

WHOI Underwater Cable Electrical Test Record # A302351

Test date: 2013 Apr 02 Conducted by: Marshall Swartz Customer: Bevin Observation Vehicle

Location and identification of cable tested (including armor, shield & conductor count: A302351 Radiostar
0.681 in dia F.O./HV cable on traction winch in Atlantis winch room.

Tested prior to use w/ Bevin OOS Vehicle. Used w/ POCA sliprings s/n

176870P.

Recorded length and condition of cable: Cable marker tape is in ~~met~~ feet not meters.

AXLE end: 0000279 (per notation on winch drum)

Wet end @ termination cut: 0032955 => length = 32676 ft at cut
= 9959.6 m

Preparation and visual condition of wire ends (bare, terminated, sliprings, etc):

viewed at

AXLE END

WET END

individually tested A302351,

SR 176870P, ~~68~~ and

Lead in Lab Feeder,

2800V per Rev R.

(0.3048 m per ft.)

Max voltage specified by cable manufacturer: 3000V Avg armor dia: 0.681 mm/in. Wire temp, °C ~15

Megger ID: AEMC Mod 1060 s/n 154855 DC DV "GAGNE" TDR ID: NO TDR

Test Sequence	Insulation Ω , M/T/G	DAR ratio	PI ratio	cap μF	appl. volts	Seconds duration
GRN-WHT1	13.92 G	2.21	V	0.960	1KV	180
GRN-WHT2	21.88 G	2.17	V	0.965	1KV	180
WHT1-WHT2	33.21 G	1.99	U	0.960	1KV	180
GRN-ARMOR	28.65 G	2.16	V	1.36	1KV	180
WHT1-ARMOR	12.32 G	2.31	V	1.37	1KV	180
WHT2-ARMOR	10.67 G	2.27	U	1.37	1KV	180
GRN-ARMOR	1.572 T	2.08	5.68	0.005	1KV	180
WHT1-ARMOR	1.791 T	2.24	6.63	0.005	1KV	180
WHT2-ARMOR	1.848 T	2.18	6.14	0.005	1KV	180
GRN-WHT1	>40 T	2.11	U-OR	0.004	1KV	180
GRN-WHT2	>40 T	2.09	U-OR	0.004	1KV	180
WHT1-WHT2	3.73 T	2.09	6.39	0.004	1KV	180
SR1-SR2	113.36 G	1.17	1.38	--	1KV	180
SR1-SR3	83.86 G	1.10	1.21	--	1KV	180
SR2-SR3	77.1 G	1.12	1.25	--	1KV	180
SR1-CASE	--	--	--	--	--	--
SR2-CASE	--	--	--	--	--	--
SR3-CASE	--	--	--	--	--	--

comments	DAR = $R_{\infty} \cos \theta$
pass	$R_{\infty} 30 \text{ sec}$
	PI = $R_{\infty} 180 \text{ sec}$
	$R_{\infty} 30 \text{ sec}$
"U" = high range	
readings with	
noise causing	
calculation error	
thus undefined.	
"U-OR" - overrange	
caused undefined	
calculation.	
pass	
not done	
not done	
not done	

End-to-End: Black: Ω , White: Ω , Red: Ω , Armor: Ω , end to end, not checked
 Termination end: armor to ship's structure: <2.0 Ω . AC volts, armor to ship's structure: 90V.

TDR setup: Velocity Factor (VF) used: 0. Confirm VF from actual recorded length? Y/N

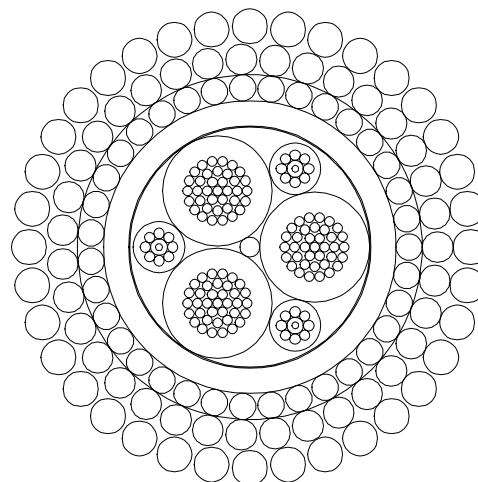
TDR Results Summary: NO TDR.

Cable resistance A302351 = 04.9 Ω /km

Note: optical loss: 0.7 dB/km => 7.0 dB @ 1310 nm.
@ 1310 nm
 Red fiber axle to term end: 4.9 dB @ 1300 nm. * - not consistent with specs.
 Black fiber axle to term end: 6.9 dB @ 1300 nm. - meets expected loss.
 WHOI Electrical Cable Test Form. WHOI_UWCabletest_20130403.doc M. Swartz, WHOI tested w/ EXFO test set of SSS6 Atlantis.

DATA LINE®

Description	Inch	mm
<u>ELEMENT A</u>		
Fiber: 8.3/125/245 μ m SMF		
Buffer: Hytrel®	0.024	0.61
Aarmor: 8/0.015" Plow Steel	0.054	1.37
Belt: Polyethylene	0.074	1.88
<u>ELEMENT B</u>		
Cdr: #11 AWG, Hard-drawn Cu		
Ins: Polyethylene	0.156	3.96
<u>ASSEMBLY</u>		
Core: Filler Rod	0.030	0.76
Layer 1: 3 Element B's with 1 Element A in each interstice.		
Void fill and tape.	0.344	8.74
Belt: Polyethylene	0.415	10.54
<u>ARMORING</u>		
1 st Layer: 35 wires GEIPS	0.500	12.70
2 nd Layer: 35 wires GEIPS	0.583	14.81
3 rd Layer: 36 wires GEIPS	0.681	17.30



PROPRIETARY; Use Pursuant to Company Instructions

tyco / Electronics / **The Rochester Corporation**

Instrumentation and Control Cable
Code: IM0060343PO01

Date	Page	Revision	Part No.
05/18/2004	1	R	A302351

PERFORMANCE CHARACTERISTICS

Nominal Values @ 20 °C

METRIC

ENGLISH

PHYSICAL

Weight in Air	1,112 kg/km	747 lb/kft
Weight in Seawater	905 kg/km	608 lb/kft
Specific Gravity (seawater)	5.6	5.6
Operating Temperature	-30 °C to 80 °C	-22 °F to 175 °F

MECHANICAL

Breaking Strength (Fixed End)	205 kN	46,000 lbf
Breaking Strength (Free End)	205 kN	46,000 lbf
Working Load @ 0.35% Strain	44.5 kN	10,000 lbf
Working Load @ 0.5% Strain	62.3 kN	14,000 lbf
Rotation @ 14,000 lbf	<3.3 °/m	<1 °/ft
Recommended Bend Radius @ 10,000 lbf	35 cm	14 inches
Recommended Bend Radius @ 14,000 lbf	61 cm	24 inches

ELECTRICAL

Voltage Rating @ 123 volts/mil	2,800 Vdc	2,800 Vdc
Insulation Resistance	3,000 MΩ.km	10,000 MΩ.kft
dc Resistance	4.9 Ω/km	1.5 Ω/kft

OPTICAL

Attenuation		
@ 1310 nm	0.7 dB/km	0.21 dB/kft
@ 1550 nm	0.7 dB/km	0.21 dB/kft
Proof Test	1,380 N/mm ²	200 kpsi

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05/18/2004	2	R	A302351