

RVSS Appendix A Overview

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by

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Definitions

- *WINCH OWNER: The party or their representative who is normally responsible for the operation, inspection, maintenance, and testing of the winch. This could be the vessel operator or **the scientific party**.*
- *ROPE: A woven, flexible tension member with no internal conductors. It may be made from natural fibers, synthetic fibers, or metal.*
- *CABLE: A woven, flexible tension member with internal conductors or other means of transmitting data such as glass fiber.*
- *TENSION MEMBER: Generic name used to describe a rope or cable in service for over the side work.*

Definitions (cont.)

- *FIXED ENDS (FE)*: Both ends of the cable being fixed without the ability to swivel. Most wire rope and cable NBL values are based on FE. An example of a fixed end application is towing a MOCNESS.
- *FREE TO ROTATE: (FTR)* The end of the cable is free to rotate either because a swivel is at the end of the tension member or the package at the end of the cable can rotate freely. Wires and Cables used in free to rotate applications have a NBL below the fixed end NBL. An example of a free to rotate application is a lowered CTD package.
- *INDUCED ROTATION* : Induced rotation occurs when external forces cause torque to be applied to the tension member. An example of an induced rotation situation would be a tow vehicle that spins while being towed but a swivel is not in place to decouple the vehicle from the tension member. This situation could develop if the tail fin was bent. Induced rotation should never be allowed to occur on a tension member that has not been specifically designed for this purpose.

Definitions (cont.)

- *ULTIMATE LOAD (UL): The theoretical load that produces failure. For the purposes of this standard, the “Ultimate Load” is assumed to be either the Nominal Breaking Load(NBL) or the Tested Breaking Load (TBL) as defined below.*
- *NOMINAL BREAKING LOAD (NBL): Manufacturer’s minimum published breaking load for a rope or cable.*
- *TESTED BREAKING LOAD (TBL): The actual load required to pull a rope or cable to destruction as determined by testing.*
- **ASSIGNED BREAKING LOAD (ABL):** Will be the lowest of the Ultimate Load, Nominal Breaking Load and Tested Breaking Load. In practice ABL will be equal to NBL used unless testing shows TBL to be less than NBL. A value greater than the NBL may never be used. Depending on the intended use of the tension member there may be two ABLs for fixed end and free to rotate conditions.

Definitions (cont.)

- *SAFE WORKING LOAD (SWL): The maximum load that is allowed to be supported during normal operation.*
- *FACTOR OF SAFETY (f_s):*NORMALY defined as the Ultimate Load/Safe Working Load
- ***FACTOR OF SAFETY (FS):*** For the purpose of this document defined more conservatively as Assigned Breaking Load / Safe Working Load.
- $SWL = ABL / FS$ For the purposes of this standard, FS shall be considered the value selected by the operator. Because there may be two different ABL (fixed end & free to rotate) there may be two SWL. Section 6.0 defines the minimum standards that must be met to select specific FS value.

Definitions (cont.)

- “D” = The root diameter of the sheave.
- “d” = The outside diameter of the cable or rope.
- “d1” = The diameter of largest strand in a rope or cable armor.

Definitions (cont.)

- *TRANSIENT LOADS: Loads induced which are temporary by nature, including the weight of entrained mud, weight of entrained water, pull out loads, drag due to package characteristics and/or winch speed, etc.*
- *DYNAMIC LOADS: Loads induced due to vessel motion (heave, roll, pitch, etc.)*
- “g” = The vertical acceleration due to gravity. For normal static loading (no dynamic effect), “g” is equal to 1.0. To take into account dynamic effect due to ship’s motion and package drag, the simple static load is multiplied by a factor higher than 1.0 under ABS standards: normally 1.75 or 2.0 for vertical accelerations depending on application.

General Concept

- OPERATING REQUIREMENTS – FS of
- Ropes and cables of *steel construction may be operated to a nominal FS = x.x on the ABL, including transient and dynamic loads, as long as the following precautions in this section are adhered to.*
- The deployment must be halted, or the next level of standards described in Table 6.n adhered to, when the subsequent SWL is reached. To some extent this will depend upon sea conditions and the resulting ship motion. Thus the trend in prevailing weather should be assessed before committing to a deployment, which could approach the limits specified above.

OPERATING REQUIREMENTS

FS of 5.0 OR GREATER

Tension Monitoring

- Tension may be determined by calculation, including transient and dynamic loads, as long as the Owner is confident that a FS of 5.0 will not be exceeded. If no other precise information is available on package drag and/or vessel accelerations, the Vessel Operator should use the ABS “g” factor of 1.75 as a minimum.

Sheave(s)

- D/d ratio must be equal to or greater than the manufacturer’s recommendations.

Deck

- Personnel on deck should follow good safety practices when working in the vicinity of cables and ropes during use.

Testing

- No routine break testing is required. Wires shall only be tested every two years to the desired SWL along with the handling system.

Logbooks

- The Owner shall establish an inspection and cutback procedure. At a minimum, the Owner shall maintain logs showing cutbacks and maximum loading (as determined by monitoring system or by calculation for each cast) for the full service life of the rope or cable. The wire log shall transfer with the cable if it is removed and placed in storage, or transferred to another system (winch) or Owner.

Operator

- The Owner and the Master of the vessel must deem competent in writing all winch operators. “Deemed Competent” means that both the Owner and the Captain are confident, given the particulars of the winch and the overall operational scenario (weather conditions, equipment being deployed, etc.), that the Winch Operator has the necessary experience to operate the winch safely.

OPERATING REQUIREMENTS

FS of 5.0 to 2.5

Tension Monitoring

- Tension in the cable or rope must be monitored at the winch operator's station with a display resolution of at least 3 Hz (every 330 mS). The system must also be capable of logging tension data at a minimum frequency of 3 Hz (every 330 mS).

Sheave(s)

- For ropes and cables of steel construction the D/d ratio must be at least 40:1 or 400d1 (whichever is greater) throughout. Grooving of the sheaves should be as close to "d" as practicable, and generally no larger than 1.5d.

Deck

- The Operator should identify "Danger Zones" around ropes and cables under tension. To the extent possible, given the nature of operations involved, all personnel should be excluded from these zones such that a sudden failure cannot result in injury.

Testing

- Samples shall be sent for testing every two (2) years and generally in conjunction with handling system SWL tests. If a 10% decrease in ABL is detected, then the testing shall be increased to annually.

Logbooks

- The Owner should maintain logs showing cutbacks **and load test results** for the full service life of the rope or cable. The archived tension data shall become part of the log and be maintained for the full service life of the cable. The wire log shall transfer with the cable if it is removed and placed in storage, or transferred to another system (winch) or Owner

Operator

- The Winch Owner must certify that all Winch Operators are competent. By "Certified Competent" it is meant that the Owner must have written documentation in place showing that the operator has been through and successfully passed a formal owner/operator developed training program on the winch, handling apparatus, and monitoring system. The system vendor or the Owner, depending on the complexity of the system, may conduct a formal training program. The certification must be renewed annually. The master shall verify qualifications and designate the approved winch operators.

CABLE OPERATING REQUIREMENTS

FS of 2.5 to 2.0

Tension Monitoring	<ul style="list-style-type: none">• Tension in the cable or rope must be monitored at the winch operator's station with a display resolution of at least 10 Hz (every 100 mS). The system must also be capable of logging tension data at a minimum frequency of 20 Hz (every 50 mS). Tension must be continuously monitored using a "tension trending" graph at the winch operator's station.
Alarms	<ul style="list-style-type: none">• The handling system shall be fitted with both audible and visual tension alarms that sound and/or illuminated prior to reaching 45% (FS = 2.2) of a cable's Actual Breaking Load (ABL).
Sheave(s)	<ul style="list-style-type: none">• The D/d ratio must be at least 40:1 or 400d1 (whichever is greater) throughout. Grooving should be per HANDBOOK OF OCEANOGRAPHIC WINCH, WIRE AND CABLE TECHNOLOGY, Third Edition, Chapter 1, and Section 11.0 to provide adequate support.
Deck	<ul style="list-style-type: none">• The Operator should identify "Danger Zones" around ropes and cables under tension. To the extent possible, given the nature of operations involved, all personnel should be excluded from these zones such that a sudden failure cannot result in injury. Warning notices should be displayed at points of access indicating the danger. Physical and/or visual barriers should be erected as needed. Existing doors and accesses to the area should be secured when possible.
Testing	<ul style="list-style-type: none">• Wire Samples from the end closest to the termination shall be sent for testing annually. If a 10% decrease in ABL is detected, then the testing shall be increased to every six months. Alternately, the Owner may cut back to and re-test a new representative length.
Logbooks	<ul style="list-style-type: none">• Same
Operator	<ul style="list-style-type: none">• Same

