RVOC 2013

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Wire Pool Manager
April 2013 Topics

• Wire Rope and Cable Maintenance
• Wire Database Enhancements
• Sheave Groove Gauges
Let me begin with a story........

• A $300K NSF owned .681 power optic cable goes to sea on an SIO portable Dynacon Winch on the University of Washington’s R/V Thomas Thompson.
• During its use at sea, it develops so much twist that there are issues with keeping the wire on the winch traction heads.
Twist problems in .681 Power Optic
If Wire Rope were a piece of MACHINERY we would perform preventative maintenance and keep it lubricated. But wait, Wire Rope is a machine!

**ma-chine**: *an assemblage of parts...that transmit forces, motion, and energy on to another in some predetermined manner and to some desired end...*

Webster’s Third New International Dictionary

As such, its functional characteristics must be understood and procedures for proper maintenance be scrupulously adhered to.
We probably would not put this in service?
So why put these in service?
Wire Rope and Cable Maintenance

• Wire ropes and cables from UNOLS Wire Pool are NSF resources.

• Access to these resources carries with it a responsibility to maintain them.

• Funds to replace these NSF resources are limited now more than ever.

• Need to prolong the useful life of these resources since replacements are not readily available.
Prolong Service Life

Protect from corrosion

• Lubrication applied at the time of manufacture is good for a reasonable amount of time while the rope is in storage.

• Initial Manuf. applied lubricant/rust inhibitor does not last once the wire is placed in service, particularly when the wire is repeatedly submerged in seawater and then exposed to salt air.

• Oceanographic wires tend to rust out before they wear out.

• Corrosion is not restricted to the outer surface but also attacks hidden inner armor.

• Test results have shown that a lubricated wire will operate >5 times as long as a dry rope in applications where D/d = 43
Break down of wire protection

- Without field re-lubrication, metal to metal contact
- Wire to wire friction increases
- Abrading breaks down galvanized coating on wires
- Abrading of individual wires reduces metallic area
- Bare steel exposed to salt (submersion and spray)
- Pitting and uneven surfaces, inhibits smooth movement of wires, high stress concentrations, failure points at wire passes over sheaves.
Need to be proactive about corrosion protection

- Wash down with fresh water spray during re-haul to reduce salt that remains in contact with wire
- Regular re-application of a lubricant/rust inhibitor
- Rotate winch drum to new resting positions during extended periods of inactivity
- Attempt to minimize exposure to the elements during storage
Simple Wash Down System on Markey Winch
CoreLube Lubrication System
Method of Operation

Air nozzles remove sea water from the cable before the lubricant is applied. (Optional) Use only if required.

Oil Nozzle Brushes precisely apply the lubricant to four points.

Spiral Brushes spread and work the lubricant into the cable evenly.
Field Re-lubrication

R/V Atlantis
Lube Location
Field Re-lubrication

R/V Atlantis
Field Re-lubrication

R/V Atlantis
Field Re-lubrication

R/V Oceanus
Field Re-lubrication

R/V Oceanus
Storage of Wire

Covered Adequate Ventilation
Going Forward

- Wire and cable maintenance policy is being developed
- Have to improve our wire maintenance efforts
  - To insure better wire and cable performance
  - To prolong the life of these tension members
Maintenance can be costly. Lack of maintenance can be even more costly!

It costs more to bring something in poor condition back to being operational than if regular maintenance had been performed.

Inadequate maintenance can result in a loss of capability that may not be quickly rectified thereby loosing a competitive advantage.
Switching Gears.........
Wire Database Enhancements

• New capability which allows operators to upload documents and photos they may want as part of the tension member history.

• New section to assist operators with requesting wire from the wire pool

See Ruthanne for a demo of these new features.
Changing Gears once more......
Sheave Groove Gauges
Thanks for Listening

Questions?
STRAN-CORE
Extreme Wire Rope Protection
Semi-Synthetic Corrosion Inhibitor
with Extreme Pressure Properties

Stran-Core was developed specifically to prevent internal & external corrosion of Wire Ropes & EM Cables.

Stran-Core also has Extreme Pressure Properties to reduce friction between the wires, sheaves & drum. The product's success is a (2) component system composed of a biodegradable carrier and a calcium based corrosion inhibitor/lubricant. The first component penetrates the cable and the second component leaves a grease like protective coating.

- Grease-like coating in a low-viscosity form
- Can be applied to wet cables
- Clings to surface in Sea Water
- Penetrates the inner wires
- Excellent Long-lasting corrosion protection
- Nontoxic
- Non-flammable-no solvents
- Extreme Pressure & Anti-Wear Protection
  (4 Ball Weld Point: ASTM D-2783 400 kg)
  Load Wear Index: ASTM D-2783 56.81

CORELUBE EQUIPMENT
Manufacturer of the BOS Systems.
Designed to apply Stran-Core.

4100-BOS 4.5" Cable
3100-BOS 3" Cable
2100-BOS 1 5/8" Cable

To order Stran-Core Lubricant Contact:
GRIGNARD COMPANY
505 Capobianco Plaza
Rutland, NJ 07965
Attn: Elainine Grignard or Melanie Feliciano
Phone: 732-340-1111 Fax: 732-340-0111
eileen@grignard.com
melanie.feliciano@grignard.com
STRAN-CORE
Extreme Wire Rope Protection
Semi-Synthetic Corrosion Inhibitor
with
Extreme Pressure Properties

Product Data:

- **Color:** Green
- **Flash Point:** 270F, 126C
- **Pour Point:** 4F, -20C
- **Biodegradable:** ASTM D-6406

Does not contain hazardous ingredients.
- **Four Ball EP Weld:** ASTM D-2596 = D-2783
  - 400
  - For comparison: The Higher the number the better.
- **Load Wear Index:** ASTM D-2596 = D-2783
  - 56.81
  - For comparison: The Higher the number the better.

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List of marine companies that are using Stran-Core to protect the wire ropes and EM cables from corrosion:

- Woods Hole Oceanographic Inst;
- Institute of Ocean Sciences
- University Of California
- Ocean Works International
- Marine Service & Supply
- Dept of US Navy
- US Coastguard
- Williamson & Associates
- NOAA
- Franklin Offshore
- Ocean & Earth Science & Technology

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Container Terminals that have switched to Stran-Core:

- A.P.M. Terminal, NJ, USA
- Maher Terminal, NJ, USA
- TSI Terminal Systems Inc., BC, Canada
- Port of Everett, WA, USA
- Maher Terminal, BC, Canada
- Transkey Container terminal, CA, USA

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