NATIONAL SCIENCE FOUNDATION
SHIP INSPECTION PROGRAM

2015 RVOC MEETING

JMS
NAVAL ARCHITECTS

Naval Architecture
Marine Engineering
Marine Surveying
Salvage Engineering

Purpose

The major purposes of the NSF Ship Inspection Program are:

1. To assure that the capabilities of the research vessel and technical support meet accepted scientific community standards and expectations;
2. To assure the seaworthiness and safety of research vessels supported by NSF meet or exceed the standards set forth by the *UNOLS Research Vessel Safety Standards (RVSS)*, and applicable requirements of the International Maritime Organization, American Bureau of Shipping (ABS), the Code of Federal Regulations (CFR), and the U.S. Coast Guard;
3. To ensure NSF-owned ships as capital assets, are being adequately maintained;
4. To ensure NSF-funded science is scheduled on properly outfitted and maintained vessels.

Recently Completed

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Upcoming Inspections

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RVSS Appendix A Compliance:

Appendix A compliance appears to be coming along well.

- **Almost all vessels are in compliance at a safety factor of 5.0.**
- **However, a factor of safety of 5.0 does not meet mission requirements for many vessels, particularly if the calculation method in the Appendix is used (g=1.75).**
- **Some of the vessels are limited to a factor of safety of 5.0 by sheave diameters and grooving and will also be limited by roller diameters as of 1 June 2015.**
- **The logging requirements for each tension member are more comprehensive than historically being maintained.**

RVSS Appendix A Compliance:

Appendix A Assist Summary for Each Wire or Cable

Appendix A Assist Summary for Each Wire or Cable (updated 3_14_2012 JMS/wec)						
Note: This is not all inclusive. See Appendix A Rev 1for requirements.	Select Applicable Column FS					
Requirement or Attribute	FS of 5.0 or Higher	FS from 3.5 to 4.99	FS from 2.0 to 3.49	FS from 1.5 to 1.99	FS=	Comments
Post Cable/Wire SWL in clear view of the winch operator (good practice)	Applies	Applies	Applies	Applies	Y/N	
General						
Determine Cable/Wire Safe Working Load (SWL) as Assigned Breaking Load / Factor of Safety	Applies	Applies	Applies	Applies	Y/N	
Tension Monitoring						
Have ability to keep load < SWL May be calculated w*g* factor at least 1.75 or from Tensiometer	Applies				Y/N	
Have ability to keep load < SWL/ Actual from monitoring system		Applies	Applies	Applies	Y/N	
Tensiometer display at operator's station with 3 Hz resolution		Applies			Y/N	
Tensiometer display at operator's station with 10 Hz resolution			Applies	Applies	Y/N	
Tension continuously monitored using a tension trending graph			Applies	Applies	Y/N	
Tensiometer logging at 3 Hz		Applies			Y/N	
Tensiometer logging at 20 Hz			Applies	Applies	Y/N	
Tensiometer Recalibration at least every 6 mo.		Applies	Applies	Applies	Y/N	
Tension measuring system maintained with 4% accuracy		Applies			Y/N	
Tension measuring system maintained with 3% accuracy			Applies	Applies	Y/N	
Alarms					Y/N	
Audible and visual tension alarms w/data logging Alarm at < ABL/2.8		Applies				
Audible and visual tension alarms w/data logging Alarm at >ABL/2.2			Applies		Y/N	
Audible and visual tension alarms w/data logging Alarm at >ABL/1.7				Applies	Y/N	
Alarm conditions automatically logged		Applies	Applies	Applies	Y/N	
Sheaves and Fairlead Rollers						
Sheaves & Rollers: As large as practical	Applies				Y/N	
Sheaves & Rollers: D/d ratio mest 40:1 or 400d/t whichever is greater		Applies	Applies	Applies	Y/N	
Sheaves: Grooves as close to d as possible and no more than 1.5d		Applies			Y/N	
Sheaves: Grooves per: Ref A 1.1 (Groove size relative to nominal diameter of wire rope: 3/16" to 1/4" 3% to 6%; over 1/4" 2.5% to 5%)			Applies	Applies	Y/N	
Deck Safety						
Good safety practices	Applies				Y/N	
Establish danger zones / safety zones		Applies	Applies	Applies	Y/N	
Warning notices posted			Applies	Applies	Y/N	
Physical or visual barriers			Applies	Applies	Y/N	
Doors and accesses secured			Applies	Applies	Y/N	
Testing						
Tension testing up to SWL load every 2 years. Break testing not req'd at FS=5.0	Applies				Y/N	
Break Testing every 2 yrs		Applies			Y/N	
Break Testing every yr if 10% decrease in ABL or cutback		Applies			Y/N	
Break Testing every yrs			Applies	Applies	Y/N	
Break Testing every 6 mo. if 10% decrease in ABL or cutback			Applies	Applies	Y/N	
Logbooks: UNOLS wire identifier, Cable Inventory/History and Running Use						
Logs stay with the wires transfer with the wire	Applies	Applies	Applies	Applies	Y/N	
Log of Tension Testing to SWL	Applies				Y/N	
Log of wire Break Testing		Applies	Applies	Applies	Y/N	
Log Cutbacks	Applies	Applies	Applies	Applies	Y/N	
Log Spooling Operations	Applies	Applies	Applies	Applies	Y/N	
Log of Lubrication	Applies	Applies	Applies	Applies	Y/N	
Wire Train Description	Applies	Applies	Applies	Applies	Y/N	
Maximmum load for each cast by calculation or monitoring (and payout)	Applies	Applies	Applies	Applies	Y/N	
Winch Operator						
Operator deemed competent in writing by master and owner	Applies				Y/N	
Operator "Certified Competent" in writing by master and owner renewed annually		Applies	Applies	Applies	Y/N	
Master verify qualifications and designate approved operators		Applies	Applies	Applies	Y/N	
Training record for formal operator training program for winch, handling apparatus, and monitoring system.		Applies	Applies	Applies	Y/N	
Suggestions: Please contact Ted@JMSnet.com						

