

5. *Can demonstrated performance onboard a ship be substituted for the inclination requirements of -20(a)(5)?*

No. The IL must determine, through type approval testing observations and engineering analysis that the system is able to perform at the listed angles of inclination.

6. *At 162.060-20(b)(5), there is a requirement that the BWMS must have a monitoring and control system that is capable of storing data for 6 months. However, at 162.060-20(b)(6), if the control and monitoring unit is replaced,*

actions must be taken to ensure data recorded prior to replacement is available for a period of 24 months? Is this an administrative error, or is there an expectation that monitoring systems retain data for 24 months?

The BWMS must have the capability to store data for 6 months. If the control and monitoring unit is replaced, the replacement must also store data for 6 months. The data from the replaced unit must be available (i.e., on board, available for inspection) for a period of 24 months after replacement. This data does not have to be stored in the control and monitoring unit, it can be a paper copy or an electronic file that can be accessed during an inspection and/or copied to suitable media (e.g., CD) and provided to the Coast Guard.

46 CFR 162.060-22 – Marking Requirements

1. *Can a manufacturer who has received type approval for their BWMS mark systems that were previously installed on vessels prior to type approval?*

The manufacturer may only mark systems that comply exactly with the type approval certificate and associated OMSM.

46 CFR 162.060-24 – Test Plan Requirements

1. *Does the Coast Guard require that LB, SB, and component testing be accomplished in a specific order?*

No, the Coast Guard does not require that testing is done in a specific order.

2. *Do LB, SB, and component testing all need to be conducted with the same individual treatment system?*

No, the test program may involve testing of multiple units to allow for simultaneous testing of the 3 phases. However, the same BWMS must be tested for all LB test trials.

With regard to simultaneous testing:

a) O&M testing must occur on one unit (i.e., not be distributed among units), providing an evaluation of system robustness.
b) The IL and/or the IL's subcontracted test facilities are responsible for ensuring that testing is carried out on identical units (i.e., built to same design and standards of construction) of the same model.
c) It is the manufacturer's decision to test simultaneously, and an IL's discretion to accommodate such an arrangement. Note - ILs and/or their subcontracted

test facilities may encounter logistical difficulties both conducting and providing sufficient oversight of simultaneous testing at multiple locations.

3. *What operational parameters must be considered for type approval testing?*

The Coast Guard has not identified a set of specific parameters applicable to particular types of treatment technologies that must be addressed in the testing. The manufacturer must identify any operational parameters or design limitations (e.g., minimum UV transmittance or intensity, water temperature, etc) for the proper operation of the system. These manufacturer claims will be taken into consideration by the IL during test plan development.

46 CFR 162.060-26 – Land-Based (LB) Testing Requirements

1. *What is treatment rated capacity (TRC)?*

The TRC is the range of incoming flow rates the BWMS is approved to manage. The TRC does not guarantee that a BWMS will always deliver a particular flow rate of treated water. Actual flow rate of compliant water may be less under more challenging conditions.

2. *Is it allowable for tanks in LB test to have internal structural members that might result in retention or incomplete drainage of sediments and treated organisms?*

ILs must validate that the design and operation of holding tanks to minimize the number of organisms retained, and the design and operation of holding tanks does not result in retention of organism numbers leading to an incorrect test results.

3. *Can ILs manipulate ambient conditions with brine or freshwater to achieve the three salinity regimes required for LB testing? (ETV Reference 5.2.1.1)*

LB verification testing in fresh, brackish, and marine salinity challenge water is intended to evaluate both the performance of BWMS under different salinities but more importantly to test BWMS efficacy with diverse biological communities found in those different natural environments. If a single source of challenge water is used for more than one salinity range, then it may be necessary to augment with freshwater or brine to achieve the necessary salinity conditions. This augmentation must be validated to demonstrate no adverse effects on biota. Further, the biota should be appropriate for the salinity regime. Thus, there must be naturally occurring brackish water organisms during brackish water tests and naturally occurring marine organisms during marine salinity tests (ETV 5.2.2). There may be a mix of biota at all times, but this needs to be validated. Such a validation may include comparison of challenge water organisms with biota in nearby areas characterized by salinity conditions within the specified ranges.

