



Naval Architects & Salvage Engineers

**Intro of Concepts in the draft
Appendix B
To the RVSS**



Objective:

- The objective of this document is to provide a unified code of practice for the structural design and operating principles of overboard handling systems used on board vessels in the UNOLS Fleet.
- Appendix B is not intended to supersede existing regulations.
- All UNOLS vessels must comply with Appendix B.



Naval Architects & Salvage Engineers

Scope:

- Applies to all overboard handling systems and their component parts intended for use on UNOLS vessels.
 - A load handling system intended to lift, deploy, and/or recover science packages over the side and into or out of the water



Naval Architects & Salvage Engineers

Sample Components:

- Winches
- Overboarding appliances (e.g., frames, davits, cranes, booms, etc)
- Sheaves (or any other device wire is lead through)
- Foundations for all above components – including ship structure
- Deck tie downs (sockets)
- Shackles
- Cranes if they are used to lift, deploy, and/or recover science packages over the side.



Naval Architects & Salvage Engineers

Compatibility

- Appendix B is to be used in conjunction with, and its application is to be fully compatible with, Appendix A - *UNOLS Rope and Cable Safe Working Load Standards*.
- The cable or rope employed is considered part of the system for any given deployment scenario.



Naval Architects & Salvage Engineers

Maximum Capability Document (MCD)

For each component

- The maximum allowed capability for a component is determined by calculation
- The MCD presents the Maximum Permissible Tension (MPT) coupled with the allowed load geometry for the given Tension for each component in a system.
- Including reactions on ship's structure, and/or the bolting pattern for portable components



Naval Architects & Salvage Engineers

Maximum Capability Document (MCD)

For each component

Shackle – the Maximum Capability Document could be a single value that is the shackle manufacturer's safe working load.

Deck Socket – the Maximum Capability Document may be three limits depending on the geometry of how the load is applied; vertically, horizontally, or at an angle.

A-frame – the Maximum Capability Document may look very similar to the load handling diagram for a crane that has different limits dependent upon the geometry of how the load is applied.



Naval Architects & Salvage Engineers

Labeling and Documentation

As a minimum, the system components shall be labelled with the following information:

- Maximum Permissible Tension (MPT)
- Test Date
- Intended Purpose:
- MPT Diagram:
- Ref. Drawing:



Naval Architects & Salvage Engineers

OVERBOARD HANDLING DATA DOCUMENT (OHDD)

- The Overboard Handling Data Document is a standard data sheet that shall be developed for an overboard handling system for both existing systems, new systems equipment, and components.
- The operator shall develop Overboard Handling Data Document's for the standard suite of overboard handling system's that are used aboard their respective ship (each configuration)



Naval Architects & Salvage Engineers

Sample

Overboard
Handling Data
Document

OHDD



Naval Architects & Salvage Engineers

Each overboard handling system will have a Maximum Capability Document developed based upon that overboard handling system's Overboard Handling Data Document and evaluation of the MPT for all the components



Naval Architects & Salvage Engineers

Maximum Permissible Tension (MPT)

The maximum permissible tension (MPT) of the system shall either be the:

- Safe Working Tension (SWT) determined in the System Maximum Capability Document,

or

- The wire/cable SWL from Appendix A, whichever is LESS



Naval Architects & Salvage Engineers

Now that we have characterized the
Maximum Permissible Tension (MPT)
for the system.

What is the anticipated tension?

Is it less than the Maximum Permissible
Tension (MTD) from the system
Maximum Capability Document (MCD)?



Naval Architects & Salvage Engineers

Tension Mitigation Devices and Systems

- Auto Render and Render/Recovery
- Weak Links

Non-load limiting devices

- Motion Compensation
- Acoustic Releases
- Remotely Operated Cutters



Naval Architects & Salvage Engineers

Maximum Anticipated Operating Tension (MOAT)

- MAOT = The GREATEST OF:
- = [Package Weight (in water) + Wire Weight (in water)] + (Package mass + wire mass+ added mass) x 0.75 + Hydrodynamic drag
 - Or
The maximum imparted load from the vessel
- = Adjusted to a lower value with a Render or Render/Recover System To:Load setting at which winch/system will render (Pay Out)
- = Adjusted to a lower value with use of a Calibrated Weak Link.



Naval Architects & Salvage Engineers

**Maximum Anticipated Operating
Tension (MOAT) must be less than
the overboard handling system's
Maximum Permissible Tension (MPT)**



Naval Architects & Salvage Engineers

Flow charts to assist with analysis

The consolidation of the Overboard Handling Data Document's and Maximum Capability Document's with the standard suite of overboard handling system documentation results in a complete library of documents that will:

- Provide a permanent record of the basic design data and operational set-up of the components.
- Be incorporated into the equipment Operator's manual.
- Promote consistency of approach.
- Be superseded when required by changes made thus providing a 'life history' of the equipment.
- Provide a record of the installation of portable pieces of equipment on different vessels or, of different positions and configurations on the same vessel, for future reference.

Questions?

Ted Colburn

JMS Naval Architects & Salvage Engineers

34 Water Street Mystic, CT 06355

860 536-0009

www.jmsnet.com

Direct Cell: 860 608 8052

ted@jmsnet.com



Naval Architects & Salvage Engineers