The Standard

Standard Safety

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Special Edition - Lifeboats

Introduction

Lifeboats Are Meant To SAVE Lives

In recent years, there have been a number of accidents during routine lifeboat drills, despite updated training and new designs of hooks, boats and davits. Part of the problem is the number of designs of hooks and lifeboats in service, estimated at more than 70, and it is essential that the crew are familiar with and capable of operating the equipment fitted on their ship.

The majority of lifeboat accidents are preventable, and we believe that a reminder of the basic principles of operation and maintenance will serve to highlight the key issues. The problem is not the competence of the crew or the design of the life saving equipment, but often a lack of knowledge about the equipment, a failure to follow procedures, or a lack of proper maintenance.

The shipping community recognises that there is a problem, and new regulations have been enacted in an attempt to address this. We have listed some of them on page 7.

Port state control, flag state and classification society inspectors, among others, will regularly verify the condition and operations of lifeboats, but ultimately, the responsibility for the safe operation of any life saving equipment lies with you, the user.

Lifeboats are designed to save your life. Learn how to safely use the lifesaving equipment on your ship and do not become another statistic.

In This Issue

Lifeboat Seminar

A seminar on Lifeboat Safety and the Future was held in London on 31 May on board the HQS Wellington. Speakers included representatives from the IMO, MCA, and manufacturers and users of lifeboats. See page 8.

(PICTURE COURTESY OF SCHAT-HARDING)

Accidents and Prevention

MSC/Circular 1049 issued by the IMO Maritime Safety Committee in 2002, identified the following causes of lifeboat accidents:

- Failure of on-load release mechanism;
- Inadvertent operation of on-load release mechanism;
- Inadequate maintenance of lifeboats, davits and launching equipment;
- Communication failure;
- Lack of familiarity with lifeboats, davits equipment and associated controls;
- Unsafe practices during lifeboat drills and inspections; and
- Design faults other than on-load release.

The Standard Club has handled a number of claims and casualties involving lifeboats, and we have found that a number, if not all, of the accidents were preventable. Their main cause was often a momentary loss of concentration, but the consequences have been dire. Some accidents are as follows:

1) A lifeboat's falls snagged on a maintenance chain whilst lowering, with the weight of the lifeboat coming onto a single hook, which then tore loose. The lifeboat fell to the water. **1 dead, 2 injured.**

Loss Prevention Lessons

Check that all loose ropes, wires and fittings are clear before lowering or raising a lifeboat.

2) A lifting hook disengaged from the block during hoisting, but the hoist button jammed, and the other block continued to be raised. A crewmember had to jump out of the boat. **1 injured.**

Loss Prevention Lessons

Check all hooks are engaged before hoisting or lowering. Equipment must be checked and serviced regularly.

3) Crewmembers were instructed to carry out a routine maintenance check of the ship's lifeboat release gear. The lifeboat was lowered onto the hanging off pendant wires attached to the recovery strop. Unfortunately the pendants were not attached to the lug, which resulted in the lifeboat falling a distance of 10 metres to the water. **2 injured.**

Loss Prevention Lessons

Check that all lines, fittings and connections are secure before lowering or raising. Check that all connections are secured to the correct attachment.

4) The second officer was instructing the new officer during a routine lifeboat drill, lowering the enclosed lifeboat by a remote control wire. The second officer pulled at the wire with both hands and the lifeboat lowered three to four metres before stopping. As the wire was slippery the officer wrapped the coils loosely around a hand and continued to pull. The lifeboat suddenly lowered at full speed. Four fingers were amputated. **1 injured.**

Loss Prevention Lessons

Know how to operate life saving equipment, and never wrap wires or ropes around hands or fingers

5) The crew had secured a liferaft canister into the cradle when the chief officer noticed that the locking lever was not in place, but had been secured with a line. He attempted to place the lever into the locked position but accidentally released a canister, which landed on a contractor who was on the gangway below. **1 dead.**

Loss Prevention Lessons

Additional lashings must be used when servicing or testing release levers. Check that the vicinity is clear before using equipment.