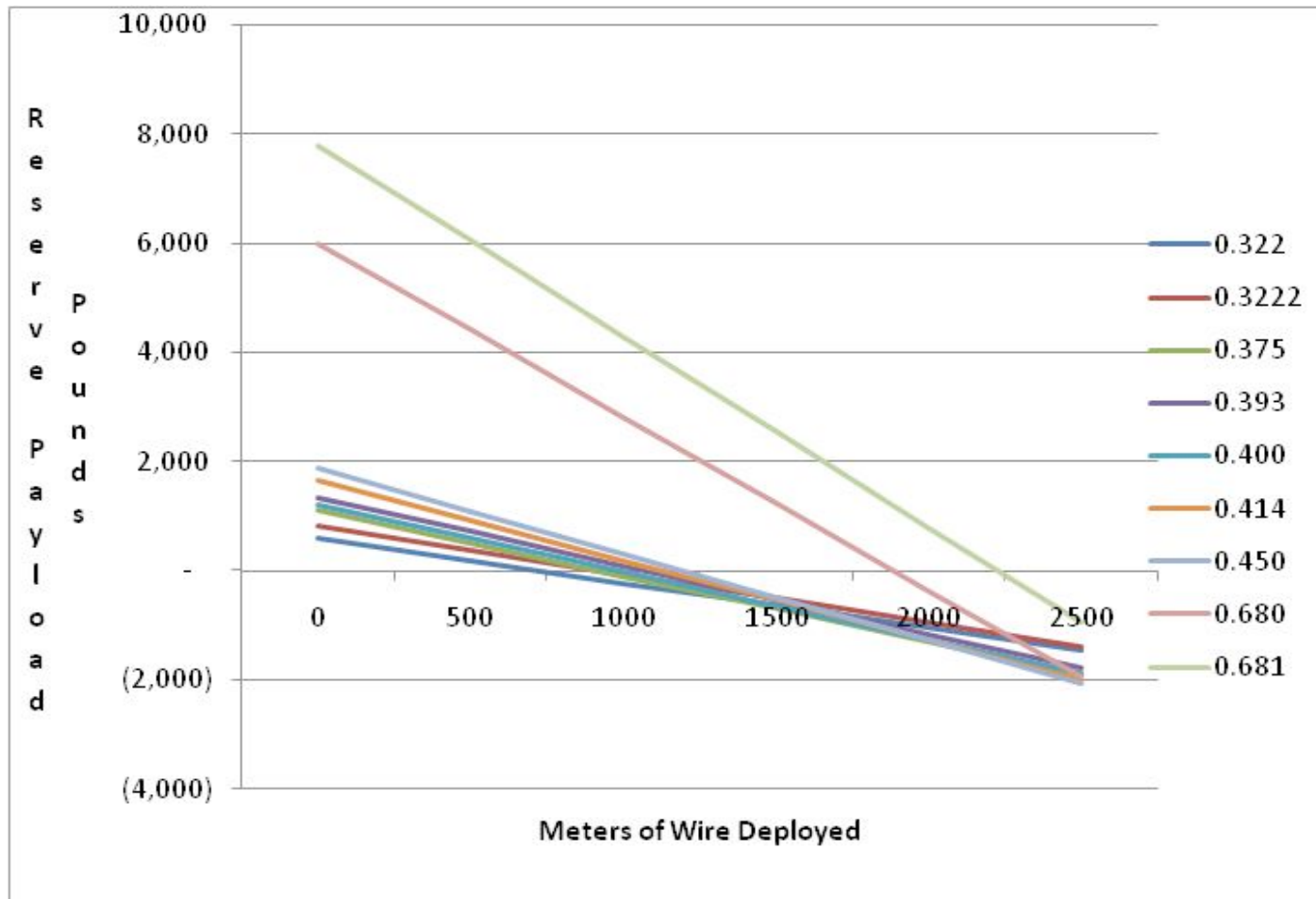
Wire OPERATING REQUIREMENTS

FS of 2. to 1.5

Tension Monitoring	<ul style="list-style-type: none">• Tension in the cable or rope must be monitored at the winch operator's station with a display resolution of at least 10 Hz (every 100 mS). The system must also be capable of logging tension data at a minimum frequency of 20 Hz (every 50 mS). Tension must be continuously monitored using a "tension trending" graph at the winch operator's station.
Alarms	<ul style="list-style-type: none">• The handling system shall be fitted with both audible and visual tension alarms that sound and/or illuminated prior to reaching 60% (FS = 1.7) of a wire's Actual Breaking Load (ABL).
Haul Back	<ul style="list-style-type: none">• Once a FS = 2.0 is exceeded a regular check on cable loading shall be performed. This will require halting a deployment at regular intervals (~ 500 m) and conducting a slow haul until the nominal and peak tensions are established and verified. A decision on whether to proceed must then be based upon the limiting value of 1.5.
Sheave(s)	<ul style="list-style-type: none">• The D/d ratio must be at least 40:1 or 400d1 (whichever is greater) throughout. Grooving should be per HANDBOOK OF OCEANOGRAPHIC WINCH, WIRE AND CABLE TECHNOLOGY, Third Edition, Chapter 1, and Section 11.0 to provide adequate support.
Deck	<ul style="list-style-type: none">• The Operator should identify "Danger Zones" around ropes and cables under tension. To the extent possible, given the nature of operations involved, all personnel should be excluded from these zones such that a sudden failure cannot result in injury. Warning notices should be displayed at points of access indicating the danger. Physical and/or visual barriers should be erected as needed. Existing doors and accesses to the area should be secured when possible.
Testing	<ul style="list-style-type: none">• When using a FS of 2.0 to 1.5, samples shall be sent for testing annually. If a 10% decrease in ABL is detected, then the testing shall be increased to every six months.
Logbooks	<ul style="list-style-type: none">• Same
Operator	<ul style="list-style-type: none">• Same

