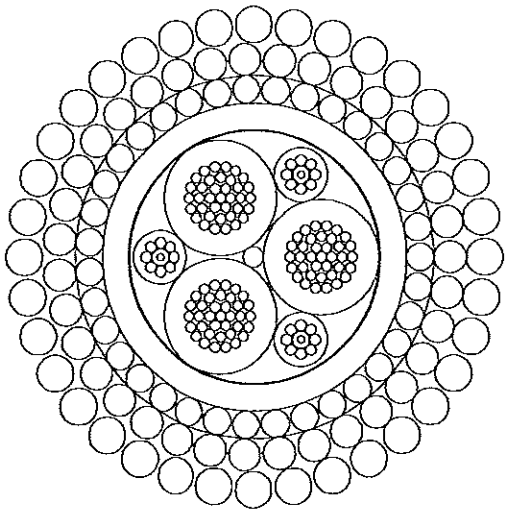
Rochester Wire & Cable, LLC
751 Old Brandy Road
Culpeper, Virginia 22701

FINAL TEST REPORT

Woods Hole Oceanographic Institute

Rochester Design A302351
Power Optic Cable

Job & Cut No.: Q9641 C 1



Certificate of Conformity

This is to certify that the material shipped under customer purchase order K118837 complies with the following:
1) Rochester Wire & Cable's DATALINE for Engineering Specification(s) A302351

ROCHESTER WIRE & CABLE IS AN ISO-9001 REGISTERED COMPANY.

Quality Department

Date: 10-21-15 **Job & Cut No.: Q9641 C** 1 **Length:** 32,765 **ft.** (*Req. length 32,810'*)

Final Inspection

Diameter: Min. .680 " Max. .686 " Avg. .683 " Pass ✓ Fail ___

Cable is fully cured Pass ✓ Fail ___

Temperature: 72 °F Relative Humidity 31 %

Breaking Strength Samples collected:
1) *Mechanical lab *(approx. 10-12 ft.)* Yes ✓ No ___
2) *W.H.O.I *(20 ft. cut by Mfg)* Yes ✓ No ___

**Note: Samples will be labeled with the Job No., Cut No., Design No., P.O No., and length of sample.*

Verify Trace No. for Grignard VGP grease is written in Armor log Yes ✓ No ___

Electrical: *Element A*

	DCR		Insulation Resistance		Hipot
ID	Total Ω	Ω / kft	Ttl. MΩ	MΩ*kft	5,600 Vdc
Green	48.1	1.5	1,500	49,148	(Pass) / Fail (Circle One)
Natural	48.1	1.5	1,610	52,752	(Pass) / Fail (Circle One)
Natural	48.0	1.5	1,690	55,373	(Pass) / Fail (Circle One)

Capacitance:

Test Cdr - Cdr & Cdr - Armor			Total µF (Record)	
Green	Natural	Natural	.895	
	Armor		1.343	
Natural	Natural	Green	.917	
	Armor		1.336	
Natural	Green	Natural	.898	
	Armor		1.326	

Summary of Electrical and Signal Testing: ☑ Satisfactory ☐ Unsatisfactory

Technician: B. Ayers Date: 10-21-15

Optical Attenuation: *Element B*

ID	1310 nm	1550 nm	Point Defect (≤.10 dB)
Red	.345 dB/km	.204 dB/km	Pass / Fail (Circle One)
Black	.341 dB/km	.201 dB/km	Pass / Fail (Circle One)
Natural	.344 dB/km	.202 dB/km	Pass / Fail (Circle One)

