Agenda

• Introduction & current situation
• IMO Ballast Water Management Convention and compliance options
• USCG Ballast Water Management Regulations and compliance options
• How does it apply to Yachts?
• Technologies overview
• LR know-how and experiences
“Ballast Water” means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship.

If a yacht is using water for this purpose (whether it is fresh or not) and it is discharged to the marine environment then it may be subject to IMO and USCG regulations on ballast water.

Loading and discharging ballast in different areas may lead to unwanted transfer of marine life, which may invade or anyway alter the marine ecosystem in the discharge area. The aim of the IMO BWM convention and USCG regulations is to stop this.

There are several ways to comply with this requirement, most notably:

- Continuous flow (replacement) of ballast water (BWM Regulation D-1)
- Treatment (mechanical/physical/chemical) of ballast water (BWM Regulation D-2)
International Maritime Organisation
Ballast Water Management Convention
<table>
<thead>
<tr>
<th>Entry into force criteria</th>
<th>Current status</th>
<th>Criteria met?</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 states</td>
<td>53 states</td>
<td>✔</td>
</tr>
<tr>
<td>35% global tonnage</td>
<td>35.28% global tonnage</td>
<td>✔</td>
</tr>
</tbody>
</table>

The BWM Convention will enter into force on **8 September 2017**!
IMO Ballast Water Management Convention
What are there compliance options?

Compliance options

Treatment
- Permanent BWTS
- Temporary BWTS
- BWTS on another ship

Alternatives
- Reception facilities

Exemptions
- Fixed route
- Same location

No discharge
- Ballast-Free
- Backhaul cargo
- Sealed ballast

Other Methods
- Municipal water
- Continuous flow system

Most deep water ships are expected to comply by installing a fixed ballast water treatment system.
All ships of 400 gross tonnes (gt) and above will be required to have on board an approved BWMP and a Ballast Water Record Book, and to be surveyed and issued with an IBWMC.
<table>
<thead>
<tr>
<th>Ballast capacity</th>
<th>Date constructed</th>
<th>Compliance date</th>
</tr>
</thead>
<tbody>
<tr>
<td>New vessels</td>
<td>All</td>
<td>On or after 1 December 2013</td>
</tr>
<tr>
<td>Existing vessels</td>
<td>Less than 1,500 m³</td>
<td>Before 1 December 2013</td>
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<tr>
<td></td>
<td>Between 1,500 m³ and</td>
<td></td>
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<tr>
<td></td>
<td>5,000 m³</td>
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</tr>
<tr>
<td>Existing vessels</td>
<td>Greater than 5,000 m³</td>
<td>Before 1 December 2013</td>
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</tbody>
</table>
USCG Ballast Water Management Regulations

Compliance options

Compliance is through the installation of a USCG Type Approved treatment system.

but

There are now three (3) USCG type approved systems available.

so you

Can install one of the three USCG type approved systems.
Can install an Alternate Management System (AMS) but there is a risk it will not get USCG Type Approval.
Can apply for an extension of the vessels compliance deadline.
Can use a reception facility or potable water.
USCG Ballast Water Management Regulations
System Approvals

USCG use the same performance standard (D-2) as the IMO.

Currently 3 USCG approved systems
<table>
<thead>
<tr>
<th>Key differences between IMO and USCG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has not entered into force yet.</td>
</tr>
<tr>
<td>Based on IOPP renewal survey (under discussion).</td>
</tr>
<tr>
<td>Requires organisms to be rendered non-viable or killed.</td>
</tr>
<tr>
<td>69 Type Approved ballast water treatment systems.</td>
</tr>
</tbody>
</table>
Over 400GT:
Under the Regulation A-5 “Equivalent compliance”, if the vessel in question is a pleasure craft used solely for recreation or competition or craft used primarily for search and rescue, less than 50 metres in length overall, and with a maximum ballast water capacity of 8 cubic metres, then the equivalent means of compliance apply and shall be determined by the Administration.

Under 400GT:
As per regulation E-1.2 of the Convention, the government of the Flag Administration will determine whether or not the vessel must comply with D-1 (exchange) or D-2 (treatment) regulations. It is understood that according to the Convention, such vessels shall be required to have approved BWMP and Record Book.
Ballast water treatment technologies
Ballast water treatment technologies

Treatment methods

- Mechanical
  - Filtration

- Physical
  - Ultraviolet irradiation
  - De-oxygenation
  - Pressure/Vacuum

- Chemical
  - Electro-chlorination
  - Ozonation
  - Chemical injection

These technical solutions are possible either singly or in combination. All compliance technologies are subject to approval through specific processes and testing guidelines, to make sure they meet the relevant IMO standards, are sufficiently robust, have minimal adverse environmental impact and are suitable for use in the specific ship-board environment.
The BWTS must have LR Class Approval. The ship-specific installation must comply with the LR Rules.
Our experience

• LR has been working on ballast water for over 15 years.

• We have developed our own rules to ensure the safety of LR classed vessels.

• For LR vessels with treatment systems installed we are already approving the systems and the installations to our rules. (Over 300 class installation approvals).

• We’ve trained over 300 delegates in 24 courses all over the world.

• We’re innovative and have worked on alternative compliance methods such as reduced-ballast design.

• LR has worked with and approved (statutory, USCG IL, and class) systems covering the complete range of available ballast water treatment technologies.

• LR is approved as independent lab by USCG for BWTS approvals
For support and resources visit our website

www.lr.org/bwm

A complete guide to Lloyd's Register's ballast water management services
Questions?
Thank you for the attention!

Fabrizio Cadenaro
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