MARITIME SAFETY COMMITTEE
66th session
Agenda item 24

REPORT OF THE MARITIME SAFETY COMMITTEE
ON ITS SIXTY-SIXTH SESSION

Attached are annexes 12 to 31 to the report of the Maritime Safety Committee on its sixty-sixth session (MSC 66/24).
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ANNEX 12

PROPOSED AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

CHAPTER II-1

CONSTRUCTION - SUBDIVISION AND STABILITY, MACHINERY AND ELECTRICAL INSTALLATIONS

PART B - SUBDIVISION AND STABILITY

Regulation 17 - Openings in the shell plating of passenger ships below the margin line

1 The existing title of the regulation is replaced by the following:
"Openings in the shell plating of ships below the bulkhead deck"

2 The following new paragraph 12 is added after existing paragraph 11.2:

"12 Ships constructed on or after [1 July 1998] shall comply with the requirements of paragraphs 1 to 11.2, as amended as follows:

.1 in the first line of paragraph 3.2, "margin line" is replaced by "bulkhead deck";

.2 in the second line of paragraph 7, "margin line" is replaced by "bulkhead deck";

.3 in the fourth line of paragraph 9.2.1, "margin line" is replaced by "bulkhead deck";

.4 in the third line of paragraph 9.2.2, "margin line" is replaced by "bulkhead deck";

.5 in the first line of paragraph 10.1, "margin line" is replaced by "bulkhead deck"; and

.6 in the first line of paragraph 11.2, "margin line" is replaced by "bulkhead deck"."

PART C - MACHINERY INSTALLATIONS

Regulation 26 - General

3 The following new paragraphs 9, 10 and 11 are added after existing paragraph 8:

"9 Non-metallic expansion joints in piping systems, if located in a system which penetrates the ship's side and both the penetration and the non-metallic expansion joint are located below the deepest load waterline, shall be inspected as part of the surveys prescribed in regulation I/10(a) and replaced as necessary, or at an interval recommended by the manufacturer."
10 Operating and maintenance instructions and engineering drawings for ship machinery and equipment essential to the safe operation of the ship shall be written in a language understandable by those officers and crew members who are required to understand such information in the performance of their duties.

11 Location and arrangement of vent pipes for fuel oil service, settling and lubrication oil tanks shall be such that in the event of a broken vent pipe this shall not directly lead to the risk of ingress of seawater splashes or rainwater. Two fuel oil service tanks for each type of fuel used on board necessary for propulsion and vital systems or equivalent arrangements shall be provided on each new ship, with a capacity of at least 8 h at maximum continuous rating of the propulsion plant and normal operating load at sea of the generator plant.* This paragraph applies only to ships constructed on or after [1 July 1998].”

* Refer to SOLAS regulation II-1/15 on Arrangements for oil fuel, lubricating oil and other flammable oils.

**Regulation 31 - Machinery controls**

4 The following new paragraph 5 is added after existing paragraph 4:

"5 Ships constructed on or after [1 July 1998] shall comply with the requirements of paragraph 1 to 4, as amended as follows:

.1 the text of paragraph 1 is replaced by the following:

"1 Main and auxiliary machinery essential for the propulsion, control, and safety of the ship shall be provided with effective means for its operation and control. All control systems essential for the propulsion, control, and safety of the ship shall be independent or designed such that failure of one system does not degrade the performance of another system.";

.2 in the second and third lines of paragraph 2, the words "and the machinery spaces are intended to be manned" are deleted;

.3 the first sentence of paragraph 2.2 is replaced by the following:

".2 the control shall be performed by a single control device for each independent propeller, with automatic performance of all associated services, including, where necessary, means of preventing overload of the propulsion machinery.";

.4 the text of paragraph 2.4 is replaced by the following:

".4 propulsion machinery orders from the navigation bridge shall be indicated in the main machinery control room and at the manoeuvring platform;";

.5 a new sentence is added to the end of paragraph 2.6 to read as follows:
"It shall also be possible to control the auxiliary machinery, essential for the propulsion and safety of the ship, at or near the machinery concerned;"; and the texts of paragraphs 2.8, 2.8.1 and 2.8.2 are replaced by the following:

".8 indicators shall be fitted on the navigation bridge, the main machinery control room, and at the manoeuvring platform, for:

.8.1 propeller speed and direction of rotation in the case of fixed pitch propellers; and

.8.2 propeller speed and pitch position in the case of controllable pitch propellers;".

PART D - ELECTRICAL INSTALLATIONS

Regulation 41 - Main source of electrical power and lighting systems

[These amendments apply to ships constructed on or after ...........]

5 The following new paragraph 1.2.1 is added after existing paragraph 1.2:

"1.2.1 Where the main source of electrical power is necessary for propulsion and steering of the ship the system shall be so arranged that the electrical supply to equipment necessary for propulsion and steering and to ensure safety of the ship will be maintained or immediately restored in the case of loss of any one of the generators in service."

6 The following new paragraph 1.4.1 is added after existing paragraph 1.4:

"1.4.1 Load shedding or other equivalent arrangements shall be provided to protect the generators required by this regulation against sustained overload."

7 Paragraph 4 is replaced by the following:

"4 Where the main source of electrical power is necessary for propulsion of the ship, the main busbar shall be subdivided into at least two parts which shall normally be connected by circuit breakers or other approved means; so far as is practicable, the connection of generating sets and other duplicated equipment shall be equally divided between the parts."

Regulation 42 - Emergency source of electrical power in passenger ships

[These amendments apply to ships constructed on or after ...........]

8 The following sentence is added at the beginning of paragraph 3:
"3 Where electrical power is necessary to restore propulsion, the capacity shall be sufficient to restore propulsion to the ship in conjunction with other machinery, as appropriate, from a dead ship condition within 30 min after blackout."

**Regulation 43 - Emergency source of electrical power in cargo ships**

[These amendments apply to ships constructed on or after ............]

9 The following sentence is added at the beginning of paragraph 3:

"3 Where electrical power is necessary to restore propulsion, the capacity shall be sufficient to restore propulsion to the ship in conjunction with other machinery, as appropriate, from a dead ship condition within 30 min after blackout."

**CHAPTER V
SAFETY OF NAVIGATION**

**Regulation 15-1 - Emergency towing arrangements on tankers**

10 The word "guidelines" in the last sentence of paragraph (b) is replaced by the word "recommendation".

11 The following new regulation 15-2 is added after existing regulation 15-1:

"**Regulation 15-2**

Safe access to tanker bows

(a) For the purpose of this regulation, tankers include oil tankers as defined in regulation II-1/2.12, chemical tankers as defined in regulation VII/8.2 and gas carriers as defined in regulation VII/11.2.

(b) All tankers to which chapter I applies shall be provided with means to enable the crew to gain safe access to the bow even in severe weather conditions. Such means of access shall be approved by the Administration based on the recommendation developed by the Organization.*"

* Refer to the Guidelines for safe access to tanker bows to be developed by the Organization.

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ANNEX 13

DRAFT ASSEMBLY RESOLUTION

GUIDELINES FOR SAFE ACCESS TO TANKER BOWS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

NOTING that new regulation V/15-2 of the International Convention for the Safety of Life at Sea (SOLAS) 1974, as adopted by the Committee by resolution MSC...(67), requires that all tankers, including gas carriers and chemical tankers, shall be provided with means to enable the crew to gain safe access to the bow even in severe weather conditions based on the recommendation developed by the Organization,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-sixth session:

1. ADOPTS the Guidelines for Safe Access to Tanker Bows, set out in the Annex to the present resolution;

2. RECOMMENDS that all Governments concerned take appropriate steps to implement the Guidelines.
ANNEX

GUIDELINES FOR SAFE ACCESS TO TANKER BOWS

Gangway and Access

1. Tankers, including oil tankers as defined in SOLAS regulation II-1/2.12, chemical tankers as defined in regulation VII/8.2 and gas carriers as defined in regulation VII/11.2, should be provided with means to enable the crew to gain safe access to the bow even in severe weather conditions. For tankers constructed on or after [1 July 1998], the access should be by means of either a walkway on the deck or a permanently constructed gangway of substantial strength at or above the level of the superstructure deck or the first tier of a deckhouse which should:

.1 be not less than 1 m in width, situated on or as near as practicable to the centre line of the ship and located so as not to hinder easy access across working areas of the deck;

.2 be fitted at each side throughout its length with a footstop and guard rails supported by stanchions. Such rails should consist of no less than 3 courses, the lowest being not more than 230 mm and the uppermost being at least 1 m above the gangway or walkway, and no intermediate opening should be more than 380 mm in height. Stanchions should be at intervals of not more than 1.5 m;

.3 be constructed of fire resistant and non-slip material;

.4 have openings, with ladders where appropriate, to and from the deck. Openings should not be more than 40 m apart;

.5 if the length of exposed deck to be traversed exceeds 70 m, have shelters of substantial construction set in way of the gangways or walkways at intervals not exceeding 45 m. Every such shelter should be capable of accommodating at least one person and be so constructed as to afford weather protection on the forward, port and starboard sides; and

.6 if obstructed by pipes or other fittings of a permanent nature, be provided with means of passage over such obstruction:

2. The Administration may accept alternative or modified arrangements for tankers with space constraint, such as small tankers, or tankers with large freeboard, such as gas carriers, provided that such alternative or modified arrangements achieve an equivalent level of safety for access to the bow.

3. Arrangements already approved by the Administration for the tankers constructed before [1 July 1998] may be accepted, provided that such existing arrangements achieve an equivalent level of safety for access to the bow.

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ANNEX 14

DRAFT ASSEMBLY RESOLUTION

GUIDANCE FOR SHIP'S CREW AND TERMINAL PERSONNEL
FOR BULK CARRIER INSPECTIONS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING FURTHER that resolution A.797(19) urges shipowners, ship operators, shipmasters and terminal operators to take immediate measures along the lines specified in its Annex which includes measures for shipowners to implement a planned maintenance scheme and to conduct "owners surveys" of cargo holds before loading and after unloading and maintain on board a log of these surveys, and that terminal personnel are aware of areas of specific concern relating to loading and unloading,

RECALLING ALSO that resolution A.744(18) requires the shipowner to maintain on board documentation relating to inspection carried out by ship's personnel with respect to structural deterioration and the condition of the coating, if any,

BEING CONCERNED at structural damages of ships carrying solid bulk cargoes which are one of the causes of the considerable number of bulk carrier losses, sometimes without a trace, and the heavy loss of life incurred,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-sixth session,

1. ADOPTS the Guidance for Ship's Crew and Terminal Personnel for Bulk Carrier Inspections, set out in the Annex to the present resolution;

2. INVITES Governments to bring the Guidance to the attention of shipowners and operators of ships entitled to fly their flag and terminal personnel and urge them to implement;

3. REQUESTS the Maritime Safety Committee to keep this subject under review and amend or extend the Guidance, as necessary.
ANNEX

GUIDANCE FOR SHIP'S CREW AND TERMINAL PERSONNEL
FOR BULK CARRIER INSPECTION

1 PURPOSE

1.1 This document is intended to provide guidance to ship's crew and terminal personnel with respect to the principal areas on bulk carriers that are likely to be susceptible to corrosion or damage.

1.2 Under the Guidance, it is considered the responsibility of the owner to maintain and, where necessary, report on deficient conditions found, together with any repair(s) carried out. This document is intended to provide guidance to personnel not experienced to conduct inspections and surveys. To facilitate effective discharge of this responsibility and recognizing the normal duties of ships' crew and terminal operators, it has been thought desirable to provide them with a simple guide that explains the areas of principal concern.

1.3 This document is also considered as an appropriate basis to assist in the implementation of an effective programme to maintain the ship in a satisfactory condition between the required periodical surveys.

2 INTRODUCTION

2.1 The responsibilities for performing periodical inspection of the hull structure of bulk carriers in accordance with the Enhanced Survey Programme (ESP) rest with the flag Administration or recognized organization.

