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Update on the Ballast Water Management Convention and the Convention's challenges for Masters

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For reasons of clarification the thoughts and opinions expressed in this presentation do not necessarily reflect the views and policy of BIMCO.

Overview

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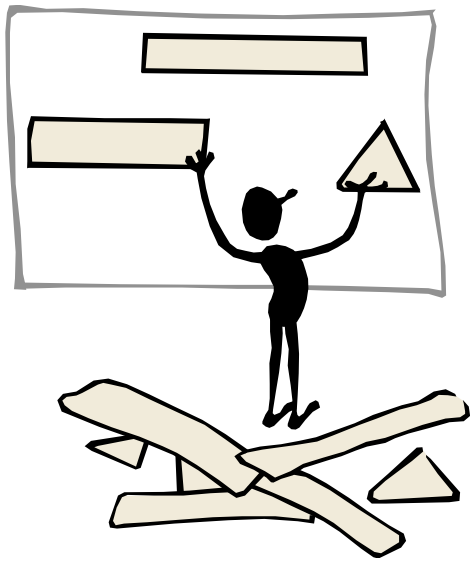
- What is BIMCO?
- The operational challenges
- Data and Documentation
- Major challenges
- Conclusions



What is BIMCO

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- Established in Denmark in 1905
- The world's largest international shipping Association for Owners, Brokers, Agents, Clubs and Associates
- Approximately 2,500 members in 123 countries
- The owner-members of BIMCO control about 65% of the world's merchant fleet.

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What is BIMCO?

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- **In order to ensure the efficient flow of world trade and to protect the global economy, ships must be able to trade on equal terms under a global legislative regime where port states accept a ship's International BWM Certificate as evidence that its equipment fulfils the requirements of the Ballast Water Convention.**
- **The Convention's access to sampling of discharge water for analysis or other in-depth examination should in BIMCO's view be restricted to situations where clear grounds have been established.**
- **Sampling and testing of ballast water should be carried out in accordance with the associated guidelines developed by IMO in particular and should not cause undue delay to the ship.**
- **Sampling/testing measures and procedures implemented by port states should be based on proper risk assessment regarding the ship's ballast water condition at the intake location taking into consideration the local water condition and possible effects of discharging the ballast water. Such a measure will prevent unnecessary sampling and testing.**
- **Sampling/testing measures and procedures should aim at ensuring the lowest possible cost for the affected ships/owners. Costs in connection with sampling and testing, including for delays or other loss to the ship, without clear grounds warranting for an expanded inspection as described in the Convention should be borne by the inspection party (Port State or National Administration).**
- **In order to avoid regional and unilateral regulation constituting a hindrance for world trade and to encourage early installation of Ballast Water Treatment (BWT) systems on board ships, all BWT systems should be subject to a grandfathering scheme in terms of compliance with any future more stringent ballast water discharge standards being imposed by individual states, ports or regions worldwide.**


