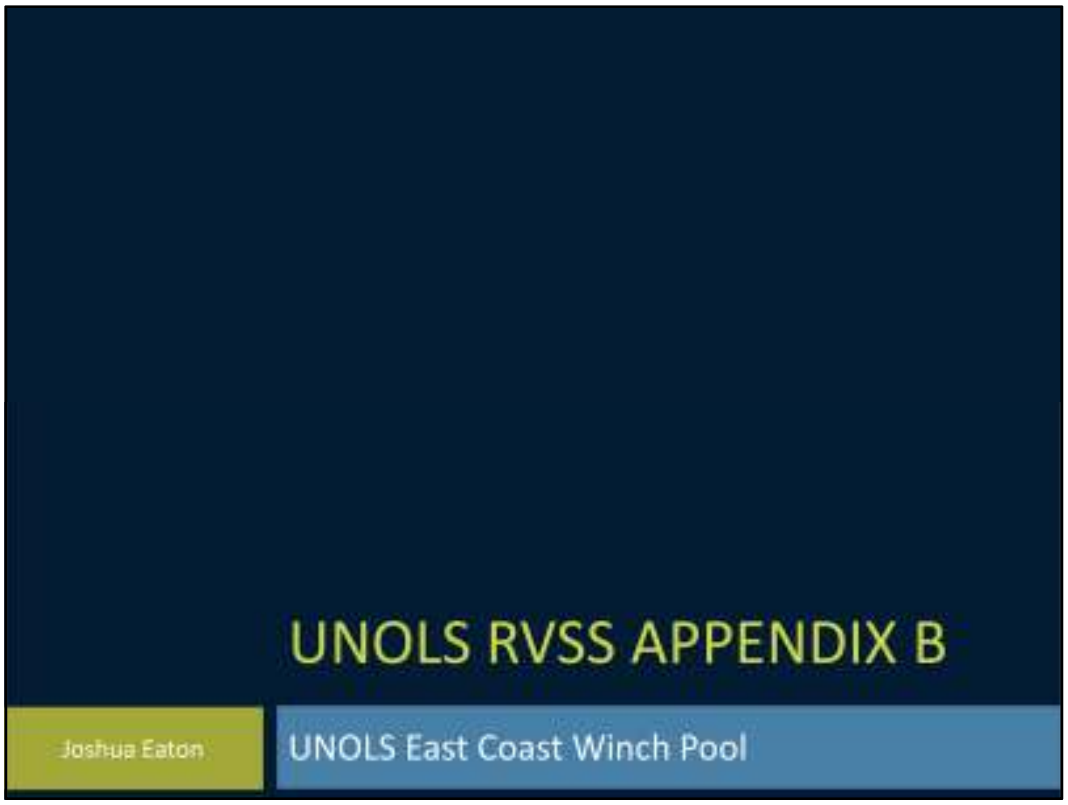
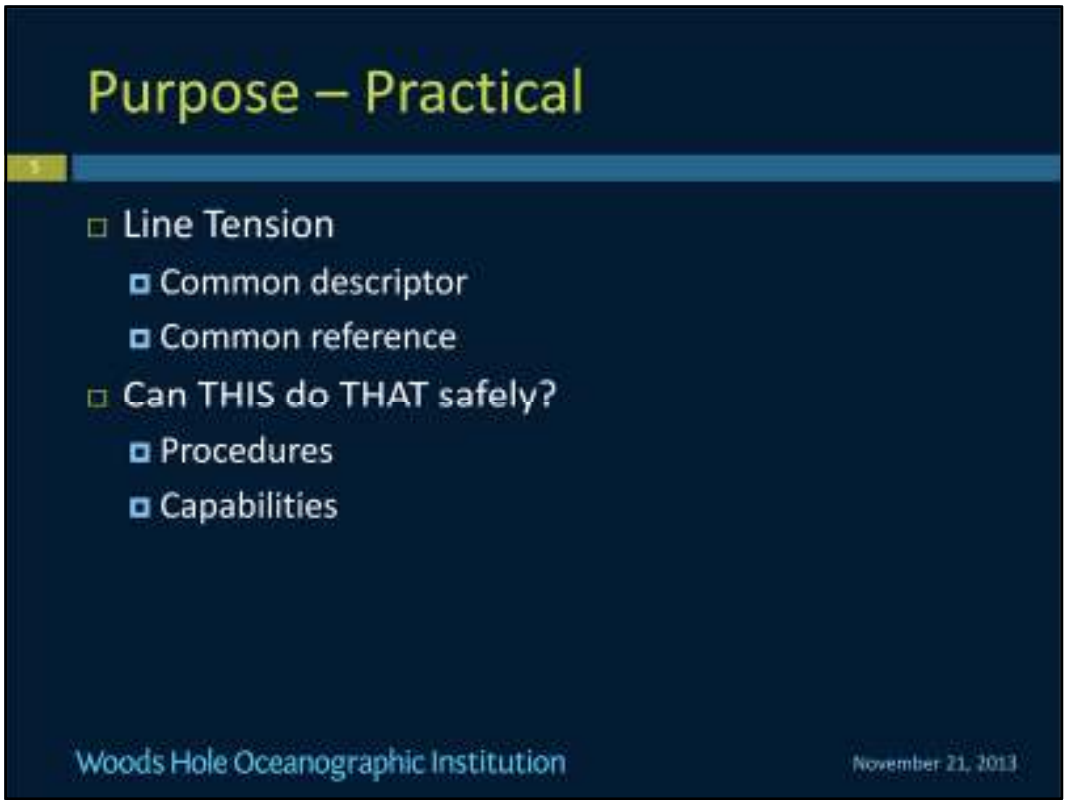


This presentation is to provide an overview and introduction to Appendix B.

Up front, I need to be honest it isn't the most exciting subject. I will do my best to convey the information and not put you to sleep.

