

NATIONAL SCIENCE FOUNDATION SHIP INSPECTION PROGRAM



2013 RVTEC MEETING

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.



Assisting compliance with RVSS Appendix A.

Appendix A Assist Summary for Each Wire or Cable

| Appendix A Assist Summary for Eac | | | | lated 3 | 14 30 | 12 JMS weck |
|---|---------------|----------|------------|------------------|-------|-------------|
| Note: The is not all inclusive. See Appendix A Plan 19a requirements. | - Send | | De COAH | H. #3 | | |
| | F 5 d | TS tom | 75 ton | 75 ton | 12+ | |
| Parguinement) or Advibule | 50.m Ngher | 3.5 | 23 | 1.5 | - | Comments |
| Post Cates/Wes TW, is clear view of the winch specular isocid practiced | Acoles | | Autor | | 'VM | |
| | | | | | | |
| Determine Cable/Wee Safe Working Load (SWL) as Assigned Breaking Load (Taster of Bately | Apples. | Applied | Applied | Austine | 7.91 | |
| mainer Mandharding | | | | | | |
| Have ability to keep load 1 SM, May be calculated any factor at least 1.75 or from Tensormation | Applets | | 1.1 | | YN | |
| Have ability to keep tood + SHL. Actual from incritioning system | | Pophes. | Apphei | Apphea | TN | |
| Tensorcometer display at operator's station with 3 Hz resolution | | Augulari | | | 116 | |
| Technologianetter display at operator's station with 12-42 resolution | - | - | Routine. | Appleie | YN | |
| | - | - | | Apples | VIN | |
| Senator continuously monitored using a terrator trending graph | - | - | -12,044 | -452444 | | |
| Tensionometer logging at 3 Hz | | Apples | - | | TN | |
| Teosiononater logging at 10 Hz | | | Apples | Appine | YN | |
| Tensionometer Recalibration at least every 5 mil- | | Applies | Applies | Applies | VN . | |
| Tansion measuring system maintained with 4% accuracy | | Applies | | | VN. | |
| Tanaloo measuring system memorianed with IN accuracy | | | Applies | Applies | YB. | |
| Querra . | | | | | YM | |
| Audiole and your leman atoms which topping April 4 < All (2.5 | | Applies | | | | |
| Agent at < ABLC.8 Applice and visual levelor approx within topping | | | Applies | | VM. | |
| Atamo at +ABC.0.3 Audites and vacual binders assimts unitate bigging | | | - | Applies | YN | |
| Alarti al ABUT.T | - | | | | - | |
| Ram conditions automatically legged Nervice and Patheod Notices | _ | Autor | Augilee | Appines | YN | |
| Dissource & Rudsen, As large as practical | Autor | | - | | VN C | - |
| Designers & Rollans, Criticalis meat 4011 or 40001 attachever is greater | | | Applies | | VN | |
| Shearway & Robert Discuss from meet 40 1 or Robert and row from 1.54 | - | Apples | - Addisord | while the second | VA. | |
| Breaker Grove at days to it as possible and to more than 1.50 Breaker Grove per Ref X 1.1 | - | ~20100 | - | | 191. | |
| (Shows size relative to numerical dameter of energies) 3/10 to 147 25 to 495. | | | Applies | Arginst | YN. | |
| over 141 (15% to 5%) | | | | | | |
| Good watery practices | Autom | - | - | | YN | |
| and the second se | | | | | | |
| Existint danget jones i safety zones | | Apples | hypites | | · YM | |
| Warring Solution protect | | | Applies | Applies | 198 | |
| Physical of visual barriers | | | Applies | Applies | - 198 | |
| Durins and accesses setured | | | Applied | Applied | YM . | |
| Notes and the second second second second second | | | - | | | |
| Terrative Identify up to EVM, load every 2 years Broad leading not explid at FS-5.0 | Apples | | | | VN: | |
| Brank Yesting every 2 pra | | Apphee . | | | 'YM | |
| Break Testing every or # 1976 decrease in Alls, or suttack | | Aughest | | | YN | |
| Break Technig every yit | - | | harmen | Applies | YN | |
| Break Seeing every 6 no. of 10% decrease in AB, or subtack | | | | | YN | |
| Break Yealing every 6 no. 7 10% decrease in AlL or Luback oglassite: OROL3 site identifier: Cable Inventory/History and Running | - | | 45701 | Apples | 1.11 | |
| he here and he | | | | | - | |
| Logs stay with the wines transfer with the wine | Applies | Apples | Apples | Apping | 1011 | |
| Log of Tension Testing to 5HV. | Applies | | | | VN | |
| Log of eine Break Teating | | Apples | Applies | Appley | 104 | |
| Log Cutherite | Applier | Apples | | | YN | |
| | | | | | VN | |
| Ling Spooling Operations | | Apples | | | | |
| Log of Lubrication | Apples | | Applies | | ¥96 | |
| Hite Train Description | Applies | 400444 | Applet | Applies | YN - | |
| Namental load for each cast to calculation at monitoring (and payod). | Apples | Applets | Applies | Applies | YN | |
| No. 8 Operated | - | - | _ | - | | |
| Operator deemed competant in writing by master and center | Apples | | | 2.5 | vn. | - |
| Operator "Carifilad Competent" in ariting by master and server renewed armually | | Apples | Applies | Applies | YN. | |
| Muster verify qualifications and designate approved spotiators; | | Applies | Applies | Applies | VN | |
| Training moted for formal operator barring program for which, handling appendixe, and monitoring system. Suggestions: Preses context TeXE 2MSred con | | | Appies | | VN | |
| | | | | | | |