Ten of the Most Unwanted
Marine plants, animals and microbes are being carried around the world attached to the hulls of ships and in ships' ballast water.
When discharged into new environments, they may become invaders and seriously disrupt the native ecology and economy.
Introduced pathogens may cause diseases and death in humans.
Cholera
Vibrio cholerae (various strains)
Native to: Various strains with broad ranges.
Introduced to: South America, Gulf of Mexico and other areas.
Impacts: Some cholera epidemics appear to be directly associated with ballast water. One example is an epidemic that began simultaneously at three separate ports in Peru in 1991, sweeping across South America, affecting more than a million people and killing more than ten thousand by 1994. This strain had previously been reported only in Bangladesh.
Cladoceran Water Flea
Cercopagis pengoi
Native to: Black and Caspian Seas
Introduced to: Baltic Sea
Impacts: Reproduces to form very large populations that dominate the zooplankton community and clog fishing nets and trawls, with associated economic impacts.
Mitten Crab
Eriocheir sinensis
Native to: Northern Asia
Introduced to: Western Europe, Baltic Sea and West Coast North America
Impacts: Undergoes mass migrations for reproductive purposes. Burrows into river banks and dykes causing erosion and siltation. Preys on native fish and invertebrate species, causing local extinctions during population outbreaks. Interferes with fishing activities.
Toxic Algae (Red/Brown/Green Tides)
Various species
Native to: Various species with broad ranges.
Introduced to: Several species have been transferred to new areas in ships' ballast water.
Impacts: May form Harmful Algae Blooms. Depending on the species, can cause massive kills of marine life through oxygen depletion, release of toxins and/or mucus. Can foul beaches and impact on tourism and recreation. Some species may contaminate filter-feeding shellfish and cause fisheries to be closed. Consumption of contaminated shellfish by humans may cause severe illness and death.
Further Information:
Round Goby
Neogobius melanostomus
Native to: Black, Asov and Caspian Seas
Introduced to: Baltic Sea and North America
Impacts: Highly adaptable and invasive. Increases in numbers and spreads quickly. Competes for food and habitat with native fishes including commercially important species, and preys on their eggs and young. Spawns multiple times per season and survives in poor water quality.
Some of the areas these species have been introduced to.
North American Comb Jelly
Mnemiopsis leidyi
Native to: Eastern Seaboard of the Americas
Introduced to: Black, Azov and Caspian Seas
Impacts: Reproduces rapidly (self fertilising hermaphrodite) under favourable conditions. Feeds excessively on zooplankton. Depletes zooplankton stocks; altering food web and ecosystem function. Contributed significantly to collapse of Black and Azov Sea fisheries in 1990s, with massive economic and social impact. Now threatens similar impact in Caspian Sea.
North Pacific Seastar
Asterias amurensis
Native to: Northern Pacific
Introduced to: Southern Australia
Impacts: Reproduces in large numbers, reaching 'plague' proportions rapidly in invaded environments. Feeds on shellfish, including commercially valuable scallop, oyster and clam species.
Zebra Mussel
Dreissena polymorpha
Native to: Eastern Europe (Black Sea)
Introduced to: Western and northern Europe, including Ireland and Baltic Sea; eastern half of North America
Impacts: Fouls all available hard surfaces in mass numbers. Displaces native aquatic life. Alters habitat, ecosystem and food web. Causes severe fouling problems on infrastructure and vessels. Blocks water intake pipes, sluices and irrigation ditches. Economic costs to USA alone of around US$750 million to $1 billion between 1989 and 2000.
Asian Kelp
Undaria pinnatifida
Native to: Northern Asia
Introduced to: Southern Australia, New Zealand, West Coast of USA, Europe and Argentina
Impacts: Grows and spreads rapidly, both vegetatively and through dispersal of spores. Displaces native algae and marine life. Alters habitat, ecosystem and food web. May affect commercial shellfish stocks through space competition and alteration of habitat.
European Green Crab
Carcinus maenas
Native to: European Atlantic Coast
Introduced to: Southern Australia, South Africa, USA and Japan
Impacts: Highly adaptable and invasive. Resistant to predation due to hard shell. Competes with and displaces native crabs and becomes a dominant species in invaded areas. Consumes and depletes wide range of prey species. Alters inter-tidal rocky shore ecosystem.
The species presented here are for illustrative purposes only. Their introduced ranges may be greater than depicted. There are numerous other examples of serious marine bio-invasions around the world.
Global Ballast Water Management Programme
GEF
undp
IMO


Bosporus
Gibraltar
Suez
Hormuz
Bab el-Mandeb
Panama
Malacca
Good Hope
Magellan

Ten of the most unwanted

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Status – BWM Convention

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- Latest ratification by Russia & Niue
- 35 IMO Member States representing 27.95% of the world tonnage
- One entry into force requirement fulfilled
- But still needs a flag state or some flag states representing 7,05% of the world tonnage to reach the required target

