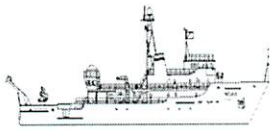

MOC Bulletin 2011-12

November 14, 2011

Fast Rescue Boat
Davit Lesson Learned

When incidents occur, the most important thing is to ensure the safety of everyone involved. Once the crew and ship are safe, finding the cause of the incident can prevent reoccurrence. The attached "Lesson Learned" provides additional details to the events described in previous MOC Bulletin 2011-8, calling for immediate corrective actions.

Review this situation and conduct a self evaluation of your individual Standard Operating Procedures (SOP) with special attention to roles, responsibility, and accountability. This is also a good topic for your daily safety meetings or a dedicated Safety Stand Down.

As with many reports, this incident revealed systematic problems in training, maintenance, and communication.

Corrective Actions should include:

1. Develop SOP(s) and/or Ship Specific Instruction(s) (SSI) inclusive of equipment manufacturer operational instructions, maintainenace, and inspection;
2. Ensure training is provided to personnel; and
3. Emphasize to ALL HANDS that safety is a critical part of everyone's job; it is everyone's responsibility to mention irregularities and look out for each other.

All ships have addressed the immediate corrective actions identified in the previous bulletin but long term actions will require implementing and maintaining our Management System, addressing staffing and turnover, and scheduling conflicts.

Nothing we do is worth a permanently disabling or fatal injury. Please be careful and think things through before you take an action. Safety always takes priority over mission accomplishment.

RDML Michael S. Devany, NOAA
Director, Marine and Aviation Operations Centers

Attachment

Cancellation Date: November 14, 2012
Responsible Position: Chief, Fleet Standardization Office

Lesson Learned

October 2011

More than Situational Awareness

The following is an edited version for distribution of a recent incident aboard a NOAA ship.

I. Summary of events

The Fast Rescue Boat (FRB) returned to ship side after launching to conduct a man overboard drill as part of the Fleet Inspection process. A crew of four assembled to recover the FRB – the Acting Chief Bosun (ACB) manned the power control station, an AB manned the Bow Line, another AB manned the stern line, and another AB manned the manual winch crank station (see Figure 1).

The bow and stern line were secured to the FRB and the fall line and brake release line (used for lowering the boat) were lowered and secured to the lift point on the FRB. The ACB received verbal feedback from each of the crew members that they were ready for recovery. Just before jogging the power to remove slack from the system, the ACB observed that the lines were twisted. He stopped the recovery and had the fall lines straightened (approximately 30 seconds). He then asked again and received verbal feedback that the deck hands were ready for recovery of the FRB. He proceeded to apply the power to remove slack.

Immediately after applying power, there was a loud "bang". The injured employee moved toward the ACB position with obvious arm injuries having been struck by the manual crank arm that rotated quickly when power was applied to the winch. The impact caused the adaptor sleeve and manual crank arm to break away from the winch motor and fall to the deck causing the loud "bang" (Figure 2). ❖

Background

During normal operation, the manual winch handle should only be inserted onto the winch motor shaft when the FRB has been recovered to the cradle after the davit limit switch cuts power to the motor. Once the FRB reaches this position, the davit is manually cranked the final few inches to secure the FRB davit. The crank should then be removed and stowed. For this incident, the injured employee inserted the manual crank handle prior to starting to recover the FRB from the water.

There is a limit switch mounted on the bottom of the crank handle adaptor sleeve. The adaptor sleeve is covered by a metal plate secured top and bottom by threaded studs and wing nuts. When ready to insert the manual crank handle, the cover plate is designed to be rotated downward to trigger the limit switch and kill power to the motor (Figure 2). For this incident, the cover plate was configured in the opposite direction where it did not activate the safety limit switch. This limit switch is a redundant safety control since the davit limit switch would be triggered first in normal operation when the FRB reaches position to be manually cranked into final position.