Assisting compliance with RVSS Appendix A: Common Finding 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 | | |

Written Procedure and Logs

Assisting compliance with RVSS Appendix A: Common Finding 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 | es | | | | |
| 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 | | |

Assisting compliance with RVSS Appendix A: Common Finding 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 | | | |

Consider also logging payout per cast and payout at maximum load Assisting compliance with **RVSS** Appendix A: Common Finding Log maximum load for each cast

Atlantic Explorer 2012

| Drop # | Drop Date & Time | Maximu m Tension Per Cast (Lbs) | Maximum Payout of Each Deployme nt (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 |

Assisting Progress toward compliance with RVSS Appendix B

Ove For

System Level

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 1 System Level | | | |
|---|--------------------------------|--------------------|--------|
| d Handling System Operator's Manual Overboard Handling System (OHS) Configuration | Reference B.3.1 | Y or N or NA | Commen |
| System Title/Description | | Y/N/NA | |
| System Illustration or photograph (more detail required in OHDD) | | Y/N/NA | |
| List of Components with identifying Model & Serial #s | | Y/N/NA | |
| System Overboard Handling System Data Document (OHDD) | B.7.3 | Y/N/NA | |
| System Maximum Capability Document including system Maximum Permissible Tension (MPT) | B.0.6 | Y/N/NA | |
| Operational Limit Document (Top Level Check of Assigned Breaking Load* (ABL) to System MPT). | Attachment A2 Attachment A5 | Y/N/NA | |
| OHS Testing procedures | B.6 Attachment A5 | Y/N/NA | |
| OHS Test Logs | B.6 Attachment A5 | Y/N/NA | |
| OHS Training and Operator Qualification Requirements | Attachment A5 | Y/N/NA | |
| OHS Inspection Procedures | B.2.16 & B.6 Attachment A5 | Y/N/NA | |
| OHS Operational and Safety Precautions | B.3.& B.7.2 Attachment A5 | Y/N/NA | |
| OHS Emergency procedures | B.3.7 Attachment A5 | Y/N/NA | |
| Flow Chart with path highlighted and annotated where applicable | Attachment A2 | Y/N/NA | |

* Attachment A2 shows assigned breaking load (ABL) which is likely lower than NBL. Consider the greater of NBL or Tested Breaking Load (TBL).

Suggestions: Please contact Ted@JMSnet.com

Assisting Progress toward compliance with RVSS Appendix B

Component Level

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

| ach Overboard Handling System (OHS) Component in the System Configuration ponent MCD Booklet for each component used including: | Reference B.5 | Y/N/NA | |
|---|--------------------------------|-------------|---|
| Component Maximum Capability Document (MCD) | 0.0 | 1/10/000 | _ |
| including: | B.5 | Y/N/NA | |
| (1) Component Maximum Permissible Tension (MPT) | | 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 | 0.0.0000000 | - |
| (4) Component OHDD | B.3.7 | Y/N/NA | - |
| Additional contents as applicable | 0.077 | | - |
| (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

Written Policy for Lithium Batteries

Use

Storage

Disposal

Lithium Battery UNOLS circular

Lithium batteries are used extensively in consumer electronics and within the oceanographic research community because of their energy density/size characteristics and recharge capability. They also have the potential to be extremely hazardous if used improperly resulting in fires, poisonous gases, and explosions. Recent information coming from the U.S. Navy, FAA, and manufacturers has indicated that the use of Class D fire extinguishers is not effective when combating a lithium battery fire. Depending on the type of lithium battery; lithium non-rechargeable or lithium-ion rechargeable batteries, water is also not effective. For lithium non-rechargeable batteries, water reacts explosively and can produce poisonous gases.

Because of the potential hazards combined with the extensive use of lithium batteries, every ship in the UNOLS fleet should develop procedures on how to handle lithium batteries. The procedures should cover usage, storage, disposal, and how to respond to emergencies. Additional information on the hazards and how to deal with lithium batteries may be found on the UNOLS website under www.unols.org/xxxxxx. The website includes information from the U.S. Navy on firefighting procedures, WHOI's "Lithium Battery Safety and Handling Guideline", and the British Natural Environment Research Council (NERC) guidance on the use of lithium batteries.

The next update to the RVSS will include an expanded discussion in chapter 9 on lithium batteries. In the interim, based on this UNOLS Safety Circular, it is a requirement that each operator shall establish written policy for lithium batteries. Beginning 1 August 2012 the NSF Ship Inspection Program will start to look at the policy as part of each inspection.

Emergency Response

Questions? Suggestions?

Ted Colburn

JMS Naval Architects & Salvage Engineers

34 Water Street •Mystic, CT 06355 www.JMSnet.com Ted@JMSnet.com Or Ted@BeechHillBison.com 860 608 8052

