



U.S. Ballast Water Regulations



U.S. Coast Guard Headquarters
Office of Operating and
Environmental Standards



Complex Challenge



- Invasion biology
- Salinity & Turbidity
- Naval engineering
- Fleet operations and management
- Compliance strategies
- Maintenance and Repairs
- Port operations and facilities
- Installation requirements
- Operational requirements
- Volume/frequency of discharge
- Regulations leading technology
- Cost





You should know.....



- Coast Guard has transitioned from implementation to compliance mode
- Compliance with BWM is as important as other pollution regs
- USCG Type Approved systems are now available for most vessels
- Vessels need to have a contingency plan if BWM method is not available





USCG Ballast Water Program



- Implementation of 2012 Regulations
- Options for Compliance
- USCG compared to IMO Type Approval
- Compliance and Enforcement
- Contingencies
- Next Steps



Six Years of Implementation



- 5 CG-approved Independent Labs
- Extensions to compliance dates: 13,000+
- 6 CG Type Approved Systems
- More systems under review or in testing phase
- IMO Convention entered into force Sept 8, 2017
- New NVIC in March 2018 consolidates a number of policy and guidance documents
- Extensions now more difficult to obtain



Options for Compliance



1. No BW Discharge



2. Coast Guard Approved Ballast Water Management System



3. Discharge to Facility Onshore or to Another Vessel for Purpose of Treatment



4. Use only water from a U.S. Public Water System



Two Temporary Compliance Alternatives



1. Alternate Management System (AMS) – Temporary Designation for up to 5 years



2. Receive an Extension to Vessel's Compliance Date - extension period will vary depending upon TA system availability





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Temporary Compliance: Alternate Management Systems



- A BWMS is accepted for use as an AMS based on its type approval by a foreign administration.
- AMS may be used for 5 years after expiration of the vessel's compliance date.
- Vessels with AMS can comply and must operate the AMS once their original/extended compliance date has passed.
- Extension will not be granted to facilitate installation of an AMS.



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Temporary Compliance Extensions



- No longer align with scheduled dry docking dates.
- USCG grants extensions for:
 - Minimum time necessary
 - To come into compliance
- Three major elements of an extension request:
 - acquisition of a BWMS,
 - type approved or expected to be type approved,
 - scheduled for installation at first opportunity.



Temporary Compliance Extensions



- Extension letters will be honored and may be transferred to new owners.
- Extensions reissued due to drydock date slips will be issued to a date and may result in less time than previously anticipated
- Failure to plan ahead may result in ship delays or lapse in eligibility to trade in U.S. waters.
- Navigation and Vessel Inspection Circular 01-18 has more details



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Type Approved BWMS



- Type Approval Certificates issued for:
 - Optimarin OBS/OBS Ex
 - Alfa Laval PureBallast 3
 - OceanSaver BWTS MKII
 - Sunrui BalClor
 - Ecochlor BWTS
 - ERMA FIRST BWTS FIT
- Additional manufacturers have submitted Letters of Intent stating they intend to apply



Type Approved BWMS Details



| Company | Method | Flow Rate (m ³ /hr) |
|--|----------------------|-----------------------------------|
| TeamTec OceanSaver AS | Electro-chlorination | 200 – 7,200 |
| Alfa Laval Tumba AB | Ultraviolet | 85 – 3,000 |
| Optimarin AS | Ultraviolet | 167 – 3000 |
| Sunrui Marine Environmental Engineering, Co. | Electro-chlorination | 170 – 8,500 |
| EcoChlor , Inc. | Chemical injection | 500 – 16,200 |
| Erma First ESK Engineering Solutions SA | Electro-chlorination | 90 – 3,740 |



Typical Ballast Pumping Rates



| Vessel Type | Flow Rate (m ³ /hr) |
|----------------------|-----------------------------------|
| Tanker | 5,000 – 20,000 |
| Float-on, float-off | 10,000 – 15,000 |
| Ore | 10,000 |
| Liquefied-gas | 5,000 – 10,000 |
| Dry bulk | 5,000 – 10,000 |
| Heavy lift | 5,000 |
| Barge-carrying cargo | 1,000 – 2,000 |
| Roll-on, roll-off | 1,000 – 2,000 |
| General cargo | 1,000 – 2,000 |



Plug-N-Play Myth



- Ship owners/operators want to :
 - Buy, install, use: Plug and Play
- Frustration with installed BWMS
 - Source water is not right (salinity, murky, etc.)
 - Replacement parts, repair, training issues
- Concerns prior to investing
- BWMS is a cargo management system



Type Approval Review Process



Six-step application review process:

1. Application screening
2. Engineering review
3. Land-based test review
4. Shipboard test review
5. Component test review
6. Scaling review



How Type Approval Works



An Independent Laboratory (IL) evaluates:

- a.) Test Data & Information from type approval testing by a foreign administration. (Additional testing and evaluation by an IL may be required.)

