Wire SWL Standards
(RVOC Meeting – April 2007)

- Right now – we have NO UNIFIED cable SWL or winch/handling system design standards across the UNOLS fleet.
- Inspected v.s un-inspected ships, wide variety of systems and applications, complex operational implications/issues, etc.
- Problem for ship operators.
- Problem for science.

Wire SWL Standards
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- ANY STANDARD right now is better than NO STANDARD!
- We can always modify later.
- Include as Appendix to new RVSS.

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- In my view, the handling system design standard is INSPEPARABLE from the cable SWL standard.
- The cable/rope is part of the system.
- Sub-Chapter U uses the cable breaking strength as the “design load”.

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- Original authors of Sub-Chapter U were BRILLIANT!
- Knowing things would change in the future, “alternate standards” (like ABS or other) are allowed by Sub-Chapter-U itself.
- However – they “overlooked” cable SWL!
- It’s up to us – as experienced R/V operators – to decide.
- No one standard is perfect for every application.

Safety Meeting Discussion
(RVOC Meeting – April 2007)

- Must be safe and "verifiable" that it's safe.
- Must be enforced – both ship and science.
- Must follow completely – if ABS used, then review, testing, and inspection requirements apply.
- Glosten to run example calculations illustrating both Sub-Chapter U and ABS standards impact on system design.
- What alternate means of strain relief are acceptable?
- Split standard? Set Sub-Chapter U for some systems/applications – alternates OK for others?
- When Operator's satisfied – approve with USCG and ABS.

Wire SWL Standards
(RVOC Meeting – April 2007)

- Looks long and complex.
- Actually quite simple – most of us are doing 90% of it now.
- Simply codifying what we do.

Wire SWL Standards
(RVOC Meeting – April 2007)

- Definitions (requested by RVTEC)
- General
- FS 5.0 or greater
- FS from 5.0 to 2.5
- FS 2.5 to 1.5
- Inspection and Testing (Rick Trask)
- Towing and Coring Ops (risk of entanglement)
- Background Information
- Examples (Requested by RVTEC)

Wire SWL Standards
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Read the Background Information FIRST!

Wire SWL Standards
(RVOC Meeting – April 2007)

Ensure safe operations…

AND

…Maintain operational flexibility.

ABS Standards

(ABS Rules for Building and Classing Underwater Vehicles, Systems and Hyperbaric Facilities (2002) – Appendix 4; "Certification of Handling Systems")

- *Generally quite good – ABS Houston and London. Result is still a robust system.*
  - Typical "engineering" F.S. codified – not simply "… a minimum of 1.5;…" (Shear, compression, bending, etc.)
  - Dynamic effects considered using 1.75g factor for "unmanned operations".
  - Modern capabilities can be incorporated – "Auto Render"

ABS Standards

- FUNDEMENTALLY DIFFERENT from Subchapter-U – Cable is NOT the “weak link” in the system. ABS view is that cable should never part. (4.7 FS on cable breaking strength)
- With Subchapter-U, there is a DIRECT LINK between cable breaking strength and structural design.
- NOT SO with ABS (or other classification society standards) – based on “Design Load” or “maximum expected load” = package, cable, drag, weight of entrained mud and water, etc.
- This has advantage on systems using strong cables for band width or synthetics – but small “expected loads”.
- Would have similar results with systems like deep coring.

ABS Standards

- ONLY issue/problem for us is 4.7 FS on cable breaking strength.

  Waiver granted by ABS Houston on R/V *SHARP* to reduce to 2.5 for “oceanographic research” following Lloyd’s model developed by UK.

- Also, ABS does not like portable equipment!