UNOLS Wire Pool 2017 Update

Rick Trask

UNOLS Wire Pool Manager

Topics to be Discussed

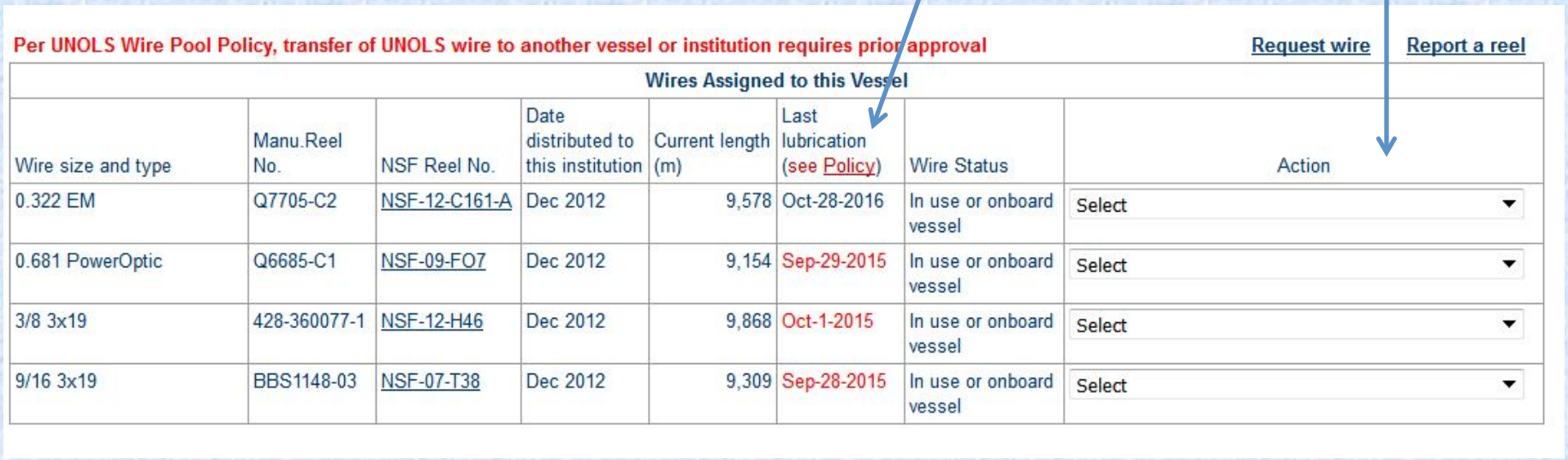
- **Wire Pool Database – New Features**
- **Efforts to Extend the Life Span of UNOLS Wire**
- **Update on the Evaluation of Synthetic Rope as a potential alternative to wire rope.**

Wire Pool Database – New Features

*Improved speed *Read-only option

*Pull down menu on Ship Report page

- Lubrication (tracks date of last lubrication)
- Cut back/re-termination
- End for end wire
- Split reel
- Update wire status
- Upload documents



Per UNOLS Wire Pool Policy, transfer of UNOLS wire to another vessel or institution requires prior approval

Request wire | Report a reel

Wires Assigned to this Vessel

Wire size and type	Manu.Reel No.	NSF Reel No.	Date distributed to this institution	Current length (m)	Last lubrication (see Policy)	Wire Status	Action
0.322 EM	Q7705-C2	NSF-12-C161-A	Dec 2012	9,578	Oct-28-2016	In use or onboard vessel	Select
0.681 PowerOptic	Q6685-C1	NSF-09-FO7	Dec 2012	9,154	Sep-29-2015	In use or onboard vessel	Select
3/8 3x19	428-360077-1	NSF-12-H46	Dec 2012	9,868	Oct-1-2015	In use or onboard vessel	Select
9/16 3x19	BBS1148-03	NSF-07-T38	Dec 2012	9,309	Sep-28-2015	In use or onboard vessel	Select

Efforts to Extend the Life Span of UNOLS Wire

- Evaluation of “Used” Wire that has potential for additional use.
  - Evaluation of conductors
  - End for end evaluation and measurement
  - Break, e-kink, mandrel testing
  - Lubrication
- Ready for distribution or loan

