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NSF SHIP INSPECTION PROGRAM

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.

Common Findings

Calibrations:

- Good progress during the past few years in keeping CTD and flow through water system sensors within the calibration periods.
- Not as good for the meteorological sensors.
- Most vessels have a system for tracking sensor calibration schedules.

Common Findings

Operating Procedures:

- Some vessels are making good progress on developing a set of “operating procedures for all installed and portable equipment and instrumentation available to support scientific investigators”.
- Several vessels are accomplishing this as an electronic Operating Procedures Manual.

Common Findings

Post Cruise Assessments:

- We look for Post Cruise Assessments from Marine Tech's:
- Anytime some aspect of science operations or related equipment (including deck handling equipment) is less than 100%.
- Often the chief scientist's and master's PCAs are weak on detail.

Common Findings

Lab Safety:

- Emergency showers:
- Often have low flow rates (20 gpm desired)
- Some are not easily accessible to where chemicals might be used.

Common Findings

Handling Systems:

- Most vessels have not determined the ultimate design load (design capacity) of their frames. Must be 150% of the strongest cable or wire breaking strength. Will become more important as Appendix B becomes implemented. Appendix B will have additional requirements.
- Most vessels have not established Safe Working Loads for deck sockets or put in place an associated periodic testing program. This will also be important as Appendix B becomes implemented.

Common Findings

System Controls Labeling:

- Progress is being made toward clear bold readable labels on all controls and associated switches.
- Identify what the control/switch is, and what is expected to occur when set in the available positions.
- Most controls are somewhat intuitive as to movement of the controls, but some are not.
- Example: moving a handle forward and aft to control a starboard frame out and in. Human Factors would indicate this makes for unnecessary accident risk.

Common Findings

Appendix A Related Progress:

- Higher rate cable monitoring systems are coming into the fleet
- Some ships have the audible and visual alarms operating
- Some ships have posted cable SWL in clear view of the operators
- At least one ship uses weak links.

Common Findings

Appendix A Related Looking For:

- Written qualifications for winch operators
- Formal training programs for winch operators (FS 2.5 and lower)
- Systematic programs to maintain and demonstrate tensiometer calibrations within 4% (FS 2.5)
- Implementation of weak links: Adjust for cable loads for any deep work.

Another Inspection Benefit

- **Spread concepts and experiences from one vessel to another as we conduct the inspections.**

Best Practices Observed During Inspections

- Dedicated Web Page:
- http://www.unols.org/committees/rvoc/ShipBestPractices/ShipInspectBestPractices.html

Sample Best Practice

RV Atlantic Explorer Workboat Davit

The vessel has a dedicated davit for the workboat similar to SOLAS rescue boat davits. Most UNOLS vessels store their work boat on the port side of the vessel and use a starboard side or centerline crane to launch and recover it. This requires several people with tag lines passing the vessel across multiple decks and around many obstructions including the stack, vans, railings, etc. A dedicated davit allows for a faster and safer deployment by fewer crew members.

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Sample Best Practice

RV Atlantic Explorer MPT Placard

Block Placard - "Maximum Permissible Tension" placard on a block which may be a future requirement of Appendix B.

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Sample Best Practice
RV SHARP Van Vestibule

The ship can accept two vans on its aft main weather deck connected to the ships interior through a vestibule. The system is designed to accept 20 ft. vanpool vans with the entry door leading into a vestibule so personnel do not go outside when entering the vans.

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Sample Best Practice
RV SHARP Gas Detector

The vessel uses a relatively inexpensive Mine Safety Appliance [MSA] Altair 4 portable/personal gas detector for confined space entry and overhauling fire scenes. The meter detects LEL, CO, H2S, and O2.

The rubber over-molded housing is easy to grip, durable, and small enough to be lowered on a line into the tank or clipped to your shirt.

Most UNOLS vessels have a gas detector that was part of a group purchase several years ago. These units have a history of sensor failures and calibration issues.

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Sample Best Practice
RV SHARP Render / Recover

Render-Recover mode on trawl winches

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Sample Best Practice
RV SHARP ADA Features

The vessel was designed to incorporate ADA features. Watertight door thresholds can be removed for easier access on the Main Deck. A handicap accessible stateroom and head as well as labs and the mess deck are easily accessible on the Main Deck. The general alarm has visual beacons as well as an audible alarm.

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Common Findings and Best Practices

In order to be more ADA capable the vessel could make improvements in the following areas:

- Incorporate more ADA awareness and requirements into the pre-cruise planning process.
- Improve access to science berthing from the main deck.
- Improve markings to access the main deck from the science berthing area.
- Improve lighting, handrails, and retro-reflective tape in stairwells and egress routes.
- Install visual alarms to augment audible alarms.
- Remove obstacles in the passageways.

Questions?

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