6) The ship's service boat was lowered to the water. The seaman in the boat reached up to free the lifting hook, but his t-shirt became entangled in the block that attached the running wire to the hook. As the boat rocked, the crewman fell into the sea, panicked and started to flounder. Another seaman jumped into the water to assist, but was unable to save his colleague, who subsequently drowned. Neither was wearing a lifejacket. **1 dead.**

Loss Prevention Lessons

Always wear appropriate clothing and a lifejacket when working overside.

Lifeboat training

New technology works well when the crew have been properly trained in its use. Familiarity with the equipment requires that everyone is aware of how to safely deploy and use a lifeboat. Varying the roles during lifeboat drills is good training, and allows for the possibility that, during a real emergency, the designated crew may not be available to prepare and lower the lifeboats.

Training would be a lot simpler if there was a common specification for lifeboats, but the reality is that crew are more likely to have to familiarise themselves with different lifeboats and release hooks on every ship. It is usually also the case that the equipment inside a lifeboat, including safety harnesses, water containers etc, are not standardised and often of a poor quality, leading to problems when using them during drills or an emergency.

Training manuals should be as simple as possible, should include pictures and diagrams, and must be ship specific. It is fortunate therefore that, no matter how lifeboat technology has evolved, one factor that has remained relatively unchanged is the names given to the operating parts of a lifeboat.

The following diagram has been taken from MSC.1/Circ.1205, 26 May 2006, GUIDELINES FOR DEVELOPING OPERATION AND MAINTENANCE MANUALS FOR LIFEBOAT SYSTEMS

Refer to the IMO's Circulars, MSC 1205 and 1206 for further information. **www.imo.org**