Summary Optical Attenuation Testing: ☑ Satisfactory ☐ Unsatisfactory

Technician: B. Ayers Date: 10-21-15

Packaging

Ship Reel: Steel 84 x 56 x 42 Pass ✓ Fail ___

Cable ends are sealed Pass ✓ Fail ___

Summary of Final Test and Inspection: ☑ **Satisfactory** ☐ **Unsatisfactory**

Technician: B. Ayers **Date:** 10-21-15

Reviewed by: [signature] **Date:** 10/21/15

Armor OD Logs

the ROCHESTER corporation
Culpeper, Virginia 22701

ELECTRICAL-MECHANICAL CABLE DEPARTMENT
ARMOR MANUFACTURING LOG

STRANDER No. 239 JOB No. 09641 C# 1

CABLE SIZE AND CONSTRUCTION 35/.0375 GEIPS RHL ~~[illegible]~~ pieff .0375

START DATE 10-12-15 FINISH DATE 10-15-15 SPEC. No. A303357

SIZING TOOL TYPE NA SIZE NA

WIRE SIZE	HEAT No's.
.0375	W43708
WIRE COUNT	
35	
JOB LENGTH	CORRECTED LENGTH
32,810	32,794

TAPE TRACE #15281005

FOOTAGE	TIGHT	CAST	DIAMETER MIN	DIAMETER MAX	BRAKE	PAYOFF TENSION	NAME (initial)	FOREMAN (initial)	SPOOL CHANGE OR WELDS	WIRE HEAT NUMBER
			MIC. @	TAKE-UP						
500	✓	12:00	493	494	20		LB			
1000	✓	12:00	.500	.502	✓		RH check brakes	start @ 346		
1500			.502	.503						
2000	✓	12:00	.501	.502						
2500			.502	.504						
3000	✓	12:00	.501	.502						
3500			.501	.502						
4000	✓	12:00	.501	.502	✓			check brakes		
4500			.502	.503						
5000	✓	12:00	.501	.503						
5500			.502	.503						
6000	✓	12:00	.501	.502						
6500			.501	.503				STOP	@ 6,723	
7000	✓	12:00	.501	.503	✓				6,723	
7500			.502	.503						
8000	✓	12:00	.501	.502						
8500			.501	.502						
9000	✓	1200	.501	.502						
9500			502	503						
10000	✓	1200	502	502						
10500			502	502	✓					
11000	✓	1200	502	502						
11500			501	502						
12000	✓	1200	501	502						
12500			502	502						
13000	✓	1200	502	502			Shift	1 (8)		
13500			.503	.504	✓		RH start	@	13,187 - check	brakes
14000	✓	1200	.501	.503						
14500			.502	.503						
15000	✓	1200	.502	.503						
15500			.502	.504						
16000	✓	1200	.500	.501						
16500			.501	.503						

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ELECTRICAL-MECHANICAL CABLE DEPARTMENT
ARMOR MANUFACTURING LOG

PAGE 2.

STRANDER No. 239 JOB No. Q9641 C# 1
CABLE SIZE AND CONSTRUCTION 35/.0375 OEIPS RHL PTCA
START DATE 10-12-15 FINISH DATE 10-15-15 SPEC. No. A302357
SIZING TOOL TYPE N/A SIZE N/A

WIRE SIZE	HEAT No's.
.0375"	W43708
WIRE COUNT	
35	
JOB LENGTH	CORRECTED LENGTH
32,810	32,794

TAPE TRACE #15281005

FOOTAGE	TIGHT	CAST	DIAMETER MIN	DIAMETER MAX	BRAKE 20#	PAYOFF TENSION	NAME (initial)	FOREMAN (initial)	SPOOL CHANGE OR WELDS	WIRE HEAT NUMBER
				Mic. @ TAKE-UP						
17,000	✓	12:00	.503	.504			RH			
17,500			.501	.502	✓		PULL BRAKES			
18,000	✓	12:00	.502	.503						
18,500			.502	.503						
19,000	✓	12:00	.500	.502						
19,500			.501	.502						
20,000	✓	12:00	.501	.502						
20,500			.501	.503					STOP @ 20,561	
21,000	✓	12:00	.501	.503	✓				20,561	
21,500			.501	503						
22,000	✓	12:00	.502	503						
22,500			.501	503						
23,000	✓	12:00	502	503						
23,500			501	502						
24,000	✓	12:00	502	503						
24,500			503	504						
25,000	✓	12:00	502	503						
25,500			502	503						
26,000	✓	12:00	502	503						
26,500			502	503						
27,000	✓	12:00	502	502						
27,500			502	503						
28,000	✓	12:00	.501	.503	✓		START @ 27,833 RH		-check brakes	
28,500			.500	.503						
29,000	✓	12:00	.501	.502						
29,500			.500	.501						
30,000	✓	12:00	.500	.502						
30,500			.499	.500						
31,000	✓	12:00	.502	.503						
31,500			.500	.502						
32,000	✓	12:00	.500	.502						
32,500			.501	.502		EOL-	32,794			
33,000										
16500										

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ELECTRICAL-MECHANICAL CABLE DEPARTMENT
ARMOR MANUFACTURING LOG

STRANDER No. 239 JOB No. Q 9641 C# 1
CABLE SIZE AND CONSTRUCTION 35/36/.050" GEIPS Lwl. Perf.
START DATE 10-16-15 FINISH DATE _____ SPEC. No. M302351
SIZING TOOL TYPE N/A SIZE N/A