2.2 It is important to recognize, however, that severe structural damages may occur to bulk carriers due to loading/unloading operations. Such damages may occur instantly, and may, in severe cases, endanger the ship's safety unless rectified rapidly. Furthermore, minor cracks, which have been undetectable at a given ESP survey, may develop into serious defects prior to the next ESP survey.

2.3 In view of this, it is recommended that terminal operators and members of the ship's crew themselves regularly inspect the cargo holds, hatch covers and ballast tanks with a view to detecting damages and defects. ESP documentation should be used as guidance on specific parts of the structure needing particular attention in individual ships.

2.4 From a safety point of view it is desirable that inspections by the ship's crew or terminal operators of cargo holds are conducted before all loading and after all unloading operations, but practical limitations will have to be taken into account.

2.5 To maximize the effect of such inspections by ship's crew or terminal personnel, an appropriate log of such inspections should be kept on board. For inspections performed by the ship's crew, it is recommended that the form "Owners Inspection Report" incorporated in resolution A.744(18) on ESP, is used for this purpose, and made available for surveyors from the flag Administration or recognized
organization. This report will also assist the shipowner in developing the survey programme, in co-operation with the flag Administration or recognized organization, which is required by SOLAS.

3 GENERAL

3.1 A bulk carrier is a cargo ship designed and built for carriage of dry bulk cargoes such as grain, coal, ore, etc. The cargo hold structure with topside tanks at both shoulders and double bottoms with hoppers at both wings has been designed as the best structure for dry bulk cargo transportation. The shape of topside tanks provides sufficient stability to prevent dangerous cargo shift, and bilge hoppers contribute to convenience in collecting the cargoes on discharge.

3.2 In addition to light bulk cargoes, coal and ore are the main cargoes carried. Coal and light bulk cargoes are stowed in every cargo hold. Iron ore, however, is usually shipped in alternate cargo holds because of its high specific gravity. This is done for the purpose of avoiding excessively stiff ship motion and also for the convenience of loading facilities.

3.3 On designing a bulk carrier, loading patterns and sequences reflecting the specific gravities of intended cargoes and ballasting patterns in various operation modes are taken into consideration. These design considerations are described in loading and operation manuals which provide ship officers with basic loading patterns, strength features and limitations of the ship.

4 DEFINITIONS AND TERMINOLOGY

4.1 Bulk carrier: A bulk carrier is a cargo ship intended for carriage of dry bulk cargoes such as grain, coal, ore, etc., provided with topside tanks at both shoulders and bilge hoppers in both double bottom wings in the cargo space. Below is a typical midship section and general arrangement.

![Midship Section and General Arrangement](image)

Figure 1: Typical midship section and general arrangement

4.2 Topside tank: Tanks provided in cargo spaces at both shoulders as the space (1) shown in the drawing above.
4.3 **Bilge hopper**: A conventional bulk carrier has hopper structures at the both bottom wings in cargo holds. This part of cargo hold is called "bilge hopper". Double bottom tanks in way of bilge hopper are often called "bilge hopper tank". In the diagram, the space is shown as (2).

4.4 **Girder and floor in double bottom**: Provided in double bottom tanks, "girder" usually indicates a strong frame usually with the full depth provided in ship's longitudinal direction. The girder fitted on the center line is called "center girder", while the others are called "side girders". "Floor" means strong framing in ship's transverse direction provided in double bottom. In double bottom beneath cargo holds, floor plates are usually solid ones with full depth of the tank. In this regard, solid ones are called "solid floors" distinctively from the others.

4.5 **Transverse web in topside tanks**: Strong framing provided in topside tanks in transverse direction, also called "transverse ring". Of a transverse ring in a topside tank, the part supporting the upper deck is called deck transverse, the part attached to the side shell is called side transverse and the part attached to the bottom is called (topside) bottom transverse.

4.6 **Transverse web in bilge hopper tanks**: Strong framing provided in the transverse direction in a bilge hopper tank. Transverse webs are called "bilge hopper transverse", "side transverse" and "bottom transverse" in accordance with the name of the hull members to which they are attached.

4.7 **Framing of various kinds**: On a typical bulk carrier, framing is designed as a longitudinal system in topside and double bottom tanks and as transverse system at cargo hold side shell. Framing fitted in ship's longitudinal direction is called "longitudinals". To identify them in detail, the name of the plate they are attached to is added such as "deck longitudinals", "side longitudinals", "bottom longitudinals", etc. Framing attached to the side shell in the cargo holds are called "hold frames", "side frames", "main frames", "shell frames", etc.

![Figure 2: Typical cross section of cargo ship (bulk carrier)](image)

5 **GROUPING OF BULK CARRIERS IN ACCORDANCE WITH THEIR DIMENSIONS**
5.1 In general, bulk carriers are grouped into 3 categories in accordance with their size. These are: capesize, panamax, and other smaller types. Among the smaller types, ships of 30,000 to 45,000 dwt having 5 cargo holds are called "Handy Bulkers". Panamax bulkers are bulk carriers having the breadth of 32.2 m which are the largest ships able to transit the Panama Canal. The ships of this kind usually have 7 cargo holds and dead weights of around 50,000 to 60,000 tons. Bulkers with dimensions greater than the panamax ships are called capesize bulkers. Capesize bulkers have 9 or more cargo holds and dead weights in excess of 100,000 tons.

5.2 Capesize and panamax bulk carriers are generally engaged in carriage of raw materials for industrial plants such as coal and iron ore. Smaller bulk carriers and some of panamax ones are generally engaged in the trade of grain. Lumber and industrial products are generally shipped by handy size or smaller bulkers.

5.3 In the trade of food resources such as wheat, corn, and lumber, unloading ports usually have no cargo handling facilities and the bulk carriers employed are often equipped with their own cargo gear, while panamax or capesize bulk carriers are gearless.

6 STRUCTURAL FEATURES AND TYPICAL DAMAGES

6.1 Upper deck areas

6.1.1 The longitudinally continuous upper deck of a bulk carrier suffers hull girder stress. The longitudinal bending causes an axial force on the upper deck that may cause cracking of the deck plate at the locations where the stress is concentrated.

6.1.2 Bulk carriers have cargo hatchways for the convenience of cargo handling facilities. These hatchways reduce the ship's torsional strength and invite concentrated stress at the hatchway corners which may be evident by cracking of the deck plates in these areas.

6.1.3 Cross deck strips come under stress by transverse bending. The transverse bulkheads provide transverse strength to a bulk carrier and the cross deck strips provide the strength to withstand the resultant axial forces in transverse direction.
Deformation

Buckling of cross deck strips

6.1.4 Generally, longitudinal beams are arranged under the longitudinally continuous upper deck outboard of the side lines of the cargo hatchways. This is called the longitudinal system. When the deck beams for cross deck strips are also arranged in this manner, buckling of the cross deck strips may take place due to insufficient strength against the axial forces acting on them in transverse direction. The transverse system is the preferred method of construction for cross deck members. Particular attention should be given to buckling of the main deck on those vessels where the cross deck strips are arranged in the longitudinal system.
Cracking

6.1.5 There are various types of cracking in the upper deck. Those propagating from the cargo hatchways are generally considered serious to the ship’s safety:

.1  Hatchway corners

The large cargo hatchway openings reduce the torsional strength of the hull and invite stress concentration at their corners on the upper deck. In this regard, upper deck plating at hatchway corners are one of the focal points for cracking. Particular attention should be paid to these areas during inspection.

Figure 6: Cracking at hatchway

.2  Upper deck plating at deck fittings
Various metal fittings are welded to the upper deck plating. These installations may cause stress concentrations at the welded joints or have defects in the welds. Deck platings in vicinities of manholes, hatchside coaming end brackets, bulwark stays, crane post foundations and deck houses, etc. are to be carefully watched for cracking.

Figure 7: Various crackings in upper

3 Hatch coamings

Hatch coamings are subjected to hull girder stress. Although they are not critical longitudinal strength members, they should be watched carefully to ensure that these cracks do not spread. Cracking may be initiated at defects in welded joints and metal fittings to the coamings that will invite stress concentration. Such cracking is considered serious to ship's safety because it may be the initiation of a fracture of a large scale.

Figure 8: Cracking in hatch coaming
Corrosion on deck

6.1.6 Thinner steel structures on deck, such as cross deck strips, hatch coamings, hatch covers, etc., are easily corroded and often holed. The best way to deter corrosion is to keep the structure well coated and painted. The parts most liable to corrosion in the upper deck area are as follows:

.1 Cross deck strips

The thickness of cross deck plating between hatchways is designed about a half of that of main strength deck plating because it is not a longitudinal strength member. However, cross deck strips provide an important part in the transverse strength of the ship, and corrosion and waste of the cross deck plating may be considered serious to the ship's soundness.

<table>
<thead>
<tr>
<th></th>
<th>L (m)</th>
<th>At main deck plating</th>
<th>At cross deck strip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handy Bulk Carrier</td>
<td>177.00</td>
<td>17.5 mm (32 H/T)</td>
<td>10.0 mm (MS)</td>
</tr>
<tr>
<td>Panamax Bulk Carrier</td>
<td>215.00</td>
<td>20.5 mm (36 H/T)</td>
<td>10.5 mm (MS)</td>
</tr>
<tr>
<td>Capesize Bulk Carrier</td>
<td>280.0</td>
<td>33.0 mm (40 H/T)</td>
<td>12.0 mm (MS)</td>
</tr>
</tbody>
</table>

Figure 9: Examples of comparison in thickness of main deck and cross deck

.2 Hatch covers

The thickness of hatch covers is approximately the same as that of cross decks. Holes in hatch covers caused by corrosion lead to water ingress in cargo holds which may lead to the shifting of cargo and/or problems with the stability of the ship.

.3 Hatch coamings

When steam pipes are arranged beside hatchside coamings, the corrosion progress of the coaming is very rapid. Corrosion holes of the coaming plates lead to the same problems as those associated with hatch cover corrosion.

.4 Weather tight doors, small hatches and wall ventilator covers

Not only covers, door plates and coamings but also hinges, gaskets and clips are to be always kept in good condition.

.5 Standing pipes on deck

Vent and sounding pipes from water ballast or fuel oil tanks and ventilation pipes for closed spaces under the upper deck are liable to corrosion. If these pieces become holed, sea water comes directly into the tanks or cargo holds and may cause contamination of fuel oil, cargo damage, shifting of cargo, and/or stability problems.
6.6 **F’cle aft wall**

The bilges in f’cle space may cause corrosion of the bulkhead where it meets the deck. Of flush decked bulk carriers, the bos’n store aft wall may be corroded in the same manner. Large bulk carriers generally do not have f’cles and have their bos’n stores down below the upper deck in fore peak spaces. Bilges left in such spaces also cause corrosion of the aft end bulkheads which separates bos’n store and No.1 cargo hold. Such wastage may lead to water ingress, cargo damage, cargo shifting, and/or stability problems.

![Figure 10: F’cle end bulkhead](image)

### 6.2 Cargo holds

#### Structural features

6.2.1 On typical bulk carriers, the topside and bilge hopper tanks compose a double hull surrounding the cargo space which together with the double bottom provide hull strength and rigidity. Single hulled side shells provided with individual transverse frames are located between the topside and bilge hopper tanks.
In recent designs, these hold frames and end brackets are thinner than the side shell and are not constructed with web frames and side stringers as is the case with general cargo carriers.

Below is a comparison in thickness of hull skin plates and hold frames in cargo hold.

<table>
<thead>
<tr>
<th></th>
<th>Tanktop (mm)</th>
<th>Hold Frame (mm)</th>
<th>Side Shell (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Web</td>
<td>Face</td>
</tr>
<tr>
<td>Handy BC</td>
<td>15.0 (MS)</td>
<td>9.0 (MS)</td>
<td>12.0 (MS)</td>
</tr>
<tr>
<td>Panamax BC</td>
<td>17.0 (MS)</td>
<td>10.0 (36HT)</td>
<td>12.5 (36HT)</td>
</tr>
<tr>
<td>Capesize BC</td>
<td>18.5 (36HT)</td>
<td>10.0 (36HT)</td>
<td>17.0 (36HT)</td>
</tr>
</tbody>
</table>

Figure 11: Comparison in thickness of hull skin and hold frames

**Corrosion and waste of hold frames**

6.2.2 Corrosion generally attacks thinner steel structures and is accelerated in thinner plates. During the time a thicker steel plate loses half of its original thickness, a thinner plate might corrode completely.