Albania, Antigua & Barbuda, Barbados, Brazil, Canada, Cook Islands, Croatia, Egypt, France, Iran (Islamic Republic of), Kenya, Kiribati, Lebanon, Liberia, Malaysia, Maldives, Marshall Islands, Mexico, Mongolia, Montenegro, Netherlands, Nigeria, Norway, Palau, Republic of Korea, Saint Kitts and Nevis, Sierra Leone, South Africa, Spain, Sweden, Syrian Arab Republic, Trinidad & Tobago, Tuvalu, Russia, Niue, Next?

The Stakeholders' Challenges

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- Ships:
  - Documentation
  - Planning
  - Procedures
  - Retrofitting/installation
- Crew:
  - Familiarisation
  - Training
  - Workload

The Stakeholders Challenges

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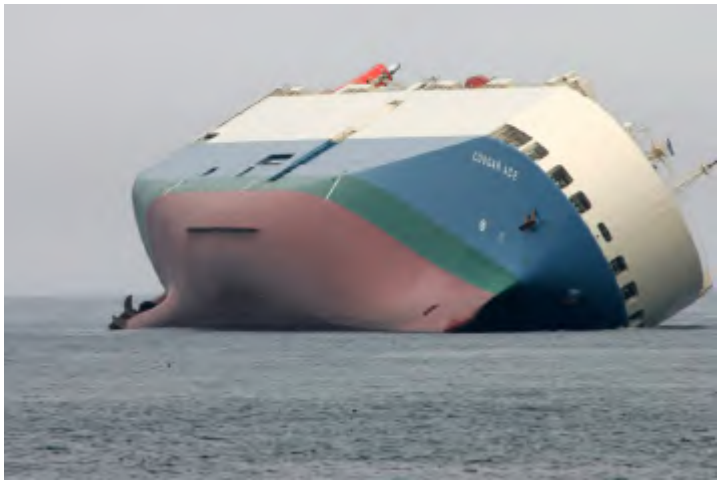
- BWMS Manufacturers:
  - Full unbiased documentation for BWMS
  - Production
  - Worldwide approval
- Authorities:
  - Plan approvals
  - Certifications
  - Surveys



The Operational Challenges

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BWMS considerations:

- Ship type, Ballast capacity & Trade
- Availability & delivery time for BWMS
- Crew health and safety
  - Safe in operation for the crew (Health)
- Crew Familiarisation & training
- Crew workload
  - Easy to operate for the crew (foolproof)
- Safe in operation for the ship
  - Possible effects on tank coatings and steel

The Operational Challenges

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continued…..

- Operational in all possible conditions
- Maintenance
  - Repair, service and spare parts availability
- Ballasting/de-ballasting procedures
  - Use of gravity might not possible
- Commercial considerations & impact:
  - Trading areas
  - Operations could take longer time to complete
- Compliance to future stringent discharge standards
  - Worldwide approval