4. *Can ILs use cultured (grown or raised under laboratory conditions) organisms to meet the required challenge condition levels of live organisms > 50 µm and >10 to <50 µm in size for land- based testing? (ETV Reference 5.2.2)*

Section 5.2.2 of the ETV Protocol specifies that ambient (naturally occurring at the test site) organisms will be used, and also specifies a minimum diversity of 5 species over 3 phyla/divisions. Organisms from this group may be cultured and used to augment abundances in the challenge water, but natural relative frequency distributions should be maintained. Similarly, collections of ambient organisms may be made and concentrated and used to increase concentrations to the necessary levels. In either case, the procedures must be validated to demonstrate no adverse effects on organisms that would affect the ability of tests to characterize BWMS performance.

5. *Does the Coast Guard require a minimum sample volume for determining concentrations of living organisms?*

Section 5.4.6.3 of the ETV Protocol contains the relevant guidance on sample volumes required if sub sampling is performed. For example: if the entire concentrated sample is analyzed, then a whole water sample of 3-5 m^3 may be sufficient provided there is documented validation that the entire concentrated sample was processed in a time that did not result in sample degradation, and that samples were analyzed with an acceptable level of accuracy and consistency. For assessment of accuracy and consistency, the Protocol recommends using micro-beads, and includes an example in appendix C. Theoretically, a sample volume of 1 m^3 could be sufficient, but there would be little or no room for error and the validation would need to be very robust. The key issue for acceptability under IL evaluation is that the test facility has documented validation of the procedure used.

6. *If a manufacturer has an option of using either granular or liquid active agent, would testing need to be completed separately for each, or could the LB and SB testing be designed to evaluate both?*

Each specific case must be evaluated by the MSC. Key issues may include dose comparison, similarity of dosing equipment, and toxic effects of both substances, and other relevant factors.

7. *Does the 50 hours of O&M operation need to be on the same BWMS, or could the testing be completed on multiple systems combined to provide 50 hours?*

O&M testing must occur on one unit (i.e., not be distributed among units).

8. *The ETV Protocol specifies that O&M testing is conducted during LB testing. Can O&M testing be conducted during SB testing instead of LB testing?*

Yes, O&M testing can be done during either LB testing or SB testing. O&M testing of at least 50 hours as specified in ETV Protocol section 5.4.5 may be conducted either

during LB or SB testing. In either case, testing must meet the specifications in ETV Protocol section 5.4.9.

9. Does O&M testing need to be done for 10,000 m^3 or 50 hours regardless of TRC?

O&M testing shall be conducted for a total of 50 hours. For a 200 m^3/hr system, this would equate to 10,000 m^3 volume. For systems with greater TRC, the volumes would be greater.

10. For an active substance based BWMS, does O&M testing need to incorporate the use of treatment and neutralization chemicals (ETV Reference 5.4.5)?

Yes. O&M testing must include all relevant treatment and neutralization components of the system. If the test facility is restricted from discharging quantities of chemicals associated with the BWMS, then the Test/Quality Assurance Plan (TQAP) may be amended to operate the treatment system during O&M cycles either eliminating or reducing dosage of the active substances.

If a brine or saltwater source is required for operation when treating under some circumstances (e.g., when treating freshwater with a BWMS that includes electrolytic generation of ions), such arrangements must also be used during testing, both for BE and for O&M testing. For flexibility, O&M testing can be conducted during SB tests.

11. Can BE tests count toward O&M testing (ETV reference 5.4.5)?

No. O&M testing is in addition to BE testing.

12. Does the O&M operation need to be completed at each salinity for which the BWMS is to be type approved? (ETV Reference 5.4.5)

No, O&M testing is required for a total of 50 hours and may occur at one salinity or across several.

13. How should eggs and other immobile organisms/life stages in the greater than 50 µm class be considered during biological parameter analysis?

The ETV Protocol indicates that dead organisms are defined by a lack of visible movement during an observation time of at least ten seconds. Unmoving organisms may be living, so they are gently touched with the point of a probe to elicit movement and then monitored for at least 10 seconds for visible movement. This standard covers mobile zooplankton, but does not include procedures for analyzing immobile organisms or organisms in immobile life stages.