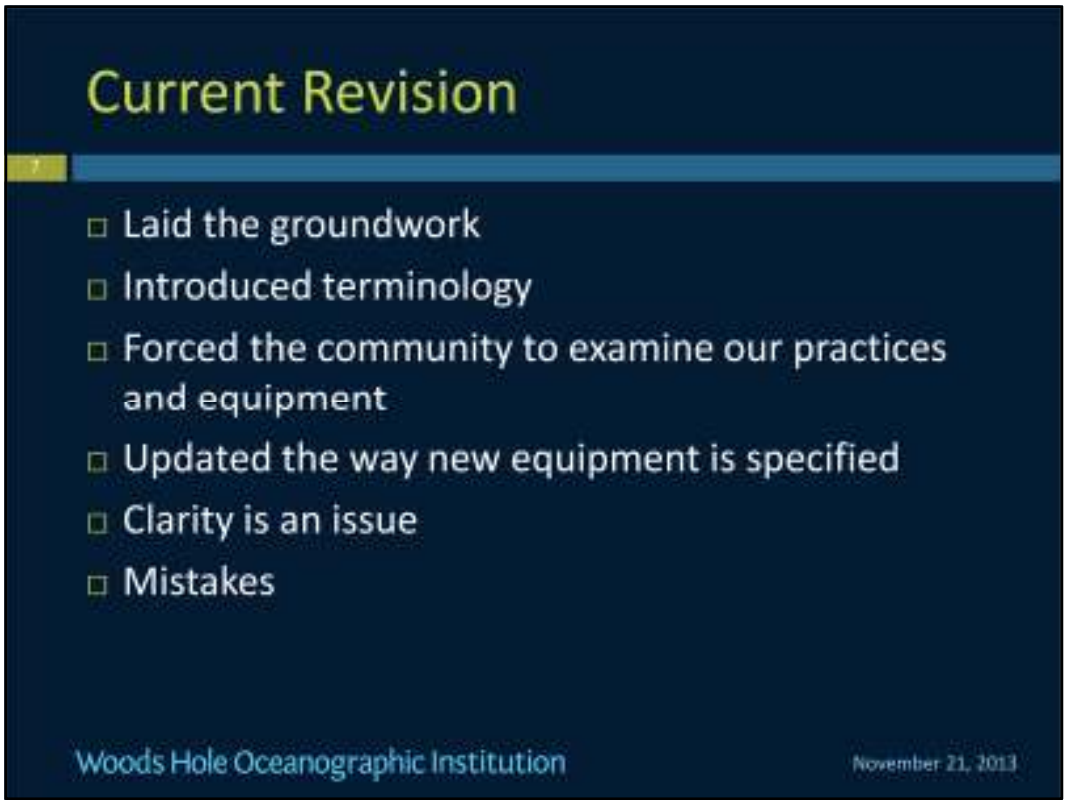
Purpose – Or do we really need more confusing paper work?

To create a set of guidelines to unify practices across the UNOLS fleet. To provide the language for such unity. This allows people to move from ship to ship to use the set language to mean the same thing.



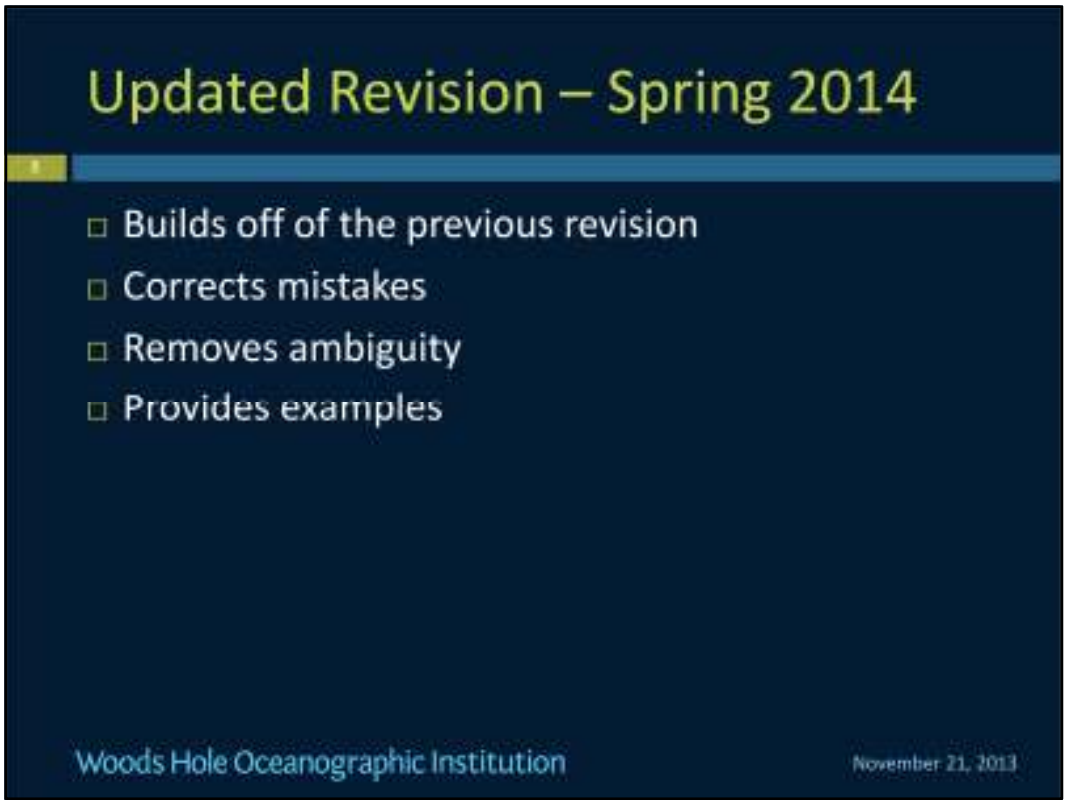
Provides a frame work using line tension as common denominator. Provides a common reference for equipment. This allows us to compare the capabilities of various components to tell if they are compatible, or what is the weakest link.


Revisions – The nightmare of living documents OR we better get some experts in here

