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issued by the Danish Maritime Authority

Guidance on safety during abandon ship drills and fire drills on board ships

Accidents during abandon ship drills and fire drills

In recent years, the shipping industry has experienced an unacceptably high number of serious accidents during abandon ship drills and fire drills. The purpose of this guidance is to provide advice and instructions that may help prevent accidents during drills.

Statutory basis of drills

Regular abandon ship drills and fire drills are prescribed by the International Convention for the Safety of Life at Sea (the SOLAS Convention), chapter III, regulations 19 and 30. In addition, chapter II-1, regulation 24, and chapter II-2, regulation 15, contain provisions on drills. In Denmark, the provisions have been implemented in the same chapters and regulations of Notice B from the Danish Maritime Authority. Similar rules for ships not covered by the SOLAS Convention are found in the set of rules applying to the relevant class of ship.

Drill frequency

Experience shows that more drills are held on Danish passenger ships than required. This is positive and generally furthers the aim of drills, for example that the crew learn to use the safety equipment and to cooperate in the organisation that is to handle the situation if the ship needs to be abandoned or a fire needs to be fought. During drills, it is also checked that the equipment is in place, in working order and ready for use. Other things being equal, it is thus positive that many drills are being held. There will, however, be elements of drills that should be carried out only at the intervals required, as described in this guidance.

Drills must be safe

Abandon ship drills and fire drills are covered by the provisions on occupational health on board ships and must be planned, arranged and carried out in a way that is in every respect reasonable from a safety and health perspective.

Musters, lifeboat and fire-fighting drills, and drills prescribed by national laws and regulations and by international instruments must be conducted in a manner that minimises the disturbance of rest periods and does not induce fatigue.

Maintenance of safety equipment
Check and maintain the equipment in accordance with the manufacturer's instructions, while observing all the precautionary measures necessary. It is important to pay attention to the condition of the equipment and, not least, to abnormal conditions of tear and wear or corrosion, of which the master must be notified immediately.

Importance of learning
Drills should be carried out at reasonable speed. During drills, emphasis should be placed on learning so that everybody gets familiar with their functions and with the equipment, among others in order to be able to launch lifeboats and liferafts quickly in an emergency. If necessary, breaks should be held to explain especially difficult elements of drills. The time limits stipulated in the Convention for, for example, the launching of a man-overboard-boat (MOB boat) or a fast-rescue-boat (FRB) are to be regarded as design criteria for boats and their launching arrangements and not as a requirement for every drill. For example, the crew's experience is decisive for how fast a drill or certain drill elements should be carried out.

Arrangement of drills
The SOLAS Convention requires that drills be, to as great an extent as possible, carried out as if there were an actual emergency.[1] This means that the entire drill should, as far as possible, be carried out. The point is that, at the same time, it must be ensured that the drill can be held in a way that is in every respect reasonable from a safety perspective. Consequently, the elements of the drill that may involve an unnecessary risk demand special attention.

The lowering of a boat with its full complement of persons or the sliding down or through a Marine Evaucation system (MES) are examples of elements of drills that may – depending on the circumstances – involve an unnecessary risk. Such elements of drills should be carried out while observing special precautionary measures in order to eliminate this risk and, if necessary, this element of a drill must be left out. However, this must not mean that the respect for drills is reduced.

IMO initiatives
The International Maritime Organisation (IMO) has placed the issue of more safe drills on its agenda and, in 2004, it is expected to finalize guidelines and measures that will make drills safer. Until the IMO has developed measures that can make drills safer, the Danish Maritime Authority recommends that the following concrete recommendations be followed as a temporary precaution.

[1] SOLAS, chapter III, regulation 19.3.1

Concrete Guidance
Lifeboats, liferafts, MES systems, MOB boats and FRBs are, in general, safe life-saving appliances that do not constitute any important safety risk if they are maintained and operated correctly. However, certain elements of drills require special attention in order to avoid accidents.

Guidance for the shipping company
The ship owner should make sure that new safety equipment on board the company's ships has been approved in accordance with the technical regulation on marine equipment and that it has been installed correctly.

Procedures for holding safe drills should be rooted in the Safety Management System (SMS) of the shipping companies. Detailed procedures for elements of drills that involve a special risk should be evident from workplace assessments adjusted to the relevant life-saving appliance.

Personnel carrying out maintenance and repair work on lifeboats should be qualified for this.

Guidance for the master
The IMO has requested Port State Control (PSC) officers[2] not to insist that boats be launched during a Port State Control inspection if the master of the ship finds it irresponsible under existing circumstances. Drills must always be arranged so that they are in every respect reasonable from a safety perspective, also when the drill is carried out upon the request of a PSC officer. If the master assesses that a given element of a drill cannot be arranged so that it is in every respect reasonable from a safety perspective, the master must leave out the given element of a drill also in this case.

It is important that the crew who are to operate safety equipment on board are familiar with the functioning and operation of such equipment. SOLAS, chapter III, regulations 35 and 36, requires that sufficiently detailed training manuals and instructions be carried on board that are easily understood by the crew. Such manuals and instructions must be accessible for everyone on board and must be observed closely during drills.

In connection with surveys in pursuance of technical regulation no. 6 of 26 August 1999 on ro-ro passenger ships and high-speed craft, the Danish Maritime Authority will inform the relevant countries of the content of this guidance.