Section 5.4.6.4 of the ETV Protocol is the only regulatory standard for enumerating organisms in the greater than 50 micron class. If ILs would like to use an analysis

method different than the prescribed standard, then they may submit a request for approval of an alternative method in accordance with 46 CFR 162.060-10(b)(1).

14. What is the difference between a BE test cycle that is invalid and one that is unsuccessful?

The IL must first determine whether a LB test cycle is valid by evaluating the test conditions against 46 CFR 162.060-26(c). If the source water does not comply with the challenge conditions specified in section 5.2 of the ETV Protocol, then the test should be considered invalid. If the test set up did not operate as specified in the test plan (this includes the BWMS operational parameters and test facility operating procedures), then the test should be considered invalid.

If a BWMS failure occurred during the test cycle, but the IL was able to correct the condition in accordance with the OMSM, then the test may be considered valid. If the IL was not able to correct the condition, then further investigation must be carried out so the IL can make the determination whether the scenario is an invalid test cycle or an unsuccessful test because of BWMS failure.

15. Is there any allowance for the minimum required challenge conditions for LB and SB testing? (ETV Reference 5.2.1.4)

Yes, the ETV Protocol allows for deviation from challenge water conditions. Test facilities may consider tests valid if, despite the best efforts of the test facility staff, challenge conditions are within 10% of specified values found in 46 CFR 162.060-26(d) and 162.060-28(f) as well as the ETV Protocol. The IL must approve the deviation and provide a detailed explanation in the test report for why the required challenge conditions were not met. Note - The variance is allowed for specific tests due to specific circumstances, not for all tests in general.

16. The ETV Protocol does not specify allowable additives to be used to supplement dissolved organic material (DOM) or dissolved organic carbon (DOC) when natural water quality parameters cannot be met. What additives does the Coast Guard find acceptable for augmentation?

Section 5.2.1 of the ETV Protocol states "Certain water quality conditions may interfere with the ability of some treatment processes. It is therefore critical to evaluate the effectiveness of a treatment system under water quality conditions that are challenging to the technology being tested."

DOM in natural waters is known to affect the performance of treatment processes. Humic substances are usually the major component of DOM in natural waters, and are comprised of a complex mix of compounds with a high proportion of aromatic and aliphatic components. DOC in natural waters has been shown to significantly affect the production of disinfection by-products, the rate of oxidant decay, and UV transmission.

Neither the ETV protocol nor the text of 46 CFR 162.060 specifies substances to be used, or not, for DOC augmentation. The ETV protocol states: "DOM can be very difficult to adjust or augment if the natural waters have insufficient content. There has been some success using Camellia sinesis (decaffeinated iced tea) to augment natural DOM content."

Because the version of the ETV protocol currently incorporated into regulation is not specific, issues concerning augmentation are reviewed on a case-by-case basis taking into account the basic premise of the Protocol "that ballast water treatment systems are designed to function effectively in the full range of water quality characteristics that will be encountered under shipboard operational conditions," and the emphasis throughout the protocol on validation of test procedures and methods, it is expected that ILs will ensure substances used to augment DOC will provide for tests that evaluate the ability of the tested systems to perform effectively when used in natural waters. In the event augmentation of water quality parameters is necessary, the basis for selection of augmented substances must be fully explained, including the appropriateness of the particular substance(s) given current understanding of the effects of natural water quality conditions on the specific treatment processes comprising the ballast water management system. This validation should include the effects of the additive with regard to total residual oxidant (TRO) consumption, UV absorption, or other technology specific parameters, in addition to comparison with ambient DOM and DOC compositions.

ILs conducting tests of BWMS are encouraged to share information on substances used to augment water quality conditions, including the scientific (rationale for use in mimicking natural water quality (WQ) conditions) and technical (practicability of use during testing, including adverse effects on organisms and any issues related to preparation/injection) bases for selecting particular substances.