6.2.3 Among the various members composing cargo hold structures, the hold frames are usually the thinnest structures especially at the web plates. In addition, the hold frames also have more surface area exposed, in that both surfaces of the plate are susceptible.

6.2.4 This may mean accelerated corrosion in the hold frames, the thinnest among all the members in cargo holds. If corrosion and waste become excessive, failure of hold frames invites additional loads to the adjacent ones, which may lead to failure throughout the side shell structure.
6.2.5 Transverse bulkheads may also be susceptible to accelerated corrosion, particularly at the midheight and at the bottom. Particular care should be exercised when inspecting hold frames and transverse bulkheads, in that these members may appear in deceptively good condition. Tanktop and side shell plating generally corrode from the steel surface facing the cargo hold and corrosion from inside the double bottom is usually less than that from cargo hold side.

6.2.6 Regarding the corrosiveness of cargoes, coal is among the most corrosive cargoes carried on board the bulk carriers. Thickness measurement surveys revealed that bulk carriers which have been employed in carriage of coal suffer more serious corrosion to their cargo holds than those engaged in the carriage of any other cargoes.

6.2.7 Cargo hold frames should also be carefully inspected for mechanical damage, corrosion and waste because many cargoes will damage hold frames through direct contact. This damage will invite corrosion from sea water brought on board in loading operations.

6.2.8 The most important aspects of cargo hold inspections are the condition of side shell structures and their reinforcements. Special attention should be paid to the condition of hold frames and their connection to the shell plating.

**Transbulkheads and associated structures**

6.2.9 Bulk carrier watertight transverse bulkheads at the ends of dry cargo holds are constructed in various ways which in general can be categorized as either vertically corrugated with or without upper or lower stools, double plated with or without upper or lower stools, or plane bulkheads vertically stiffened.
6.2.10 It may be necessary that certain holds bounded by the foregoing categories of bulkheads are partially filled with water ballast in order to achieve a satisfactory air draught at the loading/discharge berths. The filling is restricted to correspond to the dry cargo hold scantlings. However, for deep tank corrugated bulkheads at the ends of cargo holds which are designed to be fully filled with water ballast the scantlings are increased substantially from that for ordinary watertight transverse bulkheads.

6.2.11 The opportunity is taken to emphasize that for ordinary transverse watertight bulkheads, in addition to withstanding water pressure in an emergency situation, i.e., flooding, the bulkhead structures constitute main structural strength elements in the structural design of the intact vessel. Ensuring that acceptable strength is maintained for these structures is therefore of major importance.

6.2.12 The structure may sometimes appear to be in good condition when it is in fact excessively corroded. In view of this, appropriate access arrangements as indicated in Section 4 of the Guidelines, should be provided to enable a proper close-up inspection and thickness assessment.

6.2.13 It is imperative to realize that in the event of one hold flooding, the transverse watertight bulkheads prevent progressive flooding and therefore also prevent the ship from sinking.

What to look for

6.2.14 The following are examples for the more common damages/defects that may occur:

1. Fractures at the boundaries of corrugations and bulkhead stools particularly in way of shelf plates, shedder plates, deck, inner bottom, etc.

2. Buckling of the plating/corrugations leading to the failure and collapse of the bulkhead under water pressure in an emergency situation.

3. Excessive wastage/corrosion, in particular at the midheight and at the bottom of the bulkheads which may look in deceptively good condition. This is created by the corrosive effect of cargo and environment, in particular, when the structure is not coated. In this respect special attention should be given to the following areas:

   .1 bulkhead plating adjacent to the shell plating;

   .2 bulkhead trunks which form part of the venting, filling and discharging arrangements between the topside tanks and the hopper tanks;

   .3 bulkhead plating and weld connections to the lower/upper stool shelf plates;

   .4 weld connections of stool plating to the lower/upper stool shelf plates and inner bottom;

   .5 in way of weld connections to topside tanks and hopper tanks;
any areas where coatings have broken down and there is evidence of corrosion or wastage. It is recommended that random thickness determination be taken to establish the level of diminution; and

other structures, e.g., diaphragms inside the stools, particularly at their upper and lower weld connections.

Figure 13: Typical fracturing at the connection of transverse bulkhead structure

**Damages caused by cargoes**

6.2.15 In cargo holds, tanktop plating and side shell structures are apt to be damaged by cargo handling operations.

6.2.16 At loading and unloading ports for coal or iron ore, large grab buckets, high capacity cargo loaders, bulldozers and pneumatic hammers may be employed for cargo handling operations.

6.2.17 Large grab buckets may cause considerable damage to tanktop plating when being dropped to grab cargo. Use of bulldozers and pneumatic hammers may also be harmful to cargo hold structures and may result in damage to tanktops, bilge hoppers, hold frames and end brackets.

6.2.18 Lumber cargoes may also cause damage to the cargo hold structures of smaller bulkers that are employed in the carriage of light bulk cargoes and lumbers.

**Cracking**

6.2.19.1 **Combination cargo/ballast hold**

In bulk carriers having combination cargo/ballast holds, cracks may often be found at or near the connection of the stool of the transverse bulkhead and the tank top.
All the capesize and panamax bulk carriers and some of handy bulkers have combination cargo/ballast hold(s) to keep the necessary draft. The bulkhead boundaries of the spaces are designed to comply with the requirements for deep tank bulkheads. In these holds cracks may often be found at the connection between the transverse bulkhead and the tanktop. These cracks can be detected by visual inspection or by noting leakage from the double bottom tanks.

6.2.19.2 Others

Side stringers and/or side shells in way of No.1 cargo hold along the collision bulkhead are often found cracked. This kind of damage is considered to be caused by insufficient continuity between fore peak construction and cargo hold structure.

On large bulk carriers such as capesize and panamax bulkers, bilge hopper plating around the knuckle line may be cracked along the bilge hopper transverse webs. This is considered to be caused by insufficient local reinforcement.

6.3 Topside tanks

6.3.1 Corrosion and wastage of steel especially in the upper part of the topside tanks should be carefully watched.
6.3.2 Though the water ballast tanks of newer bulk carriers are well protected against corrosion, the upper portion is susceptible to corrosion because the protective coating will be easily deteriorated due to heat from the upper deck and the cyclic wet/dry effect of sea water.

6.4 Bilge hopper/double bottom tanks

6.4.1 When carrying out inspections of these tanks, particular attention should be paid to any cracking, deformation or deterioration of coating.

Cracking in bilge hopper and double bottom tanks

6.4.2 Cracks might be found at the intersections of longitudinals and transverse members and at other locations as follows:

1. Intersections of longitudinals and solid floors

Cracks may be found in the side, bottom and/or tanktop longitudinals at intersections with solid floors or bilge hopper transverses. Cracks also may be found in the floors or transverses occurring at the corners of the slots cut for longitudinals.
.2 **Cracking of longitudinals at areas of structural discontinuity**

Longitudinals may be cracked at the ends of additional (partial) side girders provided in the double bottom below cargo hold bulkheads or side walls of bilge wells for cargo holds due to additional stress concentration caused by the structural discontinuity at those connections.

![Diagram of cracking at the end connection with side walls of bilge well girder](Image)

**Figure 18: Cracking at the end connection with side walls of bilge well girder**

.3 **Bilge hopper transverse**

Cracks may be observed in transverse webs in bilge hoppers initiating from the slot openings for longitudinals and at the knuckled corners of the lower ends of the hoppers.
6.4.3 Corrosion must be carefully watched in the inspection in water ballast tanks particularly in older bulk carriers over 10 years of age. In general, the condition of the steel and protective coatings will be in satisfactory condition much longer in the double bottoms than in topside compartments. However, even double bottom tanks will deteriorate in time due to the continual ballasting of the ship.

Figure 19: Check points in bilge hopper transverse
.1  

Corrosion accelerated by heat

Since the late '70s, problems with heavy corrosion in double bottom water ballast tanks adjacent to fuel oil tanks have appeared. In some cases, the corrosion was worse in areas closer to the fuel oil tank boundaries. In those ships, fuel oil tanks were installed.

Figure 20: Areas where heavy corrosion by heat effect may be found (hatched area)
The fuel oil heating system was adopted following changes to the properties of fuel oil, mainly an increase in viscosity. Due to economics, ship operators began to use low grade bunker oil which needs heating in order to decrease the viscosity. In the beginning of this trend, the temperature required in the fuel oil tanks was not high enough to accelerate the corrosion of the steel in the adjacent spaces. However, in recent years, the grade of bunker oil being used requires the temperature in the tank to be 80°C or more. Such temperature can accelerate corrosion of the steel in the tanks, particularly in the vicinity of the boundaries of the fuel oil tanks.
.2  Areas under suction bell mouths

Bottom plates are often eroded under the suction bell mouths in tanks. On drydocking of an older ship, the bell mouths should be dismantled for examination of the condition of the shell plates below the bell mouths.

6.5  Other notices

Bottom ends of sounding pipes

6.5.1 A sounding pipe has a pad plate at its bottom end for protection of the tank bottom against the strike of the sounding scale's lead. On inspections, the extent of diminution of the protection plate should be examined.

Connection trunk between topside and bilge hopper spaces

6.5.2 Connection trunks provided between topside and bilge hopper spaces are to be carefully watched against corrosion and waste of the steel works inside.

6.5.3 On some bulk carriers, bilge hopper tanks and topside tanks form one integral tank connected with trunk spaces. The inside surface of a connection trunk is liable to corrosion and should be examined carefully.

![Diagram](Figure 22: Connection trunk entrance in topside tank)
ANNEX 15

RESOLUTION MSC.54(66)
(adopted on 30 May 1996)

ADOPTION OF AMENDMENTS TO THE RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION A.689(17))

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, when adopting resolution A.689(17) on Testing of life-saving appliances, authorized the Committee to keep the Recommendation on testing of life-saving appliances under review and to adopt, when appropriate, amendment thereto,

RECOGNIZING the need to introduce more precise testing requirements in the testing of life-saving appliances,

HAVING CONSIDERED the recommendations made by the Sub-Committee on Life-Saving, Search and Rescue, at its twenty-sixth session, and the Sub-Committee on Ship Design and Equipment, at its thirty-ninth session, upon review of the Recommendation,

1. ADOPTS amendments to the Recommendation on Testing of Life-Saving Appliances (annex to resolution A.689(17)) set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that life-saving appliances are subjected to:

   .1 the tests recommended in the Annex to resolution A.689(17) as amended by the present resolution; or

   .2 such tests as the Administration is satisfied are substantially equivalent to those recommended by the above resolution.
ANNEX

AMENDMENTS TO THE RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES
(RESOLUTION A.689(17), ANNEX)

Part 1 - Prototype testing for life-saving appliances

1 Replace the present text of subparagraph 2.8.2 by the following:

"2.8.2 These tests should be carried out with at least six able-bodied persons of the following heights and weights:

<table>
<thead>
<tr>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.40 m - 1.60 m</td>
<td>1 person under 60 kg</td>
</tr>
<tr>
<td></td>
<td>1 person over 60 kg</td>
</tr>
<tr>
<td>1.60 m - 1.80 m</td>
<td>1 person under 70 kg</td>
</tr>
<tr>
<td></td>
<td>1 person over 70 kg</td>
</tr>
<tr>
<td>over 1.80 m</td>
<td>1 person under 80 kg</td>
</tr>
<tr>
<td></td>
<td>1 person over 80 kg</td>
</tr>
</tbody>
</table>

.1 at least one and not more than two of the persons should be females with not more than one female in the same height range;

.2 for the approval of the lifejackets, the test results obtained from each of the participating subjects should be acceptable except as provided otherwise."

2 Replace the present text of subparagraph 2.9.2 by the following:

"2.9.2 These tests should be carried out with at least six persons as described in 2.8.2. Only good swimmers should be used, since the ability to relax in the water is rarely otherwise obtained."