WIRE SIZE	HEAT No's.
.044"/.050"	W44573
WIRE COUNT	43299
35 / 36	
JOB LENGTH	CORRECTED LENGTH
32,810	

35 - F Lube. Trace #1515016

FOOTAGE	TIGHT	CAST	DIAMETER MIN	DIAMETER MAX	BRAKE [redacted] 30#-B	PAYOFF TENSION	NAME (initial)	FOREMAN (initial)	SPOOL CHANGE OR WELDS	WIRE HEAT NUMBER
-0-	✓	12:00	.682	.683	✓	2220	RH			
500			.681	.682		2235				
1000	✓	12:00	.681	.682		2540				
1500			.681	.682		2570			STOP @ 1,925	
2000	✓	12:00	.650	.650	✓		LH		@ 1,925	
2500			.691	.682						
3000	✓	12:00	.651	.652						
3500			.651	.652						
4000	✓	12:00	.650	.650					wire break at 4,249	
4500			.651	.652					2 wraps	
5000	✓	12:00	.651	.652						
5500			.651	.652						
6000	✓	12:00	.650	.650						
6500			.651	.652						
7000	✓	12:00	.651	.652	✓					
7500			.651	.652					wire Break at 7,265	
8000	✓	12:00	.651	.652					2 wraps	
8500			.651	.652						
9000	✓	12:00	.651	.650						
9500			.651	.652						
10000	✓	12:00	.651	.652						
10500			.651	.652						
11000	✓	12:00	.651	.652						
11500			.651	.650	✓		LH		stop 11,861	
12000	✓	12:00	.680	.681	✓	2070	D Jung			
12500			.681	.682		2080				
13000	✓	12:00	.681	.682		2100	Shaft @ 13,250.4			
13500			.683	.684		2140	RH stops @ 13,250'			
14000	✓	12:00	.682	.683		2210				
14500			.683	.684		2220				
15000	✓	12:00	.682	.683		2260				
15500			.682	.683		2220				
16000	✓	12:00	.684	.685		2270				
16500			.683	.684		2240				

the ROCHESTER corporation
Culpeper, Virginia 22701

ELECTRICAL-MECHANICAL CABLE DEPARTMENT
ARMOR MANUFACTURING LOG

Page 2

STRANDER No. 289 JOB No. Q9441 C# 1

CABLE SIZE AND CONSTRUCTION 35/36 .050" GEIPS Lub Pref.

START DATE 10-16-15 FINISH DATE ______ SPEC. No. A302351

SIZING TOOL TYPE n/a SIZE n/a

WIRE SIZE	HEAT No's.
.044"/.050"	W44573
WIRE COUNT	43299
35/36	
JOB LENGTH	CORRECTED LENGTH
32,810	

Lube Trace #15153016

FOOTAGE	TIGHT	CAST	DIAMETER MIN	DIAMETER MAX	BRAKE 30# F 30# B	PAYOFF TENSION	NAME (initial)	FOREMAN (initial)	SPOOL CHANGE OR WELDS	WIRE HEAT NUMBER
17,000	✓	12.00	.684	.685		2140	RH			
17,500			.683	.684		2060				
18,000	✓	12.00	.683	.684	✓	2080			checked brakes	
18,500			.684	.685		2070				
19,000	✓	12.00	.684	.685		2080				
19,500			.684	.685		2150				
20,000	✓	12.00	.682	.684		2270				
20,500			.684	.685		2060				
21,000	✓	12.00	.683	.684		2140				
21,500			.684	.685		2120				
22,000	✓	12.00	.684	.685		2100				
22,500			.684	.685		2180				
23,000	✓	12.00	684	686		2050			STOP @ 23,321	
23,500			684	685	[illegible]	2010	D.S		[illegible] 23,321	
24,000	✓	12.00	684	685	[illegible]	2100				
24,500			684	685		1960				
25,000	✓	12.00	684	686		1970				
25,500			684	685		[illegible]				
26,000	✓	12.00	684	685		2140				
26,500			683	685		2060				
27,000	✓	12.00	684	684		2190				
27,500			684	685	✓	2140				
28,000	✓	12.00	682	684		1980				
28,500			682	684		2040				
29,000	✓	12.00	682	685		2060				
29,500			682	684		2030				
30,000	✓	12.00	682	684		2100				
30,500			682	684		2360				
31,000	✓	12.00	682	685		2340				
31,500			682	684		2120				
32,000	✓	12.00	682	685		2150				
32,500			682	684		2130				
33,000			682	684		2120	E	0	33,740	
16500										