46 CFR 162.060-28 – Shipboard Testing (SB) Requirements

1. *Is it allowable to conduct more than one test run at the same geographic location during the same time period during SB testing?*

No, multiple tests at the same geographic location during the same time period are not allowed during SB testing (i.e., two or more tests run simultaneously or immediately sequential, with treated water held in separate tanks). The intent of SB testing is the evaluation of the ability of a BWMS to effectively treat ballast water to meet the BWDS under a range of conditions encountered over a range of locations and times. At least 24 hours should elapse between tests at one location.

2. *Do vessels have to be in the STEP program to be involved in SB testing for type approval?*

No. A vessel used in testing a BWMS for type approval does not have to be enrolled in STEP if the vessel does not discharge treated water in US waters, or if the manufacturer has AMS approval for the BWMS being tested. If a vessel discharges treated water in U.S. waters and the BWMS is not an AMS, the vessel must be enrolled in STEP. The STEP application and acceptance process has been streamlined for ships involved in testing for U.S. type approval and can be included into the IL testing process.

3. *Can all SB testing be carried out at a single port, at different times, over the 6 month period?*

No, SB testing must be conducted in at least 2 distinct geographic locations as required by 46 CFR 162.060-28(e)(2) to provide a range of geographic variability.

4. *Can a SB test run occur entirely at one location by simply: (a) taking on, treating and sampling ballast water while in port, (b) holding that ballast water for 1 to 4 days during cargo operations, and (c) discharge and sample the treated ballast water in the same port prior to departing on its next voyage?*

Yes. Taking up and discharging in one port location without intervening transit is allowed. The IL must develop test plans that evaluate manufacturer claims, including the necessity for, or a lack thereof, of specific minimum hold times.

5. *Is it permissible to conduct whole effluent toxicity (WET) tests during LB testing versus SB testing?*

Yes, it is permissible to conduct WET testing during LB testing with a test at each salinity for which the BWMS is being type approved. However, a request under 46 CFR 162.060-10(b)(1) must be submitted by the manufacturer or the IL to the Coast Guard. This request must provide reasons why the WET tests are not "practicable" during SB testing.

6. *In the case where a BWMS is designed to use brine or sea water (SW) from a tank to augment the salinity of water used to generate hypochlorite, can the SB testing be designed to evaluate the BWMS when operated both with and without the brine/SW tank?*

In the example case, the brine/SW tank would have to be used during the freshwater LB tests and on any SB tests conducted in freshwater. The BWMS must demonstrate its capability to consistently switch to the appropriate source (feed tank or ballast water being treated) and deliver the necessary stream of SW or brine to the generator. This could be achieved during either LB or SB tests.

7. *Do five valid SB trials have to be completed for each salinity for which a BWMS is to be type approved? If not, are there a minimum number of valid trials that must be completed at a given salinity?*

Five consecutive valid and successful trials are not required at each salinity during SB testing. A total of five such trials are required over a minimum 6 month period. Under 46 CFR 162.060-28(e)(2), the circumstances of the vessel's operation during the period of SB testing must provide an acceptable range of geographic and seasonal variability.

8. *If SB testing is conducted using a containerized BWMS, will the type approval certificate limit the installation of a BWMS to containerized arrangements?*

The OMSM should identify the installation locations. During BWMS assessment, the IL should evaluate the installation for shipboard test to determine if location and configuration are consistent with its final intended use on operating vessels as described in the OMSM.

9. *Does the Coast Guard follow the guidance in IMO BWM circular 33 from August 2011 which allows testing on scaled units to be performed as SB testing with a shorter time requirement (3 months)?*

No, IMO BWM circular 33 does not apply to U.S. type approval testing.

10. *Can SB testing be performed on multiple vessels?*

No, multiple units on different ships may not be used for SB testing. One unit must be used for all testing over the SB test period.

11. *The EPA's VGP WET tests, incorporated by reference in 46 CFR 162.060-28(g)(4)(v), identify measured toxicity values 1.6 TUc or greater (daily maximum) as an issue of concern. Does this mean that if a BWMS exceeds 1.6 TUc during type approval WET testing that the test cycle would be determined to be a failure?*

A Chronic Toxicity Unit (TUc) greater than 1.6 is not a pass/fail criterion for U.S. type approval. Such a measurement must be reported in the Test Report, and the IL should evaluate the source of the measured toxicity. In addition, the IL should confirm that all residuals meet the limits of VGP 2013 which specifies the limits for organic substances. The Coast Guard may include a notation regarding the toxicity measurements on the type approval certificate.