3 Insert "or anti-exposure suit" after "immersion suit" in subparagraphs 3.1.2 to 3.1.5, 3.1.7 to 3.1.13, 3.1.15 to 3.1.18.

4 Change the heading of paragraph 3 to read as follows:

"IMMERSION SUITS, ANTI-EXPOSURE SUITS AND THERMAL PROTECTIVE AIDS"

5 Add "and anti-exposure suits" to the heading of subparagraph 3.1.
6 Replace the present text of subparagraph 3.1.1 by the following:

"3.1.1 These tests should be carried out with at least six persons as described in 2.8.2."

7 Add at the end of the subparagraph 3.1.5 the following sentence:

"The diameter of the pencil shall be 8-10 mm."

8 Replace the present text of subparagraph 3.1.7 by the following:

"3.1.7 When wearing the immersion suit, or anti-exposure suit, in conjunction with a life-jacket if required, the test subjects should float face-up with their mouths clear of the water by at least 120 mm and be stable in that position. The freeboard should be measured from the water surface to the nose and mouth with the test subject at rest. The freeboard of the anti-exposure suit without a life-jacket should be at least 50 mm."

9 Add at the end of subparagraph 3.1.10 the following sentence:

"It should be established by questioning the test subjects that the suit does not injure the wearer as a result of this test."

10 Replace the present text of subparagraph 3.1.11 by the following:

.1 The ingress of water into the pre-wetted suit should not exceed a mass of 200 g following:

.1 a period of flotation in calm water for 1 h; or

.2 swimming for 20 min for a distance of at least 200 m;

.2 The mass of water ingress should be measured by weighing the test subject and the suit in accordance with the method prescribed in subparagraph 3.1.9."

11 Replace the present text of subparagraph 3.1.18 by the following:

"3.1.18 The immersion suit or AES should be subjected to the body strength tests prescribed in 2.6.1, except the load applied should be 1350 N. The immersion suit or anti-exposure suit may be cut if necessary to accommodate the test device."

12 Replace the present text of paragraphs 3.2 and 3.3 by the following:

"3.2 Thermal protective tests

3.2.1 General

3.2.1.1 These tests should be performed as described below. The thermal protective qualities may be measured using a thermal manikin, when such a method is required by an Administration
and has been demonstrated to provide test results which correlate satisfactorily in all aspects to test results using human subjects.

3.2.1.2 If the test should be performed by human subjects, they should be medically examined before being accepted for participation in the tests. Each design of immersion suit or anti-exposure suit is to be tested by the test subjects specified in subparagraph 3.1.1.

3.2.1.3 Where human subjects are used, the tests should always be conducted under the supervision of a physician. Emergency resuscitation equipment should be available during all tests. For safety reasons, ECG should be monitored during every test. Testing should be stopped at the wish of the test subjects, if the falling rate of the core temperature is more than 1.5°C per hour after the first half hour, if the skin temperature of the hand, foot or lumbar region should fall below 10°C, or if the attending physician considers it advisable.

3.2.1.4 When testing with human subjects, continuous body core temperature (rectal temperature) and skin temperatures of lumbar region, both hands, calves, feet (foot instep) and heels, should be measured. The accuracy of the measuring system should be ±0.2°C. Appropriate corresponding measurements should be taken if a manikin is used in lieu of human subjects.

3.2.1.5 Prior to the tests, the same amount of water resulting from the jump test in paragraph 3.1.9 should be poured into the dry immersion suit or anti-exposure suit worn over the dry test clothing specified in 3.2.2 by the test subject lying down.

Test clothing

3.2.2 The test subjects should wear a standard range of clothing consisting of:

.1 underwear (short sleeved, short legged);
.2 shirt (long sleeved);
.3 trousers (not woollen); and
.4 woollen socks.

3.2.3 If the immersion suit or AES is to be worn in conjunction with a lifejacket, the lifejacket should be worn during the thermal protective tests.

Specific tests for non-insulated immersion suits

3.2.4 In addition to the clothing specified in paragraphs 3.2.2 and 3.2.3, the test subject should wear two woollen pullovers.

3.2.5 Each test subject should wear an immersion suit previously subjected to the jump test in paragraph 3.1.10. Following a 1 h period of immersion, with the hands gloved, in circulating calm water at +5°C, each test subject's body core temperature should not fall more than 2°C below the normal level of the subject's temperature.
3.2.6 Immediately on leaving the water after completion of the test prescribed in 3.2.5, the test subject should be able to pick up a pencil as specified in paragraph 3.1.5 and write.

**Specific tests for insulated immersion suits**

3.2.7 Each test subject should wear an immersion suit previously subjected to the jump test in paragraph 3.1.10. Following a 6 h period of immersion, with the hands gloved, in circulating calm water at between 0° and +2°C, each test subject's body core temperature should not fall more than 2°C below the normal level of the test subject's temperature.

3.2.8 The immersion suit should provide sufficient thermal protection to ensure that immediately on leaving the water after a 1 h period of immersion, with hands gloved, in circulating calm water at +5°C, each test subject can pick up a pencil as specified in paragraph 3.1.5 and write. Alternatively, at the manufacturer's option, the ability to pick up a pencil as specified in paragraph 3.1.5 and write may be demonstrated immediately on leaving the water after completion of the test prescribed in 3.2.7.

**Specific test for anti-exposure suits**

3.2.9 Each test subject should wear an anti-exposure suit previously subjected to the jump test in paragraph 3.1.10. Following a 1 h period of immersion, with the hands gloved and hood donned, in circulating calm water at a temperature of + 5°C, each test subject's body core temperature should not fall more than 2°C below the normal level of the test subject's temperature.

3.2.10 Immediately on leaving the water after completion of the test prescribed in paragraph 3.2.9, the test subject should be able to pick up a pencil as specified in paragraph 3.1.5 and write.

Replace the present text of paragraph 5.2.2 by the following:

"5.2.2 The jump test may be simulated by dropping a suitable and equivalent mass, arranged to as to impact the liferaft with shoes as described in 5.2.1."

Replace the present text of paragraph 5.6 by the following:

"5.6 LIFERAFT PAINTER SYSTEM TEST

The breaking strength of the painter system, including its means of attachment to the liferaft should be as follows:

1. not less than 7.5 kN for liferafts accommodating up to 8 persons;
2. not less than 10.0 kN for liferafts accommodating 9 to 25 persons;
3. not less than 15.0 kN for liferafts accommodating more than 25 persons."
Replace the present text of paragraph 5.7 by the following:

"5.7 Loading and seating test

The freeboard of the liferaft in the light condition, including its full equipment but no personnel, should be recorded. The freeboard of the liferaft should again be recorded when the number of persons for which the liferaft is to be approved, having an average mass of 75 kg, and each wearing an immersion suit and lifejacket, have boarded and are seated. It should be established that all the seated persons have sufficient space and headroom and it should be demonstrated that the various items of equipment can be used within the liferaft in this condition and, in the case of an inflated liferaft, with the floor inflated. The freeboard, when loaded with the mass of the number of persons for which it is to be approved and its equipment, with the liferaft on an even keel and, in the case of an inflatable liferaft, with the floor not inflated, should not be less than 300 mm."

Replace the present text of paragraph 5.8 by the following:

"5.8 Boarding and closing arrangement test

The boarding test should be carried out in a swimming pool by a team of not more than four persons who should be of mature age and of differing physiques as determined by the Administration. Preferably they should not be strong swimmers. For this test they should be clothed in shirt and trousers or a boiler suit and should wear approved lifejackets suitable for an adult. They must each swim about 100 m before reaching the liferaft for boarding. There must be no rest period between the swim and the boarding attempt. Boarding should be attempted by each person individually with no assistance from other swimmers or persons already in the liferaft. The water should be of a depth sufficient to prevent any external assistance when boarding the liferaft. The arrangements will be considered satisfactory if three of the persons board the liferaft unaided and the fourth boards with the assistance of any of the others. The above mentioned test should be carried out also with persons clothed in immersion suits and lifejackets. After the boarding test, it should be demonstrated by a person clothed in an approved immersion suit that the canopy entrance can be easily and quickly closed in 1 minute and can be easily and quickly opened from inside and outside in 1 minute."

Replace the present text of paragraph 5.11 by the following:

"5.11 Swamp test

It should be demonstrated that when the liferaft is fully swamped it remains seaworthy. The swamped inflatable liferaft should be tested in at least 10 waves at least 0.9 m high. The waves may be produced by the wake of a boat, or by other acceptable means. The liferaft should not seriously deform in this condition."

Replace the present text of paragraph 5.17.4 by the following:
"5.17.4 When inflated in an ambient temperature of between 18°C and 20°C, it should achieve total inflation in not more than 1 min. The force required to pull the painter and start inflation should not exceed 150 N."

19 Add a new paragraph 5.18 after subparagraph 5.17.13, as follows:

"5.18 Liferaft light tests

The liferaft lights should be subjected to the tests prescribed in 10.1."

20 Replace the present text of paragraph 7.1.1 by the following:

"7.1.1 Rigid rescue boats should be subjected to the tests prescribed in 6.2 to 6.13 except 6.5.2 and 6.8.1, and to the test prescribed in 7.2.4.2 and 7.2.10, and if the boats are provided with outboard motors, 7.2.11."

21 Replace the present text of paragraph 7.2.1 by the following:

"7.2.1 The inflated rescue boats should be subjected to the tests prescribed in 6.3, 6.5.1, 6.7.1, 6.10.1 to 6.10.4, 6.11, 6.12, 6.13, 7.1.2 and 7.1.3."

22 Replace the heading of subparagraph 7.2.10 "Manoeuvrability and towing tests" by "Manoeuvrability tests".

23 Add a new subparagraph 7.3.10 after subparagraph 7.3.9, as follows:

"7.3.10 Engine-out-of-water test

The engine should be operated for at least 5 min at idling speed under conditions simulating normal storage. The engine should not be damaged as a result of this test."

24 In the first line of subparagraph 9.1, replace "4.3.1.1" and "4.3.1.3" by "4.3.1" and "4.3.3" respectively.

25 Replace the title subparagraph 10.1 "Survival craft light tests" by "Survival craft and rescue boats light tests".

26 Replace the present text of subparagraphs 10.1.2 to 10.1.4 by the following:

"10.1.2 In the case of sea-activated power sources, four survival craft lights of each type should, following at least ten complete temperature cycles be taken from a stowage temperature of -30°C and be operated immersed in seawater at a temperature of -1°C; four of each type should be taken from a stowage temperature of +65°C and be operated immersed in seawater at a temperature of +30°C; and four of each type should be taken from ordinary room conditions and operated immersed in fresh water at ambient temperature. The canopy, enclosure or cover lights should be of white colour and should provide a luminous intensity of not less than 4.3 cd in all directions of the upper hemisphere for a period of not less than 12 h. The interior lights should provide
sufficient luminous intensity to read survival instructions and equipment instructions for a period of not less than 12 h.

10.1.3 In the case of dry-activated power sources, provided they will not come into contact with seawater, four survival craft lights of each type should, following at least ten complete temperature cycles be operated at an air temperature of -30°C, four of each type at an air temperature of +65°C, and four of each type at ambient temperature. The canopy, enclosure or cover lights should be white in colour and should provide luminous intensity of not less than 4.3 cd in all directions of the upper hemisphere for a period of not less than 12 h. The interior lights should provide sufficient luminous intensity to read survival instructions and equipment instructions for a period of not less than 12 h.

10.1.4 In the case of a flashing light, it should be established that the rate of flashing for the 12 h operative period is not less than 50 flashes and not more than 70 flashes per minute and the effective luminous intensity is at least 4.3 cd (see 10.2.2).