- b.) Test Data & Information produced and submitted by an IL.



Accepted Independent Labs



- NSF International (Ann Arbor, MI)
 - December 2017 announced it would wind down
- Det Norske Veritas-Germanischer Lloyd (DNV-GL; Norway)
- Korean Register of Shipping (ROK)
- Control Union Certifications (Netherlands)
- Lloyd's Register EMEA (UK)

Coast Guard is in contact with other test organizations interested in acceptance as IL for BWMS testing.



USCG v IMO

- U.S. is not party to the IMO Convention. There are no plans to change our requirements or implementation dates due to changes to the IMO Convention.
- USCG Regulations are not the same as the IMO Implementation.
- Discharge standards are similar but not exactly the same – limits on Viable (IMO) v. Living (USCG) organisms
- Differences between IMO and U.S. type approval testing



Type Approval Similarities



1. Readiness evaluation
2. Land-based testing
3. Shipboard testing
4. Environmental/
Component testing
5. Treatment system scaling





Technical Differences



1. Discharge Standard
2. Shipboard Testing
3. Hold Time
4. Component /
Environmental Testing





Summary of Technical Differences



| | IMO G8 | USCG |
|-----------------------------------|-----------------------|-----------------------|
| Discharge Standard | < 10 Viable Organisms | < 10 Living Organisms |
| Shipboard Testing | 3 Test Cycles | 5 Test Cycles |
| Hold Time | > 5 Days | > 24 Hours |
| Component / Environmental Testing | 2 Hour Endurance Test | 4 Hour Endurance Test |