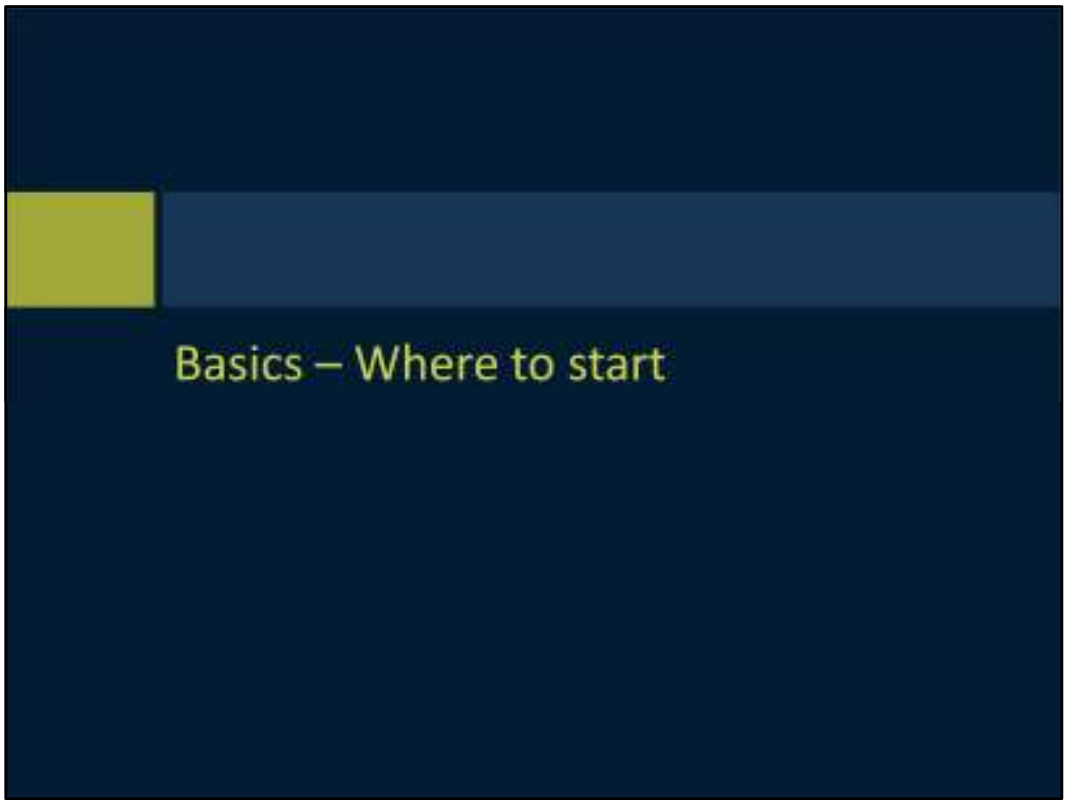


The current lay out has introduced us to this new terminology and has laid down the groundwork for future work. It is getting us to examine our current equipment and practices to see if they are suitable for what we are actually doing.

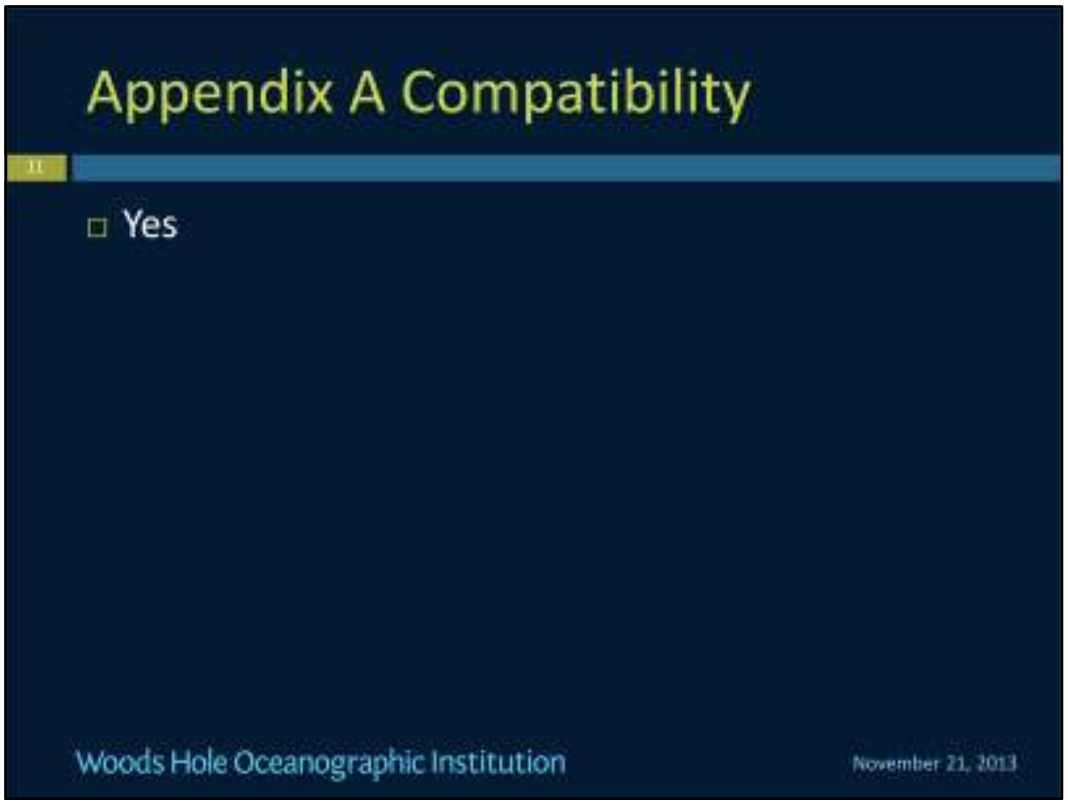
The clarity of the document is lacking. In it's current form everything is not as clear as it should be and has been a source of confusion.



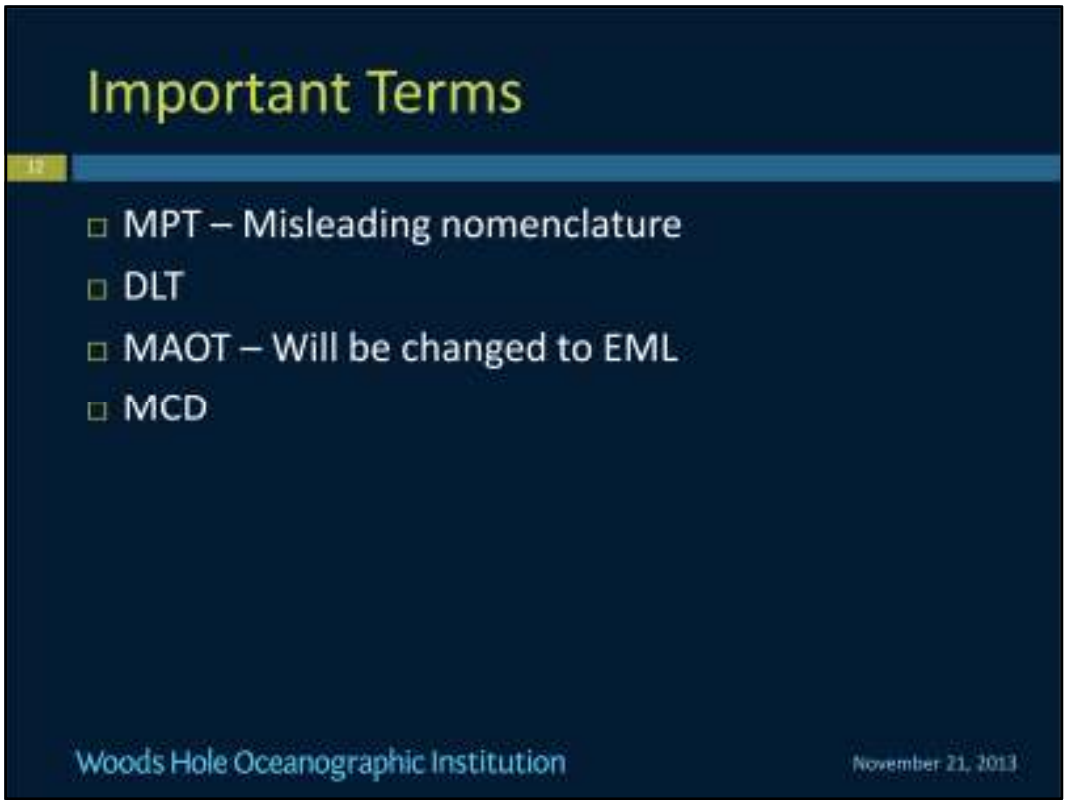
The biggest change to App B is the clarification of the existing standard. The revision makes some changes to the structure of the document and provides a consistent writing style through out. The responsibilities are better laid out, who is responsible for what part. There will still need to be some institution interpretation. But from the outside it should be clearer. The mistakes from the current revision will be removed and amended. The biggest change will be the provision of examples. Currently the examples are minimal, the plan is to expand these, from component level to system level.


