



RVOC 2013

Rick Trask
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 $D/d = 43$

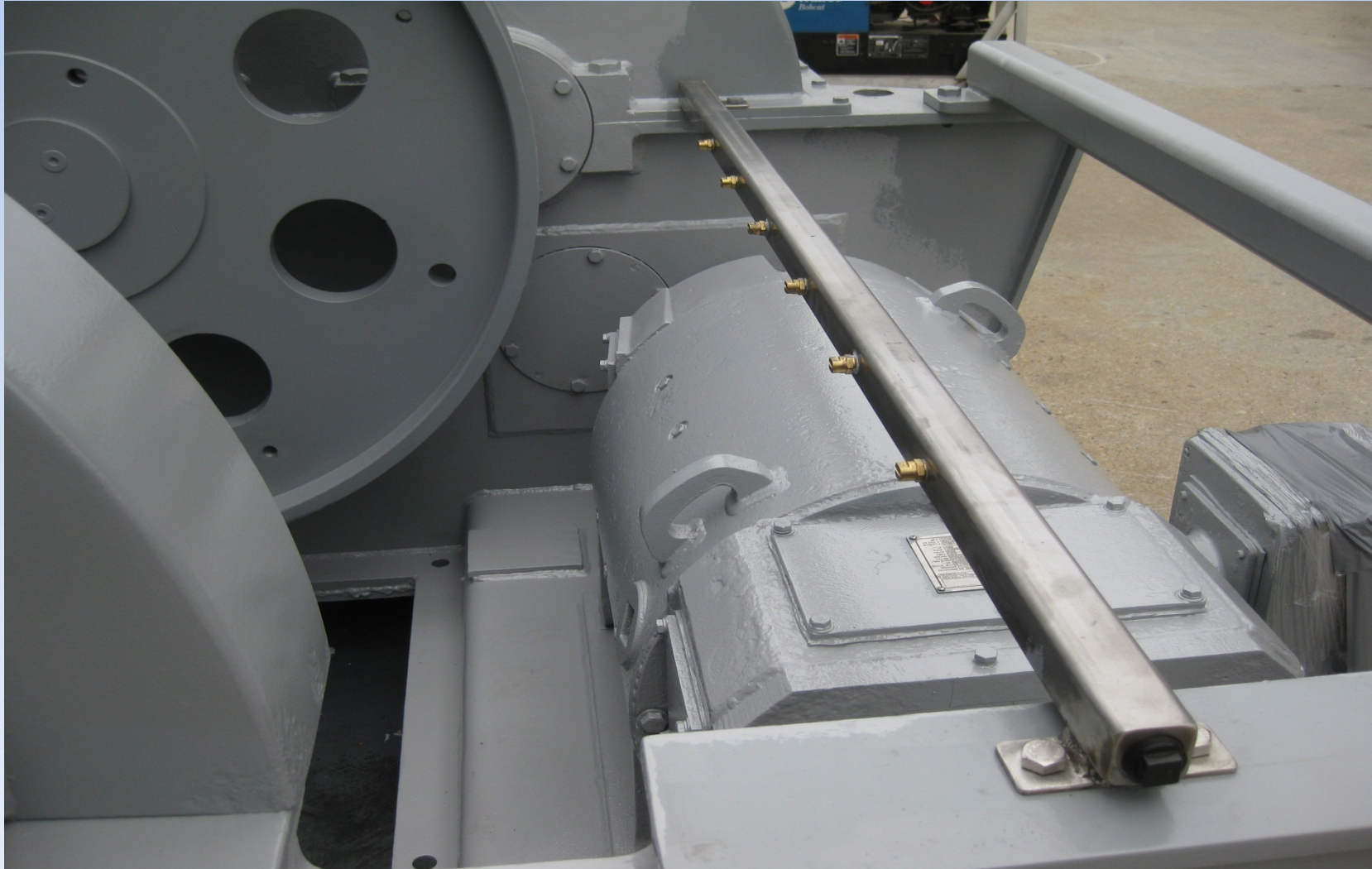
Break down of wire protection

- **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.**

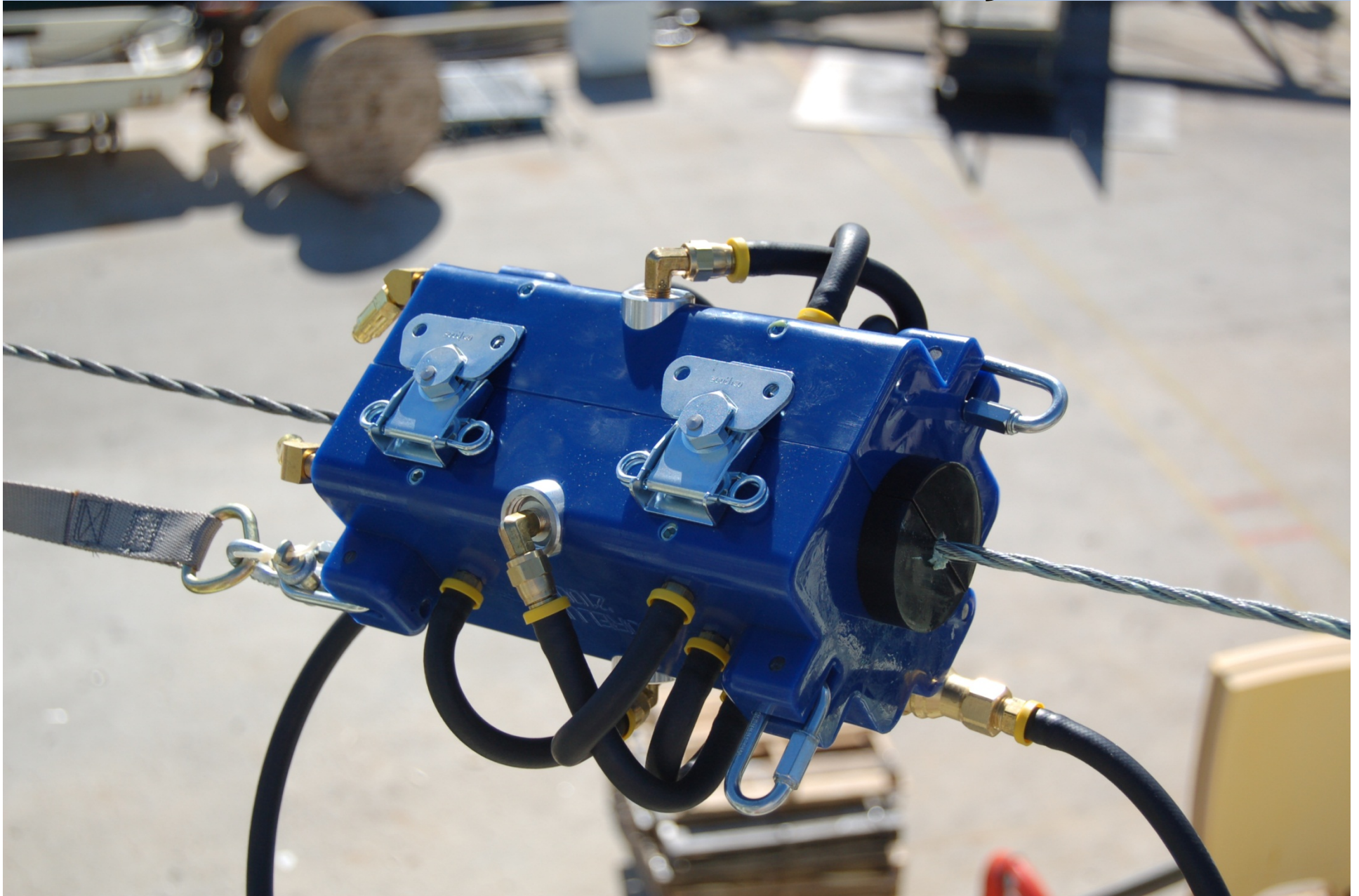
Need to be proactive about corrosion protection