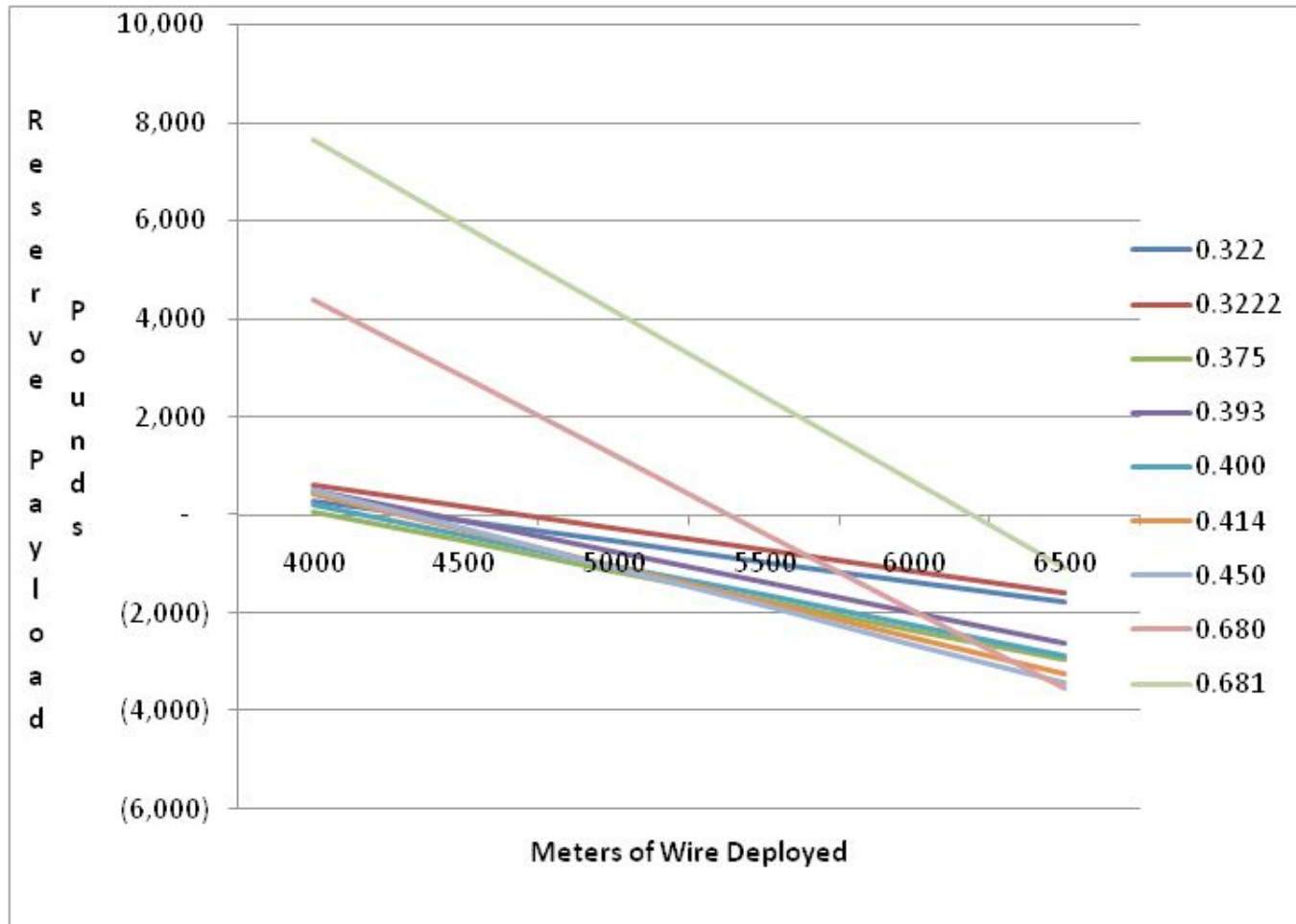
Cables FS 5

Package Wt 800 lbs., $g=1.75$



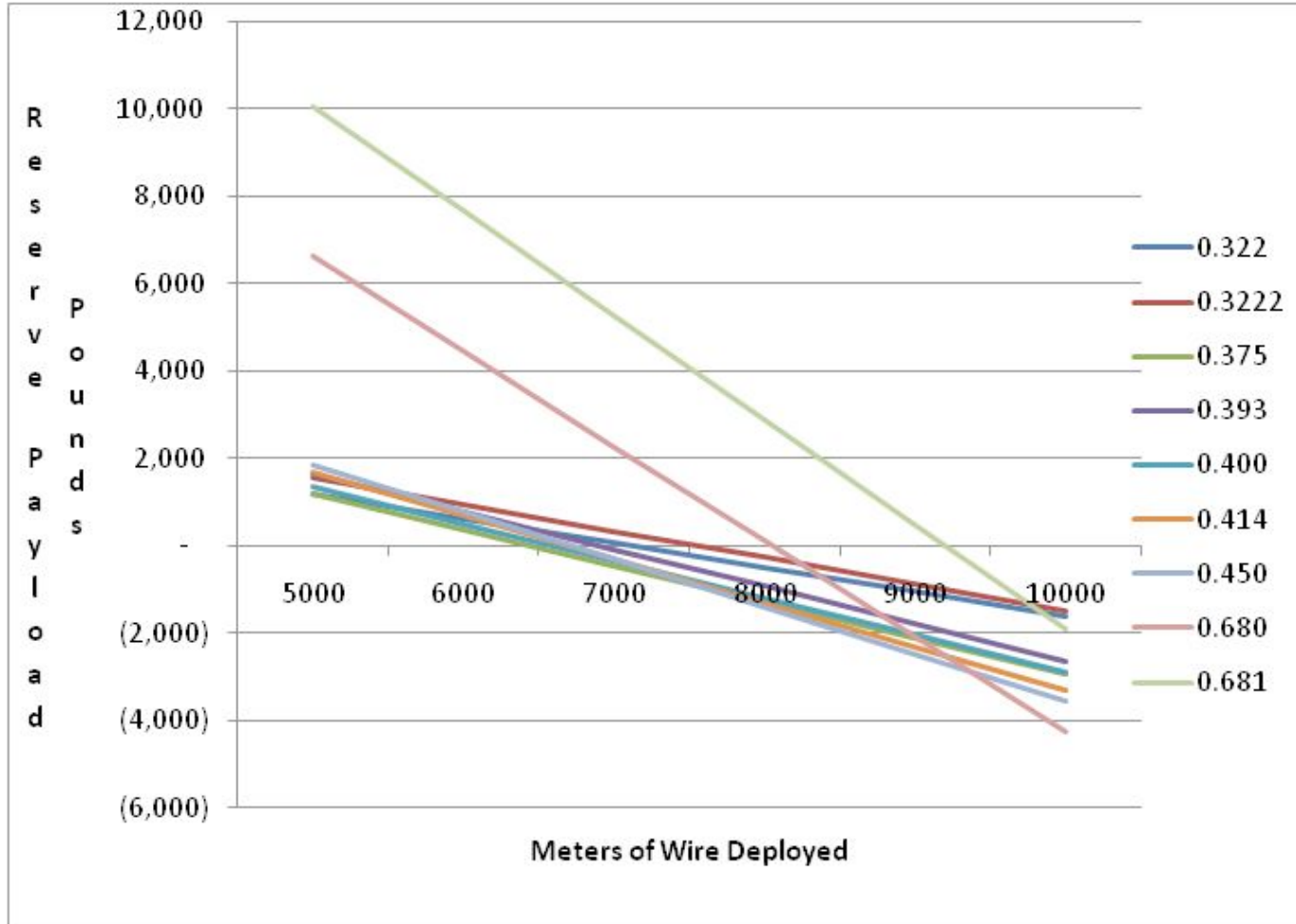
Cables FS 2

Package Wt 800 lbs., $g=1.75$



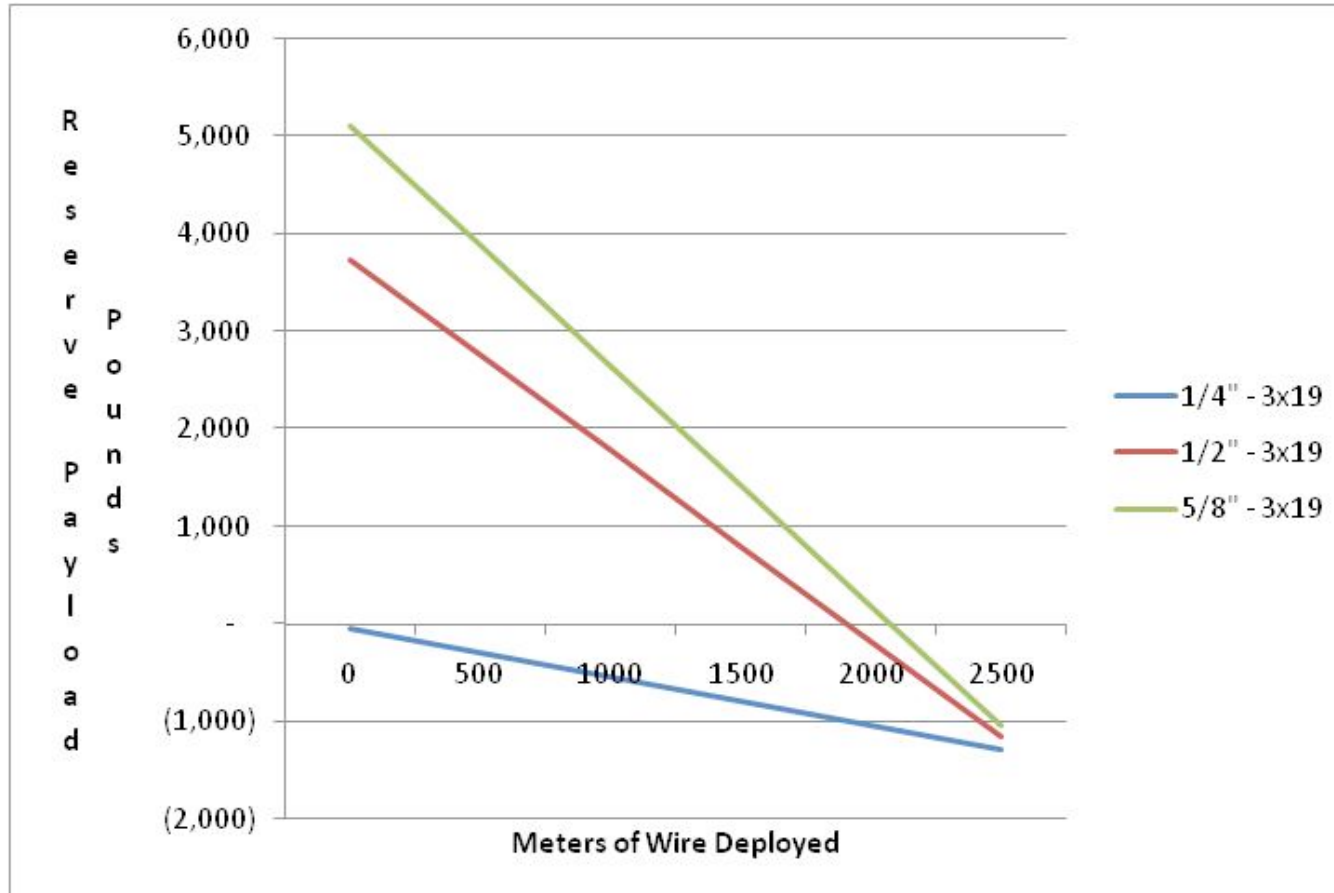
Cables FS 2

Package Wt 800 lbs., $g=1.2$



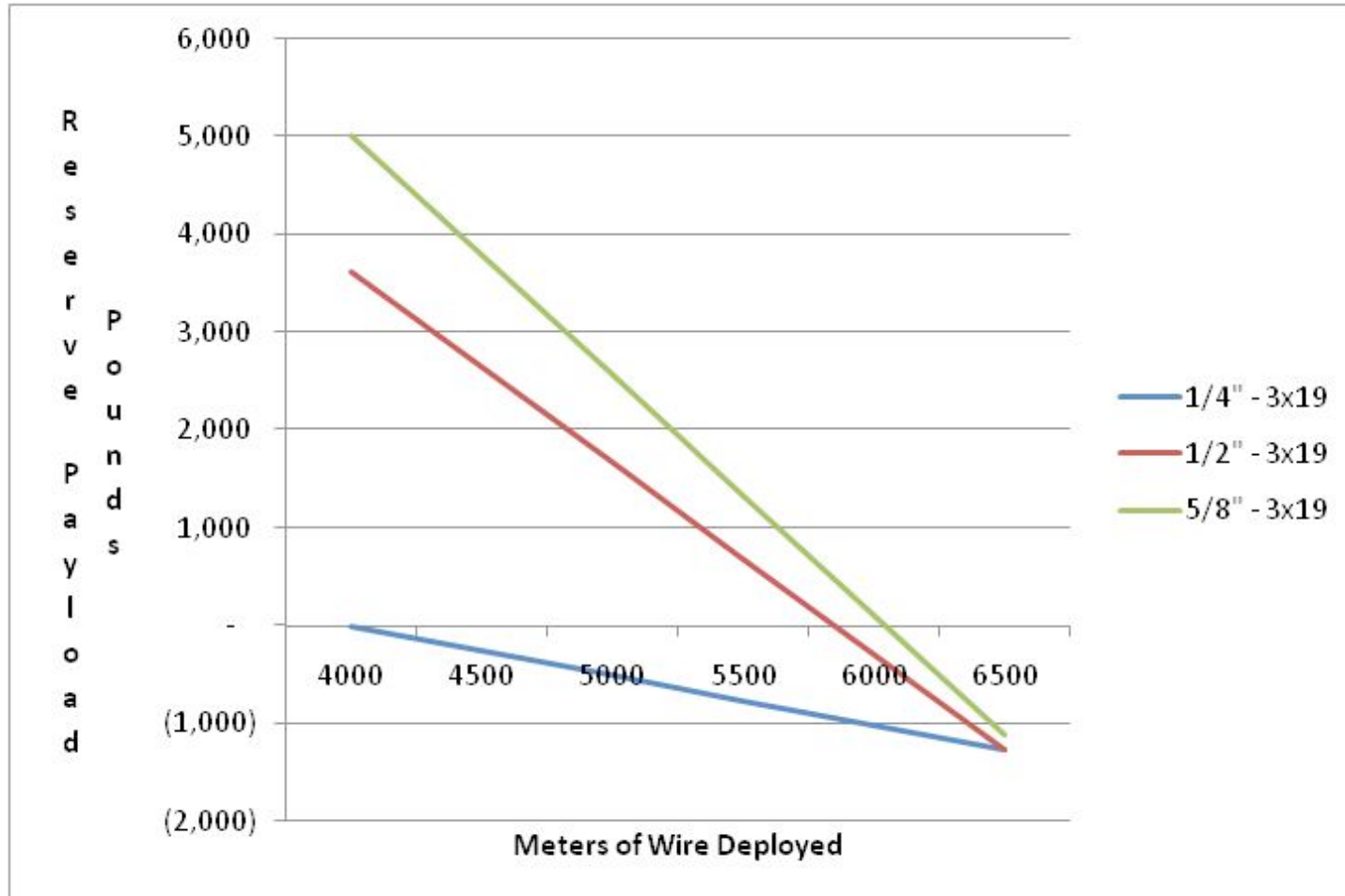
Wire Rope FS 5

Package Wt 800 lbs., $g=1.75$



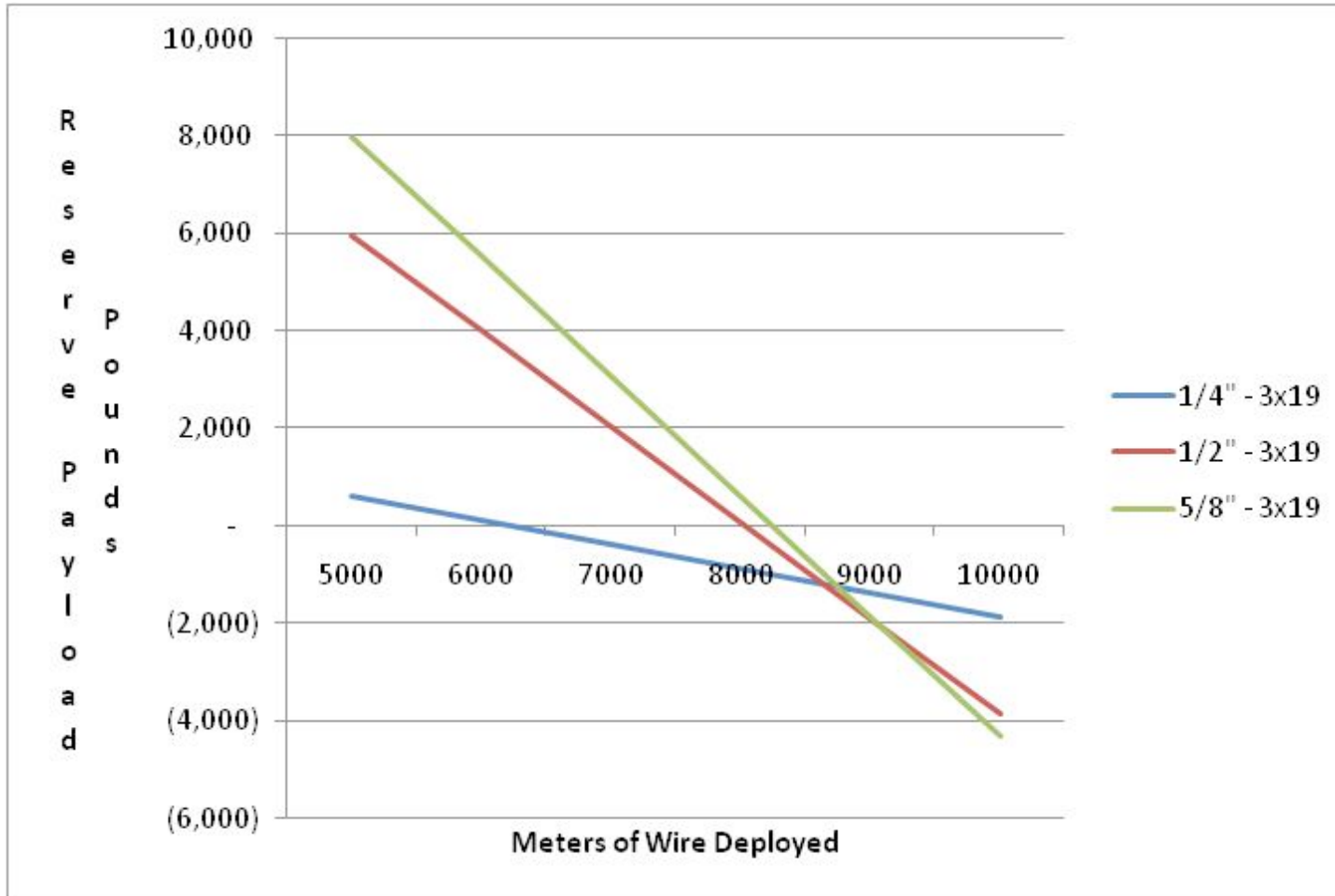
Wire Rope FS 2

Package Wt 800 lbs., $g=1.75$



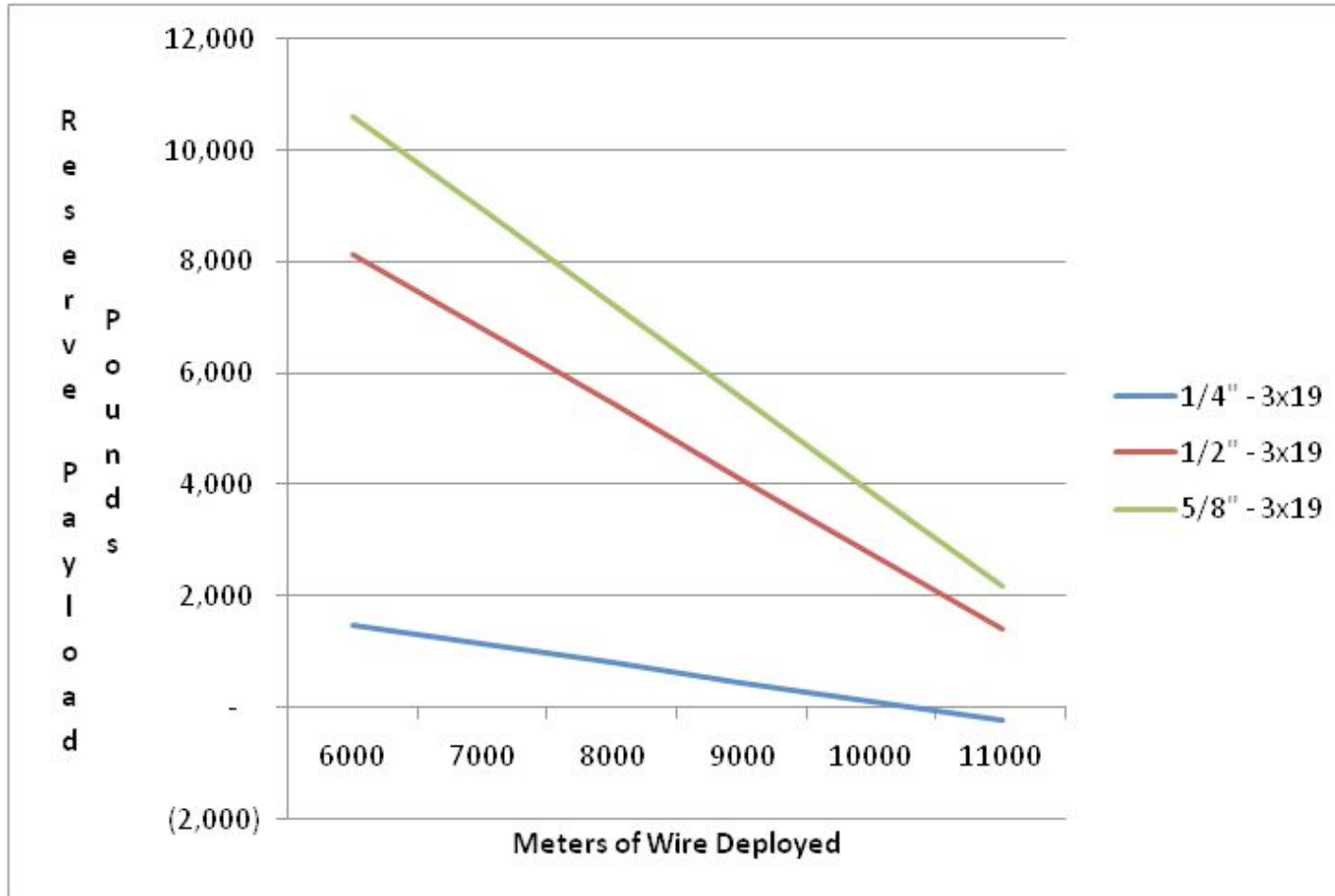
Wire Rope FS 1.5

Package Wt 800 lbs., $g=1.75$



Wire Rope FS 1.5

Package Wt 800 lbs., $g=1.2$



Implications

- Limited to FS of 5 if tensiometer fails!
- Applies to all winches and tension members including those supplied by scientists!
- No logbooks -- you can not operate!

How Soon?

- This standard will be phased as soon as the appropriate equipment can be funded and purchased and no later than 18 months after the published date of this revision of the RVSS.

SWL Pre-cruise Estimator

SWL Estimator									
General Information		Value	Units						
Wire Description		.322 Cond FTR							
Manufacturer		Rochester							
Manufacturer Part Number		A30159							
Type (Cond or 3x19)		Cond							
JNOLS Serial Number									
Manufacturer's Breaking Load Specification		10,000	pounds						
Actual Breaking Load		10,000	pounds						
Weight of wire in seawater lb/meter		0.144	pounds/foot						
Diameter of cable/wire (d)		0.322	inches						
Diameter of largest strand (d1)		0.037	inches						
Manufacturer Recommended Sheave Diameter			12 inches						
Weight of equipment package in seawater		600	pounds						
Dynamic Load "g"		1.75							
Transient Load (e.g. pullout)		-	pounds						
Winch Operator Status		Certified Competent							