The Operational Challenges

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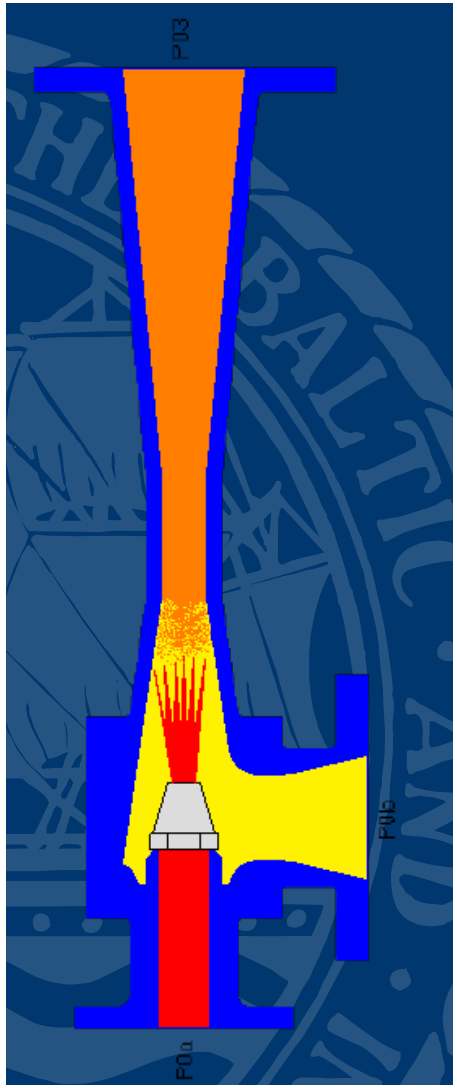
- New problem is the use of ballast ejectors – the water used for creating the vacuum and the water coming from the ballast tank mixing after the ballast ejector
- OK when drive water comes from the ballast tank and is treated before discharge
- Main problem is that BWMS in many cases are requiring either two treatments (at intake and discharge) or only treatment at intake
- If a sample is taken after the ballast ejector, such water will be "contaminated" by the water in the harbor having either no treatment or only one of two required treatments



Commercial and logistical aspects:

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- Responsibilities in case of delays or detentions caused by BWM Convention enforcement
- Contractual impact
- Tidal draft limitations versus ballast/de-ballast capacity
- Impact on port turn-around times
- Designation of lay-by berths and fall back areas
- Information exchange requirements

Data & Documentation

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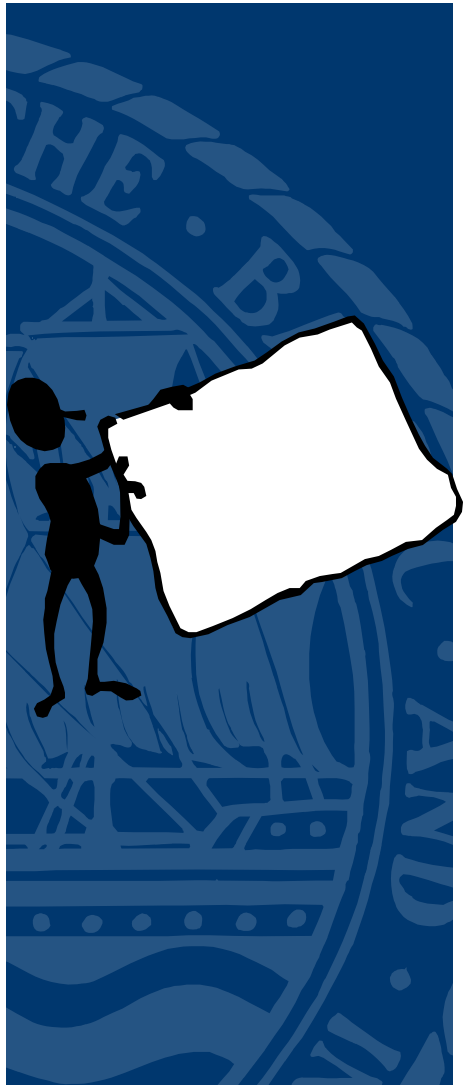
The Ballast Water Management (BWM) Convention requires:

- Ship-specific Ballast Water Management Plan approved by the Administration
- Properly kept Ballast Water Record Book
- Ballast water exchange (Regulation D-1)
- An approved ballast water treatment system (Regulation D-2)
- An International Ballast Water Management Certificate



Data & Documentation

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Ships should ensure:

- Continuous operational monitoring for proof of a compliant BWMS operation
- Operating in accordance with the BWM Plan
- Proper BWM Record Book keeping
- Fulfilling reporting requirement internal and external
- Amending the Safety Management System (ISM Code)