- **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



OPERATIONS MANUAL



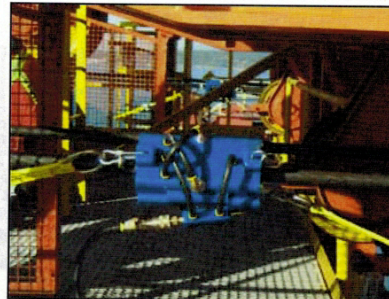
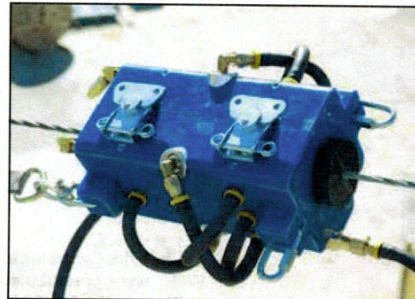
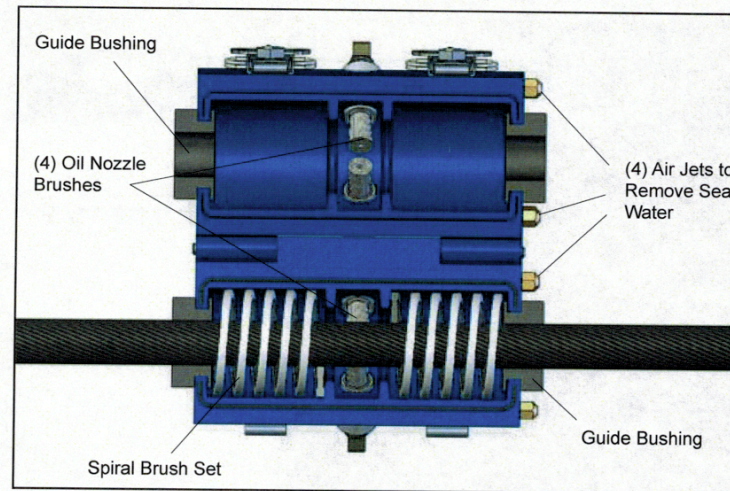
CORELUBE 2100-BOS SYSTEM

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 losing 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.....