27 Replace the present text of subparagraph 10.2.2 by the following:

"10.2.2 After at least ten complete temperature cycles, one self-igniting light should then be taken from a stowage temperature of -30°C and operated immersed in seawater at a temperature of -1°C, and another should be taken from a stowage temperature of +65°C and operated immersed in seawater at a temperature of +30°C. Both lights should be of white colour and should continue to provide a luminous intensity of not less than 2 cd in all directions of the upper hemisphere or, in the case of a flashing light, flash at a rate of not less than 50 flashes and not more than 70 flashes per minute with at least the corresponding effective luminous intensity for a period of not less than 2 h. The effective luminous intensity is to be found from the formula:

$$I_{\text{max}} = \left[ \frac{t_2}{t_1} - \frac{\int I dt}{0.2 + (t_2 - t_1)} \right]$$

where:

- $I$ is the instantaneous intensity
- $0.2$ is the Blondel-Rey constant and $t_1$ and $t_2$ are time-limits of integration in seconds

Note: Flashing lights with a flash duration of not less than 0.3 seconds, not including incandescence time, may be considered as fixed lights for the measurement of luminous intensity. Such lights should provide the required luminous intensity in all directions of the upper hemisphere. (Incandescence time is the time interval between switch on and the luminous intensity reaching the required minimum luminous intensity).

At the end of the first hour of operation the lights should be immersed to a depth of 1 m for 1 min. The lights should not be extinguished and should continue operating for at least an hour longer."

28 Replace the present text of subparagraph 10.3.2 by the following:
"10.3.2 After at least ten temperature cycles, four of these lifejacket lights should be taken from a stowage temperature of -30°C and then be operated immersed in seawater at a temperature of -1°C. Four should be taken from a stowage temperature of +65°C and then immersed in seawater at a temperature of +30°C and four should be taken from ordinary room conditions and operated immersed in freshwater at ambient temperature. Water activated lights should commence functioning within 2 min and have reached a luminous intensity of 0.75 cd within 5 min in seawater. In freshwater a luminous intensity of 0.75 cd should have been attained within 10 min. At least 11 out of the 12 lights, which should all be of white colour, should continue to provide a luminous intensity of not less than 0.75 cd in all directions of the upper hemisphere for a period of at least 8 h."

Add a new subparagraph 10.3.4 after existing subparagraph 10.3.3 as follows:

"10.3.4 One light should be dropped from a height of 2 metres onto a rigidly mounted steel plate or concrete surface. The light should not suffer damage and should be capable of providing a luminous intensity of not less than 0.75 candela for a period of at least eight hours when operated immersed in fresh water at ambient temperature."

29 Replace the present number and text of subparagraph 10.3.4 by the following:

"10.3.5 In the case of a flashing light it should be established that:

.1 the light can be operated by a manual switch

.2 the rate of flashing is not less than 50 flashes and not more than 70 flashes per minute; and

.3 the effective luminous intensity is at least 0.75 cd (see 10.2.2)."

30 Replace the present text of subparagraphs .2, .4 and .5 of paragraph 11.2 by the following:

".2 Temperature tests

The hydrostatic release units should then be subjected to the temperature cycling prescribed in 1.2.1. Following temperature cycling as prescribed in 1.2.1, one hydrostatic release unit should be taken from a stowage temperature of -30°C and should then operate in seawater at a temperature of -1°C. The other hydrostatic release unit should be taken from a stowage temperature of +65°C, and should then operate in seawater at a temperature of +30°C.

.4 Strength test

After reassembly the hydrostatic release unit, if forming part of the painter system, should be subjected to a tensile test of at least 10 kN for a period of 30 minutes. If the release unit is to be fitted to a liferaft for more than 25 persons it should be subjected to a tensile test of at least 15 kN. After the tensile test the unit, if designed to allow manual release should then be capable of being operated manually."
.5 Technical tests on the membrane

Resistance to detergents

.5.5 Two membranes should be immersed for 7 days in detergents commonly used on board ship:
   Test temperature  +18°C to +20°C
   Requirements: The membranes should show no signs of deterioration.”

31 Insert a new paragraph 12 after subparagraph 11.3.2, as follows:

"12 MARINE EVACUATION SYSTEMS

12.1 Materials

   Materials used in the construction of marine evacuation systems are to be tested to the standards laid down in paragraph 5.17.13 where applicable.

12.2 Marine evacuation system container

   12.2.1 It should be demonstrated that the passage and platform if fitted, or liferafts in any other case, can be deployed from the container by one person in a sequence prescribed in the manufacturer's instruction. If more than one action is necessary to operate the system means should be provided to prevent incorrect operation.

   12.2.2 A static load of 2.2 times the maximum load on the system should be applied to its structural attachment to the ship for a period of 30 minutes. This static load is to be equivalent to the calculated load imposed by the maximum number and size of fully loaded liferafts for which the system is designed, attached to the loaded platform with the ship moving through the water at 3 knots against a head wind of force 10 on the Beaufort scale. There should be no evidence of significant deformation or other damage as a result of this factory test.

   12.2.3 The exterior of the container as installed should be hose tested in a similar manner to the canopy closure test in paragraph 5.12 to ensure that it is reasonably weathertight to prevent the ingress of water.

   12.2.4 The release and securing arrangements for any internal or external doors are to be satisfactorily tested by 5 dry release operations carried out consecutively.

   12.2.5 It should be demonstrated by 2 dry deployments of the system, with the container angled back to simulate an unfavourable trim of up to 10° and list of up to 20° either way, that the outer door, the passage and platform (if fitted), will not suffer damage which will render it unusable for its intended purpose.
12.3 Marine evacuation passage

12.3.1 For an inclined inflated passage the following requirements are to be complied with:

.1 a fully inflated passage should be arranged on solid base at the height at which it is to be stowed on board. When loaded at mid length with a weight of 150 kg for each single slide path the passage must not become unduly distorted;

.2 a fully inflated passage should be subjected to individual sliding operations twice the number for which it is to be certificated. For this test actual persons of varied physique and weight should be used. On completion the slide path must remain in a serviceable condition;

.3 it should be demonstrated using actual persons that the loss of pressure in any one section of the passage will not limit its use as a means of evacuation;

.4 a static load of 2.2 times the maximum to which the system is to be designed, in accordance with paragraph 12.2.2, should be applied for a period of 30 minutes to the connection between the passage and the container. On completion there must be no signs of any fracture or stranding of its connections;

.5 the uninflated passage with its gas cylinders should be placed in a cold chamber at a temperature of -30°C. After a period of not less than 24 h at this temperature the chute should reach its working pressure within 5 min. The components must show no sign of cracking, seam slippage or other defects;

.6 the uninflated passage with its gas cylinders should be placed in a hot chamber at a temperature of +65°C for not less than 7 h. On inflation the pressure relief valves on the passage should be of sufficient capacity to prevent pressure in excess of twice the designed working pressure;

.7 it should be demonstrated with at least 10 sliding operations on a slide path thoroughly wetted with water to simulate wet weather conditions, that the speed of descent is not excessive or dangerous; and

.8 a pressure test is to be carried out in accordance with paragraphs 5.17.7 and 5.17.8.

12.3.2 For vertical passage systems the following requirements are to be complied with:

.1 the passage(s) should be subjected to individual descent operations twice the number for which it is to be certificated. For this test actual persons of varied physique and weight should be used. On completion the passage path should remain in a serviceable condition;

.2 a load of 2.2 times the maximum to which the system is to be designed, in accordance with paragraph 12.2.2, should be applied for a period of 30 min to the
connection between the passage and the container. On completion there must be no signs of any fracture or stranding of its connections;

.3 the stowed passage should be placed in a cold chamber at a temperature of -30°C. After a period of 24 h at this temperature the passage should show no signs of cracking or other defects;

.4 it should be demonstrated with at least 10 descent operations, in the case of open vertical passages with the path thoroughly wetted with water to simulate wet weather conditions, that the speed of descent is not excessive or dangerous.

12.4 Marine evacuation platform, if fitted

12.4.1 The platform should be inflated and loaded with the number of persons carried in accordance with the number specified by paragraph 6.2.1.3.3 of the Code, all wearing an approved lifejacket. Freeboards are to be measured all round, and should not be less than 300 mm.

12.4.2 It should be demonstrated that in the event of the loss of 50% of the buoyancy in the tubes the platform should be capable of supporting, with a positive freeboard all round, the number of persons specified in paragraph 6.2.1.3.3 of the LSA Code.

12.4.3 It should be demonstrated that the platform is self draining with no possibility of a build up of water.

12.4.4 The platform with its inflation system should be placed in a cold chamber at a temperature of -30°C. After a period of not less than 24 h at this temperature the platform on being inflated should achieve its normal working pressure in not more than 5 min. There should be no seam slippage, cracking or other defects on the platform, and it should be ready for use on completion of the test.

12.4.5 The platform with its inflation system should be placed in a hot chamber at a temperature of +65°C for not less than 7 h. On being inflated the pressure relief valves should be of sufficient capacity to prevent pressure in excess of twice the designed working pressure.

12.4.6 A pressure test is to be carried out in accordance with paragraphs 5.17.7 and 5.17.8 of the Code.

12.5 Associated inflatable liferafts

12.5.1 Liferafts used in conjunction with the marine evacuation system should conform and be prototype tested to the requirements of paragraph 5.

12.5.2 It should be demonstrated that the liferafts can be deployed from their stowage position, and moored alongside the platform, if fitted, before being inflated, and bosed in ready for boarding.
12.5.3 It should be demonstrated that the liferafts can be deployed from their stowage positions independently of the marine evacuation system.

12.5.4 It should be demonstrated that the liferafts will float free from their stowage positions, inflate and then break free in the event of the ship sinking.

12.5.5 If the passage is to give direct access to the liferaft(s), it should be demonstrated that it can be easily and quickly detached.

12.6 Performance

12.6.1 It should be demonstrated in harbour by a full deployment of a system, including the launching and inflation of all the associated liferafts, that the system will provide a satisfactory means of evacuation. For this trial the number of persons to be used should be that for which the system is to be certificated. The various stages of this trial should be timed so as to permit the calculation of the number of persons that can be evacuated in any specified period.

12.6.2 It should be demonstrated at sea by a full deployment of a system, including the launching and inflation of the associated liferafts, that the system will provide a satisfactory means of evacuation in a sea state associated with a wind of force 6 on the Beaufort scale, and in association with a significant wave height of at least 3 m. The demonstration should be carried out in accordance with the following procedures:

- Phase 1 - Initial deployment of system
  - with the ship in a simulated "dead ship" condition, and the bow into the wind the system (passage and platform or any other configuration) should be deployed in its normal design manner; and
  - the platform and passage are to be observed from the ship to verify in this condition that it forms a stable evacuation system for the platform crew to descend and carry out their initial duties in preparation for evacuation;

- Phase 2 - Lee side trial
  - the ship to be manoeuvred to place the system on the lee side and then allowed to freely drift;
  - where the system employs a platform, the nominated number of the platform crew are to descend via the passage and retrieve at least two liferafts which have been launched separately;
  - where the system employs a passage giving direct access to the liferaft, the nominated number of liferaft boarding crew are to descend via the passage. If additional liferafts are employed with the system, then they should be launched separately and be retrieved by the liferaft crew; and
.4 after the liferafts have been satisfactorily deployed, dependant upon safety consideration 20 persons in suitable protective clothing are to evacuate to the liferafts through the passage;

.3 Phase 3 - Loaded trial lee side

.1 the platform, if fitted, and the required number of liferafts are to be loaded to their certified capacity with weights representing 75 kg/person; and

.2 when loaded with the required weights the system is to be observed for a period of 30 minutes, with the ship free to drift, to confirm the system continues to provide a safe and stable evacuation system;

.4 Phase 4 - Loaded trial weather side

.1 the trials in paragraphs 12.6.2.2 and 12.6.2.3 should be repeated with the system deployed on the weather side of the ship. The lee side trial and the weather side trial may be conducted in any convenient order;

.2 where ship manoeuvres are required to place the system on any one side, any damage or failure sustained during this manoeuvre should not constitute a failure of the system; and

.3 the system should be tested, as far as practicable, on a vessel having similar characteristics to the types of ships the equipment is to be fitted to."

**Part 2 - Production and installation tests**

32 Add a new subparagraph 2.2 after subparagraph 2.1.2, as follows:

"2.2 IMMERSION AND ANTI-EXPOSURE SUITS

Every immersion and anti-exposure suit should be tested with a constant air pressure for a period of at least 15 min and checked for leaks using a leak detection fluid. The air pressure should be appropriate to the type of material used in the manufacture of the suit and should never be less than 0.02 bar. All leaks shall be repaired before the suit leaves the factory."