WET testing was removed from VGP 2013, but there are still effluent limits for biocides. The regulations require WET testing in accordance with VGP 2008, and the test results must correspond to current environmental standards to ensure discharges are not persistent, bioaccumulative, or toxic. The EPA currently includes a process of determining the need for water quality based on effluent limitations known as reasonable potential. Discharge scenarios generally account for dilution, which is different than the non-mixing framework of VGP 2008. EPA and many states have established a baseline standard dilution ratio for these scenarios of 10% effluent,

which equates to a 10-fold dilution that corresponds to a TUc value of 10 for the purposes of comparison with WET testing results.

Compliance with 46 CFR 162.060-34(a)(4)(iii) is considered to be achieved if the BWMS discharge meets the limits set forth in Table 3 of VGP 2013. Coast Guard considers TUc measurements from type approval WET testing up to 10 to be acceptable. In cases where the TUc>10, additional analysis should be carried out to identify the source of the toxicity and measures the manufacturer needs to take to reduce the potential for higher toxicities during operation. Additionally, the treatment chemical must be Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) registered or be subject to risk evaluation in accordance with 46 CFR 162.060-32.

12. Is WET testing required during BWMS commissioning on a BWMS using technologies that are not active substance based, such as UV, deoxygenation, and ozone?

The Coast Guard does not consider UV and deoxygenation treatment to involve the use of an active substance, and is therefore not subject to WET testing requirements referenced in 46 CFR 162.060-28(g)(4)(v). Ozone treatment may result in toxic substance residuals that need to be evaluated against the VGP standards.

13. Can a manufacturer conduct 2 SB tests instead of the full 5 if the manufacturer conducted 3 SB tests for IMO?

Yes, only if it is the same unit tested on the same ship, with no system modification or upgrades made in the interim, all maintenance and repair is documented, and the required consecutive, valid test sequence is achieved. The purpose of SB testing is to demonstrate that the system as designed and constructed can operate effectively over a period of time under shipboard conditions. The 3 IMO tests must have been completed under the supervision of the IL (see 46 CFR 162.060-12).

14. 46 CFR 162.060-28(d) requires that during SB tests, the BWMS must be installed and operated in the vessel in a location and configuration consistent with its intended use on operating vessels. Does this mean every configuration of modular BWMS (i. e., systems comprised of multiple treatment modules such as UV, Filter, chemical doser, etc) must be tested separately?

Location and configuration of a BWMS for SB testing for type-approval must be consistent with the configuration of its intended final use.

15. Does equipment that is installed in a vessel's pump room need to be classed as zone 0.

To the extent practicable, BWMS equipment should be installed in a nonhazardous, or the least hazardous location possible. If the BWMS equipment is installed within a

hazardous location, the equipment must meet the corresponding requirements for the intended location.

46 CFR 162.060-28(k) - Shipboard Technology Evaluation Program (STEP)

1. *How will the Shipboard Technology Evaluation Program (STEP) be affected by the type approval of BWMS that meet the BWDS?*

The STEP for experimental BWMS will continue as currently described in NVIC 01-04. The NVIC can be found at Coast Guard Homeport website. STEP acceptance will also be conferred to vessels engaged in shipboard testing of BWMS in waters of the U.S. for the purposes of type approval, under the oversight of an accepted IL in accordance with 46 CFR 162.060, to allow such vessels to discharge treated ballast water. Vessel owners engaged in testing BWMS for purposes of type approval must contact the Coast Guard and arrange for enrollment of such ships in STEP before discharging water treated by BWMS undergoing type approval testing in U.S. waters. Once a BWMS has been type approved, the vessel on which it was tested may use the system as a type approved system, and the vessel will be dropped from STEP. If the BWMS is not granted type approval due to its R&D status, the vessel may transition to the STEP for experimental systems if the vessel owner and BWMS manufacturer will continue to test the system during shipboard operations.