Basics – Where to start

Appendix B covers all equipment involved in putting equipment in and taking equipment out of the water. From the deck sockets on up everything is included through the tension member.

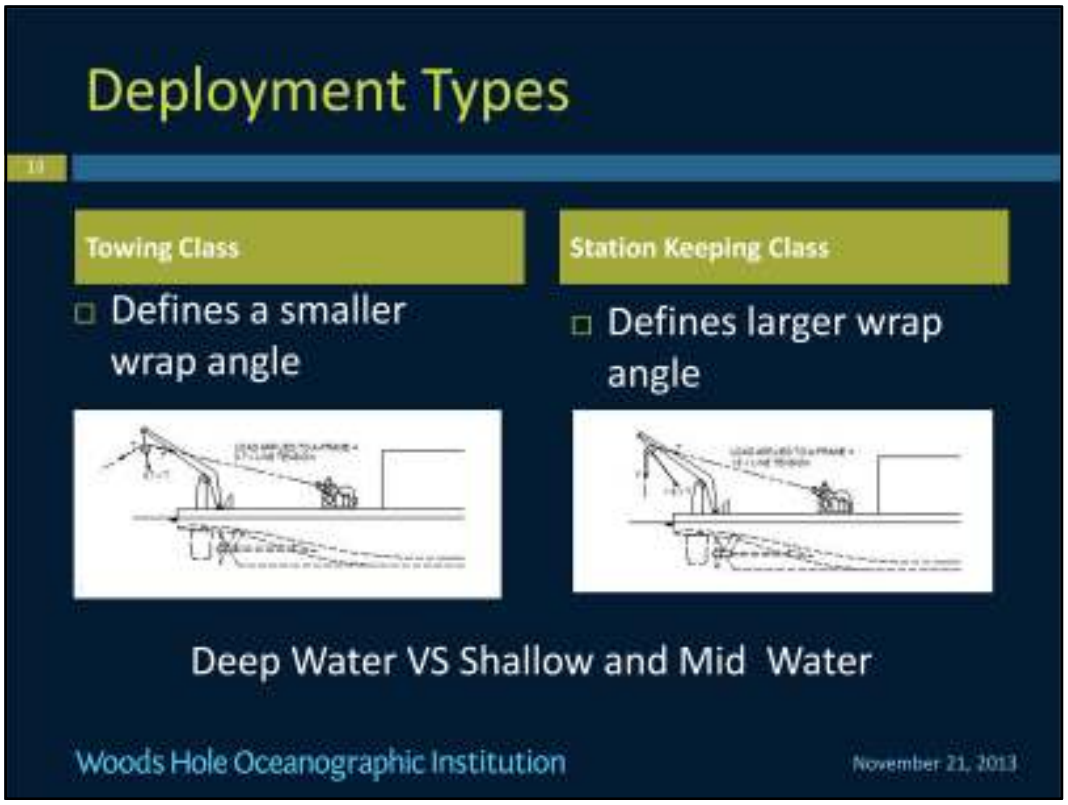


Appendix B is intended to compliment Appendix A. They should not be in conflict and are not intended to be.



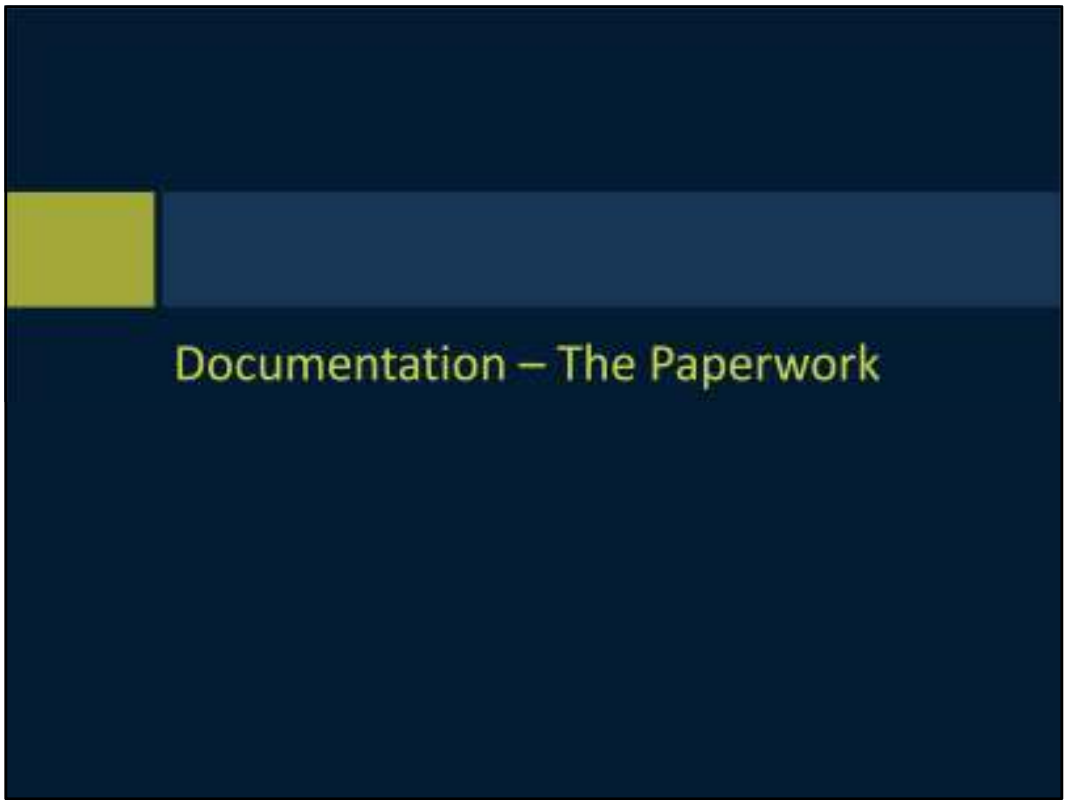
These terms can be found in the definition section of Appendix B.