Scope	Weight of Wire	Static Load inc. package	Dynamic Load Included	Total Load Including Pullout	Reserve				
					FoS	5	2.5	2	1.5
					% of ABL	20%	40%	50%	66.7%
Meters	Pounds	Pounds	Pounds	Pounds	Max Load	2,000	4,000	5,000	6,667
0	0	600	1050	1050		350	2,950	3,950	
1000	472	1072	1877	1877		123	2,123	3,123	
2000	945	1545	2703	2703		(703)	1,297	2,297	
3000	1417	2017	3530	3530		(1,530)	470	1,470	
3500	1653	2253	3943	3943		(1,943)	57	1,057	
5000	2362	2962	5183	5183		(3,183)	(1,183)	(183)	
6000	2834	3434	6009	6009		(4,009)	(2,009)	(1,009)	
7000	3306	3906	6836	6836		(4,836)	(2,836)	(1,836)	
8000	3778	4378	7662	7662		(5,662)	(3,662)	(2,662)	
9000	4251	4851	8489	8489		(6,489)	(4,489)	(3,489)	
10000	4723	5323	9316	9316		(7,316)	(5,316)	(4,316)	
Min Sheave Diameter (Larger is always better)						12.00	15.00	15.00	15.00

Typical Values										
.322 Cond FTR	.322 Cond FE	.680 Cond FE	.680 Cond FTR	.681 Cond FE&FTR	3/16" 3 x 19	1/4" 3 x 19	1/4" 3 x 19	5/16" 3 x 19	Trawl 1/2"	Trawl 9/16"
Rochester	Rochester	Rochester	Rochester	Rochester	WireCo	WireCo				
A30159	A30159	A301241	A301241	A30251	RP041070	RP041070				
Cond	Cond	Cond	Cond	Cond	3x19	3x19	3x19	3x19	3x19	3x19
10,000	11,600	40,000	37,000	46,000	4,000	5,750	5,750	10,300	25,700	32,500
	0.144	0.144	0.553	0.553	0.608		0.0867	0.0867		0.341
0.322	0.322	0.680	0.680	0.681		0.250	0.250	0.313	0.5	0.5625
	0.0375	0.0375	0.060	0.060			0.031	0.031		0.058
12	12	28	28	48		12.5	12.5		23.5	26.5

Instructions for the specific cable you are working with from the table above
 If the cable manufacturer does not have a value in e9, you will have to make an estimate based on e8

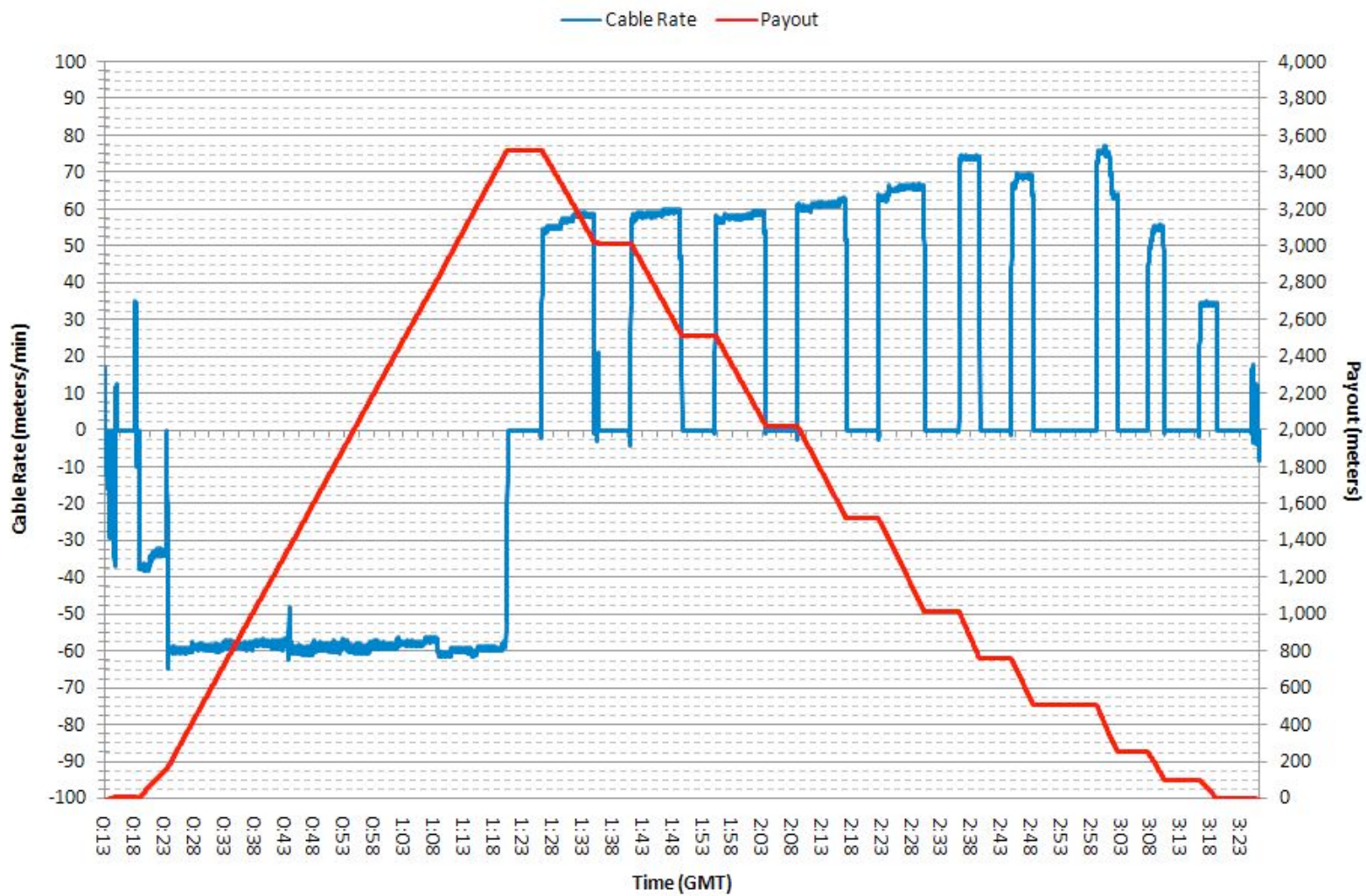
Enter the appropriate values in cells e14 and e16

