RVOC 2014

UNOLS Wire Pool

Rick Trask

Wire Pool Manager

Wire and Cable Purchases, Distributions and Testing

Past 3 years:

- **Purchased 25 reels of wire/cable/synthetic(1)**
- **Distributed 27 reels**
- **Tested 201 samples from UNOLS vessels**

Attempting to maximize the utilization of previously used resources to meet the needs of the UNOLS fleet (10 lengths distributed)


Wire Maintenance > >

Wire Maintenance

- Draft policy written
- Comments solicited from small group
- Versions 2, 3, ….followed
- Draft sent to RVOC and RVTEC for comments
- Comments incorporated in a version distributed most recently to the Safety Committee.
- Under review by the Safety Committee

Wire Disposal

Matt Hawkins' Back Yard

Wire Disposal

- Require approval through the Wire Pool
- May be shipped to the East Coast storage location for closer evaluation
- Three scrap metal companies have expressed willingness to dispose of unusable wire from the pool
  - Challenge to find companies interested in sporadic disposal of a variety of metal compositions

Synthetic Tension Members

What has been happening in the Wire Pool with regard to synthetic tension members?

Synthetic Substitute for 9/16” Wire Rope General Purpose Specification

- High ratio of strength to weight
- O.D. of 9/16” to minimize mods to winch/sheave train systems
- Unbroken lengths up to 13,720 m
- Capable of being used on both single drum and traction winches
- Operate continuously over appropriately sized sheaves without degradation in strength.
- Withstand cyclical loading in tension without degradation in strength
- Clamping of instrumentation without loss of strength
- Easily terminated in the field
- Rotational Stability (minimal axial rotation)

Meet or exceed performance specifications of 9/16” Wire Rope

- Rotate no more than 5°/ft at 45% RBS. A change of tensile load of 10% RBS → <1°/ft
- Breaking strength >=32,500 lbs
- Withstand 50,000 flexure cycles at 35-40% of RBS with strength reduction < 5% RBS
- Withstand 50,000 tension cycles from 0-45% RBS with strength reduction < 5% RBS

Phillystran Recommendation: PSTB-Technora

- Torque balanced design
- 36 strand laid design
- Aramid strength bearing core and cover braid jacket
- Jacket provides external abrasion resistance
- Jacket is sacrificial-> no contribution to strength-> field repairable.

PSTB-Technora

- Laid design provides better internal abrasion resistance than a braided design
- Technora offers good heat resistance for internal heat caused by friction
- Possible field termination options include:
  - hand splice
  - compression fittings
  - Nicopress
  - poured spelter sockets

  Best approach TBD

Does it meet the performance specifications?

Manufacturer will test rope performance

- Breaking Strength
- Rotation Tests
- CBOS Tests
- Tension Cycling

Tension Member Comparison

9/16” 3x19 Wire Rope

- Wt. of Corer in SW = 2000
- Wt. of Sample in SW = 100
- Wt. of 5.5 km WR in SW = 7722
- **Total** **9822**
- Quasi-Static Load
  - Pound-Mass of corer in air = 2600
  - Pound-Mass of mud sample = 350
  - Pound-Mass of WR= 8877
  - **Total Mass of System =** **11827**
- Dynamic Load 8870
- Transient Load Pull Out Load 2000
- Est. Max Load Pounds-force 20992
- FS=Est. Max Load/BS = 1.55

9/16” PSTB-Technora

- Wt. of Corer in SW = 2000
- Wt. of Sample in SW = 100
- Wt. of 5.5 km Syn in SW = 720
- **Total** **2820**
- Quasi-Static Load
  - Pound-Mass of corer in air = 2600
  - Pound-Mass of mud sample = 350
  - Pound-Mass of Syn= 2035
  - **Total Mass of System =** **4985**
- Dynamic Load 3738
- Transient Load Pull Out Load 2000
- Est. Max Load Pounds-force 8858
- FS=Est. Max Load/BS = 3.81

Questions?

- Minimum breaking strength
- General D/d ratio is 20:1
- Factor of safety of 5 for overhead lifting slings
  - Modified based on safety, payload, desired working life of rope, user discretion
- Sheave grove 10% oversized compared to rope diameter