2. *For vessels enrolled in STEP, is there an option to transition to AMS?*

STEP and AMS are not related. If a vessel in STEP has a BWMS that is accepted as an AMS, that vessel's owner may decide to withdraw from STEP and meet its BWM requirements under the AMS provision in 33 CFR 151.1510 or 151.2025. If the vessel owner decides to make this change, then the 5-year limitation period for use of AMS applies.

3. *In the event a BWMS is installed on a vessel for purposes of type approval testing, and the ship is enrolled in STEP, will the option for grandfathering in the case of BWMS which do not pass TA be allowed, and if so, for how long (i.e., 5 year? 10 year? Life of the vessel/system?)?*

There is no "grandfather option" in the case where a BWMS does not pass the Coast Guard type approval process. If accepted into the STEP, the BWMS is considered to meet the requirements of subsequent BWDS regulations for 10 years or the life of the BWMS, whichever comes first.

4. *Given that different entities will enroll in STEP for different reasons (i.e., experimental evaluation of R&D prototype, testing for type approval) will the Coast Guard prioritize applicants based on their purpose for applying to STEP?*

STEP applications for R&D and STEP applications for type approval testing are handled separately. R&D-related applications will continue to be evaluated by the Coast Guard Environmental Standards Division (OES-3).

46 CFR 162.060-30 – Testing Requirements for BWMS Components

1. *Are there alternate testing requirements for components that are too large for test labs?*

The IL should evaluate whether testing of sub-components that make up the component can be done (see 46 CFR 162.060-30). Test results may be combined with analysis of structure/means of attachment to/within the overall component. If this is not practicable, then a 10(b)(1) request should be submitted for the system detailing the alternate testing or modeling that will be performed to evaluate suitability for long term shipboard operation.

2. *Is IACS UR E10 an equivalent testing standard to 162.060-30?*

Testing may be conducted in accordance with International Association of Classification Societies (IACS) Test Specification for Type Approval (UR E10), with the exceptions that the tests must be conducted in the prescribed order and in accordance with the test specifications listed in 46 CFR 162.060-30.

3. *Does the Coast Guard require component testing to be conducted again if component testing completed for IMO type approval was not conducted in the prescribed sequence?*

Yes, the Coast Guard does not accept component testing conducted in a different sequence than that which is set forth in 46 CFR 162.060-30.

4. *Are UV reactors and EC chambers required to undergo component testing?*

The entire chamber may not need to undergo component/environmental testing if it is possible to remove and test all attached electrical devices (e.g., sensors and controllers) from the UV reactor/EC chamber.

5. *For a UV based system, does the component testing of the UV system include the UV lamps?*

Yes, the lamps are considered to be electrical/electronic components.

6. *Can demonstrated performance aboard a ship be substituted for the component inclination testing?*

Performance onboard ship does not substitute for component inclination testing. However, there is no requirement that an actual inclination test be performed during

shipboard testing. Rather, BWMS components must "be designed to operate" at the vessel inclinations specified, and the IL shall evaluate the BWMS design to ensure this requirement is met.

7. *Do components (e.g. UV chambers, electrolytic cells, ozone generators etc.) need to be in operation during component inclination testing in accordance with -30(a)(9)?*

No. There is no requirement that an inclination test be performed. The IL shall evaluate the BWMS to determine if the components will be affected by the inclination specified by -30(a)(9). The Test Report should include an explanation for the IL's conclusion.

8. *Can a test facility be approved by the Coast Guard for conducting only the environmental tests of electrical/electronic components in accordance with 46 CFR 162.060-30, without doing so under the supervision of an IL?*

No. Under the type approval requirements in 46 CFR 162.060, all testing and evaluation of a BWMS must be conducted by an IL. The IL can use approved sub-labs, but such sub-labs must be identified in the application for approval as an IL, or in a subsequent application by the IL for approval of additional sub-labs. The Coast Guard does not approve test facilities or labs for conducting only portions of the required testing identified in 46 CFR 162.060. A test facility may be an accepted sub-lab for more than one IL.

9. *Is there any allowance for reduced testing for common marine equipment that is already used in shipboard application?*

Treatment systems may use electrical/electronic components that are already used in the shipboard environment. Common marine equipment such as temperature sensors and flow meters are already in use in marine applications and tested/type approved under classification society rules. Common marine equipment that is already approved in accordance with IACS UR E10 does not need to undergo additional testing under 162.060-30. Note - The common marine equipment provision does not apply to components installed in a control/monitoring panel. In accordance with 46 CFR 162.060-30(a), panels must be tested in their standard production configuration, which includes all subcomponents whether or not they are type approved.