Real World Test

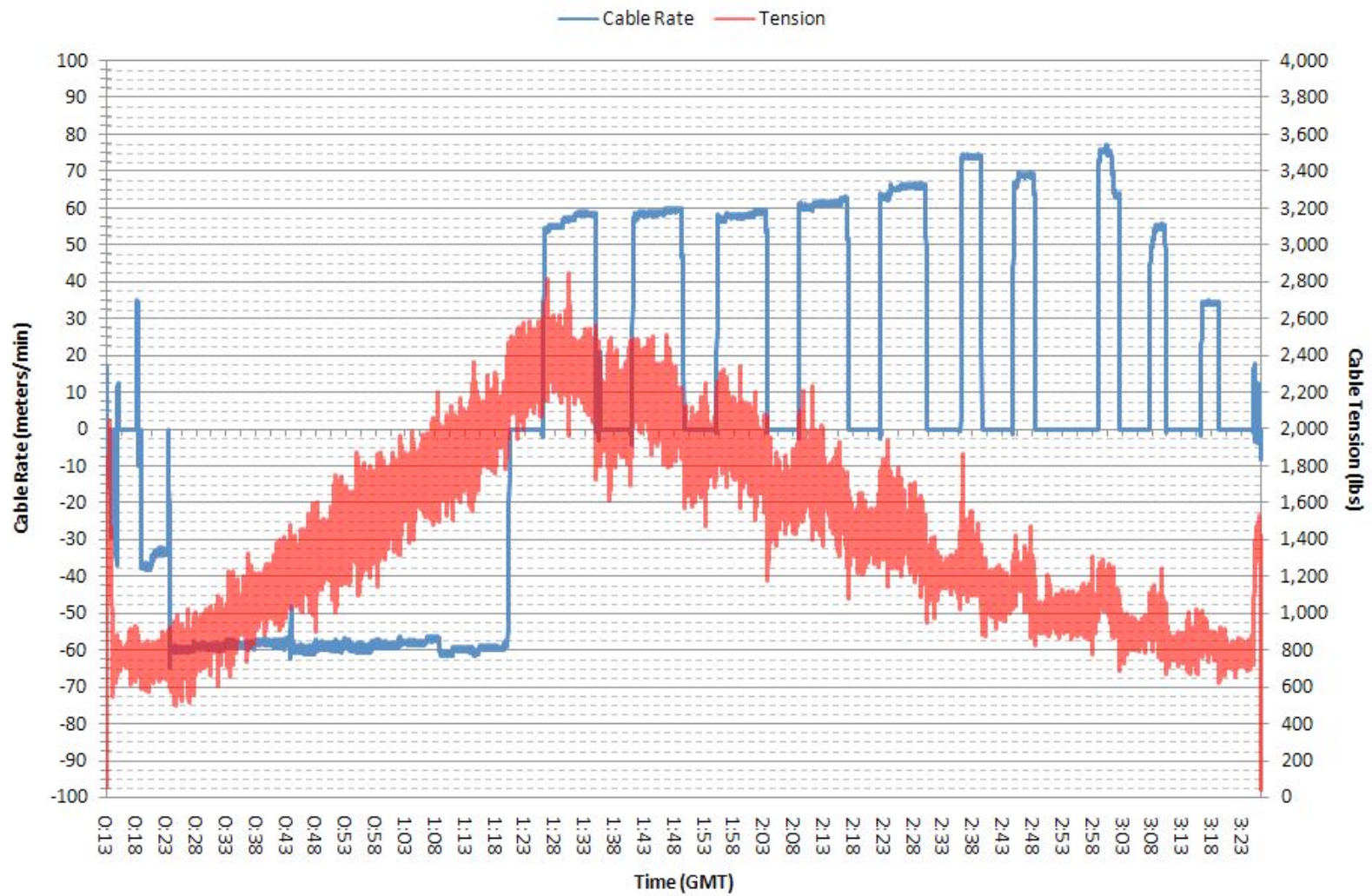
- 12 x 12 Carousel with dual LADCP
- Weather conditions moderate SS 2-3
- Deployed 3500 meters of cable, calculated tension of 2253 pounds.
- National Instruments cRIO data acquisition 20 samples/second
- \$3,600



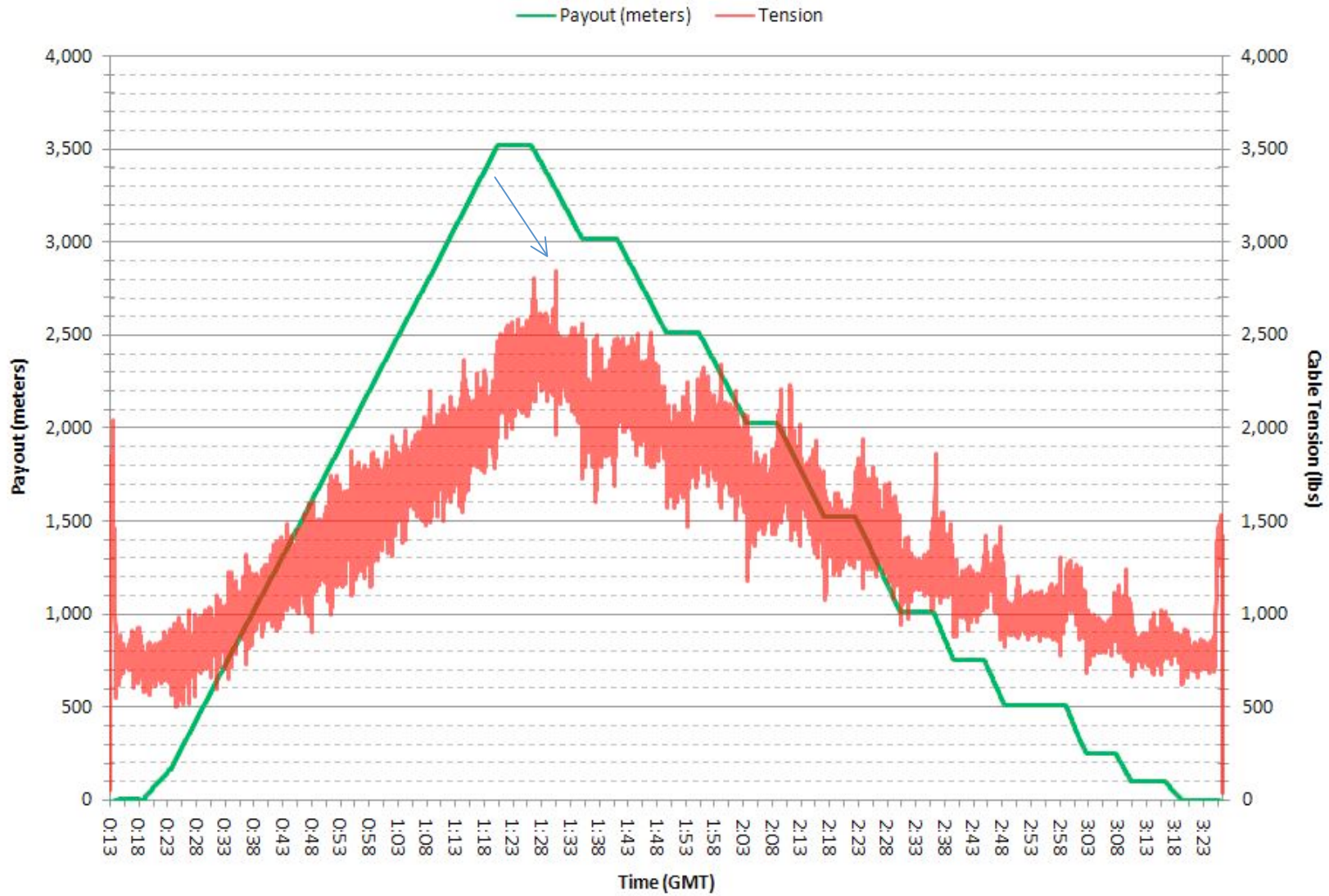
Cable Rate & Payout for Entire CTD Cast - April 19, 2008 (1/2 second averaged data)



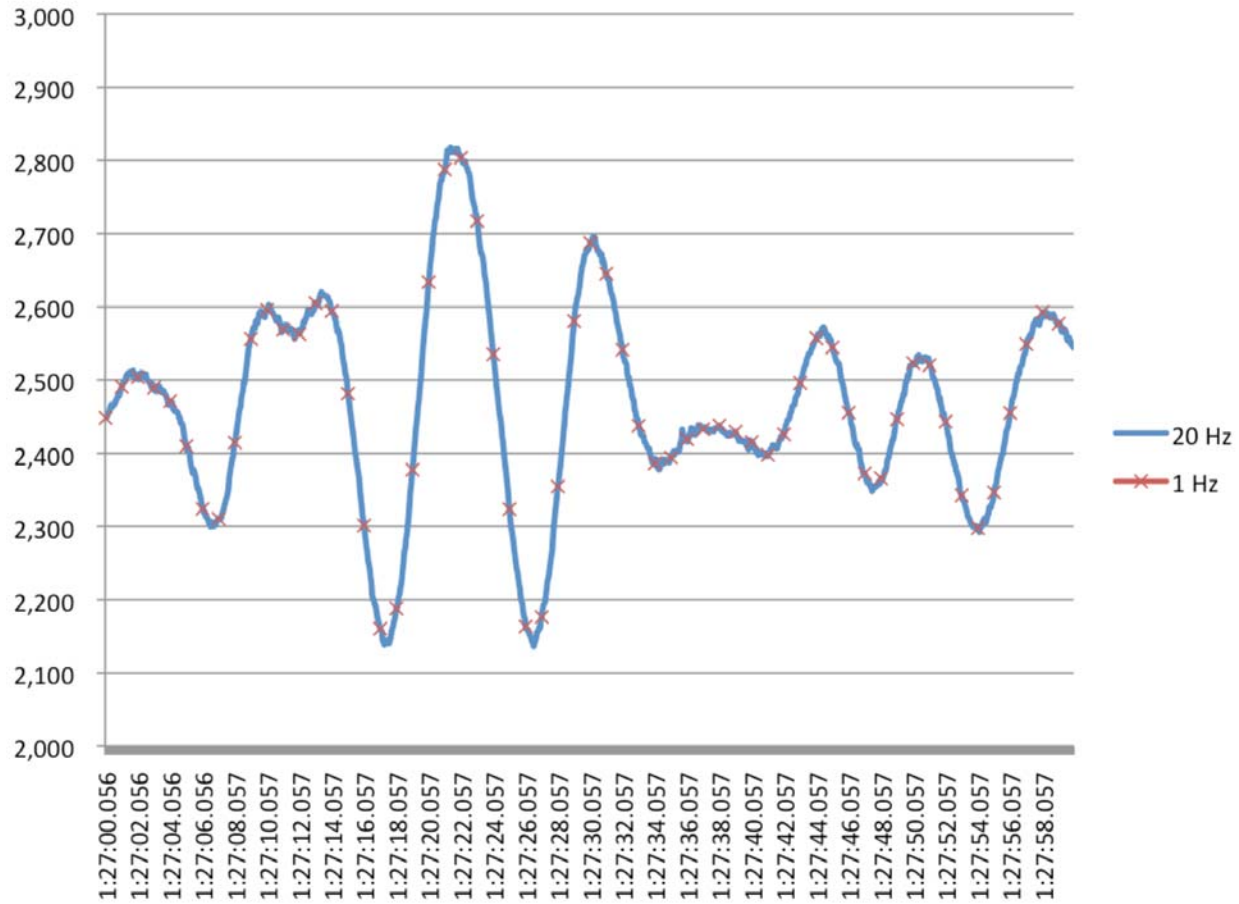
Cable Rate & Tension for Entire CTD Cast - April 19, 2008 (1/2 second averaged data)