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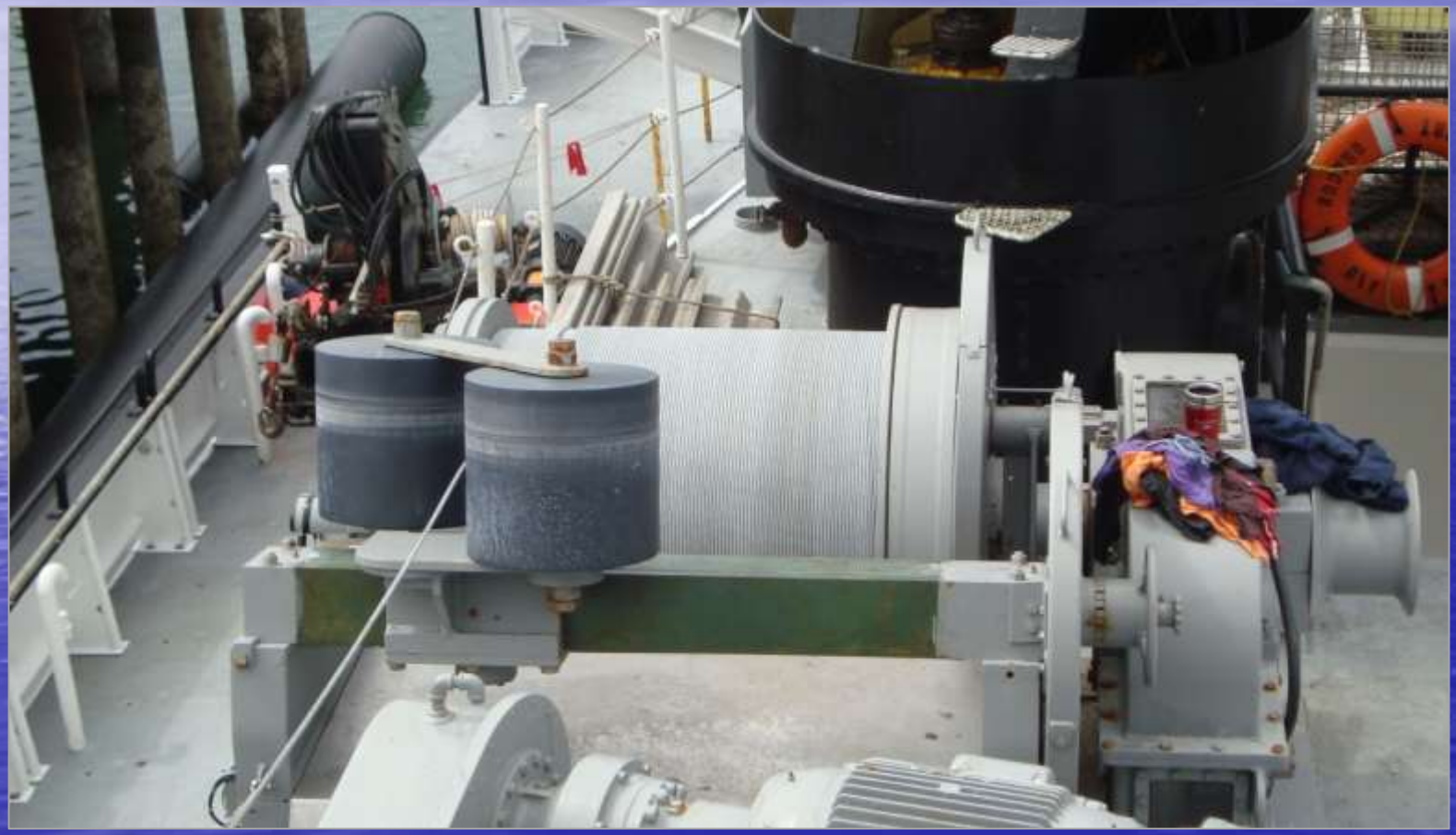
Common Findings: Sheave and Fairlead Roller Diameter

Older Levelwinds limit FS to 5.0

	Select Applicable Column FS			
Requirement or Attribute	FS of 5.0 or higher	FS from 2.5 to 4.99	FS from 2.0 to 2.49	FS from 1.5 to 1.99
Sheaves and Fairlead Rollers				
Sheaves & Rollers: As large as practical	Applies			
Sheaves & Rollers: D/d ratio meet 40:1 or 400d1 whichever is greater		Applies	Applies	Applies
Sheaves: Groves as close to d as possible and no more than 1.5d		Applies		
Sheaves: Groves per Ref A 1.1 (Groove size relative to nominal diameter of wire rope: 3/16" to 1/4" 3% to 6%; over 1/4" 2.5% to 5%)			Applies	Applies

Common Findings: Sheave and Fairlead Roller Diameter

Large rollers installed on RV OCEANUS



Common Findings: Maintaining Accuracy

.	Select Applicable Column FS			
Requirement or Attribute	FS of 5.0 or higher	FS from 2.5 to 4.99	FS from 2.0 to 2.49	FS from 1.5 to 1.99
Tension Monitoring				
Tension measuring system maintained with 4% accuracy		Applies		
Tension measuring system maintained with 3% accuracy			Applies	Applies

One common weak area is the concept of "maintaining" calibrations within 4% or 3% depending on the factor of safety selected. There is a need for a standard protocol that may be shared within the fleet.

Common Findings: SWL Documentation

WLL or SWL identified on a block is not the same as max permissible tension. These blocks don't indicate if the WLL is for the tension member or for the shackle/block.

