Watercraft Marine

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SAFETY ALERT 03/24

Critical Failures in Lifeboat Release Gear Cables

This safety alert is intended to raise awareness of potential hazards associated with substandard lifeboat release gear cables and the use of excessive force during lifeboat release gear operations.

Incident Overview

Recent investigations have identified multiple cases of broken lifeboat release gear cables discovered during routine inspections and third-party services. These failures compromise the functionality of release gear systems, potentially leading to catastrophic accidents or, at the very least, rendering lifeboats inoperable until replacement cables are installed.

- In one incident, the aft hook of a lifeboat opened unexpectedly during a routine monthly lowering exercise. A serious accident was avoided only because Fall Preventer Devices (FPDs) were fitted. The hook design had been previously modified to meet new LSA Code requirements, but this incident raises concerns about the effectiveness of such modifications on older hook systems, particularly as the hook did not fail to safe when the cable failed

Figure 1: The port lifeboat suspended by FPD following opening of the aft hook due to a failed release gear cable. Note the angle of the boat indicating fwd hook is still properly engaged.

- In another incident, excessive paint on the hook units restricted their movement, with paint intrusion into critical areas such as the main hook pin, bushes, and locking pin further hampering functionality. During resetting, the aft hook failed to return to its locking position, and the locking pin could not close. The crew applied excessive force on the release handle, ultimately breaking the cable.

Figure 2: Aft hook indicator shows the hook is not properly reset.Despite which, the crew continued to force the system to close

Figure 3: The aft hook cable failed

These incidents underscore the critical need for proper inspection, maintenance, and operational practices to ensure the safety and reliability of lifeboat systems.

Root Causes

1. **Substandard Cable Quality:** Failure caused by the use of push-pull cables not designed for the compressive and tensile forces required in lifeboat operations.
2. **Improper Installation:** Issues arising from improper bend radii that exceed cable design specifications, leading to lower efficiency, mechanical stress and eventual failure.
3. **Corrosion:** Gradual degradation due to water ingress at cable connections, often caused by insufficient sealing and exposure to marine environments.
4. **Excessive Paint:** Over-painting of hook units inhibits movement, contaminates key components (such as pins and bushes), and leads to seizing or malfunction.
5. **Improper Resetting Practices:** Application of excessive force on release handles during hook resetting when components are fouled, ultimately causing cable damage.
6. **Questionable Hook Modifications:** The inability of a lifeboat hook system to fail to safe, as designed, following a component failure raises questions about the effectiveness of modifying old non-compliant hook systems to comply with sections 4.4.7.6.4 to 4.4.7.6.6 of the LSA Code.
7. **Innefective Maintenance & Inspections:** Evidence from these incidents suggests that routine inspections by the crew were not conducted per SOLAS requirements. Proper inspections would have prevented seized hook components and corroded cables.
8. **Lack of knowledge on correct operation**: The crew did not abort resetting when visual indicators showed a hook was not fully reset. This suggests inadequate training or disregard for the risks of excessive force beyond the hook system's design limits, resulting in cable failure.

Potential Consequences

1. **Unexpected Hook Failures:**
   - **Safety Risks:** Increased risk of serious accidents during lifeboat operations, potentially endangering crew lives.
   - **Equipment Damage:** Failures can lead to significant damage to the release system and associated components, affecting ongoing serviceability and necessitating lifeboats to be withdrawn from operations.
2. **Commercial Impact:**
   - **Crew Repatriation:** Costs and logistical challenges related to repatriating injured crew members.
   - **Repair Costs:** Financial burden associated with repairing or replacing damaged lifeboat components.
   - **Dispensation Requirements:** Inoperative lifeboats may require special dispensations, which could delay operations and affect vessel charters.
   - **Off-Hire Scenarios:** Lifeboat issues could lead to vessels being taken off hire, causing revenue loss, loss of charters and operational disruption.
   - **RightShip Rating Impact:** Safety-related deficiencies can negatively affect RightShip ratings and vetting inspections, potentially influencing future charter opportunities.
   - **Class Conditions:** Additional surveys or inspections may be mandated to remove conditions of class, incurring further delays and costs.
3. **Temporary Repairs:**
   - **Risk of Compromise:** Commercial pressures or fear of reporting failures may prompt vessel crews to undertake temporary repairs to keep lifeboats in service.
   - **Prohibited Practice:** Temporary repairs to hook release cables or other critical hook components are strongly discouraged. These components are critical to safety and have already failed; any temporary fixes will not provide the same performance as properly serviced components.
   - **False Confidence:** A temporary repair may give the crew a false sense of security, increasing the likelihood of catastrophic failure during subsequent use.

Recommendations

1. **Routine Inspections**:
   - Include all exposed fittings, securing clamps, and bolts in weekly checks.
   - Confirm hook movement and operation under off-load conditions while secured in maintenance pendants.
2. **Operational Precautions**:
   - If excessive force is needed to reset or release a hook, abort the operation and investigate.
   - Ensure forces required for release and reset are within design criteria (100N to 300N for fully loaded systems).
3. **Maintenance Protocols**:
   - Replace release gear cables every 5 years or sooner if signs of deterioration appear.
   - Avoid over-painting hook units, as they are designed to operate without additional coatings.

4. **Documentation Review**:
   - Verify the presence of an up-to-date, equipment-specific hook operation manual on board.
   - Ensure manuals reflect any hook modifications or replacement performed.
5. **Procurement Standards**:
   - Use push-pull cables that are suited for lifeboat release gear operations rated for the necessary push and pull load requirements with suitable bend radii and efficiency rating.
   - Ensure all exposed cable fittings are marine-grade stainless steel (LSA Code 4.4.7.6.9).
   - Engage manufacturers or approved service providers, such as Watercraft Marine, for guidance on appropriate cable specifications.

Actions to Take in Case of Cable Failure

- **Immediately remove the lifeboat from service**: Secure the lifeboat with maintenance pendants to prevent any operational use until repairs are completed.
- **Notify relevant parties**: Inform the office, including the Superintendent, Fleet Manager, and Designated Person Ashore (DPA), as per your company's incident reporting procedures.
- **Report near misses**: Document and report any near-miss incidents. Research shows that for every fatal accident, there are approximately 300 near misses. Consistent near-miss reporting helps identify patterns and prevent future accidents.
- **Notify flag state and classification society**: Seek guidance for dispensation requirements and ensure compliance with applicable regulations.
- **Avoid temporary repairs**: Under no circumstances should temporary repairs be attempted on lifeboat cables or other critical components. Such measures compromise safety and do not restore the system to its required operational standards.

Conclusion

The integrity of lifeboat release gear cables is essential for ensuring operational safety and compliance. Regular inspections, adherence to maintenance protocols, and the use of high-quality components are key to preventing failures and maintaining lifeboat readiness.

For further guidance or technical assistance, contact Watercraft Marine at **admin@watercraft-marine.com** Our lifeboat safety experts are available to provide support and ensure your vessels meet the highest safety standards.

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Address questions to admin@watercraft-marine.com