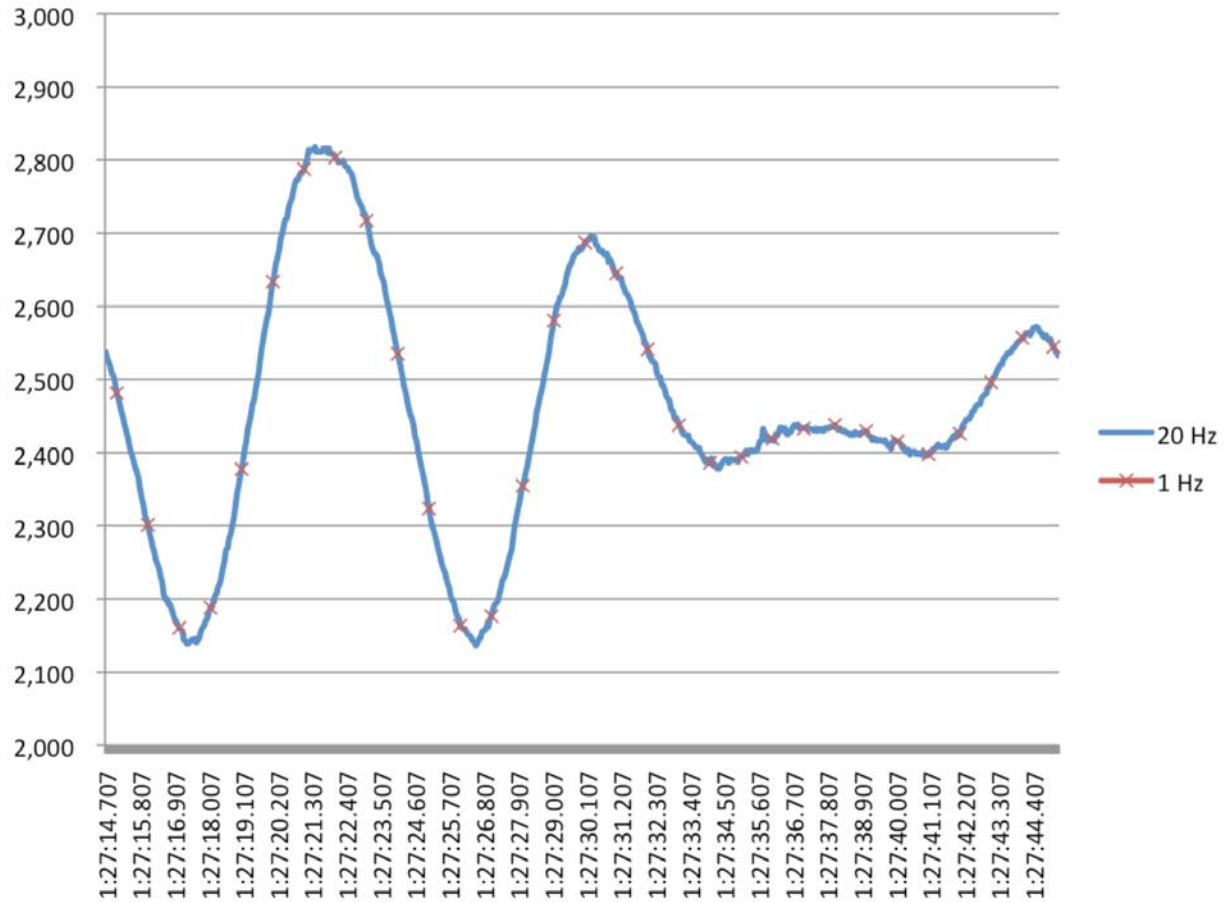
Payout & Tension for Entire CTD Cast - April 19, 2008 (1/2 second averaged data)



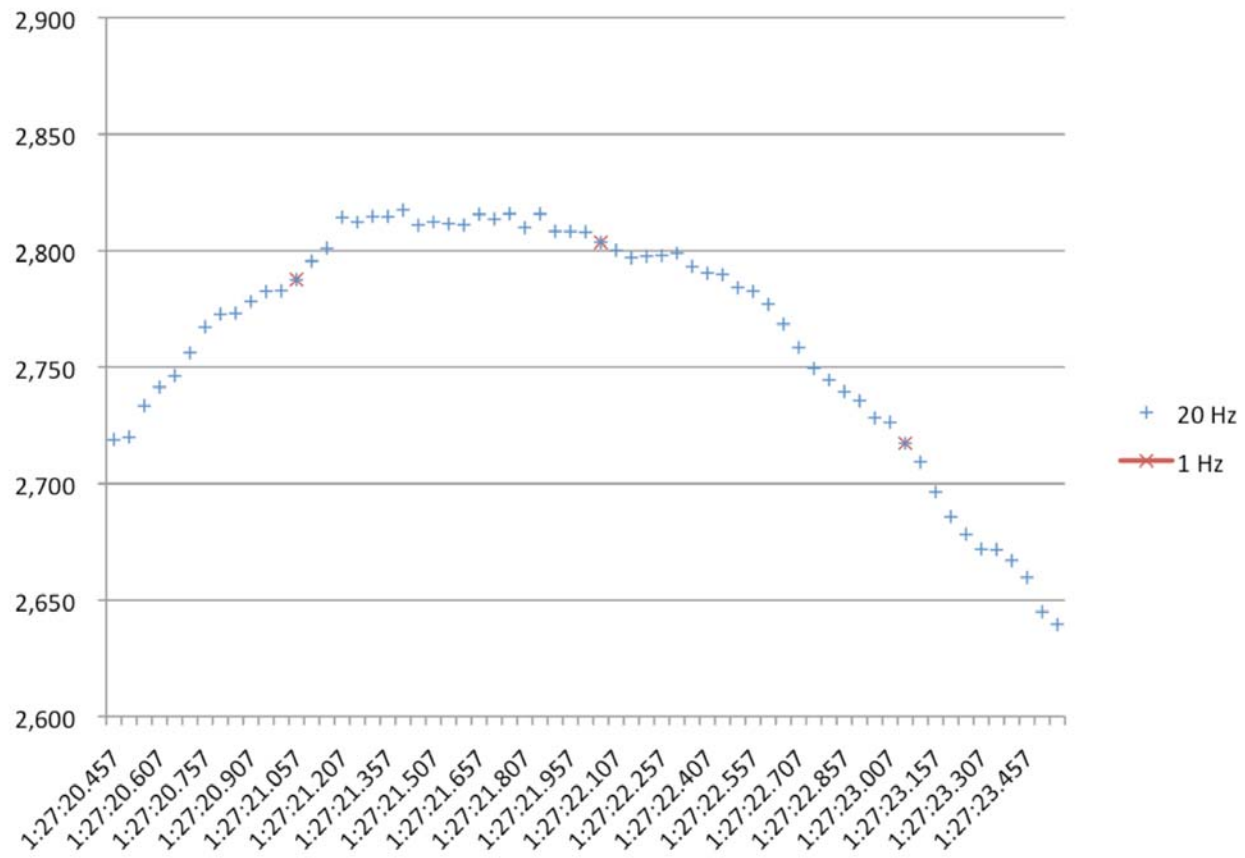
60 Seconds



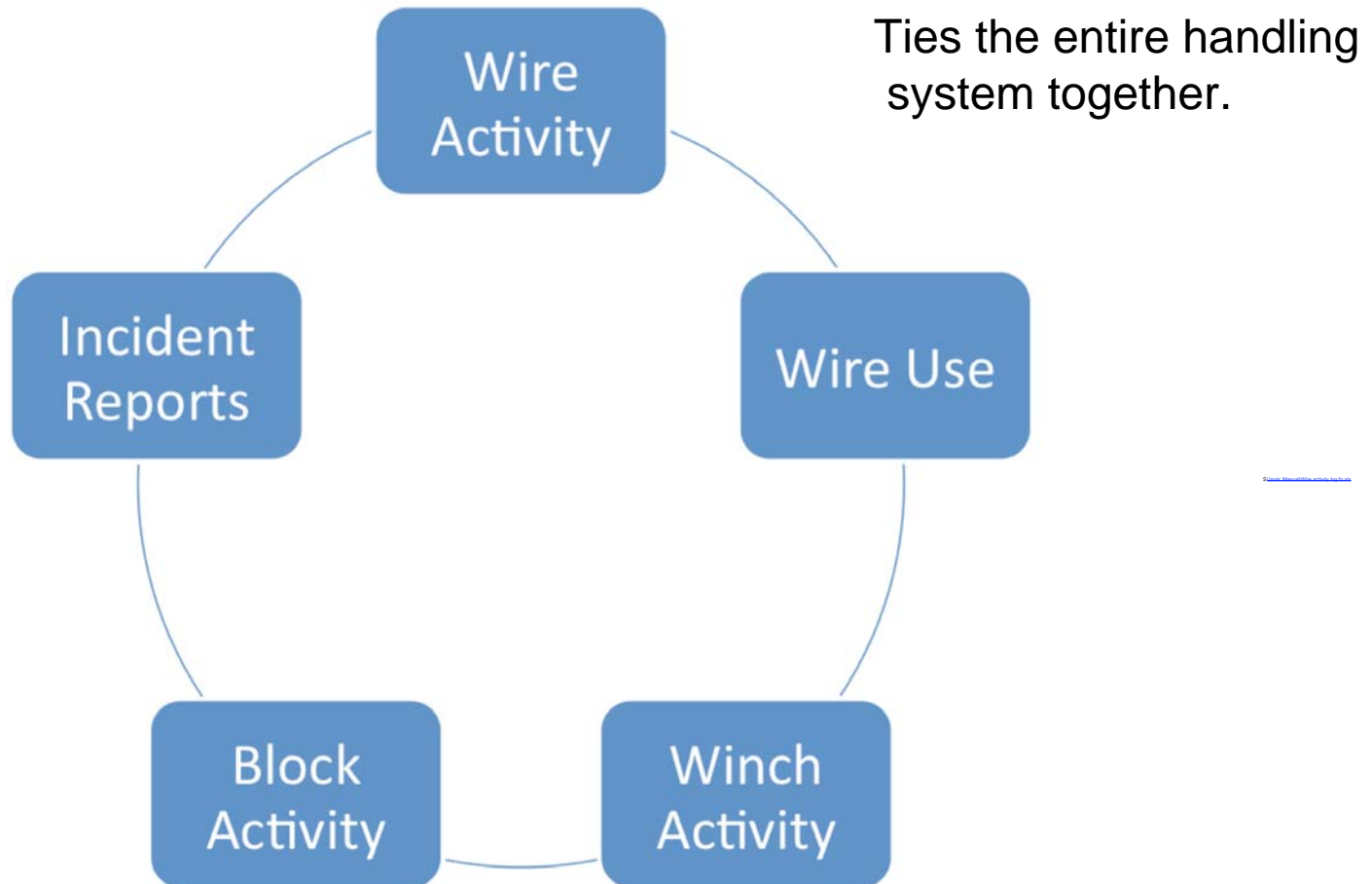
30 Seconds



4 Seconds



Winch & Wire Handbook, 3rd Edition
Chapter 7 - Instrumentation Lowering System
Documentation

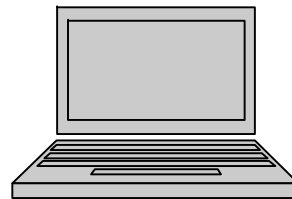


Challenge

- New responsibilities for ship operators & winch operators to be able to operate at lowest FS
- If you don't keep required records you can not meet the scientist's needs
- Solution is to integrate and automate

Network Nodes

Web browser display, one control
multiple view



General Description

- Acquisition/logging system attached to winch
- Compatible with installed sensors
- Combination of solid state hard drive and Compact Flash memory
 - Hard drive holds wire log, **stays with wire** (characteristics, test results, deployments, tension, cut backs, etc.)
 - CF holds winch logs, **stays with winch** (SWL, tensiometer cals, sheave characteristics, lubrication etc.)
- Ship network storage holds ship related logs, **stays with ship** (operator certifications, sheave characteristics, frame SWL)
- Outputs - NMEA 183 NMEA 2000 Ethernet IIRP