Best Practice: Sheaves

Clear indication of SWL expressed in terms of MPT.

Best Practices: Sheave Wrap Angle

RV SAVANNAH: Instrument blocks that measure the wrap angle in order to measure the tension in the cable.

Common Findings: Log Maximum Load for Each Cast

	Select Applicable Column FS			
Requirement or Attribute	FS of 5.0 or higher	FS from 2.5 to 4.99	FS from 2.0 to 2.49	FS from 1.5 to 1.99
Logbooks: UNOLS wire identifier: Cable Inventory/History and Running Use				
Maximimum load for each cast by calculation or monitoring.	Applies	Applies	Applies	Applies

One of the requirements in Appendix A is to log the maximum tension per cast. For the crews that record the tensions electronically into a data file (as most do), this is an extra step to accomplish this criteria.

Best Practices: Appendix A

Drop #	Drop Date & Time	*Maximum Tension Per Cast (Lbs)*	Maximum Payout of Each Deployment (Meters)
0	5/5/12 13:45	2987	0
1	5/8/12 2:34	1859	1000
2	5/9/12 2:06	1568	2000
3	5/9/12 22:06	2368	4572
4	5/10/12 2:08	1364	1100
5	5/11/12 2:41	2050	4353
6	5/11/2012 5:14	1502.9	1811.5
7	5/11/2012 19:41	2312.3	4617
8	5/12/2012 3:07	2016.9	4200.3
9	5/12/2012 23:00	1604.7	2000
10	5/13/2012 13:15	2859.1	4614.8

RV ATLANTIC EXPLORER:

Logs both the payout per cast and payout at maximum load

RVSS Appendix B Compliance:

Appendix B Assist Sheet for Overboard Handling Systems (updated 2_9_2013 JMS/wec)			
This assist sheet is to access progress toward compliance with RVSS Appendix B by the compliance date of 7/15/2014			
Page 2 Component & Sub-System Level			
For each Overboard Handling System (OHS) Component in the OHS System Configuration Component MCD Booklet for each component used including:	Reference B.5	Y / N / NA	
Component Maximum Capability Document (MCD) including:	B.5	Y / N / NA	
(1) Component Maximum Permissible Tension (MPT)	B.5	Y / N / NA	
(2) Component proof or analysis of the MPT, or Manufacturer's Certification	B.3 & B.4	Y / N / NA	
(3) Applicable Geometry	B.05 & B.5 & B.06	Y / N / NA	
(4) Component OHDD	B.3.7	Y / N / NA	
Additional contents as applicable			
(5) Footprint and bolt pattern	B.5 Attachment A5	Y / N / NA	
(6) Attachment loadings	B.5 & B.6 Attachment A5	Y / N / NA	
(7) Ship system interface requirements such as electrical power, hydraulics, data transfer	Attachment A5	Y / N / NA	
(8) Testing procedures	B.6.1 Attachment A5	Y / N / NA	
(9) Test Logs	B.6 Attachment A5	Y / N / NA	
(10) Component weight	B.7.2 Attachment A5	Y / N / NA	
(11) Overall dimensions	Attachment A5	Y / N / NA	
(12) Equipment Operator's Manual	B.5 & B.10.1 Attachment A5	Y / N / NA	
(13) Training and operator qualification requirements	B.0.5 Attachment A5	Y / N / NA	
(14) Inspection procedures	B.6 Attachment A5	Y / N / NA	
(15) Preventative maintenance	B.0.5 Attachment A5	Y / N / NA	
(16) Operational and Safety precautions	B.6 Attachment A5	Y / N / NA	
(17) Emergency procedures	Attachment A5	Y / N / NA	
(18) For portable components additionally:	B.3.2 & B.6.3 Attachment A5		
Sub-component inventory list		Y / N / NA	
Delivery check-off list		Y / N / NA	
Installation instructions		Y / N / NA	
Suggestions: Please contact Ted@JMSnet.com			

Vessels appear to be making progress toward compliance with Appendix B, but we have yet to see a complete package for a complete overboarding handling system.

Assist sheets are available for the system level and component level.

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RVSS Appendix B Compliance:

Appendix B contains the following aspects of overboard handling systems:

- **System and component descriptions***
- **Operation***
- **Maintenance***
- **Strength (typically requires original design documentation or expert help)**
- **Testing (may require expert help)**

*** Typically can be accomplished from shipboard experience and manuals. (No need to wait for experts).**

Common Findings: Appendix B Test Plans:

RV SIKULIAQ: Testing in the towing position

Develop a test plan/procedure

Include a line diagram

Test the system (all components) as it is intended to be used

Common Findings: Lithium batteries

- Develop policy and procedures on how to handle lithium batteries.
- The procedures should cover
  - usage
  - storage
  - disposal
  - how to respond to emergencies
- Incorporate into the cruise planning process.
- Note: Lithium batteries should not be treated the same as lithium ion batteries. Typical portable extinguishers can be used to extinguish a lithium ion fire.

Common Findings: Fuel Efficiency

Need for a ***methodical*** approach to help use fuel as cost effectively as possible. Requires the ability to take dynamic action based on real-time performance data and known benchmarks. Shipboard Energy Efficiency Management Plan (IMO requirement >400GT) comprised of strategic and tactical actions.