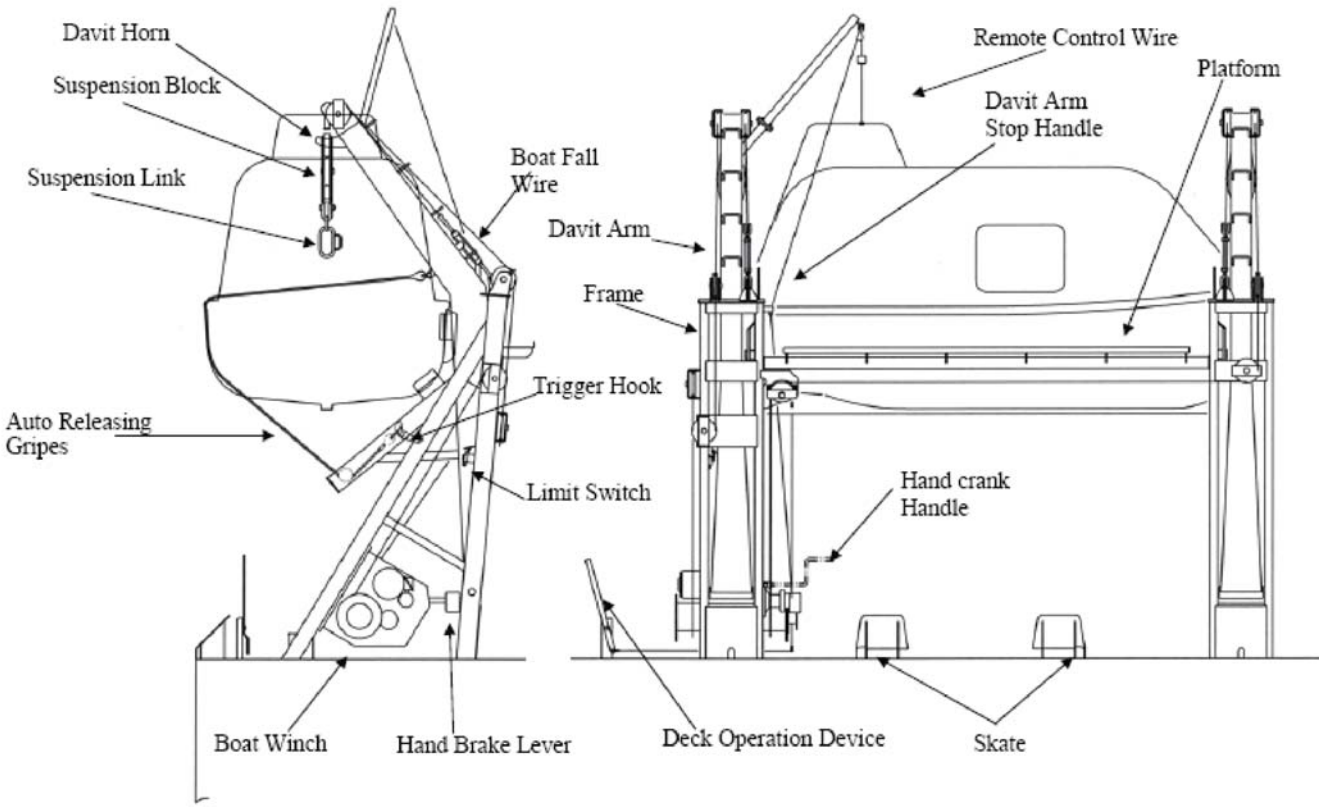
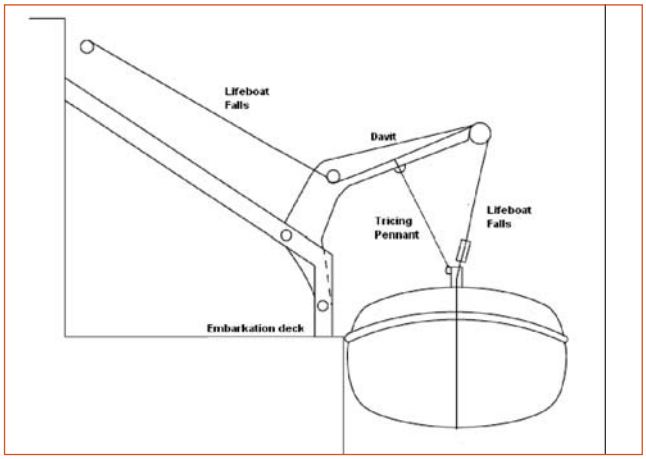
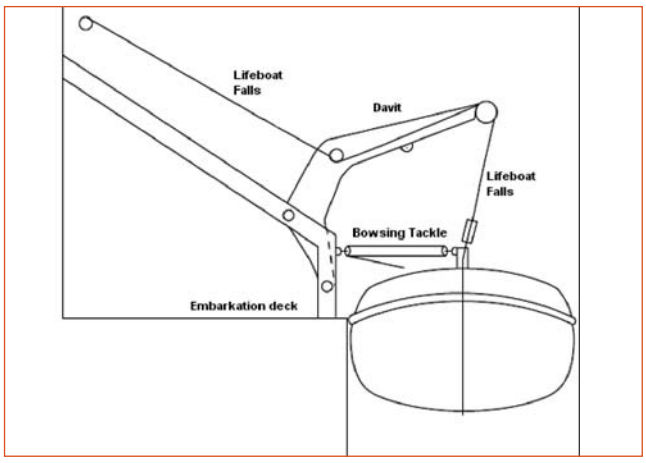


Fig. 1.1 Lifeboat davit arrangement

Launching

A number of accidents have taken place whilst preparing a lifeboat for launching. Although modern lifeboats allow the crew to board the boat in the stowed position, the traditional method for lowering a conventional lifeboat to the embarkation deck is shown in the diagrams below.





(PICTURES COURTESY THE UK MAIB)

- A lifeboat is lowered to the embarkation deck using the davit and lifeboat falls.
- The tricing pennants, fitted fore and aft, swing the boat alongside. Care should be taken to ensure that the weight of the boat stays on the falls and not on the tricing pennants.
- The bowsing tackles are rigged, tricing pennants are disengaged, and the boat is swung back out using the tackle.
- When a lifeboat is lowered or raised, each individual part should be under strict observation by the crew (one person looking at the wires and pulleys, another looking at the hooks, another looking at the winch and so on).

Deployment

IMO's MSC Circular 1206 contains guidelines on safety during abandon-ship drills. It emphasises the requirement that crews be familiar with the lifesaving systems aboard their ships, and recommend that periodic drills be carried out for this purpose.

The latest amendments to SOLAS state that lifeboats should be turned out and lowered to the water without the operating crew on board, but that crew must be on board prior to launching.