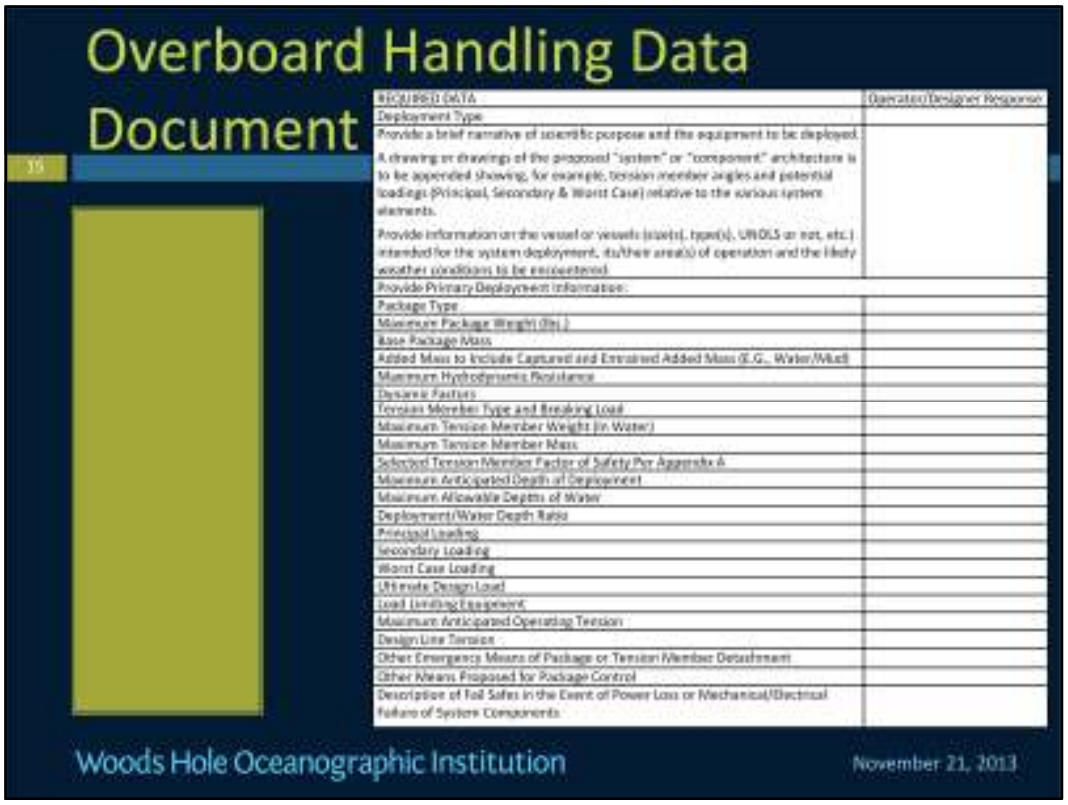
- MPT is Maximum Permissible Tension is analogous to Safe Working Load of a cable. A good way to think of this is the Maximum Working Tension.
- DLT is Design Line Tension is analogous to breaking strength of a tension member
- MAOT is Maximum Anticipated Tension is similar to Estimated Maximum Load in App A. It is the calculated loading, package weight, wire weight, drag, and the force from acceleration of entrained mass and the mass of the package and wire.
- MCD is the Maximum Capability Document. This document should describe the component or system along with it's limitations. What is it designed for? Etc.. It also needs to include the loading geometry and the reaction forces. Once change this is happening is that the reaction forces with be given at both MPT and DLT



This is a visual representation of wrap angle.

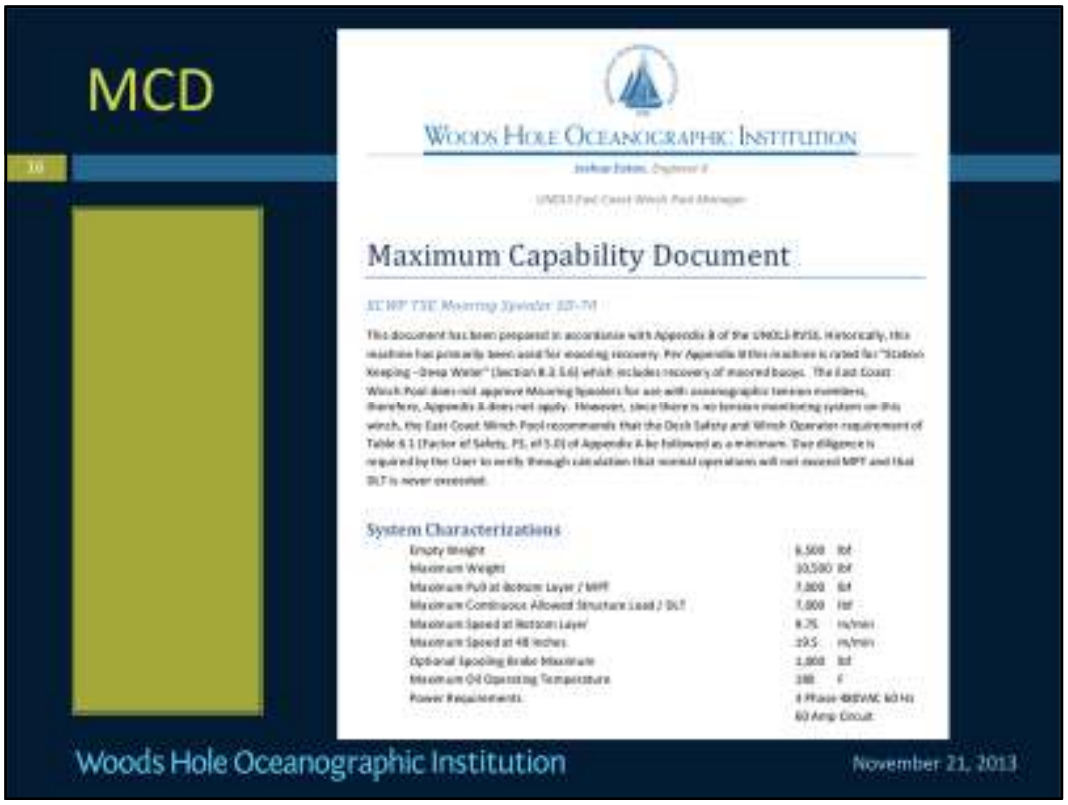
In the towing class of deployment type we can see that the wire travels a shorter distance around the sheave than in the station keeping class.