Figure 1 – Davit and station locations

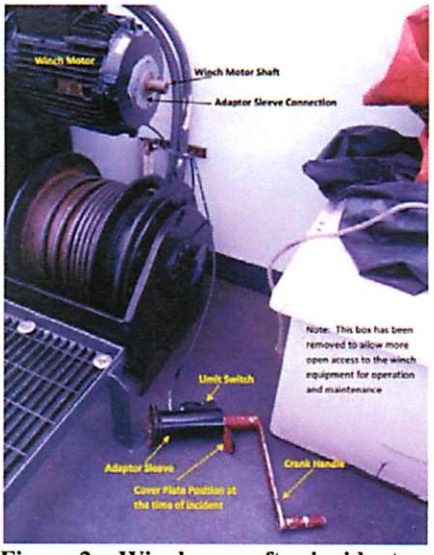

Figure 2 – Winch arm after incident

Figure 3 – X-ray of fractured arm –
not actual X-ray from this case

Immediate Cause

The immediate cause of the injury was the employee was struck by the spinning crank arm when power was first applied to recover the FRB.

Contributing Causes

A combination of factors created the series of events leading up to the injury.

1. Injured employee inserted the manual crank arm onto winch motor prior to the FRB being recovered to the deck position. No specifics were discussed during a pre-operation meeting that could have dictated who would be responsible for specific duties proper order. Although the ship had a Standard Operating Procedure (SOP) in place it lacked sufficient detail. The procedure calls for five people to conduct the FRB recovery. In this case, four crew members were assigned. Interviews indicated that typically three people are used.
2. The lower stud did not have a wing nut and was painted over indicating that the plate was normally rotated up. The design of the cover plate and securing mechanism (two wing nuts) allows rotation and securing in the wrong position and there are no visual cues on the assembly to prompt a person to align properly (Figure 4).
3. The person manning the power controls does not have a clear line of site to the winch motor/handle location (Figure 1). It appears that the manual crank handle was inserted during the brief time when the lines were being straightened, just prior to applying power to the winch.
4. Nobody on the ship understood the functionality of the winch motor limit switch or the proper configuration for insertion of the winch handle.

Root Causes

1. **Equipment Design**: The design of the adapter sleeve/limit switch/cover plate did not ensure that the plate is configured in the correct position. There were no visual cues/instructions/checklists on the equipment or in use by the crew to facilitate remembering how to operate/configure critical safety controls.
2. **Procedures**: The operating procedure did not include controls to hazards and risks associated with the all aspects of operations including equipment operation and critical safety systems; e.g. controls to ensure safe manual crank operation and configuration of the winch motor limit switch. The operating procedure did not provide details on roles and responsibilities for various crew members and oversight responsibilities. The maintenance procedures did not have any details on the critical safety systems or their setup. Additionally, these procedures were not known to all personnel involved with the FRB launch/recovery or the davit system.

Management Systems: A system was not in place to ensure that operators and maintainers understood the content, location, etc. of procedures. A system was not in place to ensure that key personnel that write procedures and supervise operations had sufficient knowledge of safety equipment operation.

3. **Training**: Operator training did not contain critical safety controls for all hazards and risks associated with the FRB recovery operation and associated equipment. Operators and maintainers did not receive training in sufficient detail to understand how to test and maintain critical equipment. A training system was not in place to ensure that all employees associated with the operation received adequate training and proficiency to conduct the operation and to do inspections, test, and maintenance.
4. **Inspection, Testing, and Preventive Maintenance**: The maintenance system (SAMM) did not contain sufficient details or instructions to ensure that all safety critical equipment is functioning properly nor did it contain all manufacturer recommended ITPMS items.
5. **Supervision**: The person in charge was unable to provide sufficient oversight due to configuration of equipment and duties that required focus in the direction of FRB vs. equipment and involved personnel.
6. **Communication**: There was no pre-operational briefing or huddle to do a quick safety overview of the recovery process including the roles/responsibilities of crew members and to ensure that all positions were manned by trained personnel.

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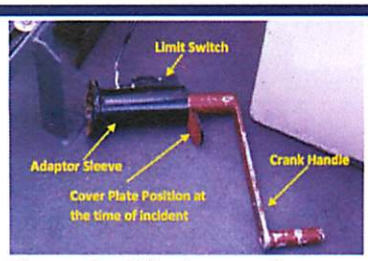

Figure 4 – Winch arm after incident

The best ideas for improving safety come from the fleet.

Got an idea to help prevent injuries?

Please send any suggestions and we will share it with the fleet.
MOC.Fleet.Accidents@noaa.gov