One of the ways in which this can be achieved is by lowering the boat to the water without any crew on board, and the crew can board by pilot ladder.

Alternatively, the boat can be lowered to the water and hoisted back up to the embarkation deck, where the operating crew can board.

In both cases, the brakes should be tested whilst lowering and retrieving the lifeboat, and release hooks should be checked.

A conventional lifeboat should not be lowered from the embarkation deck with the full complement on board.

In order to test the release mechanism, the boat and crew can be hoisted to a metre above the water before releasing.

Freefall lifeboats

Freefall lifeboats have become more prevalent, and mandatory on bulk carriers. Ships crews are able to board and launch a freefall lifeboat quicker than a conventional boat, which usually means a quicker evacuation in an emergency. Some of these lifeboats can be launched from heights of over 30 metres.

There have been some problems reported with these boats, including a lack of handrails and non-slip flooring, which hampers access and training when the boat is in the stowed position. Given that the boat is designed to fall rapidly from a height, back injuries and damage to the seats can result if the crew are not properly deployed and seated.

In order to prevent accidents with freefall lifeboats occurring during abandon-ship drills, the IMO advise that, at least once every three months during an abandon-ship drill, the crew shall board the lifeboat, secure themselves in their seats and commence the launch procedure without actually releasing the lifeboat. The lifeboat shall then either be free-fall launched with only the required operating crew on board, or lowered into the water by means of the secondary means of launching with or without the operating crew on board. The lifeboat shall thereafter be manoeuvred in the water by the operating crew.

At intervals of not more than six months, the lifeboat shall either be launched by free-fall with only the operating crew on board, or simulated launching shall be carried out in accordance with IMO guidelines. This amendment is expected to enter into force on 1 July 2008. Please refer to MSC.1/Circ.1207.

Maintenance

IMO's MSC Circular 1206 sets down rules and guidance for servicing of lifeboat equipment. Regular inspections, tests and services by manufacturer-trained and approved technicians are now mandatory for all SOLAS ships. These rules require regular tests and inspections of lifeboats, release gear and davit winches, and specify that whilst weekly and monthly work can be carried out by on board personnel, they must be done to the standards set down by the manufacturer. The guidelines require owners to use correct spares and technicians approved by the original equipment manufacturer.

The annual and five-yearly tests and service have to be done by personnel trained and authorised by the manufacturer. Where the manufacturer's own engineers are not available, there are a number of authorised service companies whose engineers must be trained by the lifeboat manufacturers.

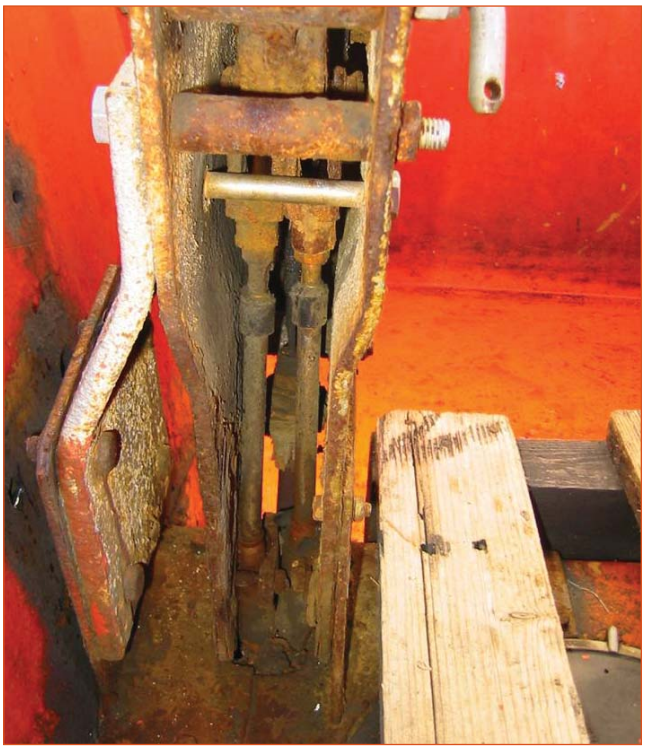
DAMAGED EQUIPMENT IN SERVICE

HOOK SECURED WITH WIRE

Some of the problems that service engineers have found include:

- Excessive paint or rust
- Indicator showing unsafe situation
- No grease on wire falls
- No records on board of maintenance
- No pendant eyes on davit, making it harder to inspect

The irony here is that a chief engineer is able to operate and maintain the engine and machinery on a supertanker or large container ship, but seemingly incapable of maintaining a lifeboat!