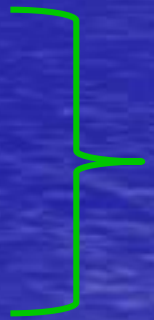
- Examples of strategic actions that can be adopted:
  - Repowering
  - Advanced hull coatings
  - Optimized propeller and rudder design
  - Addition of stern wedges
  - Use of shaft generators
- Examples of tactical actions that can be adopted:
  - Trim/draft optimization
  - Speed management / real time fuel flow monitoring
  - Maintenance: Tune engine compression, u/w hull cleaning, etc.
  - Energy conservation
  - Provide crew and staff guidance and awareness training

Common Findings: Environmentally Acceptable Lubricants [EAL]

- All vessels (not only new vessels) must use environmentally acceptable lubricants (EALs) in all oil-to-sea interfaces, unless technically not feasible.
- EPA defines EALs as lubricants that are "biodegradable" and "minimally-toxic" and are "not bioaccumulative".
- The vessel's Annual Report must identify the complete brand names of EALs used. The vessel should also maintain a copy of certificates and technical data sheets for each EAL.
- EALs are only mandated for use in specific oil-to-sea interfaces. Vessels are not required to change to an EAL for above deck equipment, but EPA strongly encourages the use.

Oil-to-Sea Interfaces include:

- Controllable pitch propeller
- Thrusters
- Stern tubes
- Thruster bearings
- Stabilizers
- Rudder bearings (excluding head bearing)
- Azimuth thrusters
- Wire rope
- Mechanical equipment subject to immersion (including dredges and grabs)



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Common Findings: Shipyard Documentation

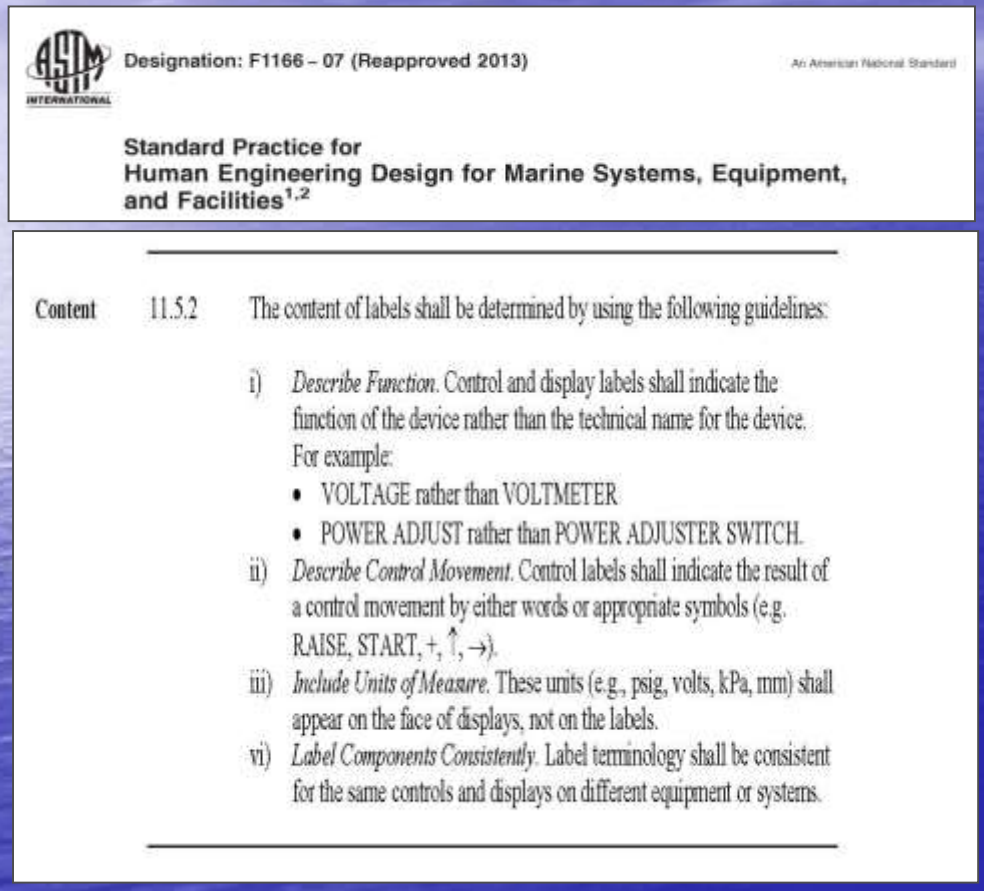
- Lack of post-shipyard documentation/reports
  - summary of what was accomplished
  - records of clearances, NDT, etc.
- Incomplete NDT surveys
  - "portable" equipment that hasn't moved in years (under winch foundations, A-Frame foundations, cranes
  - bilges, machinery foundations
  - internal structure – webs, flanges
- Need to maintain/update shell expansion plans
  - document readings *and* plate renewal

Common Findings: Impractical Life Raft Embarkation Plans

Due to their storage locations it is often difficult to launch the rafts and tend them aft to where science personnel could embark.

Procedures often differ from the science safety brief or station bill.

Common Findings: Human Factors



Designation: F1166 – 07 (Reapproved 2013)

An American National Standard

Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities[1,2]

Content 11.5.2 The content of labels shall be determined by using the following guidelines:

i) *Describe Function.* Control and display labels shall indicate the function of the device rather than the technical name for the device. For example:
- VOLTAGE rather than VOLTMETER
- POWER ADJUST rather than POWER ADJUSTER SWITCH.

ii) *Describe Control Movement.* Control labels shall indicate the result of a control movement by either words or appropriate symbols (e.g. RAISE, START, +, ↑, →).

iii) *Include Units of Measure.* These units (e.g., psig, volts, kPa, mm) shall appear on the face of displays, not on the labels.

vi) *Label Components Consistently.* Label terminology shall be consistent for the same controls and displays on different equipment or systems.

Each control and control setting should be labeled. The label should describe the control function and the result of the control movement in words and/or symbols. All deck equipment controls should be labeled consistently and be clearly visible by the operator with adequate lighting and a conspicuous format.

Common Findings: Human Factors

Best Practice: Hydraulic Hoses

- Tag provides the serial number of the item for cross reference in a Hose Log and installation date.
- The following information should be provided on the tag and/or log:
  - Hose serial number
  - Hydrostatic Test Pressure and Test Date
  - Installation or Replacement Date

Common Findings: Science Safety

More than just a preunderway safety brief is needed!