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[2] MSC/Circ. 1016, Application of SOLAS reg. III/26 concerning FRB and means of rescue (MOR) systems on ro-ro passenger ships.

Guidance for both the master and the crew
Training in the use of the safety equipment should include instructions pertaining to personal safety, including issues to which particular attention should be paid, the use of personal protective equipment, etc.

Some elements of drills can be risky. Particular caution should be exercised in connection with such risky elements and, if they cannot be carried out in another way that is in every respect reasonable from a health and safety perspective, personal protective equipment should be used. If necessary, risky elements should be entirely left out.

The crew should make themselves completely acquainted with the ship's training manuals and instructions and should follow closely the instructions given by the ship management. Particular caution should be exercised when carrying out risky elements of a drill and especially when drills are carried out with lifeboats, launching arrangements, fast-rescue-boats and means of rescue.

The following are examples of particularly risky elements of drills and suggestions for precautions to be taken:

Lifeboats lowered by means of wires
Where lifeboats are placed in a high position, they should be lowered and recovered without persons on board and, when it has been ascertained that this functions correctly, the boat is lowered with exactly the number of persons on board necessary to operate the boat. The drill should take place only in protected waters in calm weather in a quiet sea.

In a circular,[3] the IMO has pointed to the following reasons for accidents with lifeboats, to which special attention should be paid on board:

1. failure of on-load release mechanism;
2. inadvertent operation of on-load release mechanism;
3. inadequate maintenance of lifeboats, davits and launching equipment;
4. communication failure;
5. lack of familiarity with lifeboats, davits, equipment and associated controls; and
6. unsafe practices during lifeboat drills and inspections; and
7. design faults other than on-load release mechanism.

[3] MSC/Circ. 1049, Accidents with lifeboats.

The Danish Maritime Authority will make efforts within the framework of the IMO to ensure that in the future equipment is required to be made such that fail-safe operation is achieved.

MOB boat and FRB
The same applies for the launching of MOB boats and FRBs as for lifeboats, i.e. where the boats are placed in a high position, they should be lowered and recovered without persons on board and, when it has been ascertained that this functions correctly, the boat is lowered with exactly the number of persons on board necessary to operate the boat. The drill should take place only in protected waters in calm weather in a quiet sea.

If, during a drill, the master assesses that a MOB boat or FRB must nevertheless be launched while the ship is making speed, the correct use of a painter is important.

In such cases, the crew of MOB boats and FRBs should wear immersion suits or anti-exposure suits during drills.

There is no requirement that the hook on boats released by free-fall be fitted with an on-load release. Consequently, a simple cargo hook with a safety catch is recommended for such boats (preferably the ESVAGT hook).

Lifeboats for free-fall launching
The monthly drills with lifeboats for free-fall launching should be carried out so that the persons who are to enter the boat in an emergency train how to embark the boat, how to take their seats in a correct way and how to use the safety belts as well as are instructed how to act during launching into the sea. Subsequently, they disembark the boat and the boat is <u>not</u> released for free-fall. The release system, etc. should be tested while a short wire is fitted so that the boat moves only a few centimetres down the ramp. The type of wire and its fastening must be in accordance with the manufacturer's instructions, and the wire must be fitted only in connection with drills and maintenance work.

SOLAS, chapter III, regulation 19.3.3.4, requires that lifeboats for free-fall launching be launched by free-fall every six months with its assigned operating crew on board. During such launching, only the persons who are to manoeuvre the boat in the water should be on board, insofar as possible.

The same SOLAS regulation gives the Administration a possibility of extending the interval between the launching of lifeboats by free-fall to 12 months provided that an arrangement is provided for simulated launching every six months. **The Danish Maritime Authority hereby grants Danish ships an extension of the intervals between the launching of lifeboats by free-fall to 12 months**

provided that a simulated launching is carried out at least every six months. Such simulated launching should be carried out according to the manufacturer's instructions and without any persons on board.

MES systems (chutes and slides)
Drills can be carried out using especially designed installations ashore.

The drills on board the ship include going through the procedures to be followed in the event that the system is to be launched. The system is released only exceptionally. In general, persons should not be sent down slides or chutes. Such drills should be carried out using an installation ashore.

Liferafts intended for lowering
During drills with liferafts that are intended for lowering, no persons should be on board the liferaft while it is suspended in the wire over the ship's side. In this connection, it should be considered using a dummy raft, such as an empty container shell fitted with the lines necessary for the drills. By means of such a raft, it is possible to train the operation of the crane, hook, lines, etc.

Fire drill
Fire drills have given rise to accidents, and for this reason elements involving an unnecessary risk should be left out of such drills. Here are a couple of examples:

- When watertight doors are closed, there might be a risk of persons getting jammed in the doors that are closing at great force. For this reason, watertight doors should not be closed by means of remote control during drills.

- The remote release of fire doors can also involve a risk of personal injury. Before fire doors are remote released, a warning hereof should, insofar as possible, be announced by the public address system.

- Some ships are provided with an arrangement for the recovery of a hoist stretcher, for example from the pump room. Training of the recovery of a hoist stretcher should be carried out without persons on the stretcher. A similar load can be used instead.

- Reduced visibility caused by smoke can, for example, be simulated by darkening the glass of the smoke-helmet. This makes it possible for a person who can see to walk next to the firefighter with reduced visibility and take action if he is about to get problems.