33 Replace the existing text of subparagraph 5.1.4 by the following:

"5.1.4 Each liferaft produced should be inflated with air to the lesser of 2.0 times its working pressure or that sufficient to impose a tensile load on the inflatable tube fabric of at least 20% of the minimum required tensile strength. Relief valves should be inoperative for this test. After 30 min the liferaft should not show any signs of seam slippage or rupture, nor should the pressure decrease by more than 5%. The measurement of the pressure drop due to leakage can be started when it has been assumed that the compartment rubber material has completed stretching due to the inflation pressure and stabilized. This test should be conducted after equilibrium condition has been achieved. Following the test each relief valve should be tested for proper relief and reseating pressure."
34 Add after subparagraph 5.1.6 a new subparagraph 5.1.7, as follows:

"5.1.7 Exact NAP-test pressures can be calculated in accordance with the following equation:

\[
P(\text{kg/cm}^2) = \frac{2 \times \text{tensile strength (kg per 5 cm)}}{25 \times \text{diameter tube (cm)}}
\]

35 Add after subparagraph 6.2.7 a new paragraph 7, as follows:

"7 MARINE EVACUATION SYSTEMS

7.1 Installation tests

7.1.1 On the installation of a marine evacuation system on a ship, at least 50% of such systems should be subjected to a harbour trial deployment. At least one of these systems should be deployed in association with at least two of the inflatable liferafts to establish that correct launching and subsequent retrieving, bowsing-in and inflation procedures have been correctly installed.

7.1.2 Subject to the above deployments being satisfactory, untried systems should be similarly deployed within 12 months of the installation date.

7.1.3 For first of the above deployments, in association with the launching of the liferafts, a partial evacuation trial should be carried to ensure that:

.1 the system does not interfere with the launching of other life-saving equipment fitted onboard; and

.2 the system and associated liferafts are clear of all possible obstructions or dangers such as stabilisers or the ship's propellers."

***
ANNEX 16

RESOLUTION MSC.55(66)
(adopted on 30 May 1996)

ADOPTION OF AMENDMENTS TO THE RECOMMENDATION ON CONDITIONS FOR THE APPROVAL OF SERVICING STATIONS FOR INFLATABLE LIFERAFTS (RESOLUTION A.761(18))

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Assembly, when adopting resolution A.761(18) on Recommendation on conditions for the approval of servicing stations for inflatable liferafts, authorized the Committee to keep this Recommendation under review and to adopt, when appropriate, amendments thereto,

RECOGNIZING the recent technological advancement made in testing procedures for inflatable liferafts and with a view to improving their safety standard,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Life-Saving, Search and Rescue, at its twenty-sixth session, upon review of the Recommendation,

1. ADOPTS the Amendments to the Recommendation on Conditions for the Approval of Servicing Stations for Inflatable Liferafts (Annex to resolution A.761(18)), set out in the Annex to the present resolution;

2. INVITES Governments to inspect servicing stations for inflatable liferafts within their authority in accordance with the Recommendation as amended by the present resolution.
ANNEX

AMENDMENTS TO THE RECOMMENDATION ON CONDITIONS FOR THE APPROVAL OF SERVICING STATIONS FOR INFLATABLE LIFERAFTS (RESOLUTION A.761(18), ANNEX)

1 Replace the text of subparagraph 5.4 by the following:

".4 each liferaft should be subjected to the necessary additional pressure (NAP) test as described in appendix 1, at yearly intervals after the tenth year of the liferaft's life unless earlier servicing is deemed necessary as a result of visual inspection. After allowing sufficient time for the liferaft to regain fabric tension at working pressure, the liferaft should be subjected to a pressure holding test over a period of not less than one hour during which the pressure drop should not exceed 5% of the working pressure;"

2 Replace the text of subparagraph 5.9 by the following:

".9 with the buoyancy tubes supported by a system which leaves the floor seams unsupported, at a suitable height above the service floor as shown in appendix 3, a person weighing not less than 75 kg should walk/crawl around the perimeter of the floor for the entire circumference and the floor seams should be checked again. Manufacturers may substitute this test with another test which will determine the integrity of the floor seam until the next inspection is due. This test should be carried out at yearly intervals after the tenth year of the liferaft's life;"

3 Replace the text of subparagraph 5.12 by the following:

".12 davit-launched liferafts should be subject to a 10% overload suspension test at every second servicing. The floor seam (FS) test required in the eleventh and subsequent years need not be carried out for davit launched liferafts at servicings when the overload suspension test is conducted;"

4 Replace the text of subparagraph 6.2 by the following:

".2 the Administration is responsible for the approval of servicing stations for inflatable liferafts and for conducting periodic checks to determine compliance with this recommendation and for checking quality assurance by such checks or inspections as are deemed to be adequate to ensure compliance. However, for the approval of servicing stations for inflatable liferafts situated in other countries, the Administration may accept or recognize servicing stations approved, checked or inspected by surveyors nominated for the purpose or recognized organizations or by other SOLAS Contracting Governments;"

5 Add after the appendix 2 an appendix 3 - Guidelines for floor seam test supports, as attached.
APPENDIX 3

GUIDELINES FOR FLOOR SEAM TEST SUPPORTS (REF. PARAGRAPH 5.9)
ANNEX 17

PROPOSED AMENDMENTS TO SOLAS CHAPTER VII

CHAPTER VII

CARRIAGE OF DANGEROUS GOODS

Regulation 2 - Classification

1. Amend class 6.1 to read:

"Class 6.1 - Toxic substances".

2. Amend class 9 to read:

"Class 9 - Miscellaneous dangerous substances and articles, i.e. any other substances which experience has shown, or may show, to be of such a dangerous character that the provisions of this part should apply to it".

Regulation 7 - Explosives in passenger ships

3. Add the following new paragraph 1.5 to read:

"1.5 articles in compatibility group N shall only be allowed in passenger ships if the total net explosive mass does not exceed 50 kg per ship and no other explosives, apart from division 1.4 compatibility group S, are carried".

***
ANNEX 18

DRAFT ASSEMBLY RESOLUTION

CODE OF SAFE PRACTICE FOR THE CARRIAGE OF CARGOES AND PERSONS BY OFFSHORE SUPPLY VESSELS (OSV CODE)

THE ASSEMBLY,

   RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

   RECALLING ALSO resolution A. 741(18) on the International Management Code for the Safe Operation of Ships and Pollution Prevention (International Safety Management (ISM) Code),

   RECALLING FURTHER that the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, adopted, on 24 May 1994, a new SOLAS chapter IX - Management for the safe operation of ships, by which the ISM Code becomes mandatory,

   BEING AWARE that the specialized operations of offshore supply vessels may expose personnel and cargoes on board to additional hazards,

   BEARING IN MIND that a number of serious accidents have occurred on offshore supply vessels, during the carriage of cargoes and persons,

   RECOGNIZING that proper practice in the operation and management of offshore supply vessels, when interfacing with offshore installations, could avoid such accidents in the future,

   HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-sixth session,

   1. ADOPTS the Code of Safe Practice for the Carriage of Cargoes and Persons by Offshore Supply Vessels (OSV Code) set out in the Annex to the present resolution;

   2. INVITES Governments to apply the OSV Code;

   3. REQUESTS the Maritime Safety Committee to keep the OSV Code under review and to amend it, as necessary.
CODE OF SAFE PRACTICE FOR THE CARRIAGE OF CARGOES AND PERSONS BY OFFSHORE SUPPLY VESSELS (OSV CODE)

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2 Port operations

3 Sea-transport

4 Operations at the offshore installation

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Appendix 2 Colour code for hoses transferring bulk substances

Appendix 3 Interfacing activities of operators and contractors
FOREWORD

The purpose of this Code of Safe Practice is to provide, for both operator and contractor, an international standard to avoid or reduce to a minimum the hazards which affect offshore supply vessels in their daily operation of carrying cargoes and persons to, from and between offshore installations. It is not intended to address contractual matters or the financial implications that occur in the operator/contractor relationship.

This standard should be considered when implementing a Safety Management System (SMS) as meant by paragraph 1.4 of the IMO International Safety Management (ISM) Code.

1 GENERAL

1.1 Definitions

1.1.1 Contractor means the organization that has the responsibility for the operation of the ship as laid down in paragraph 1.1.2 of the International Safety Management (ISM) Code.

1.1.2 Operator\(^1\) means the party who contracts an offshore supply vessel.

1.1.3 Offshore supply vessel (OSV) means a vessel which is used for the transportation of stores, materials, equipment or personnel to, from and between offshore installations.

1.1.4 Offshore installation manager (OIM) means the person responsible for all activities on the offshore installation.

1.1.5 Offshore installation means a structure which is, or is to be, or has been used, while standing or stationed in water, or on the foreshore or other land intermittently covered with water (see appendix 1).

1.1.6 Logistics co-ordinator means a person or persons based on shore or offshore, specifically designated by the operator as a focal point and having responsibility for:

1. the proper preparation of cargo for transport offshore;
2. loading/unloading/backloading plans;
3. sailing schedules;
4. contingencies; and
5. other matters, as required by the situation, including dangerous goods.

\(^1\)A mobile offshore unit (MOU) owner/contractor is the operator in cases where he contracts an offshore supply vessel.
1.1.7  *Cargo handler* means a member of ship or offshore installation handling the cargo on board the OSV at the offshore installation.

1.2  **Information and documentation**

1.2.1  OSVs should be supplied with all relevant information to undertake the intended voyage(s). In deciding upon the relevancy of the information provided, a distinction should be made between:

.1  vessels chartered for a stated period or more consecutive voyages; and

.2  vessels chartered for one voyage or a short period of time.

1.2.2  The operator and the contractor should have documents, containing procedures and instructions, preferably used to describe and implement the Safety Management System (SMS), that address the relevant items of table 1 and table 2:

Table 1

<table>
<thead>
<tr>
<th>Operator and contractor</th>
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<td>Detailed communication procedures</td>
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<td>Procedures for reporting accidents and non conformities and follow-up action</td>
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<td>Vessel sailing schedule taking into account assessment of weather- and sea conditions</td>
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<td>Arrival/departure procedures vessel - shore base</td>
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<td>Arrival/departure procedures vessel - offshore installation</td>
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<td>Detailed loading/unloading/backloading procedures with checklist, including those related to dangerous goods, heavy lifts and unusual loads</td>
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<td>Responsibilities and authorities</td>
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<td>Emergency procedures</td>
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<td>Special operations</td>
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<tr>
<td>Critical operations</td>
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</tbody>
</table>
Table 2

<table>
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<tr>
<th>Operator</th>
<th>Contractor</th>
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</thead>
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<td>Incoming materials on the shore base with an offshore destination</td>
<td>Arrival vessel in 'safety zone' offshore installation</td>
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<td>Mooring and anchoring procedures at the offshore installation</td>
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<tr>
<td>Cargo handling</td>
<td>Check on/check-list securing cargo</td>
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<td>Cargo handling equipment</td>
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<td></td>
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<tr>
<td>Update field information</td>
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</tbody>
</table>

1.2.3 Further to 1.2.2, it is recommended that all interfacing activities, such as those set out in appendix 3, are addressed.

1.3 Communication

There should be effective communications between all responsible persons involved in all OSV operations. When radio communications are used, dedicated channels should be maintained throughout an operation.

1.4 Cargo handling and stability

1.4.1 General

1.4.1.1 Both during sea-transport and operations at the offshore installation, OSVs with an open stern, under certain conditions (e.g. certain weather- and sea-conditions, deeply laden), are troubled with incoming water on the exposed cargo deck. This can lead to dangerous situations, especially if cargoes with a tendency to float and/or with low friction coefficients are stowed on the exposed deck of the vessel. It is recommended that these vessels be provided with instructions to counter these dangers.
1.4.1.2 The number of cargo handlers should be sufficient for safe and effective cargo operations.