- Welcome aboard
- Safety Brief
  - Pre underway is best, use of real examples is most effective
- Shipboard policies
  - Sexual harassment, drug & alcohol, environmental, etc.
- General safety training information
  - RVOC Safety Training Manual & video
- Ship specific safety items
  - Use ship photos, PowerPoint or videos
- Reinforce in the Cruise Planning Manual, ship's web site, in labs and in staterooms

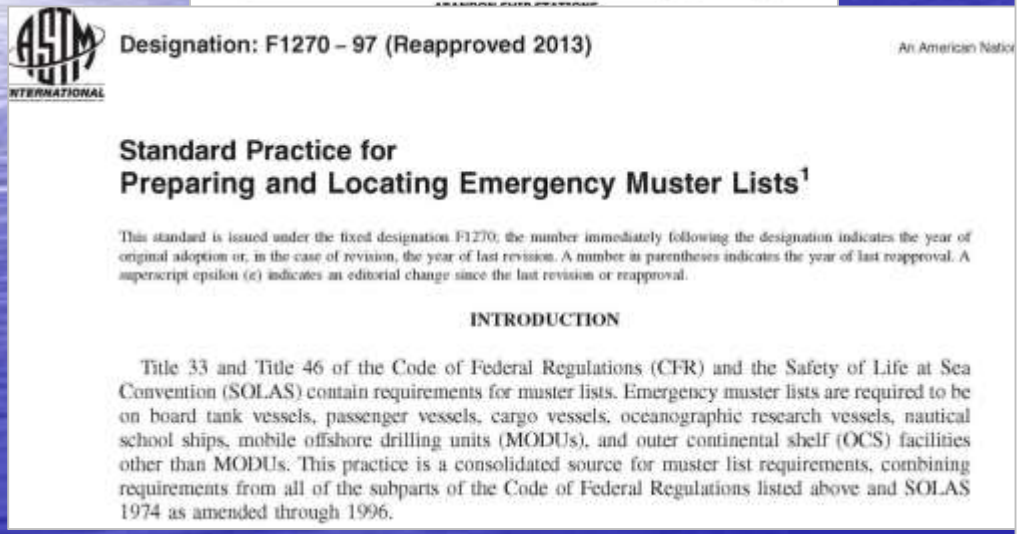
Best Practices: Muster List

F1270 – 97 (2013)

MUSTER LIST

GENERAL INSTRUCTIONS

FIRE AND EMERGENCY STATIONS



Designation: F1270 – 97 (Reapproved 2013)

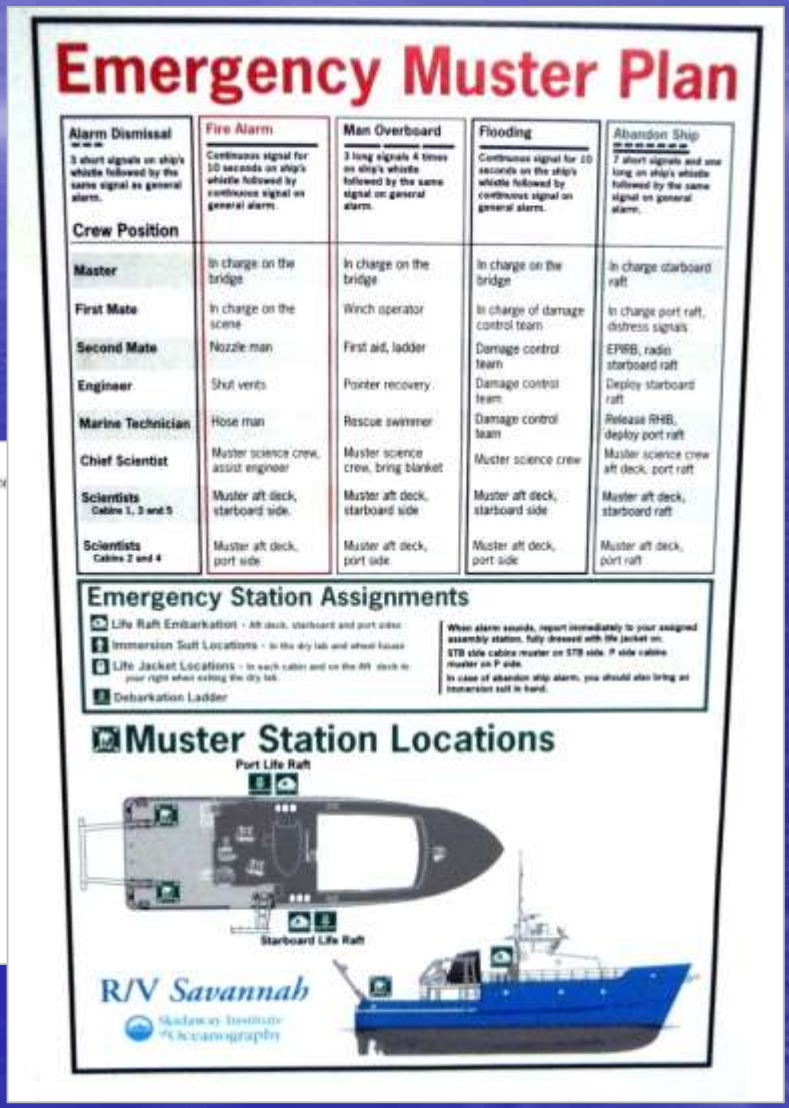
An American Natio

Standard Practice for Preparing and Locating Emergency Muster Lists[1]

This standard is issued under the fixed designation F1270; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Title 33 and Title 46 of the Code of Federal Regulations (CFR) and the Safety of Life at Sea Convention (SOLAS) contain requirements for muster lists. Emergency muster lists are required to be on board tank vessels, passenger vessels, cargo vessels, oceanographic research vessels, nautical school ships, mobile offshore drilling units (MODUs), and outer continental shelf (OCS) facilities other than MODUs. This practice is a consolidated source for muster list requirements, combining requirements from all of the subparts of the Code of Federal Regulations listed above and SOLAS 1974 as amended through 1996.