CORROSION AND WASTAGE

Design

Discussions with ship's staff indicate that open lifeboats with simple release hooks are easier to use because there is less that could go wrong. However modern enclosed lifeboats are designed to provide a seafarer with additional protection from the weather, sea and hazards, including fire and contaminants in the water.

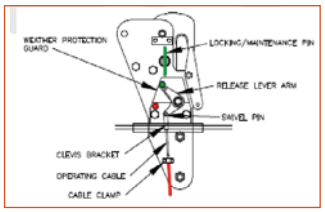
Technology is constantly evolving, and wherever possible, a single type of lifeboat or release hook should be fitted on all ships in a fleet to reduce the possibility of accidents. There are a number of innovations in lifeboat design and release hook technology, and we have highlighted some of them here.

Release Hooks

1) Schat-Harding's second generation hooks have eliminated the need for strict tolerances and use corrosion resistant material on critical components, simplifying maintenance routines and improving reliability. The hook lock is either clearly visible or is fitted with a clear external indicator to show that the hook is closed correctly.

2) Survival Craft Inspectorate's SAFELAUNCH is a quick release on-load lifeboat hook for conventional davit launched lifeboats.

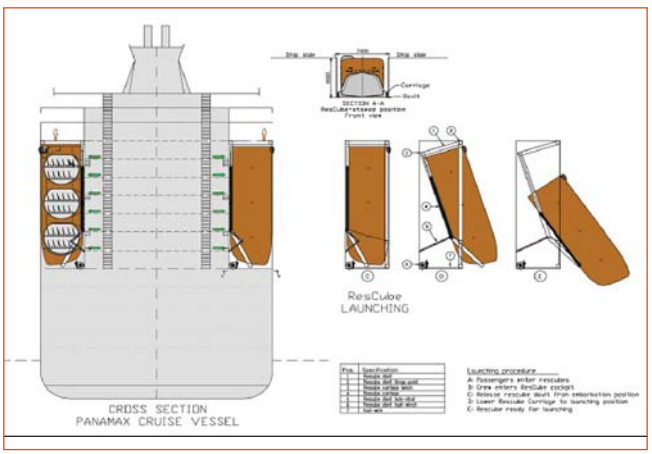
   The release hook has a colour coded indicator, red for danger and green indicating it is safe to proceed, which allows crew to verify that the lifeboat is secure before anyone enters the boat. An additional pin is provided for locking the hook when maintenance or drills are being undertaken.



Lifeboat Design

Lifeboat design has traditionally focused on single level boat-shaped craft, however the advent of large cruise ships, ferries and offshore structures, where the priority is to safely evacuate large numbers of passengers or crew quickly and safely from ships with high freeboards has challenged manufacturers to look at new designs.

The Norsafe Rescube is a new concept that allows evacuation from more than one deck level simultaneously, using a free fall system.



Best Practice and Regulations

Best practice guidelines should include the following

- Manuals should be
  - ship-specific
  - in the common working language on board
  - readily accessible to all crew, who must read and understand the instructions
  - supplemented with simple diagrams

- Lifeboat drills should be
  - varied and not too routine
  - conducted with crew roles interchanged, to ensure all crew are confident in safe deployment and recovery

- Equipment
  - if possible, fit a single type of equipment on all company ships and ensure that all crew receive the necessary training
  - training equipment, including release hooks fitted with plastic side plates, can be useful demonstration aids

- Before boarding, lower the boat a few metres and hoist back to the embarkation deck and only then, lower with operating crew inside.

- Check all fittings and loose gear is clear before lowering

- When retrieving, always use the crank handle for the last few metres, and do not rely solely on the limit switch, as the power of the winch can damage the fall wire.

- Crank handles sometimes disengage while retrieving the lifeboat because they are not properly engaged or because of worn couplings. Check before using.