1.4.1.3 The crew of OSVs should be adequately trained.

1.4.1.4 During deck cargo handling operations other activities should be avoided on the cargo deck of the vessel.

1.4.1.5 "Safe havens" and escape routes for personnel from the cargo deck should be properly marked and kept clear at all times. A crash barrier, fitted along each side of the deck, could be one method of achieving a safe haven.

1.4.2 Pre-planning

1.4.2.1 A passage plan and sailing schedule should be made and taken into consideration when a loading plan is made. After departure the passage plan may only be changed by the responsible logistics Co-ordinator in cooperation with the master. It is essential therefore that liaison, preferably by the logistics co-ordinator, is established between the OIM and the master prior to unloading or backloading of cargo.

1.4.2.2 The master should be advised of expected delays to operations. Excessive stand-by times in close proximity to offshore installations should be avoided.

1.4.3 Cargo

1.4.3.1 The master should ensure coordination of all parties involved in the loading or discharging of cargoes or persons before transfer operations begin, to ensure that all those involved recognize their responsibilities and reach agreement on the equipment, communications and safety procedures to be used.

1.4.3.2 Before loading, the master should be provided with details on dangerous cargoes, non-standardized cargoes and cargoes which are heavy, difficult to stow, secure, or unload.

1.4.3.3 The master should not accept the loading of any cargo which is not safe for cargo handling, not adequately packed, not properly marked or not properly documented. The responsibility for ensuring that cargoes are properly prepared for carriage on board OSVs rests with the operator, shipper and/or owner of the items concerned.

1.4.3.4 All cargo operations should be supervised by the officer-in-charge.

1.4.3.5 Operators should ensure that as much cargo as possible is containerised to allow safer stowage and securing on deck. Where different container sizes are used, the need for safe securing should be considered when planning the stowage. For constructional requirements for containers reference should be made to MSC/Circ.613 - Guidelines for the Approval of Containers Handled in Open Seas.

1.4.4 Stowage and securing of cargo

1.4.4.1 The master should ensure that the vessel has a sufficient quantity and types of lashing and securing materials for the safe operation of the vessel. The lashing and securing materials should be:
suitable for their intended purpose;

.2 of adequate strength;

.3 easy to use;

.4 well maintained; and

.5 periodically inspected,

and a record should be kept of the inspections.

1.4.5 Bulk cargo

1.4.5.1 Hoses used for the transfer of bulk substances should be colour-coded at the hose terminations to identify the product for which the hose is to be used. A recommended colour code is shown in appendix 2 to this Code.

1.4.5.2 Before bulk cargo transfer operations take place the following should be established:

.1 starting and stopping procedures;

.2 quantities and categories of product to be transferred;

.3 permitted pumping rate and pressure; and

.4 emergency stopping procedures.

1.4.5.3 During bulk cargo transfer a responsible crew member should be in attendance to monitor, direct and control the transfer operation.

1.4.6 Stability

Reference should be made to the Guidelines for the Design and Construction of Offshore Supply Vessels (IMO resolution A.469(XII), as amended).

1.4.7 Personal protective equipment

---

^1For hazardous and noxious liquid substances in bulk see IMO resolution A.673(16) "Guidelines for the Transport and Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk in Offshore Support Vessels".
1.4.7.1 Each crew member and/or cargo handler should, during cargo operations, be provided with personal protective equipment (PPE) in a high visibility colour, appropriate to the geographical area of operation and the work to be done. Sufficient spare equipment should be available.

1.4.7.2 Crew members and/or cargo handlers working on deck should wear buoyancy aids and relevant PPE to protect head, feet and hands.

1.4.7.3 Examples of PPE which may be required are:

.1 working-life jackets;
.2 working-exposure suits (for operations in extreme areas); and
.3 hard hats, protective boots, safety glasses.

2 PORT OPERATIONS

2.1 Communication

2.1.1 Prior to departure of the OSV the logistics co-ordinator should communicate information concerning sailing-schedule, cargo manifest and other relevant items to the operator and the contractor (e.g. OIM and master).

2.1.2 Prior to the arrival of an OSV at a port, the master should communicate to the port information regarding the vessel's ETA, cargo requirements and any special circumstances of the OSV.

2.2 Cargo

2.2.1 The operator should ensure that cargoes within containers are adequately stowed and secured for sea transport. The master has the authority to carry out random inspections. If inspection of any container reveals inadequate stowing, lashing or securing arrangements, inadequate marking or labelling of dangerous goods, or if he is in doubt as to the safety status of the container, he should refuse this container for sea-transport.

2.2.2 Reference should be made to the Code of Safe Practice for Cargo Stowage and Securing (CSS Code (IMO resolution A.714(17))) and the IMO/ILO Guidelines for Packing Cargoes in Freight Containers or Vehicles.

3 SEA-TRANSPORT

3.1 General

3.1.1 Cargoes should be properly stowed and secured during sea-transport. Regular visual checks of the securing arrangements should be carried out.
3.1.2 Closed containers should not normally be opened while the vessel is at sea unless an emergency situation (e.g. fire or spillage) occurs. All necessary precautions should be taken to prevent injury to personnel.

3.2 Communication

During sea-transport the master, OIM and logistics co-ordinator should inform each other about changes in relevant schedules and conditions.

4 OPERATIONS AT THE OFFSHORE INSTALLATION

4.1 General

4.1.1 Prior to commencing cargo operations the Master and the OIM should confirm the loading/unloading plan.

4.1.2 Any circumstance limiting cargo operations between the OSV and offshore installation (e.g. the visibility of the deck from the crane control cab, blinding lighting or overboard discharges from the installation) should be immediately communicated between the master and the OIM.

4.1.3 The OIM should ensure that a sling of sufficient length is attached between the crane block and the hook to minimize danger to cargo handlers and vessel imposed by the block. The crane block should be marked in such a way that it is visible under all circumstances of operation.

4.2 Mooring requirements

4.2.1 Taking into account such factors as listed below, the master decides whether and how he will moor and confirms this with the OIM:

   .1 wind, sea and swell;
   .2 current;
   .3 manoeuvring characteristics of the vessel;
   .4 mooring area of the offshore installation and crane specifications;
   .5 specifications of the cargo (weight, location, nature); and
   .6 effectiveness of anchor(s) in seabed.

4.2.2 The decision on when it is unsafe for the vessel to remain moored or in close proximity to the offshore installation can be taken by the master or the OIM.

4.2.3 "Snatching" of cargo is allowed when the master considers it safe to do so under the prevailing conditions.
4.3  Communication

4.3.1 Prior to arrival at the offshore installation the master should obtain permission from the OIM to enter the installation's Exclusive Zone.

4.3.2 During cargo operations and personnel transfer at the offshore installation effective communication should be maintained between officer in charge, cargo handlers, crane operator and deck foreman of the offshore installation.

4.3.3 The master should inform the OIM and logistics co-ordinator about the vessel's time of departure and ETA at next location.

4.4  Information and documentation

4.4.1 Cargo information should be available to the receiving parties before cargo operations commence.

4.5  Personnel transfer

4.5.1 When transfers of personnel are performed, the normal methods are by personnel basket or by boat. The safety of personnel should never be compromised and the highest level of control and communication should be followed throughout these operations.

4.5.2 No personnel transfer should take place on location unless the consent of the OIM has been obtained and procedures have been agreed upon by all responsible parties concerned, taking into account actual and forecast weather conditions, wind speed, sea state and visibility.

4.5.3 The OIM should ensure that personnel baskets and all associated rigging are designed and maintained to achieve a 10:1 load factor of safety. Baskets should be inspected daily and prior to use.

4.5.4 The OIM should ensure that only certified cranes and crane operators are involved in personnel transfers. Direct communications should be established, and maintained throughout the transfer, between vessel deck crew, crane operators and vessel bridge.

4.5.5 Persons being transferred should wear lifejackets, safety helmets and boots. In addition, suitable protective and exposure suits should be worn as required.

4.6  Cargo handling

To minimize the potential for injury to deck crew and/or cargo handlers, they should not attempt to assist the crane operator to position hooked cargo on deck. The cargo should be landed, unhooked, and then if need be, moved into stowage position with tugger winches or rams.
APPENDIX 1

EXAMPLES AND TYPES OF OFFSHORE INSTALLATIONS

The table below gives examples of the types of structures and vessels which, for the purposes of determining the applicability of this Code, are and are not offshore installations:

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<thead>
<tr>
<th>Offshore installations</th>
<th>Not offshore installations (or parts of installations)</th>
</tr>
</thead>
<tbody>
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<td>- Fixed production platforms</td>
<td>- Heavy lift vessels</td>
</tr>
<tr>
<td>- Floating production platforms</td>
<td>- Diving support vessels</td>
</tr>
<tr>
<td>- Floating storage units</td>
<td>- Shuttle tankers</td>
</tr>
<tr>
<td>- Mobile offshore drilling units (MODUs)</td>
<td>- Well service vessels</td>
</tr>
<tr>
<td>- Flotels</td>
<td>- Stacked MODUs</td>
</tr>
<tr>
<td>- Floating production, storage and operations unit (FPSO)</td>
<td>- Subsea installations</td>
</tr>
<tr>
<td></td>
<td>- Dredgers</td>
</tr>
<tr>
<td></td>
<td>- Wells not connected to an installation</td>
</tr>
<tr>
<td></td>
<td>- Survey vessels</td>
</tr>
<tr>
<td></td>
<td>- Pipelaying barges</td>
</tr>
<tr>
<td></td>
<td>- Pipelines which are more than 500 m from the main</td>
</tr>
<tr>
<td></td>
<td>structure to which they are attached</td>
</tr>
<tr>
<td></td>
<td>- Structures which are permanently attached to dry</td>
</tr>
<tr>
<td></td>
<td>land or bridges or walkways</td>
</tr>
</tbody>
</table>
APPENDIX 2

COLOUR CODE FOR HOSES TRANSFERRING BULK SUBSTANCES

To avoid misunderstanding about the hoses to be used for transferring bulk substances and connection points on board the vessel and offshore installation, colour coding should be used. For the purpose of identification the hose terminations and connection points should be colour coded by use of a coloured band to mark the substance and all offshore supply vessels and offshore installations should adopt a colour code as follows:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Coloured Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potable water</td>
<td>Blue</td>
</tr>
<tr>
<td>Drill water</td>
<td>Green</td>
</tr>
<tr>
<td>Fuel</td>
<td>Brown</td>
</tr>
<tr>
<td>Dry bulk</td>
<td>Yellow: cement</td>
</tr>
<tr>
<td></td>
<td>Orange: barite/bentonite</td>
</tr>
<tr>
<td>Dedicated base oil/oil based mud</td>
<td>Black</td>
</tr>
<tr>
<td>Brine</td>
<td>Optional</td>
</tr>
<tr>
<td>Methanol</td>
<td>Optional</td>
</tr>
</tbody>
</table>
APPENDIX 3

INTERFACING ACTIVITIES OF OPERATORS AND CONTRACTORS

1. The purpose of this appendix is to assist operators and contractors in addressing interfacing activities that follow from the carriage of cargoes and persons by offshore supply vessels preferably through a Safety Management System, or operating procedure, whichever is in place.

2. The operator and the contractor should establish common procedures and operating criteria and resolve conflicts on areas where both plans and instructions interface. Examples of such areas are:

   .1 safety and environmental protection policies;
   .2 periodical drills; and
   .3 the authority and responsibilities of respective personnel representing the operator and the contractor, which include:
      .3.1 the master and OIM's authority and responsibility to advise each other and to interrupt operations when they consider that safety and environmental matters make it necessary; and
      .3.2 the designated person of the contractor (reference is made to paragraph 4 of the ISM Code) and the person of appropriate authority for the operator to communicate directly with each other, with respect to safety and environmental matters.

3. The operator and the contractor should make relevant parts of their Safety Management Systems, or operating procedures, mutually available.

4. The operator and the contractor should establish procedures for the mutual exchange of information with regard to relevant non-conformities, accidents and hazardous occurrences with the objective of improving safety and environmental matters. Meetings between key personnel, including crane operators, can assist this exchange.