10. *Is there any testing allowance for components that exhibit many major resonant frequencies? Is sweeping of resonant frequency ranges acceptable in lieu of testing at each frequency?*

Major resonant frequency is not defined in the regulations. 46 CFR 162.060-30(a)(3) applies to resonance frequencies found between 2 Hz and 80 Hz. If multiple resonant frequencies are observed between 2 Hz and 80 Hz, then the component should be

vibrated at the major resonant frequency in each plane for 4 hours. If no major frequencies are observed, then the component should be vibrated at 30 Hz for 4 hours.

46 CFR 162.060-32 – Testing & Evaluation Requirements for Active Substances, Preparations, and Relevant Chemicals

1. *Is it permissible to use a Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) report in order to satisfy the requirements of 46 CFR 162.060-32(b)?*

According to 46 CFR 162.060-34 (g)(1), the IL's test report must include an appendix that: 1) has documentation regarding FIFRA requirements, and 2) for all other active substances or preparations, documentation of the assessment specified in 46 CFR162.060-32(b). A GESAMP report under regulation D-3 of the IMO BWM Convention may be acceptable to satisfy the requirements of -32(b), provided the included data is acceptable to the Coast Guard in accordance with -12 "Use and acceptance of existing test data". For questions regarding the applicability of FIFRA, the Coast Guard recommends that BWMS manufacturers contact the EPA's Office of Pesticide Programs, Antimicrobial Division (http://www2.epa.gov/pesticide-contacts/contacts-office-pesticide-programs-antimicrobial-division).

2. *Does the Coast Guard consider UV systems with filtration to involve the use of active substances?*

No, the Coast Guard does not consider UV systems with filtration to be systems that involve the use of active substances.

3. *What if the salinities at test locations do not exactly match the salinity ranges of the ETV protocol for low- and high-salinity waters?*

Coast Guard regulations require that type approval testing include testing in the salinity ranges (i.e., fresh (<1 PSU), brackish (10-20 PSU), and marine (28-36 PSU)) for which the system is to be approved. It is incumbent on the IL to ensure testing conditions meet the Coast Guard requirements. If the IL proposes to test with alternative salinity ranges, a request may be submitted in accordance with 46 CFR 162.060-10(b)(1) that analyzes the effect of salinity on the BWMS and the observed organisms populations in the proposed ranges.

46 CFR 162.060-42 – Responsibilities for ILs

1. *Does the Coast Guard publish a list of accepted Independent Laboratories (IL)?*

A list of Coast Guard accepted ILs can be found on the Coast Guard Maritime Information Exchange at: http://cgmix.uscg.mil or http://cgmix.uscg.mil/EQLabs/EQLabsSearch.aspx and in the "Approval Series Name" block and in the drop down list select "Ballast Water Management Systems" and then hit the "Search" button.

2. *Does the Coast Guard have a framework or checklist for evaluating test facilities when reviewing IL applications?*

Yes, the Coast Guard uses the IL checklist located at: http://homeport.uscg.mil/ballastwater.

3. *Is it permissible to conduct type approval tests at a test facility under IL review?*

The Coast Guard cannot authorize, or otherwise indicate in advance, that any testing by an organization that is not a Coast Guard accepted IL at the time of testing will be acceptable. If a BWMS is undergoing tests when the test organization is under review for acceptance as an IL, the Coast Guard will consider the test results to have been produced by an IL if the test organization is eventually accepted as an IL or a sub-lab to an IL.

4. *May an IL accept test results from a sub-lab that is approved under another IL?*

Yes, an IL may consider test data carried out under the responsibility of another IL. The manufacturer should seek acceptance prior to initiating tests with another sub-lab, as the IL may not accept the test report if it does not comply with the IL's QA requirements and/or testing regulations. The IL must be able to conclude and attest that the tests carried out by the other IL were fully compliant with all relevant requirements in 46 CFR 162.060.