Capabilities

- Takes all the information available and shows real time minimum FS
 - Operator qualification
 - Last determination of ABL
 - Blocks within specification
- Displays current Operating Requirements
 - Deck cleared, physical barriers etc.
- Predicts load – deviation would indicate approach of slack wire
- Logs everything –winch operator, winch, blocks in use and suitability, bending cycles
- Controls fresh water spray bar
- Could control hydraulic by pass valve for auto render

Start Menu

START 13:28:03 14/04/2009

ACKNOWLEDGE ALARM


Wire Handling Configuration

0.0 SCOPE (m)

0.0 RATE (m/m)

0.0 Tension (lbs)

ZERO METER

WASH OFF 

Operator

MAIN MENU

Winch/Wire Monitoring System

DEMO

Select Operator then Select Wire Handling System

To Get Started

Main Menu MAIN

NIGHT/DAY	SELECT OPERATOR >>	SELECT WIRE HANDLING SYSTEM >>	Start Cast
DISPLAY CAST SUMMARY	DISPLAY LOGS	DISPLAY GRAPHS	CONFIGURE SYSTEM >>

Select Operator

The screenshot displays a monitoring software interface. At the top right, it shows 'Monitor' and the date '11:16:10 24/10/2008'. Below this is a large 'ACKNOWLEDGE ALARM' button. A central graph plots 'Amplitude' (0 to 10000) against 'Time' (10:50:01.774 AM 5/7/1998 to 8:47:48.835 AM 4/25/2019). To the right of the graph are three readouts for 'Wire Handling Configuration': SCOPE (m) at 0.0, RATE (m/m) at 0.0, and Tension (lbs) at 0.0. Below these are 'ZERO METER' and 'WASH OFF' buttons. A table at the bottom left shows 'CAST TIME', 'LOG FILE', and 'OPERATOR' columns with values '00:00:06.0', 'Wire', and 'Gustav'. A 'SELECT OPERATOR' list contains 'fnewbee', 'soldhand', and 'admin'. Other buttons include 'MOVE UP', 'MOVE DOWN', 'SELECT', 'LOG OUT', and 'MAIN MENU'. The bottom status bar shows 'WiLoMon.lvproj/My Computer'.

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

SELECT OPERATOR

- fnewbee
- soldhand
- admin

MOVE UP

MOVE DOWN

SELECT

LOG OUT

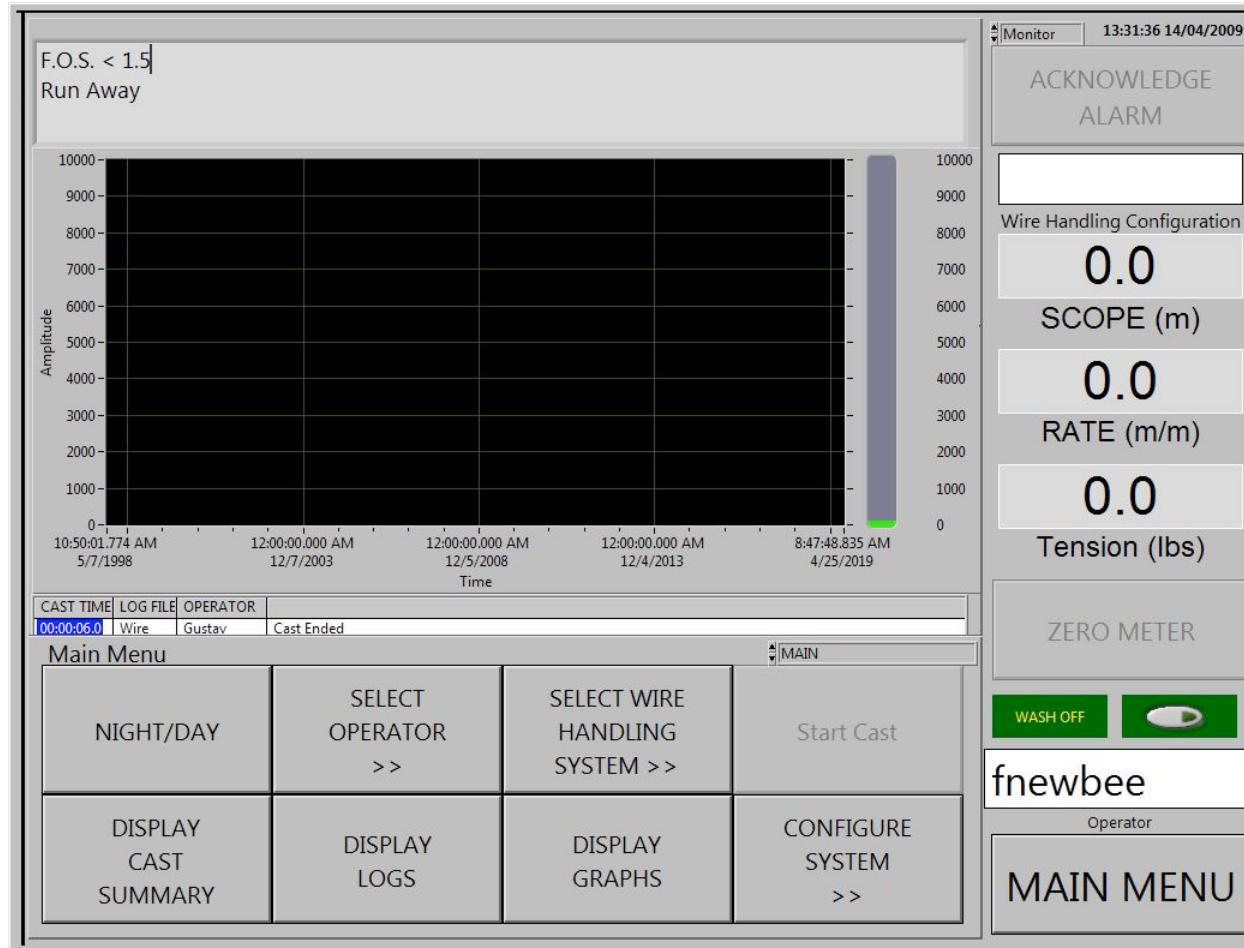
WASH OFF

Operator

MAIN MENU

WiLoMon.lvproj/My Computer

Operator Selected



Select Handling System

The interface displays a central graph with 'Amplitude' on the y-axis (0 to 10000) and 'Time' on the x-axis. The x-axis has markers for 10:50:01.774 AM (5/7/1998), 12:00:00.000 AM (12/7/2003), 12:00:00.000 AM (12/5/2008), 12:00:00.000 AM (12/4/2013), and 8:47:48.835 AM (4/25/2019). A vertical bar on the right side of the graph is currently at 0.0.

At the top left, the status reads 'F.O.S. < 1.5 Run Away'. At the top right, the monitor shows '13:32:24 14/04/2009'.

Below the graph is a table with columns 'CAST TIME', 'LOG FILE', and 'OPERATOR':

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

The table indicates 'Cast Ended'. Below the table is a list of handling systems: 'CTD-STBD' (highlighted in blue), 'MOCNESS-STBD', and 'MOCNESS-Stern'. To the right of the list are 'MOVE UP' and 'MOVE DOWN' buttons, and a 'List Select' dropdown.

On the right side of the interface, there are several control elements: 'ACKNOWLEDGE ALARM', a 'Wire Handling Configuration' section with 'SCOPE (m)', 'RATE (m/m)', and 'Tension (lbs)' all set to '0.0', a 'ZERO METER' button, a 'WASH OFF' button, a 'fnewbee' operator name, and a 'MAIN MENU' button.

Ready to Start Cast

F.O.S. < 1.5
Run Away

Monitor 13:33:15 14/04/2009

ACKNOWLEDGE ALARM


CTD-STBD
Wire Handling Configuration

0.0
SCOPE (m)

0.0
RATE (m/m)


0.0
Tension (lbs)

ZERO METER

WASH OFF 

fnewbee
Operator

MAIN MENU



CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

Cast Ended

Main Menu

NIGHT/DAY	SELECT OPERATOR >>	SELECT WIRE HANDLING SYSTEM >>	Start Cast
DISPLAY CAST SUMMARY	DISPLAY LOGS	DISPLAY GRAPHS	CONFIGURE SYSTEM >>

Configuration Level 1

F.O.S. < 1.5
Run Away

Monitor 13:38:21 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

Amplitude

Time

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

Cast Ended

CONFIGURE SYSTEM

WIRE WASH

ADVANCED CONFIGURATION >>

11:51:06.442 PM 10/3/1998 12:00:00.000 AM 12/7/2003 12:00:00.000 AM 12/5/2008 12:00:00.000 AM 12/4/2013 3:22:27.873 AM 10/25/2019

Configuration level 2

Monitor 13:39:09 14/04/2009

F.O.S. < 1.5
Run Away

Amplitude

Time

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

Cast Ended

LEVEL-2 ADVANCED CONFIGURATION ADV-CONF

BLOCK MAINTAINENCE	WIRE MAINTAINENCE	WINCH MAINTAINENCE	USER MAINTAINENCE
HANDELING SYSTEM MAINTAINENCE	COMMUNICATIONS SETTINGS		

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

Wire Maintenance Menu

F.O.S. < 1.5
Run Away

Monitor 13:40:09 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0

SCOPE (m)

NaN

RATE (m/m)

0.0

Tension (lbs)

ZERO METER

WASH OFF

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

Cast Ended

WIRE MAINT

NEW	EDIT	MEGGER RESISTANCE TEST	LUBRICATE
TERMINATE	SUB-DIVIDE	SPOOL UNSPOOL	

admin

Operator

MAIN MENU

Wire Maintenance Edit

Keyboard 13:41:06 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0

SCOPE (m)


NaN

RATE (m/m)

0.0

Tension (lbs)

ZERO METER

WASH OFF 


admin

Operator

MAIN MENU

Keyboard

Wire Maintenance Edit Form

WIRE MAINTAINENCE		WIRE MAINT EDIT	
Wire ID Number	Date Of Manufacture	Tested By	
1	10/13/2008	WHOI	
Wire Type	Manufacturers Ultimate Load	Last Test Date	Actual Breaking Load (lbs)
322	0	10/7/2008	6000
Manufacturer	"d" outside diameter	SWL Test Date	SWL Test(lbs)
Rochester	0.322	10/19/2008	3500
Manufacturers Part Number	"d1" diameter of largest strand	Current Length Entry Date	Current Length (m)
	0	10/27/2008	10000
Nominal Breaking Load	 Conductor Cable		
0			

Winch Maintenance Menu

The screenshot displays a software interface for winch maintenance. At the top left, it shows 'F.O.S. < 1.5' and 'Run Away'. The central part features a graph with 'Amplitude' on the y-axis (0 to 10000) and 'Time' on the x-axis (11:51:06.442 PM 10/3/1998 to 3:22:27.873 AM 10/25/2019). Below the graph is a table with columns for 'CAST TIME', 'LOG FILE', and 'OPERATOR', containing data like '00:00:06.0', 'Wire', and 'Gustav'. The 'WINCH MAINTAINENCE' section includes buttons for 'NEW', 'EDIT', 'MEGGER RESISTANCE TEST', and 'LUBRICATE'. On the right, a 'Monitor' panel shows '13:42:03 14/04/2009' and buttons for 'ACKNOWLEDGE ALARM', 'CTD-STBD', 'SCOPE (m)' (0.0), 'RATE (m/m)' (NaN), 'Tension (lbs)' (0.0), 'ZERO METER', 'WASH OFF', and 'MAIN MENU'. The operator is identified as 'admin'.