Emergency Muster Plan

Crew Position	Alarm Dismissal 3 short signals on ship's whistle followed by the same signal as general alarm.	Fire Alarm Continuous signal for 10 seconds on ship's whistle followed by continuous signal on general alarm.	Man Overboard 3 long signals 4 times on ship's whistle followed by the same signal on general alarm.	Flooding Continuous signal for 10 seconds on the ship's whistle followed by continuous signal on general alarm.	Abandon Ship 7 short signals and one long on ship's whistle followed by the same signal on general alarm.
Master	In charge on the bridge	In charge on the bridge	In charge on the bridge	In charge starboard raft
First Mate	In charge on the scene	Winch operator	In charge of damage control team	In charge port raft, distress signals
Second Mate	Nozzle man	First aid, ladder	Damage control team	EPIRB, radio starboard raft
Engineer	Shut vents	Pointer recovery	Damage control team	Deploy starboard raft
Marine Technician	Hose man	Rescue swimmer	Damage control team	Release RHB, deploy port raft
Chief Scientist	Muster science crew, assist engineer	Muster science crew, bring blanket	Muster science crew	Muster science crew aft deck, port raft
Scientists Cabins 1, 3 and 5	Muster aft deck, starboard side.	Muster aft deck, starboard side	Muster aft deck, starboard side	Muster aft deck, starboard raft
Scientists Cabins 2 and 4	Muster aft deck, port side	Muster aft deck, port side	Muster aft deck, port side	Muster aft deck, port raft

Emergency Station Assignments

- Life Raft Embarkation - Aft deck, starboard and port sides
- Immersion Suit Locations - In the dry lab and wheel house
- Life Jacket Locations - In each cabin and on the Aft deck to your right when exiting the dry lab.
- Debarkation Ladder

When alarm sounds, report immediately to your assigned assembly station, fully dressed with life jacket on. STB side cabins muster on STB side. P side cabins muster on P side.

In case of abandon ship alarm, you should also bring an immersion suit in hand.

Muster Station Locations

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Best Practices: Battle Lanterns

- LED bulbs
- Rechargeable batteries
- Refit kits available

Best Practices: Realistic Drills

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Marine Safety Alert

UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Inspections and Compliance Directorate

March 11, 2015
Washington, DC

Safety Alert 4-15

ENGINE ROOM OPERATIONS

Maintaining Machinery, Knowing Escape Routes, & Conducting Thorough Engineering Watches

Recently an engine room fire occurred onboard an older cruise ship while it was at berth. A fuel oil spray under pressure developed from an operating engine's fuel supply line when a bolted flange parted. The fuel spray ignited when it contacted the engine's exhaust piping or turbocharger components. The vessel's fine mist extinguishing system automatically activated and performed as designed extinguishing the primary fire. Fuel pumps and shutoff valves were also secured. However, the short-duration fire also ignited cable bundles, quickly filling the machinery space with smoke. As a result, one crewmember and two technicians were unable to egress and perished in the engine room.

Although the investigation is not complete and there is more to be learned, the Coast Guard is issuing this safety alert to: 1) reiterate the importance of vessel engineers being cognizant of and taking action on engine manufacturer technical bulletins and service letters, 2) remind personnel working in machinery spaces to have a personal exit plan no matter where they are working, and 3) stress the value of having engineers frequently perform detailed engineering space inspection rounds on engines, systems, and other equipment.

The ongoing investigation into the fire has revealed that a fuel line supply flange integral to the engine parted after three bolts completely loosened and the remaining bolt fractured. Other bolts within the engine's hot box were also found broken. The involved engine was a Wartsila model

Maintaining Machinery, Knowing Escape Routes, & Conducting Thorough Engineering Watches:

The Coast Guard **strongly recommends** that owner and operators of all types of vessels develop policy and procedures to ensure:

- Vessel engineers are cognizant of and take action on engine manufacturer technical bulletins;
- Any persons working within machinery spaces understand the escape routes and available emergency equipment;
- That all engineering personnel know how to perform effective and comprehensive inspections and rounds to detect abnormalities and problematic systems, equipment, and components as early as possible.

Marine Safety Alert

UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Inspections and Compliance Directorate

November 12, 2014
Washington, DC

Safety Alert 15-14

ACCIDENTAL RELEASE OF CO_2 SYSTEM!

IMPORTANCE OF DESIGN AND TESTING OF EMERGENCY SYSTEM CONTROLS

This safety alert serves to remind shoreside and vessel personnel of the importance of 1) designing and maintaining emergency systems to be logical and easily operated in high stress situations, 2) maintaining a high level of crew familiarity with emergency systems, and 3) exercising safeguards during testing to mitigate the risk of human error or system malfunction. Although regulations prescribe standards for safety systems aboard vessels, installations particularly those onboard uninspected vessels, can vary dramatically.

During a recent Uninspected Towing Vessel (UTV) exam, a vessel crewmember intending to test the fuel oil shut-off cables instead pulled the CO_2 system release cables. As seen in photos directly below and at the end of this safety alert, the emergency control panel used during the incident contained pull cables for both the CO_2 system and fuel oil shut-offs.

Accidental releases are not uncommon and vessel crewmember and Coast Guard inspector fatalities have occurred in the past. Fortunately, in this instance the audible alarm system and release time delay functioned as intended, allowing all personnel to safely evacuate the machinery spaces prior to discharge.