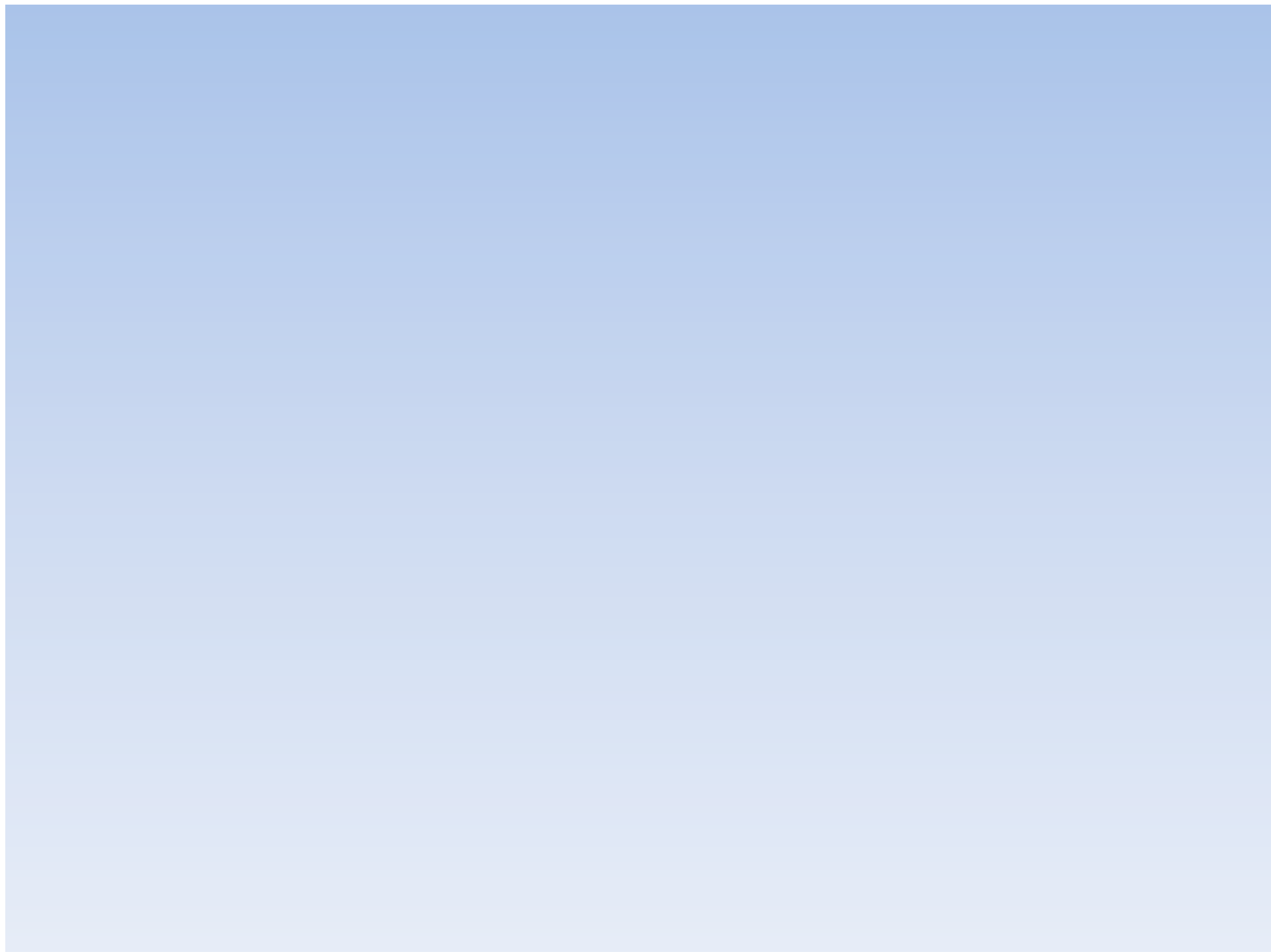


Sheave Groove Gauges



Thanks for Listening

Questions?



STRAN-CORE

Extreme Wire Rope Protection

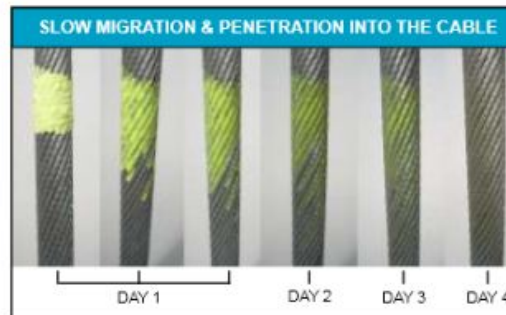
*Semi-Synthetic Corrosion Inhibitor
with
Extreme Pressure Properties*



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-Ware 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
Rahway, NJ 07065
Attn: Etienne Grignard or Melanie Feliciano
Phone: 732-340-1111 Fax: 732-340-0111
etienne@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.

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

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
Transbay Container terminal, CA, USA



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