Documentation – The Paperwork



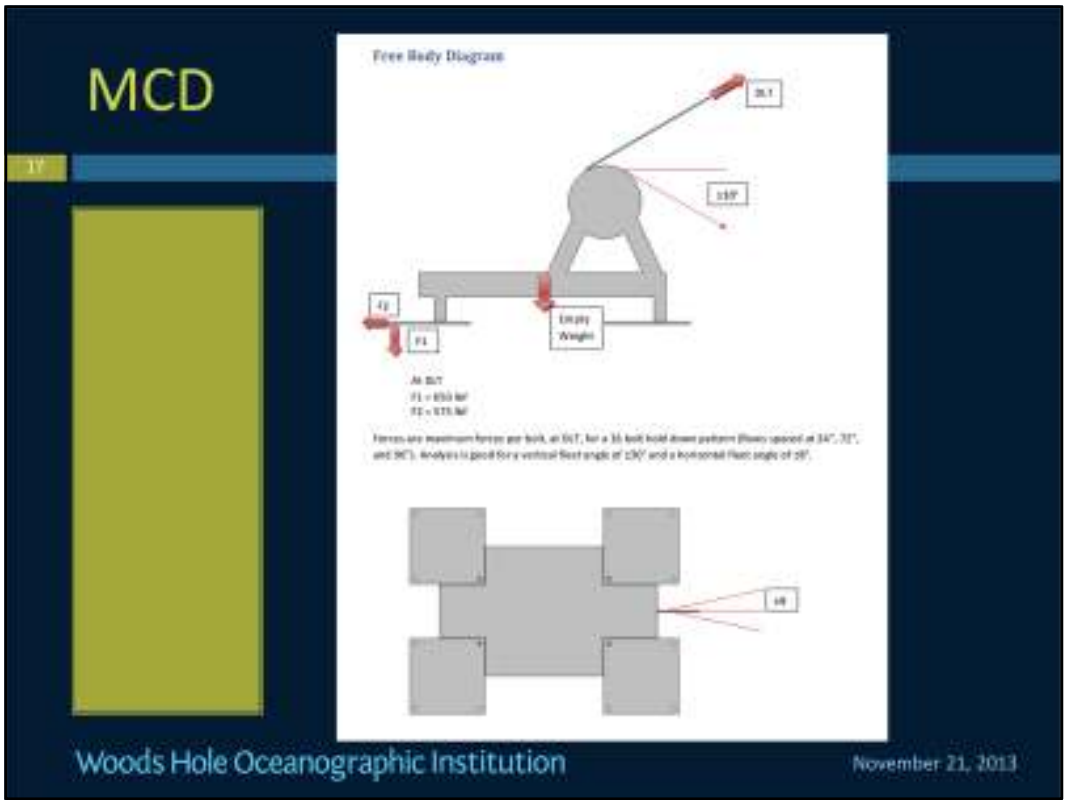
REQUIRED DATA	Operator/Designer Response
Deployment Type	
Provide a brief narrative of scientific purpose and the equipment to be deployed. A drawing or drawings of the proposed "system" or "component" architecture is to be appended showing, for example, tension member angles and potential loadings (Principal, Secondary & Worst Case) relative to the various system elements. Provide information on the vessel or vessels (size(s), type(s), URIDLS or not, etc.) intended for the system deployment, its/their area(s) of operation and the likely weather conditions to be encountered.	
Provide Primary Deployment Information:	
Package Type	
Maximum Package Weight (lbs.)	
Base Package Mass	
Added Mass to Include Captured and Entrained Added Mass (E.G., Water/Mud)	
Maximum Hydrodynamic Resistance	
Dynamic Factors	
Tension Member Type and Breaking Load	
Maximum Tension Member Weight (in Water)	
Maximum Tension Member Mass	
Selected Tension Member Factor of Safety Per Appendix A	
Maximum Anticipated Depth of Deployment	
Maximum Allowable Depths of Water	
Deployment/Water Depth Ratio	
Principal Loading	
Secondary Loading	
Worst Case Loading	
Ultimate Design Load	
Load Limiting Equipment	
Maximum Anticipated Operating Tension	
Design Line Tension	
Other Emergency Means of Package or Tension Member Detachment	
Other Means Proposed for Package Control	
Description of Fail Safes in the Event of Power Loss or Mechanical/Electrical Failure of System Components	

This form can be found in App B. Please don't try to read it here. It will hurt your eyes.

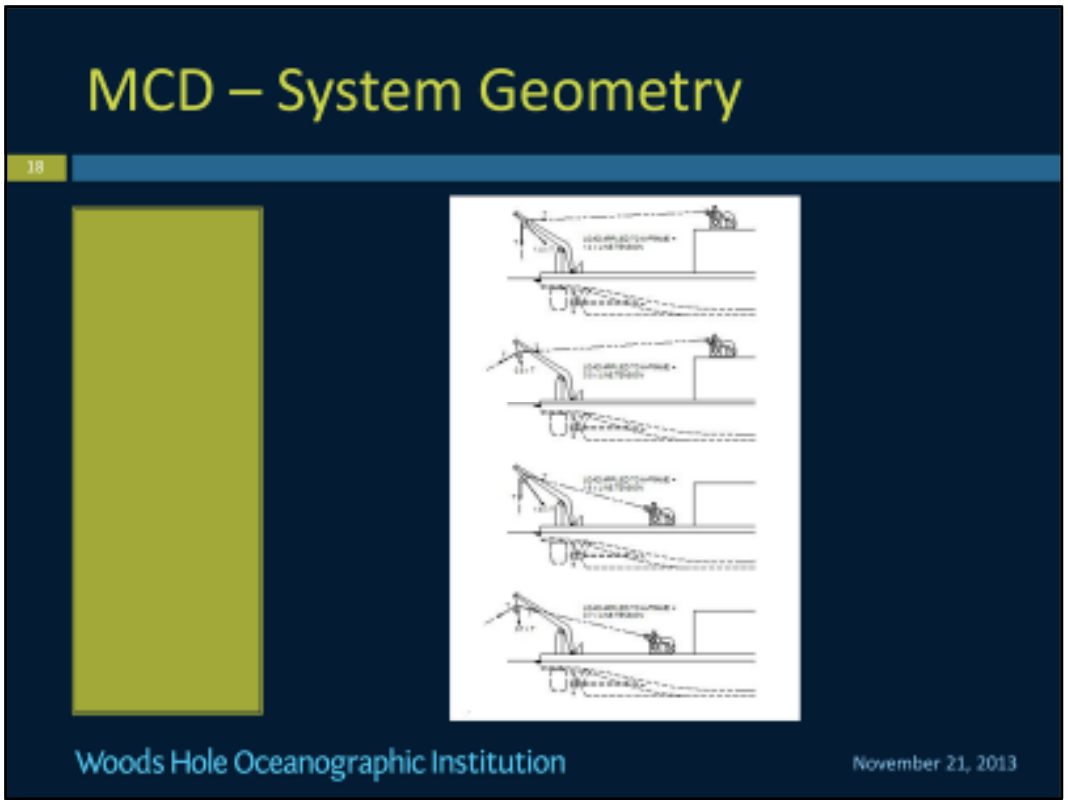


This is an example MCD developed by the East Coast Winch Pool. Our website has further examples. Under equipment if you click on a specific item there will be a document listed as an MCD.