Data & Documentation

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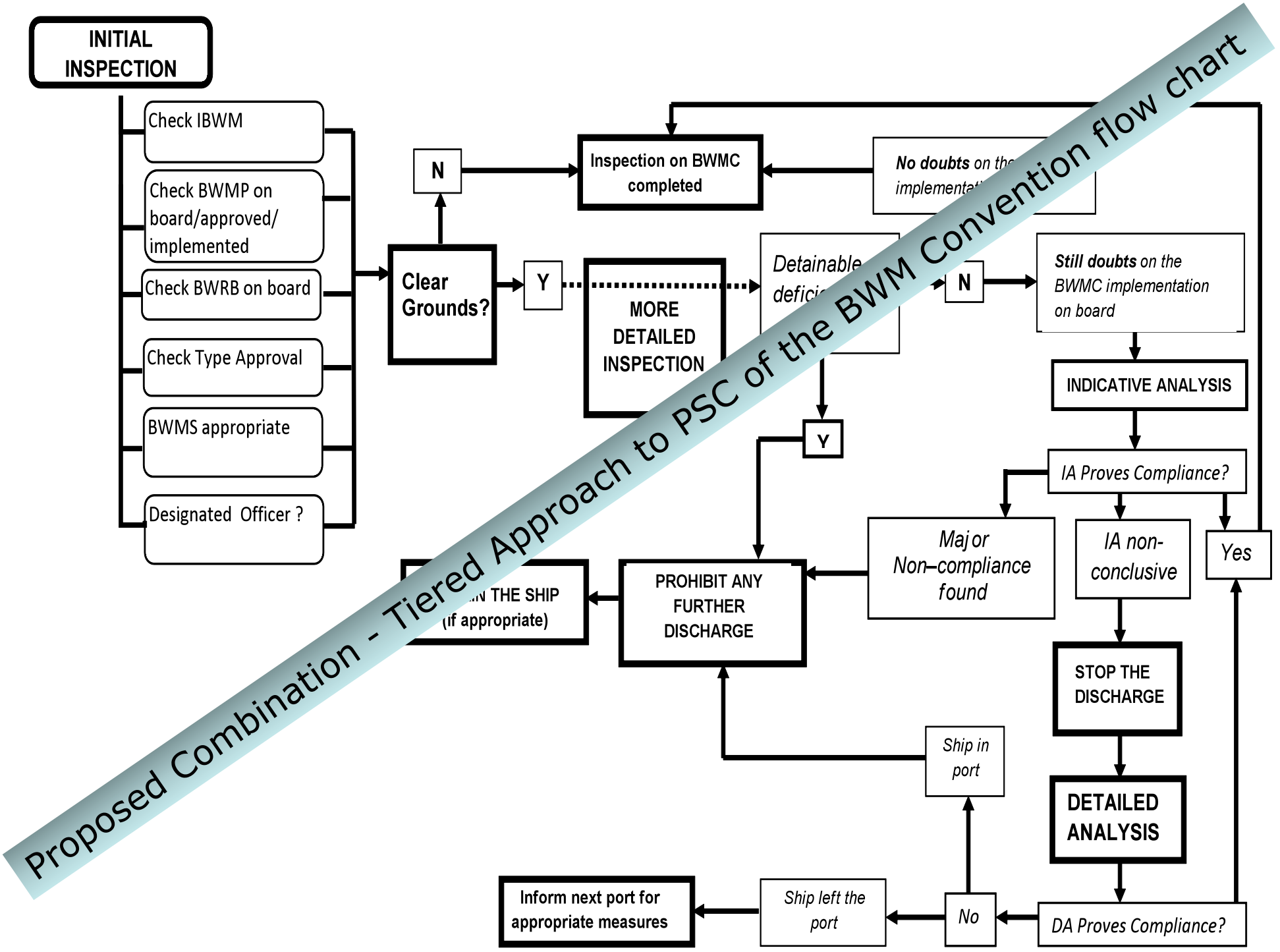
BWM enforcement issues is still somewhat outstanding for the IMO in terms of:

- Sampling and Analyses
- Test procedures
- Port State Control


INITIAL INSPECTION
Check IBWM
Check BWMP on board/approved/ implemented
Check BWRB on board
Check Type Approval
BWMS appropriate
Designated Officer ?
Clear Grounds?
N
Y
Inspection on BWMC completed
No doubts on the implementation
MORE DETAILED INSPECTION
Detainable deficiencies
N
Still doubts on the BWMC implementation on board
INDICATIVE ANALYSIS
Y
IA Proves Compliance?
Major Non–compliance found
IA non-conclusive
Yes
PROHIBIT ANY FURTHER DISCHARGE
(if appropriate)
STOP THE DISCHARGE
Ship in port
DETAILED ANALYSIS
Inform next port for appropriate measures
Ship left the port
No
DA Proves Compliance?
Proposed Combination - Tiered Approach to PSC of the BWM Convention flow chart

Data & Documentation

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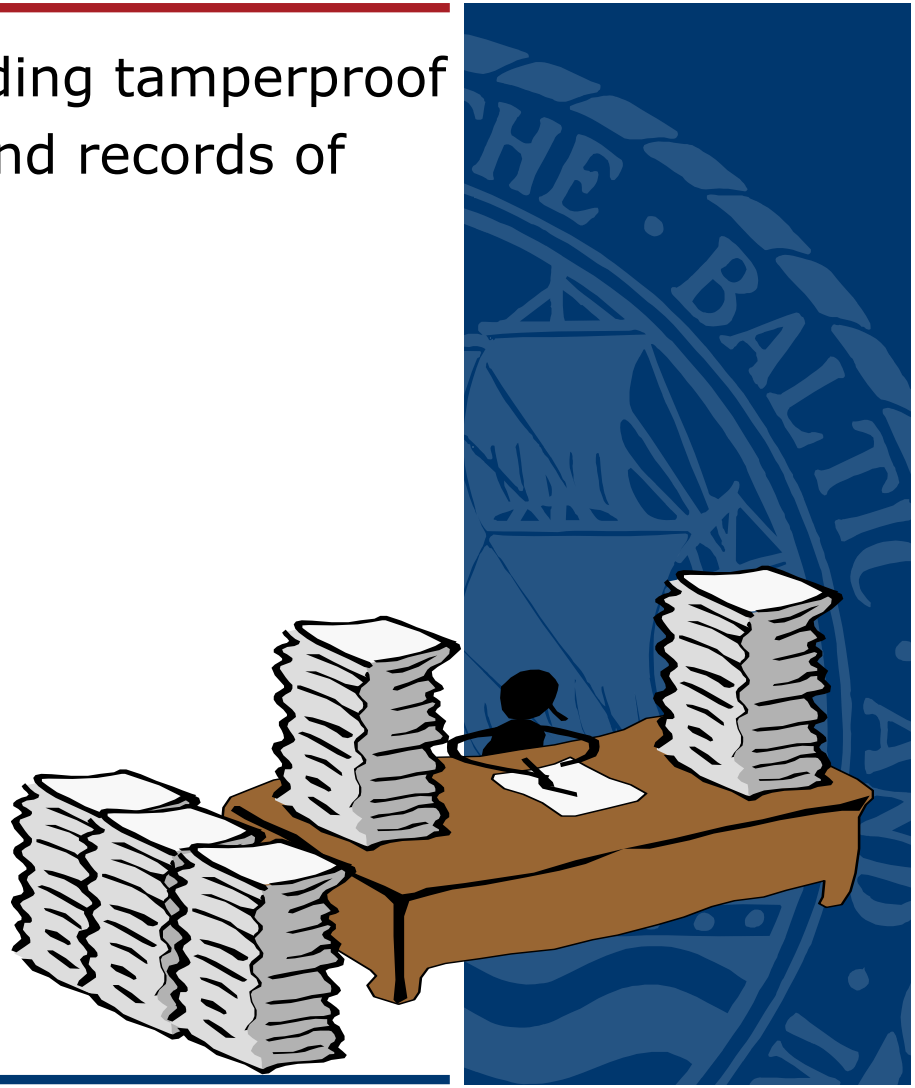
BWMS should be capable of providing tamperproof electronically logging with proof and records of operations in terms of:

- Time and date
- Location (interlinked with GPS)
- Operation mode
- System status
- System error or failure indication
- Valve position indication
- Report printing
- Etc.



Data & Documentation

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Ballast Water Self Monitoring & Control:

- An option for owners
- On board sampling and testing with the available and suitable equipment
- Qualified independent third party surveys schemes' might serve as guard against over eager enforcement regimes

Data & Documentation

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Sampling, Analyse and Testing regimes for ballast water should:

- Accept other signatory Parties' certificates
- Accept result of qualified independent third party survey schemes
- Adhere to "the avoidance of undue delay" principle and allow ships to perform their operations and continue the voyage before the result of the ballast water testing is available

Alternatives

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Are owners getting value for money by installing compliant BWT systems allowing release of unwanted organisms, into the ecosystems in port and estuaries?

Alternatives for consideration could be the use of:

- Fresh or recycled industrial process water
- FW ballast from areas with capacity of natural water de-ballasted in areas with low capacity of natural water could be a potential income on the ballast voyage.
- Shore based BW treatment solutions or dedicated mobile BW treatment plants

Outstanding issues

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- Capacity study and Ratification of the BWM Convention or vice versa
- Finalization of the IMO BWM Guidance
- Familiarization and training standards for crew
- Globally agreed and applied BW Sampling and Testing protocols
- Implementation of the BWM Conventions in a practical and workable manner

Conclusions

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The major challenges for regulators and in achieving timely compliance with the Ballast Water Management Convention are related to:

- Continuous development of Guidance & Information
- Fair and practical testing procedures for BW
- Global regime for discharge standards
- Sufficient grandfathering for pre-convention installed BWMS
- Reconsideration of the available resources for production, installation and retrofitting of BWMS and a revised implementation schedule
- Approved and applicable BWM training

Conclusions

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The major challenges for owners in achieving timely compliance with the BWM Convention are related to:

- Ballast Water Management Plan
- BWM planning for retrofitting/installation
- Operational challenges
- Selection of suitable worldwide approved BWMS
- Timing and planning
- Training of relevant staff and crew

Conclusions

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The major challenges for Shipmasters will be related to the following:

- Being acquainted with the BWM Convention
- BWM Plan and operations
- Certification, Documentation, Data, Logging, record keeping, etc.
- Crew familiarisation and additional workload
- Control, Inspection, Sampling, Analysis, testing
- Safety Management System amendments

Conclusions

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Beside the BWM related challenges is there currently other equally pressing issues on the regulatory agenda:

- Oxides of nitrogen (NOx)
- Sulphur (SOx) emissions
- Refrigerants and fire-fighting agents
- Oil pollution prevention Fuel tank protection
- Garbage/waste handling and disposal
- Sewage treatment & grey water
- Anti-fouling systems & Bio-Fouling
- Oily bilge water
- Vapour emission control

So the challenges will continue!

Will we make it in time?