- Develop safe recovery procedures that include
  - a confirmatory check as soon as the lifeboat is clear of the water that the safety interlock for on-load release is correctly set, and
  - a further verification by the person in charge of the drill when the boat is stowed following recovery
    (these two checks should be conducted by different persons)

- Maintenance
  - carry out routine maintenance in accordance with manufacturer's instructions
  - annual service must be done by approved service engineers.
  - greasing is a part of routine maintenance, but too much grease can make the lifeboat unsafe.

- Crew should
  - always wear personal protective equipment, such as helmet, gloves and life jackets, when entering a lifeboat.
  - always be in radio contact with the Master or designated officer whilst in the lifeboat, as misunderstanding orders can be a cause of accidents.

- As the lifeboat engine is noisy, which makes communications difficult, action must be properly planned before carrying out a drill, and an action check list must be followed.

Regulations

The IMO has recently initiated a number of amendments to SOLAS regulations in response to casualties involving lifeboats. Some of the more relevant changes, include:

Chapter III - Life Saving Appliances (LSA) and Arrangements

- Regulation 19.3.3.3 (Abandon ship drill)
  - Lifeboats can be lowered without crew but must be launched with operating crew on board.

- Regulation 20.3 (Maintenance)
  - Maintenance, inspections and testing of lifeboats must be done in accordance with guidelines contained in MSC/Circ.1093

- Regulation 20.6 (Weekly drills)
  - Inspections and tests of LSA and alarms are to be recorded in the Logbook

  - Lifeboats (except free-fall) can be moved from their stowed position without crew on board.

- Regulation 20.7.1 (Monthly drills)
  - Lifeboats (except free-fall) can be turned out from their stowed position, weather permitting, without any crew onboard

- Regulation 20.11 (Periodic servicing)
  - Must be done annually

- Regulation 31 (Survival craft and rescue boats)
  - Free-fall lifeboats and rescue boats are mandatory for bulk carriers

- Regulation 32.3 (Personal LSA)
  - Immersion suits to be provided for every person on board

The IMO is also looking at completely revising SOLAS Chapter III. In the short term, the IMO sub-committee on Ship Design and Equipment are, at it's meetings in 2007 and 2008, reviewing:

- standard on-load release hooks and systems

- changes to seat sizes in lifeboats

- amendments to the LSA Code concerning lifeboat release gear

- guidance for qualification and certification of personnel carrying out servicing and maintenance of lifeboats, launching appliances and on-load release gear

- worldwide servicing facilities for lifeboats

Conclusions

Lifeboat Safety and the Future

The seminar was organised by the Honourable Company of Master Mariners, in conjunction with the Nautical Institute and the Institute of Marine Engineers. Following the presentations, delegates were asked to advise on the following:

- Why is launching a lifeboat so hazardous and what can we do to reduce the hazard?

The number of different designs, a lack of simple instructions and manuals in the right language, lack of effective training and training aids, and a lack of research and statistics into accidents and incidents.
We need better training and maintenance, and to standardise the design of lifeboats and hooks.

- Is on-load release gear still required?

Yes, but the design of hooks should be improved, ideally defaulting closed to prevent deployment if the hook releases accidentally.

- Should lifeboats be used as rescue boats?

No because of limitations in visibility, manoeuvrability and recovery of persons from the water.

- What are the alternative to lifeboats?

There are currently no viable alternatives.

Conclusions

Lifeboats are designed to be used in an emergency.

The reason for regular drills is so that the ship's crew knows what to do when something goes wrong. If you are trying to prepare and board a lifeboat in the dark, when the ship is experiencing heavy weather and rolling, or if there is a fire or other similar situation, it is vital that you know what to do.

It is not only your life but the lives of your fellow seafarers at risk. It is important that everyone is aware of the role they play, and are capable of doing so.

Ship design is constantly evolving and there are a number of larger and technologically advanced ships on order that will take incorporate advances in technology and shipbuilding skills. It is hoped that the owners of these ships will also take into account the safety equipment that is being supplied with the ship, and specify a higher or common standard of lifeboat and release hooks, rather than settling for the cheapest option provided by the shipyard. The cost may increase by a fraction, but the saving in safety is immeasurable.

There are no shortcuts to safety, and everyone has to contribute.