Distribution vs. Loan of Wire

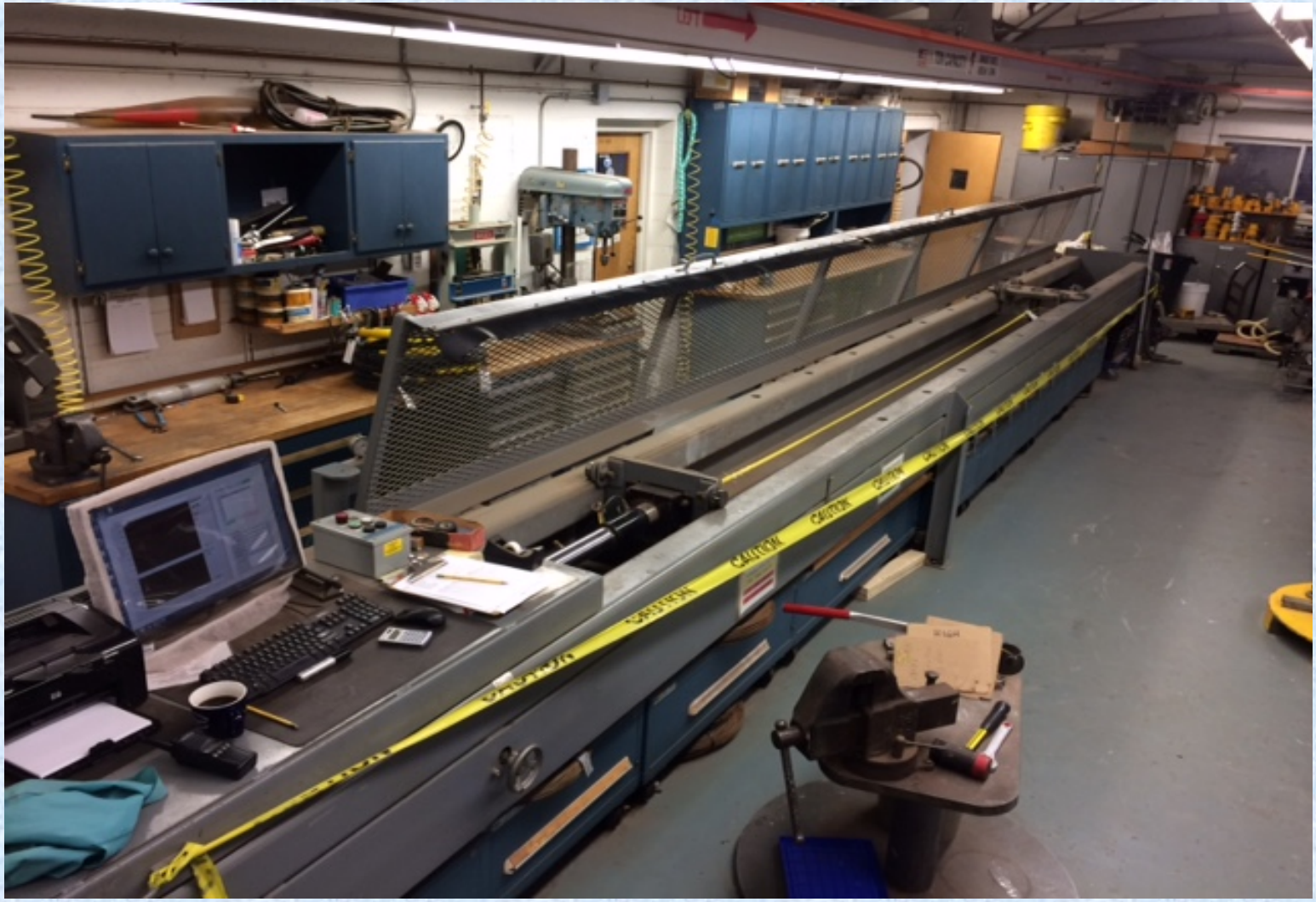
Distribution

- Wire to be wound on to a UNOLS vessel's winch as a permanent installation.
  - Vessel is responsible for the wire
    - Making sure it is properly maintained and lubricated
    - Testing is kept up to date

Loan

- Appropriate for single, short term operation
  - Wire is loaned with the expectation that it will be returned to the Wire Pool
  - Wire pool maintains wire (testing, lubrication)

Synthetic Evaluation Update



Initial Synthetic Evaluation
April 2016

Heavy Lift tests conducted using 2 Synthetic Ropes

- Phillystran PST 9/16" diameter Technora Aramid Fiber
- Samson DM 20 9/16" diameter Dyneema DM-20 Fiber

Included lifting 5,000, 10,000, 15,000 lbs. using traction winch on R/V Endeavor

Gravity Coring Cruise on R/V Endeavor, April 2016, utilizing the both ropes as tension members.

Heavy lift tests on a 3rd sample, following the Endeavor cruise:

- Cortland B-O-B 5/8" diameter

Lifting 25,000 lbs. using traction winch on R/V Endeavor

Additional Synthetic Evaluation 2016/2017

- More Traction Winch Tests
- In House Laboratory Testing

Additional Synthetic Evaluation 2016/2017

Traction Winch Tests

Repeat of lift tests using the traction winch of R/V Neil Armstrong

- 5/8” Cortland B-O-B
- 9/16” Samson Product with DM-20 fiber
- 9/16” Cortland Plasma® HiCo

20,000 lbs. lift on R/V Neil Armstrong using Synthetic Rope

Additional Synthetic Evaluation 2016/2017

In House Laboratory Testing

Thousand Cycle Load Level Determination for 4 Rope Samples

- 5/8” Cortland B-O-B
- 9/16” Samson Product with DM-20 fiber
- 9/16” Phillystran PST w/ Multiplex jacket
- 9/16” Cortland Plasma® HiCo

Thousand Cycle Load Level

Theoretical Load Level at which failure would occur at 1,000 cycles
Expressed as a % of the manufacturer's minimum breaking strength

- 1,000 cycles @ 50% of breaking strength, if it survives
- 1,000 cycles @ 60%, if sample survives
- 1,000 cycles @ 70%, if sample survives
- 2,000 cycles @ 80%

Using Predetermined Equivalents:

- 1,000 cycles @ 50% = 251 cycles @ 60%
- 1,000 cycles @ 50% + 1,000 cycles @ 60% = 215 cycles @ 70%
- 1,000 cycles @ 50% + 1,000 cycles @ 60% + 1,000 cycles @ 70% = 113 cycles @ 80%

CTF= Number of Cycles to Failure
TLL = Test Load Level at which CTF occurred

TCLL can be calculated: $TCLL = 100\% - ((6.91 (100\% - TLL))/Ln\ CTF)$

Oil Companies International Marine Forum (OCIMF)
Guidelines for the Purchasing and Testing SPM Hawsers

Thousand Cycle Load Level Test Results

Manufacturer	Product	TCLL [% MBS]
Cortland	B-O-B	71.4
Phillystran	PST	79.4
Samson	DM-20	81.9*
Cortland	Plasma® HiCo	81.9

* Used an estimated minimum breaking strength

Now Hear This!


Questions?