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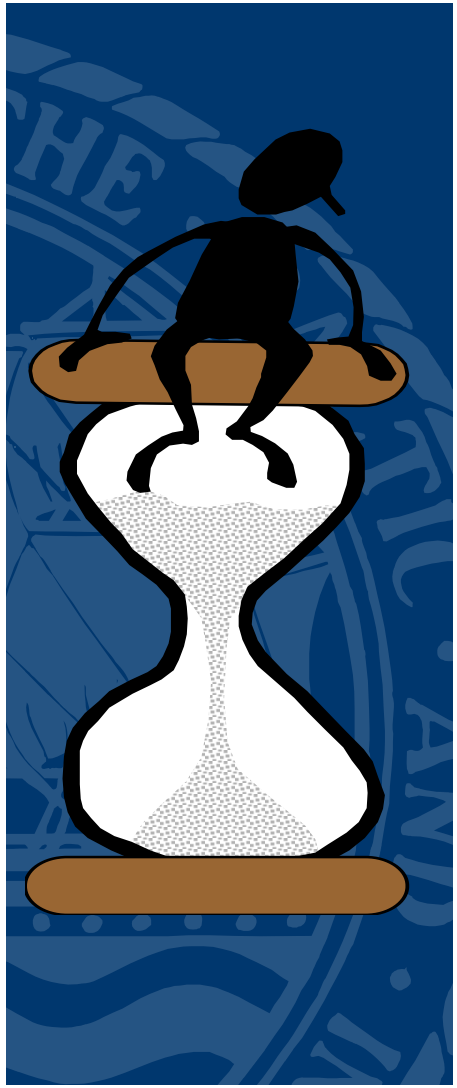
Yes, simply because:

- The shipping industry has done it before!
- The world trade and the shipping industry is depending on compliance with the internationally agreed Conventions!
- The world's population of seafarers in general terms is considered to be competent, well educated and trained
- Maybe not at the highest score and without hiccups but in the end all stakeholders will pass the finish line of the BWM Convention race within the applicable time limits



Will we make it in time?

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Please remember - the installation or retrofitting of a BWMS on board is not the end, in fact it is the beginning of the real challenges!

The BWT System choosing, planning and installation considerations should include a full cost benefit assessment taking into account if p[illegible]le all or some of the following bullet points:

•The BWT System choosing, planning and installation considerations should include a full cost benefit assessment taking into account if possi[illegible]e following bullet points:

•Additional cost for maintenance i.e. ballast pumps wear & tear due to increased running hours

•Alternative solutions use of "technical" water or freshwater taken on board in discharge ports as ballast

•Amendment to the Safety Management System

•Availability & delivery time for the BWT system(s)

•Ballast capacity carried during normal operation

•Ballast pumping and treatment rates

•Ballast system characteristics (for example, the number of independent systems on board o[illegible]

•BMT system compatibility with ship design and construction i.e. pipelines and possible [illegible]

•BWT System efficacy and reliability

•Commercial considerations of trading areas

•Commercial impact as cargo operations could take longer time to co[illegible]

•Crew health and safety

•Crew training

•Crew workload – a BWT system should be easy to [illegible]

•Effects on tank coatings and steel

•Ejector use for stripping of Ballast Wa[illegible]atment

•Explosion proof/intrinsically safe [illegible]

•Flexibility in terms of insta[illegible]

•Installation:

- O[illegible]ires heavy planning and logistics
- [illegible]ons for new buildings

•[illegible]

•M[illegible]

•Nev[illegible]s as use of gravity might not be possible depending on the chosen BWT system

•On b[illegible]y to operate the BWT system

•Operat[illegible]

•Operatio[illegible]ll possible shipboard conditions i.e. cold or warm waters

•Operation, [illegible]ol and monitoring aspects i.e. proof of operation for compliance purpose i.e. tamperproof electronic logs with records of operations

•Repair & service availability for the BWT (after-sales support, spares, maintenance, repair etc.)

•Safe in operation for the ship's loading and discharging in terms of stability and strength

•Ship type, size & trade

•Space limitations versus space required - major challenges for ships with "spaghetti" pipelines in pump rooms and engine rooms

•The BWM systems possibility for expanding the scope of compliance to future more stringent Ballast Water discharge standards

•Up and run time needed for the BWT equipment (time needed from start of system to fully effective and operational)

•US approval – owners are recommended only to install BWT systems that have achieved USCG approval

Thank You

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