Poor design characteristics:

Similar activation pulls were collocated for fuel and CO_2 systems. Fuel oil shut down signage was located on the left, but fuel oil pulls were located on the far right with three CO_2 pulls in between.

System design, proper human engineering, labeling, and detailed training will substantially reduce the risk of human error:

The Coast Guard **strongly reminds** all maritime operators of the importance:

- Designing and maintaining emergency systems to be logical and easily operated in high stress situations,
- Maintaining a high level of crew familiarity with emergency systems, and
- Exercising safeguards during testing to mitigate the risk of human error or system malfunction

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Marine Safety Alert

UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Assistant Commandant for Prevention Policy

June 20, 2012
Washington, DC

Alert 02-12

OVERLOADED LIFTING GEAR ON FISHING VESSELS

Recently, several catastrophic failures of masts, booms, and lift cables have occurred on purse seine fishing vessels that have resulted in loss of life and severe injuries. Over the years many casualties have occurred onboard all types of fishing vessels attempting to haul in catches that exceeded the capacity of their winches, hoists, and associated equipment. These types of casualties are not unusual. This alert serves to remind all purse seine fishing vessel owners/operators and other fishing segments to ensure safe use of the haul equipment particularly matching the size and the capacity of the nets to the rated size and capacity of the winch/haul/hoist equipment, taking into account safety factors for various species, and other concerns such as the variable platform that a rolling fishing vessel and variable catch presents.

Owners / operators, and vessel *Insurers* must ensure that vessel winch, haul and hoist systems are not modified by crew members to increase the lifting capacity beyond the rated design which in some cases can be done very easily. Such boosting of hydraulic systems must be prohibited and certain components should be protected with special seals. The machinery should be properly maintained and records kept in a historical log. It is imperative that owners / operators ensure every load bearing structure and its associated components are maintained in original condition, that they will be operated as designed using all appropriate safety margins for anticipated working conditions. All such equipment will experience fatigue over time and as result must be inspected and monitored routinely. Bearings, limit switches, brakes, safety devices, sheaves, cables and other components, should be routinely inspected by certified organizations.

Overloaded Lifting Gear:

Several catastrophic failures of masts, booms, and lift cables have occurred on vessels that have resulted in loss of life and severe injuries.

The Coast Guard strongly recommends:

* Know the design limits of load bearing structures and winches, hoist, and haul components;
* Ensure they are inspected and tested on a regular basis;
* Evaluate and revise operational procedures as needed.

Appendix B!

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U.S. Department of Homeland Security

MARINE SAFETY ALERT

Inspections and Compliance Directorate

April 30, 2013
Washington, DC

03-13b

Surge Protective Devices Onboard Vessels
(correction with additional information)

We've all seen them and used them. Surge protective devices (SPDs), more commonly known as surge protectors or power strips help protect our expensive electronic devices from being damaged from excessive currents and allow us to simultaneously deliver power to multiple devices. This safety alert addresses the use of certain electrical protection devices onboard vessels and the inherent risks they may cause. Most commercially available SPDs are designed for use ashore and will interrupt *only* the hot conductor when a surge occurs. What does that mean for the ship owner/operator? It means that while these devices may provide protection in our homes and offices, these same devices may be a fire risk onboard vessels.

A marine casualty investigation of two separate stateroom fires onboard a U.S. Flag Container ship revealed that the sources of the fires were attributed to the use of SPDs plugged into a lighting circuit. It was discovered that a ground had developed on another circuit that was connected to the same distribution panel providing power to the staterooms. This ground created an imbalance of voltage between the two power conductors supplying the SPDs which caused excessive currents, overheating, and subsequently, a fire. In this instance, even if the SPDs automatically tripped as designed, only one power conductor would have been secured while the other would continue to provide power, possibly shorting to the device's ground wire and the structure of the vessel.

Surge "Protective" Devices:

Most surge protects are designed for use ashore and will interrupt only the hot conductor.

A Delta wired circuit has two hot leads one at +/- 60 VAC, the other at +/- 60 VAC, simultaneously to provide the 120 VAC potential. Here lies the problem with inexpensive and older SPDs that only disconnect one "hot" terminal lead. The other "hot" terminal remains hot if the circuit breaker supplying the receptacle and SPD does not trip.

It should be noted that related issues (mismatches between Delta or WYE systems) have been reported with 120 VAC Uninterrupted Power Supplies purchased ashore and used onboard vessels. Such devices should be selected to match the power supply configuration.

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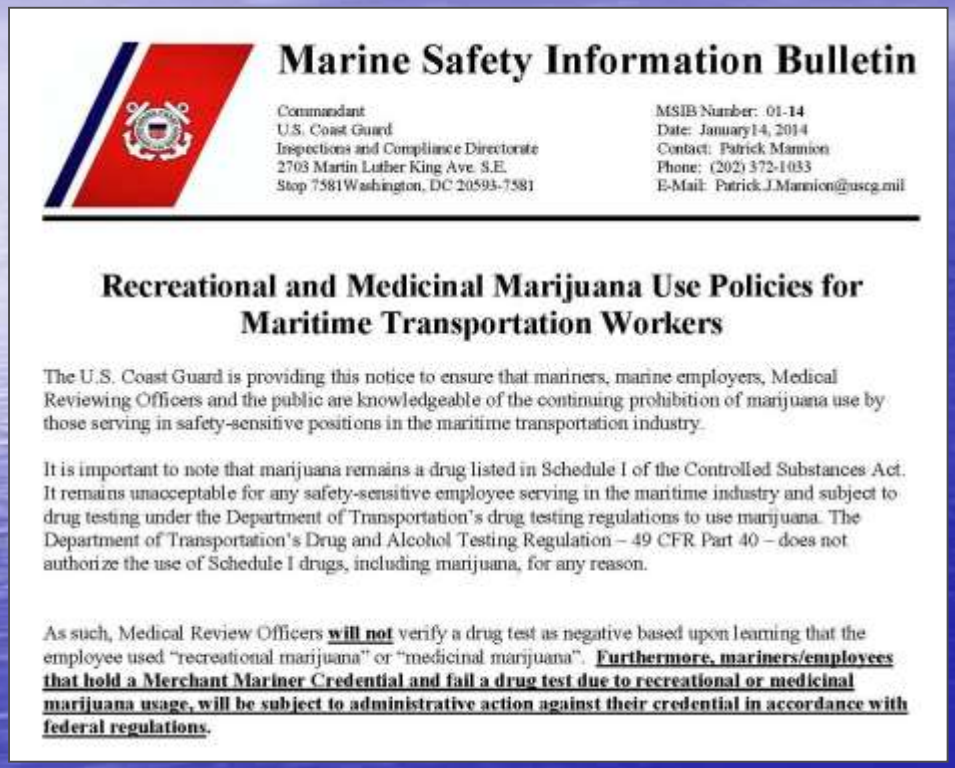