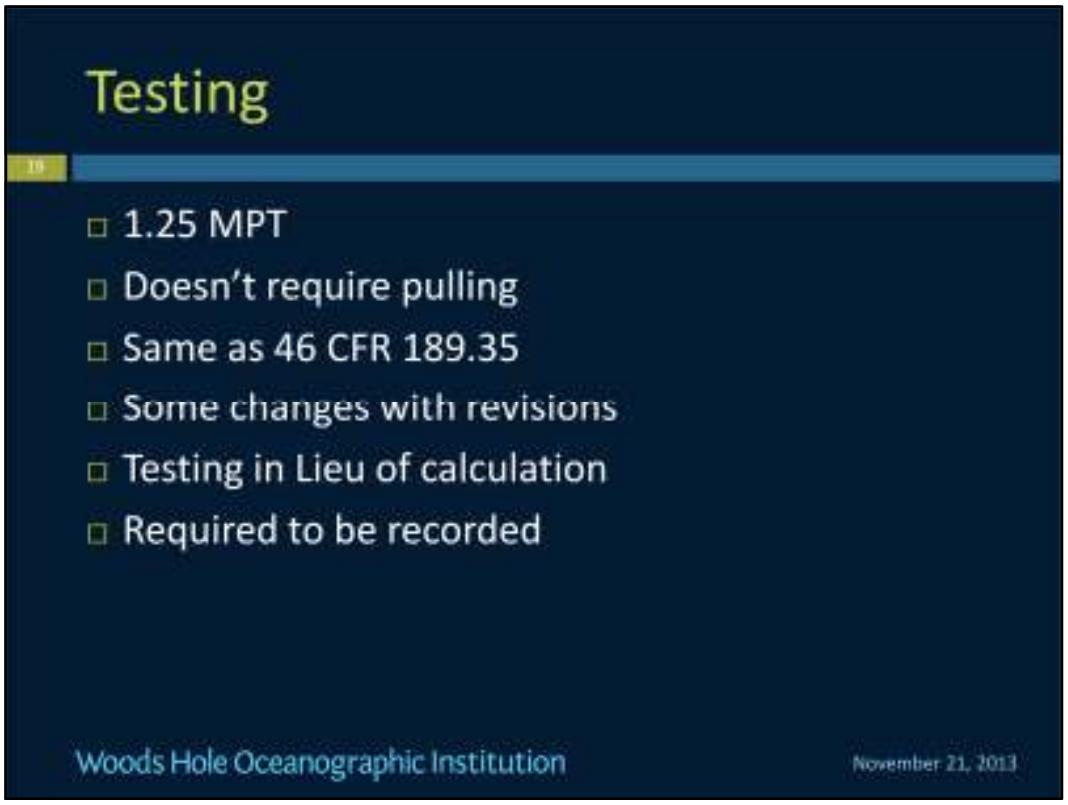
http://winchpool.whoi.edu



Page 2 showing geometry. This needs to be updated to show both the DLT and the MPT.

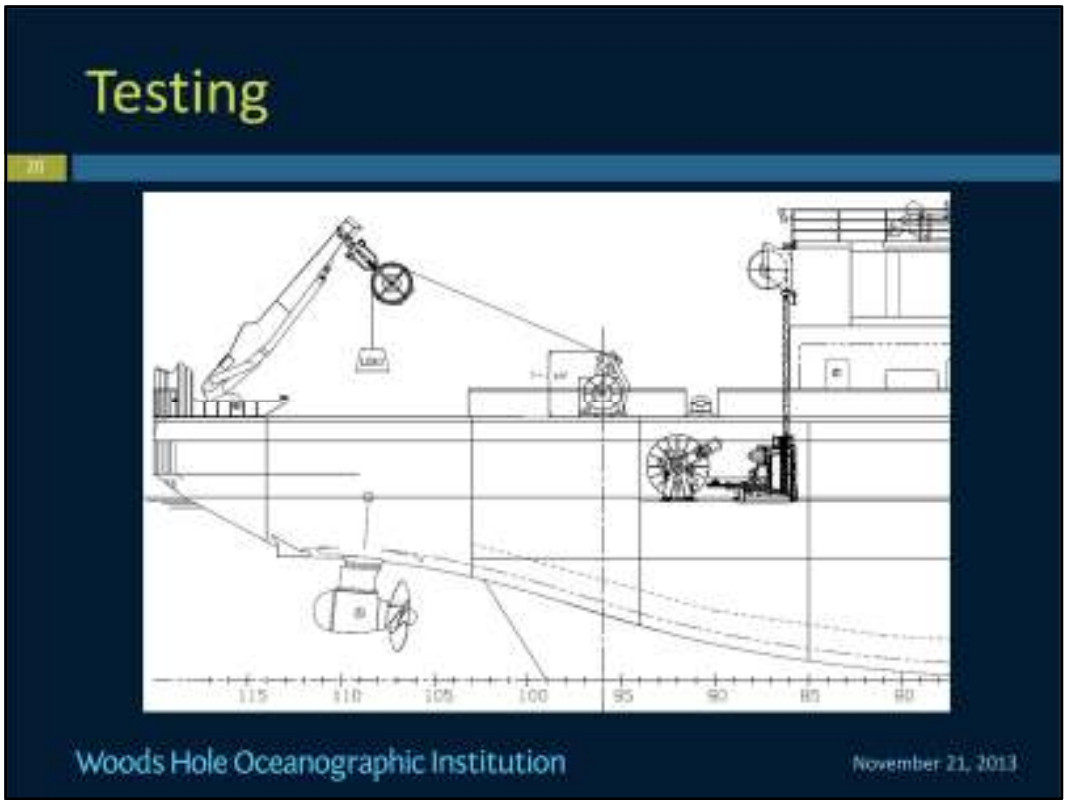


This is a further example of loading geometry and how we have to pay attention to the geometry and how it affects the loading.