Compliance and Enforcement

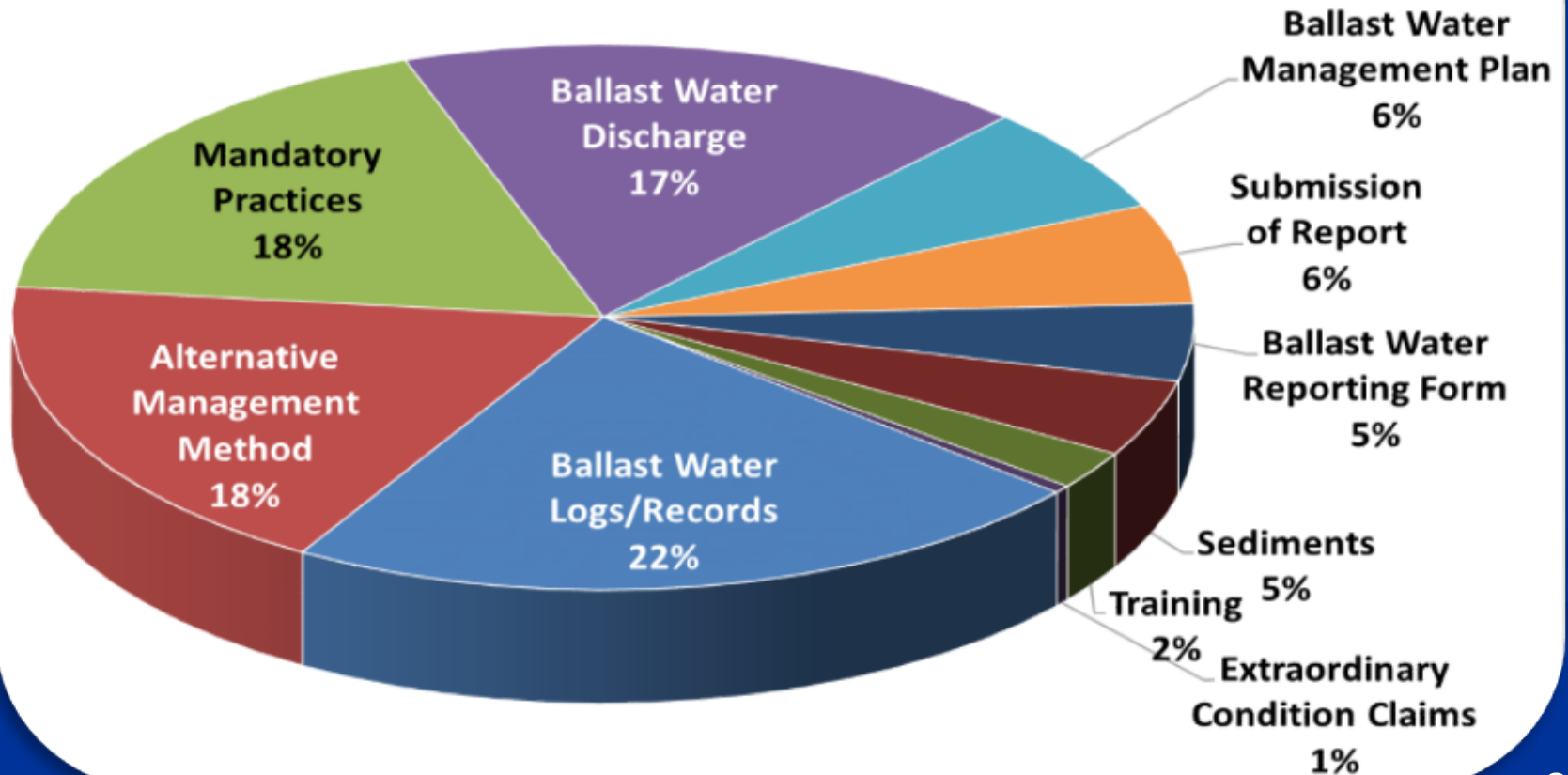
- Regular vessel inspections include ballast water management (BWM)
 - BWM exams on foreign vessels: 9,000/year
- Follow existing compliance approach
 - Documentation, Equipment Condition and Operation, & Crew knowledge
- Deficiencies issued since 2012 Final Rule: ~800
- Enforcement actions: ~30 (warnings to fines)



BWM Compliance 2017



Types of BWM Deficiencies





Non-compliance can be costly



- COTP may impose operational controls that restrict vessel's movement or cargo operations
 - These may cost \$30,000 - \$150,000 for port, agent, or pilot fees; additional fuel; cargo delays and lost income; or other penalties.
- Violators may have higher priority consideration for future examinations
- Civil penalties are being issued
- Criminal penalties are available (Class C felony)



Planning for contingencies

- USCG issued Policy Letter CG-CVC 18-02
 - Guidelines for potential courses of action
- Report immediately to the cognizant COTP
- Present your plan
- COTP may allow other methods in regulations
- An inoperable BWMS needs to be fixed
- Might require voyage deviation for BWE



Next Steps



- USCG R&D - Sampling and analysis method and tools in development

- New NVIC for field units and industry published March 1, 2018

- Address challenges to type approval
 - Modification of system components (filters)
 - Scaling (size, flow rates)



USCG Prevention Policy

Long-Term Strategy



“Now, in addition to protecting against the risk of accidental release of pollutants, vessel designers and operators must also address the impact of waste streams including ballast water and air emissions. These changes have resulted in the incorporation of innovative design thresholds, new operational practices and additional engineering equipment. The drive for optimization and efficiency has generated environmental benefits, but has also created additional challenges for marine safety from new failure modes and increased complexity.”

- Rear Admiral Paul Thomas, Asst. Commandant for Prevention Policy



USCG Program Offices



- Commercial Vessel Compliance (CVC)
 - Compliance manager, NVIC owner
 - Alias [URL address](#) coming soon
 - cgcvc@uscg.mil

- Operating & Environmental Standards (OES)
 - Regulation & policy program manager
 - <http://www.dco.uscg.mil/OES>
 - environmental_standards@uscg.mil



USCG Program Offices



- Design & Engineering Standards (ENG)
 - 3rd Party Independent Lab manager
 - <http://www.dco.uscg.mil/CG-ENG>
 - typeapproval@uscg.mil

- Marine Safety Center (MSC)
 - Type approval manager
 - <http://www.dco.uscg.mil/MSC>
 - msc@uscg.mil



Questions?