Marine Safety Information Bulletin

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Recreational and Medicinal Marijuana Use Policies for Maritime Transportation Workers

The U.S. Coast Guard is providing this notice to ensure that mariners, marine employers, Medical Reviewing Officers and the public are knowledgeable of the continuing prohibition of marijuana use by those serving in safety-sensitive positions in the maritime transportation industry.

It is important to note that marijuana remains a drug listed in Schedule I of the Controlled Substances Act. It remains unacceptable for any safety-sensitive employee serving in the maritime industry and subject to drug testing under the Department of Transportation's drug testing regulations to use marijuana. The Department of Transportation's Drug and Alcohol Testing Regulation – 49 CFR Part 40 – does not authorize the use of Schedule I drugs, including marijuana, for any reason.

As such, Medical Review Officers **will not** verify a drug test as negative based upon learning that the employee used "recreational marijuana" or "medicinal marijuana". **Furthermore, mariners/employees that hold a Merchant Mariner Credential and fail a drug test due to recreational or medicinal marijuana usage, will be subject to administrative action against their credential in accordance with federal regulations.**

Recreational and Medicinal Marijuana Use Policies for Maritime Transportation Workers:

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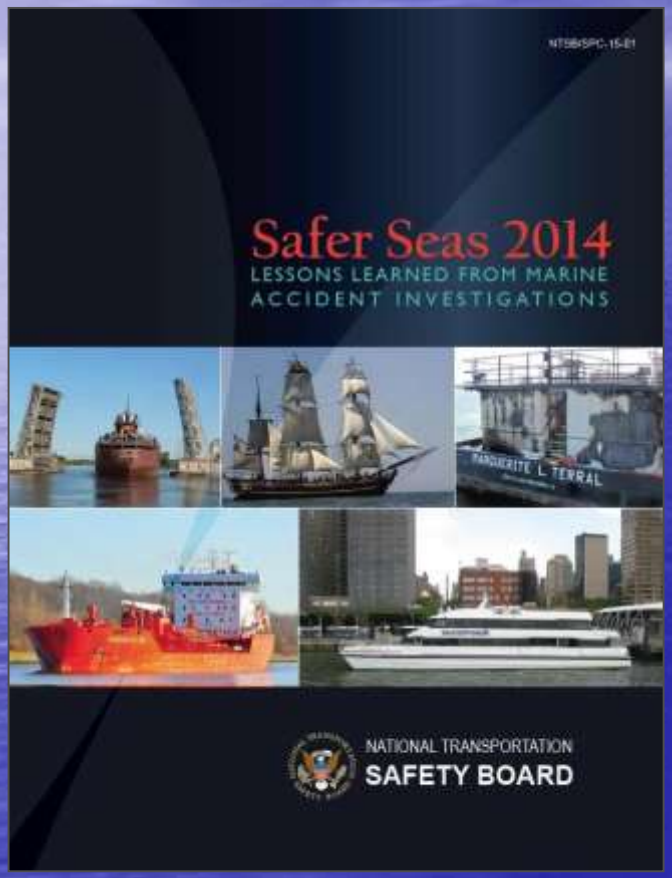
NTSB Lessons Learned



Summary — Safer Seas 2014: Lessons Learned from Marine Accident Investigations

Summary of Lessons Learned from Accident Investigations

Of the 23 reports completed in 2014, fishing vessels and towing vessels were the most common vessel types.

- 5 fishing vessel accident reports
- 9 towing vessel accident reports

Important Issues:

- CONTROL SYSTEM UNDERSTANDING: As bridge systems become increasingly technologically advanced, it is important that operators have a thorough understanding of the systems they are using. In two casualties reported this year, a lack of understanding of vessel control systems led to accidents. (*Seastreak Wall Street* and *Megan McB*)
- PASSENGER SAFETY DURING CRITICAL MANEUVERS: Stairways on passenger vessels can be a hazard when docking and undocking. During the *Seastreak Wall Street* allision, people standing near the stairways were seriously injured when the vessel allided with the dock. Vessel operators should develop procedures to control passenger access to stairways during docking and undocking. (Please see NTSB video on stairway safety at: http://www.ntsb.gov/safety/safety-alerts/Pages/Safety-Videos.aspx.)
- PROPER MAINTENANCE: Proper maintenance is of the utmost importance with wooden vessels. Two accident reports from this publication highlight this fact. In both accidents the wooden vessels had maintenance issues that had been identified, but repair work was deferred. Both vessels encountered problems when facing heavy weather and both sank as a result. (*Bounty* and *Moonlight Maid*)
- CREW TRAINING: Several accidents from this publication highlight the importance of training. Know your vessel and its systems. Use realistic drills. Inadequate response to a fire on the *Marguerite L.Terral* and flooding on the *Ricky B* led to the loss of both vessels.

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