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav
Cast Ended		

WINCH MAINTAINENCE			
NEW	EDIT	MEGGER RESISTANCE TEST	LUBRICATE

Monitor 13:42:03 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0

SCOPE (m)

NaN

RATE (m/m)

0.0

Tension (lbs)

ZERO METER

WASH OFF

admin

Operator

MAIN MENU

Winch Maintenance Select

The screenshot displays a control interface for a winch system. At the top left, it shows a status indicator "F.O.S. < 1.5 Run Away". The central part of the interface is a graph with "Amplitude" on the y-axis (ranging from 0 to 10000) and "Time" on the x-axis (ranging from 11:51:06.442 PM 10/3/1998 to 3:22:27.873 AM 10/25/2019). The graph area is currently empty. To the right of the graph, there are several control buttons and status indicators: "ACKNOWLEDGE ALARM", "CTD-STBD", "Wire Handling Configuration" (0.0 SCOPE (m)), "NaN RATE (m/m)", "0.0 Tension (lbs)", and "ZERO METER". Below the graph, there is a table with columns "CAST TIME", "LOG FILE", and "OPERATOR". The table contains one row: "00:00:06.0 Wire Gustav Cast Ended". At the bottom left, there is a list box containing "W-MOCNESS" (highlighted in blue) and "W-CTD". To the right of the list box are buttons for "MOVE UP", "MOVE DOWN", "SELECT", and "LOG OUT". At the bottom right, there is a "WASH OFF" button, a "WASH OFF" indicator (a green bar with a white circle), the text "admin Operator", and a "MAIN MENU" button. The top right corner shows "Monitor 13:42:47 14/04/2009".

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav Cast Ended

Winch Maintenance Edit

Keyboard 13:43:42 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

Keyboard

Display Name
W-MOCNESS

Inventory ID
W-1600

Last SWL Test Date
10/5/2008

Last Tested SWL (lbs)
1000

Manufacturer
Markey

Model
DUSH-3

Serial Number
8336-18702

Manufacturers SWL (lbs)
15000

Manufacturers Ultimate Load (lbs)
18000

Tension Available

Tension Method
Voltage

Cal Method
2 Point

Low Weight	Low Value	High Weight	High Value
0	0	0	0

Slope(m)
1680.32786

Offset(lb)
119.344

Rate Available

PPM 0

WINCH-MAINT-EDIT

User Maintenance

Monitor 13:44:34 14/04/2009

F.O.S. < 1.5
Run Away

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

Cast Ended

USER MAINTAINENCE USER MAINT

NEW	EDIT		

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

User Select

F.O.S. < 1.5
Run Away

Monitor 13:45:36 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

Amplitude

Time

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav
		Cast Ended

List Select

fnewbee
soldhand
admin

MOVE UP

MOVE DOWN

SELECT

LOG OUT

11:51:06.442 PM 10/3/1998 12:00:00.000 AM 12/7/2003 12:00:00.000 AM 12/5/2008 12:00:00.000 AM 12/4/2013 3:22:27.873 AM 10/25/2019

User Maintenance Edit

Keyboard 13:46:45 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0

SCOPE (m)


NaN

RATE (m/m)

0.0

Tension (lbs)

ZERO METER

WASH OFF 

admin

Operator

MAIN MENU

Keyboard

USER MAINT EDIT

Last Name	First Name	User ID
Administrator		admin
P.I.N	Security Level	Training Level
666	Administrator	Master
Time/Date Created	Created By	
12:05:17.834 PM 10/1/2008	System	

System Maintenance Menu

The screenshot displays a software interface for system maintenance. At the top left, it shows a status message: "F.O.S. < 1.5 Run Away". Below this is a large graph with "Amplitude" on the y-axis (0 to 10000) and "Time" on the x-axis. The x-axis has markers for 11:51:06.442 PM (10/3/1998), 12:00:00.000 AM (12/7/2003), 12:00:00.000 AM (12/5/2008), 12:00:00.000 AM (12/4/2013), and 3:22:27.873 AM (10/25/2019). The graph area is mostly black, with a small green bar at the bottom right. To the right of the graph is a vertical scale from 0 to 10000. Below the graph is a table with columns: CAST TIME, LOG FILE, OPERATOR, and a status field. The first row contains: 00:00:06.0, Wire, Gustav, and Cast Ended. Below the table is a section titled "HANDLING SYSTEM MAINTAINENCE" with a sub-label "HAND SYS MAINT" and a grid of buttons: NEW, EDIT, and two empty buttons. On the right side of the interface, there is a "Monitor" window showing the time 13:47:38 14/04/2009. Below this are several control buttons: "ACKNOWLEDGE ALARM", "CTD-STBD", "Wire Handling Configuration", "0.0 SCOPE (m)", "NaN RATE (m/m)", "0.0 Tension (lbs)", "ZERO METER", "WASH OFF" (with a green indicator), "admin Operator", and "MAIN MENU".

F.O.S. < 1.5
Run Away

Monitor 13:47:38 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

CAST TIME	LOG FILE	OPERATOR	
00:00:06.0	Wire	Gustav	Cast Ended

HANDLING SYSTEM MAINTAINENCE

NEW EDIT

System Maintenance Select

The screenshot displays a software interface for system maintenance. At the top left, it shows 'F.O.S. < 1.5' and 'Run Away'. The central part of the interface is a graph with 'Amplitude' on the y-axis (0 to 10000) and 'Time' on the x-axis (11:51:06.442 PM 10/3/1998 to 3:22:27.873 AM 10/25/2019). Below the graph is a table with columns 'CAST TIME', 'LOG FILE', and 'OPERATOR'. The table contains one row: '00:00:06.0', 'Wire', 'Gustav', 'Cast Ended'. To the right of the graph is a vertical bar with a green segment at the bottom. On the right side of the interface, there are several control buttons and displays: 'ACKNOWLEDGE ALARM', 'CTD-STBD', 'Wire Handling Configuration', '0.0 SCOPE (m)', 'NaN RATE (m/m)', '0.0 Tension (lbs)', 'ZERO METER', 'WASH OFF' (with a green button and a white indicator), 'admin Operator', and 'MAIN MENU'. At the bottom left, there is a list box containing 'CTD-STBD', 'MOCNESS-STBD', and 'MOCNESS-Stern', with 'CTD-STBD' selected. To the right of the list box are buttons for 'MOVE UP', 'MOVE DOWN', 'SELECT', and 'LOG OUT'. The top right corner shows 'Monitor' and the time '13:48:37 14/04/2009'.

F.O.S. < 1.5
Run Away

Monitor 13:48:37 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD

Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

ZERO METER

WASH OFF

admin
Operator

MAIN MENU

CAST TIME	LOG FILE	OPERATOR
00:00:06.0	Wire	Gustav

CAST TIME LOG FILE OPERATOR
00:00:06.0 Wire Gustav Cast Ended

CTD-STBD
MOCNESS-STBD
MOCNESS-Stern

MOVE UP
MOVE DOWN
SELECT
LOG OUT

Amplitude

Time

System Maintenance Edit

Keyboard


System Name
CTD-STBD

Winch
W-CTD

Wire
1

Block(s) Comma delimited List
B-1

Frame
STBD Center

Active 

HAND SYS EDIT

Keyboard 13:49:32 14/04/2009

ACKNOWLEDGE ALARM

CTD-STBD


Wire Handling Configuration

0.0
SCOPE (m)

NaN
RATE (m/m)

0.0
Tension (lbs)

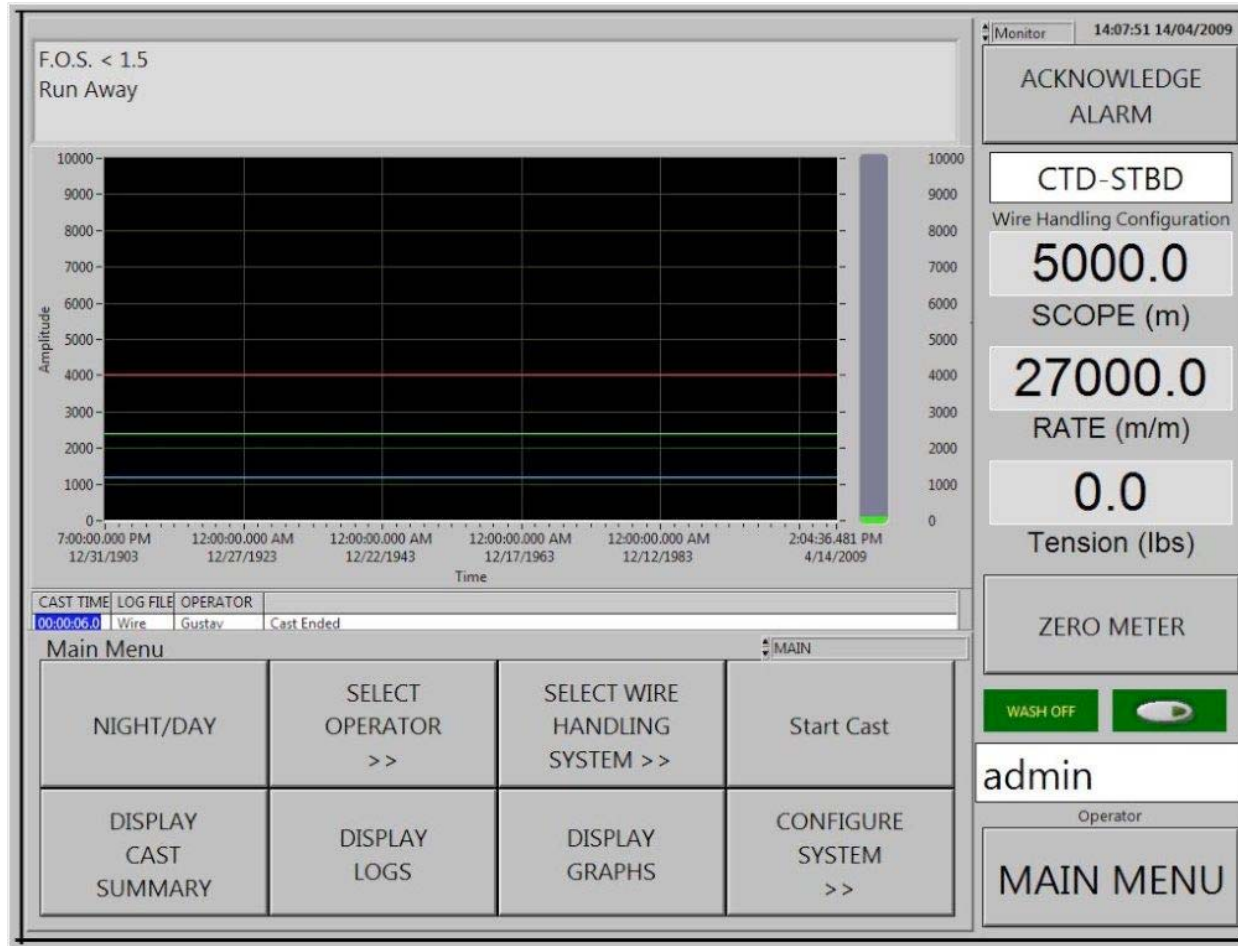
ZERO METER

WASH OFF 

admin
Operator

MAIN MENU

Cast Running



Display Logs