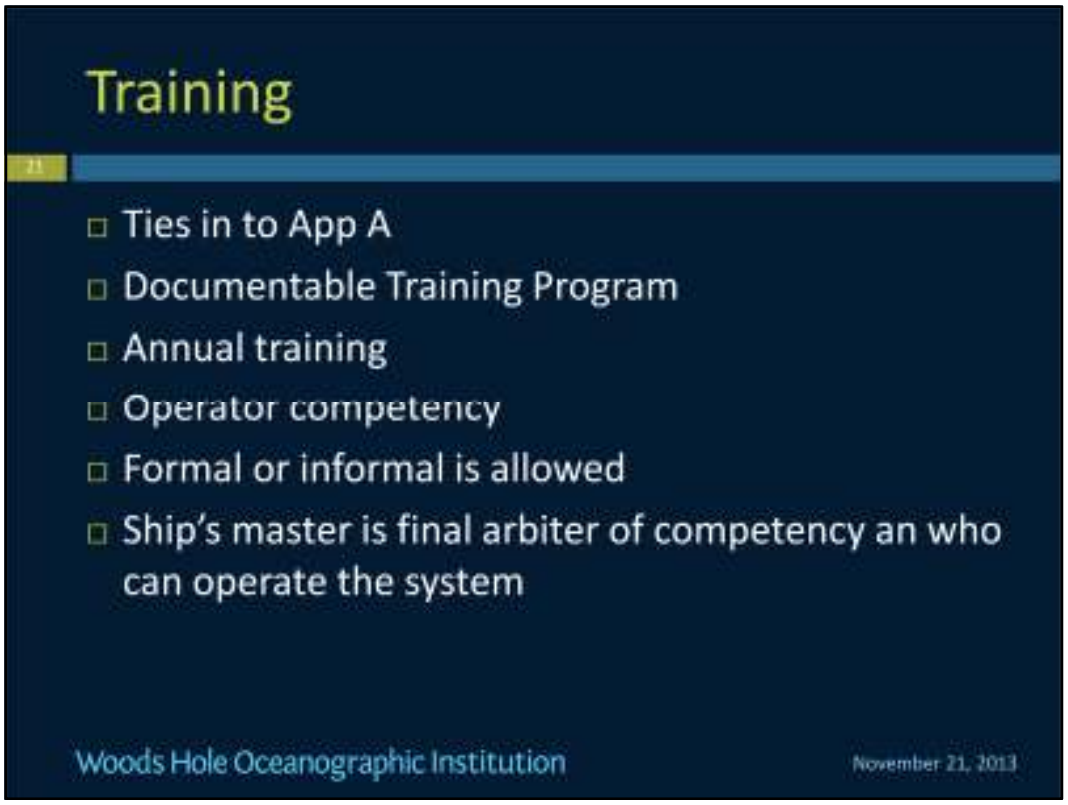


Testing is to 1.25 MPT. The equipment doesn't have to pull to 1.25 MPT. It can be achieved by chain fall or other apparatus. This is the same as the CFR. The new revision will have changes in the testing, including allowing testing instead of calculation. This is not the preferred method. It only provides the MPT not the DLT. All testing needs to be recorded and documented.

For testing a system remember that the cable is part of that system. In the case of a .322 handling system working with a safety factor of 2. If all other components are rated for 10k lbf mpt and the cable is 5000 lbf mpt. The system MPT is 5000lbf. So the system needs to be tested to 7500 lbf. Component piece wise testing would require 1.25 times the MPT of each component. Testing should not damage a component. In this example the tension member should be replaced for the test.



This test would only be for the winch and deck sockets. To test the a frame and block the frame should be out. This would then test the station keeping.



The training ties directly back to Appendix A training requirement. The master of the ship has the final say who is qualified and competent. Training should be documentable and annual.

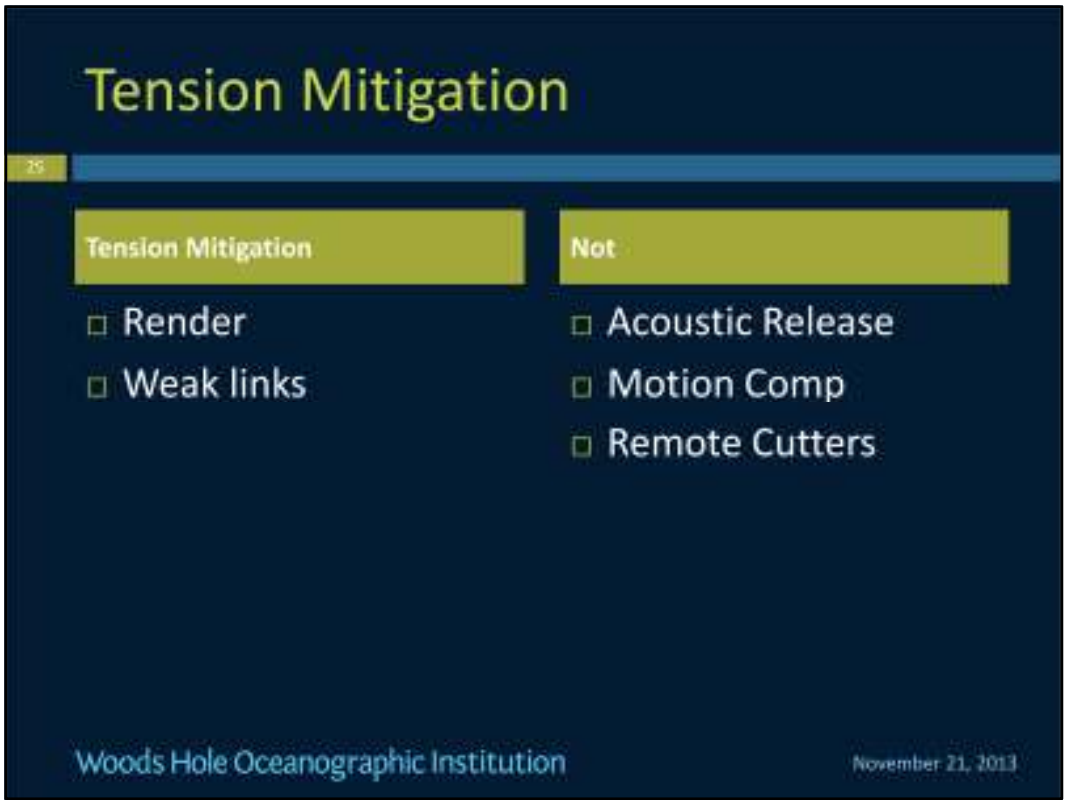
Procedures

22

- Should be developed during sea trials of equipment
- The procedures developed should be in the documentation
- Everyone working with the equipment should be familiar with the procedures
- Document any changes


Safety – Not breaking things

Around rotating machinery and finger pinches there should be guards as long as it doesn't impinge upon the operation of the equipment. An analysis should be completed for every piece of equipment.



Only render and weak links count as tension mitigation.

Render pays out cable at a specified tension. It may only operate when the winch has power. This is a limitation.

Weak links should be calibrated such that they are set to shear at the rated load minus the deployed cable weight.

I hope that this has cleared up some of the confusion around App B and provided guidance on moving forward


Discussion