***
ANNEX 19

DRAFT ASSEMBLY RESOLUTION

RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

BEING CONCERNED with the continued loss of life resulting from personnel entering spaces, in which the atmosphere is oxygen-depleted, toxic or flammable,

BEING AWARE of the work undertaken by the International Labour Organization, Governments and segments of the private sector in this regard,

NOTING that the Maritime Safety Committee, at its fifty-ninth session, approved appendix F of the Code of Safe Practice for Solid Bulk Cargoes concerning recommendations for entering cargo spaces, tanks, pump-rooms, fuel tanks, cofferdams, duct keels, ballast tanks and similar enclosed spaces,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-sixth session,

1. ADOPTS the Recommendations for Entering Enclosed Spaces Aboard Ships, set out in the Annex to the present resolution;

2. INVITES Governments to bring the Recommendations to the attention of shipowners, ship operators and seafarers urging them to apply the Recommendations, as appropriate, to all ships;

3. REQUESTS the Maritime Safety Committee to keep the Recommendations under review and amend them, as necessary.
ANNEX

RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

PREAMBLE

The object of these recommendations is to encourage the adoption of safety procedures aimed at preventing casualties to ships personnel entering enclosed spaces where there may be an oxygen deficient, flammable and/or toxic atmosphere.

Investigations into the circumstances of casualties that have occurred have shown that accidents on board ships are in most cases caused by an insufficient knowledge of, or disregard for, the need to take precautions rather than a lack of guidance.

The following practical recommendations apply to all types of ships and provide guidance to seafarers. It should be noted that on ships where entry into enclosed spaces may be infrequent, for example, on certain passenger ships or small general cargo ships, the dangers may be less apparent and, accordingly, there may be a need for increased vigilance.

The recommendations are intended to complement national laws or regulations, accepted standards or particular procedures which may exist for specific trades, ships or types of shipping operations.

It may be impracticable to apply some recommendations to particular situations. In such cases, every endeavour should be made to observe the intent of the recommendations, and attention should be paid to the risks that may be involved.

1 INTRODUCTION

The atmosphere in any enclosed space may be deficient in oxygen and/or contain flammable and/or toxic gases or vapours. Such an unsafe atmosphere could also subsequently occur in a space previously found to be safe. Unsafe atmosphere may also be present in spaces adjacent to those spaces where a hazard is known to be present.

2 DEFINITIONS

2.1 "Enclosed space" means a space which has any of the following characteristics:

.1 limited openings for entry and exit;

.2 unfavourable natural ventilation; and

.3 is not designed for continuous worker occupancy,
and includes, but is not limited to, cargo spaces, double bottoms, fuel tanks, ballast tanks, pump-rooms, compressor rooms, cofferdams, void spaces, duct keels, inter-barrier spaces, engine crankcases and sewage tanks.

2.2 "Competent person" means a person with sufficient theoretical knowledge and practical experience capable of making an informed assessment of the likelihood of a dangerous atmosphere being present or subsequently arising in the space.

2.3 "Responsible person" means a person authorised to permit entry into an enclosed space and having sufficient knowledge of the procedures to be followed.

3 ASSESSMENT OF RISK

3.1 In order to ensure safety, a competent person should always make a preliminary assessment of any potential hazards in the space to be entered taking into account the previous cargo carried, ventilation of the space, coating of the space and other relevant factors. The competent person's preliminary assessment should determine the potential for the presence of an oxygen-deficient, flammable or toxic atmosphere.

3.2 The procedures to be followed for testing the atmosphere in the space and for entry should be decided on the basis of the preliminary assessment. These will depend on whether the preliminary assessment shows that:

.1 there is minimal risk to the health or life of personnel entering the space;

.2 there is no immediate risk to health or life but a risk could arise during the course of work in the space; and

.3 a risk to health or life is identified.

3.3 Where the preliminary assessment indicates minimal risk to health or life or potential for a risk to arise during the course of work in the space, the precautions described in sections 4, 5, 6 and 7 should be followed as appropriate.

3.4 Where the preliminary assessment identifies risk to life or health, if entry is to be made, the additional precautions specified in section 8 should also be followed.

4 AUTHORIZATION OF ENTRY

4.1 No person should open or enter an enclosed space unless authorised by the master or nominated responsible person and the appropriate safety procedures laid down for the particular ship have been followed.

4.2 Entry into enclosed spaces should be planned and the use of an entry permit system, which may include the use of a checklist, is recommended. An Enclosed Space Entry Permit should be issued by the master or nominated responsible person and completed by a person who enters the space, prior to entry. An example of the Enclosed Space Entry Permit is provided in the annex.
5 GENERAL PRECAUTIONS

5.1 The master or responsible person should determine that it is safe to enter an enclosed space by ensuring:

.1 that potential hazards have been identified in the assessment and as far as possible isolated or made safe;

.2 that the space has been thoroughly ventilated by natural or mechanical means to remove any toxic or flammable gases, and to ensure an adequate level of oxygen throughout the space;

.3 that the atmosphere of the space has been tested as appropriate with properly calibrated instruments to ascertain acceptable levels of oxygen and acceptable levels of flammable or toxic vapours;

.4 that the space has been secured for entry and properly illuminated;

.5 that a suitable system of communication between all parties for use during entry has been agreed and tested;

.6 that an attendant has been instructed to remain at the entrance to the space whilst it is occupied;

.7 that rescue and resuscitation equipment has been positioned ready for use at the entrance to the space, and that rescue arrangements have been agreed;

.8 that personnel are properly clothed and equipped for the entry and subsequent tasks; and

.9 that a permit has been issued authorizing entry.

The precautions in .6 and .7 may not apply to every situation described in this section. The person authorizing entry should determine whether an attendant and the positioning of rescue equipment at the entrance to the space is necessary.

5.2 Only trained personnel should be assigned duties of entering or functioning as attendants or as members of rescue teams. Ships' crews should be drilled periodically in rescue and first aid.

5.3 All equipment used in connection with entry should be in good working condition and inspected prior to use.

6 TESTING THE ATMOSPHERE

6.1 Appropriate testing of the atmosphere of a space should be carried out with properly calibrated equipment by persons trained in the use of the equipment. The manufacturers' instructions should be strictly followed. Testing should be carried out before any person enters the space and at regular intervals thereafter until all work is completed. Where appropriate, the testing of the space should be carried out at as many different levels as is necessary to obtain a representative sample of the atmosphere in the space.
6.2 For entry purposes, steady readings of the following should be obtained:

.1 21% oxygen by volume by oxygen content meter; and
.2 not more than 1% of lower flammable limit (LFL) on a suitably sensitive combustible gas indicator, where the preliminary assessment has determined that there is potential for flammable gases or vapours.

If these conditions cannot be met, additional ventilation should be applied to the space and re-testing should be conducted after a suitable interval. Any gas testing should be carried out with ventilation to the enclosed space stopped, in order to obtain accurate readings.

6.3 Where the preliminary assessment has determined that there is potential for the presence of toxic gases and vapours, appropriate testing should be carried out using fixed or portable gas or vapour detection equipment. The readings obtained by this equipment should be below the occupational exposure limits for the toxic gases or vapours given in accepted national or international standards. It should be noted that testing for flammability does not provide a suitable means of measuring for toxicity, nor vice versa.

6.4 It should be emphasized that pockets of gas or oxygen-deficient areas can exist and should always be suspected even when an enclosed space has been satisfactorily tested as being suitable for entry.

7 PRECAUTIONS DURING ENTRY

7.1 The atmosphere should be tested frequently whilst the space is occupied and persons should be instructed to leave the space should there be a deterioration in the conditions.

7.2 Ventilation should continue during the period that the space is occupied and during temporary breaks. Before re-entry after a break, the atmosphere should be re-tested. In the event of failure of the ventilation system, any persons in the space should leave immediately.

7.3 In the event of an emergency, under no circumstances should the attending crew member enter the space before help has arrived and the situation has been evaluated to ensure the safety of those entering the space to undertake rescue operations.

8 ADDITIONAL PRECAUTIONS FOR ENTRY INTO A SPACE WHERE THE ATMOSPHERE IS KNOWN OR SUSPECTED TO BE UNSAFE

8.1 If the atmosphere in an enclosed space is suspected or known to be unsafe, the space should only be entered when no practical alternative exists. Entry should only be made for further testing, essential operation, safety of life or safety of a ship. The number of persons entering the space should be the minimum compatible with the work to be performed.

8.2 Suitable breathing apparatus, e.g., of the air-line or self-contained type should always be worn, and only personnel trained in its use should be allowed to enter the space. Air-purifying respirators should not be used as they do not provide a supply of clean air from a source independent of the atmosphere within the space.
8.3 The precautions specified in section 5 should also be followed, as appropriate.
8.4 Rescue harnesses should be worn and, unless impractical, lifelines should be used.
8.5 Appropriate protective clothing should be worn particularly where there is any risk of toxic substances or chemicals coming into contact with the skin or eyes of those entering the space.
8.6 The advice in paragraph 7.3 concerning emergency rescue operations is particularly relevant in this context.

9 HAZARDS RELATED TO SPECIFIC TYPES OF CARGO

9.1 Dangerous goods in packaged form

9.1.1 The atmosphere of any space containing dangerous goods may put at risk the health or life of any person entering it. Dangers may include flammable, toxic or corrosive gases or vapours that displace oxygen, residues on packages and spilled material. The same hazards may be present in spaces adjacent to the cargo spaces. Information on the hazards of specific substances is contained in the IMDG Code, the Emergency Procedures for Ships Carrying Dangerous Goods (EMS) and Materials Safety Data Sheets (MSDS). If there is evidence or suspicion that leakage of dangerous substances has occurred, the precautions specified in section 8 should be followed.

9.1.2 Personnel required to deal with spillages or to remove defective or damaged packages should be appropriately trained and wear suitable breathing apparatus and appropriate protective clothing.

9.2 Bulk liquid

The tanker industry has produced extensive advice to operators and crews of ships engaged in the bulk carriage of oil, chemicals and liquefied gases, in the form of specialist international safety guides. Information in the guides on enclosed space entry amplifies these recommendations and should be used as the basis for preparing entry plans.

9.3 Solid bulk

On ships carrying solid bulk cargoes, dangerous atmospheres may develop in cargo spaces and adjacent spaces. The dangers may include flammability, toxicity, oxygen depletion or self-heating, which should be identified in shipping documentation. For additional information, reference should be made to the Code of Safe Practice for Solid Bulk Cargoes.

9.4 Oxygen depleting cargoes and materials

A prominent risk with such cargoes is oxygen depletion due to the inherent form of the cargo, for example, self-heating, oxidation of metals and ores or decomposition of vegetable oils, animal fats, grain and other organic materials or their residues. The materials listed below are known to be capable of causing oxygen depletion. However, the list is not exhaustive. Oxygen depletion may also be caused by other materials of vegetable or animal origin, by flammable or spontaneously combustible materials, and by materials with a high metal content:
.1 grain, grain products and residues from grain processing (such as bran, crushed grain, crushed malt or meal), hops, malt husks and spent malt;

.2 oilseeds as well as products and residues from oilseeds (such as seed expellers, seed cake, oil cake and meal);

.3 copra;

.4 wood in such forms as packaged timber, roundwood, logs, pulpwood, props (pit props and other propwood), woodchips, woodshavings, woodpulp pellets and sawdust;

.5 jute, hemp, flax, sisal, kapok, cotton and other vegetable fibres (such as esparto grass/Spanish grass, hay, straw, bhusa), empty bags, cotton waste, animal fibres, animal and vegetable fabric, wool waste and rags;

.6 fishmeal and fishscrap;

.7 guano;

.8 sulphidic ores and ore concentrates;

.9 charcoal, coal and coal products;

.10 direct reduced iron (DRI)

.11 dry ice;

.12 metal wastes and chips, iron swarf, steel and other turnings, borings, drillings, shavings, filings and cuttings; and

.13 scrap metal.

9.5 **Fumigation**

When a ship is fumigated, the detailed recommendations contained in the Recommendations on the Safe Use of Pesticides in Ships* should be followed. Spaces adjacent to fumigated spaces should be treated as if fumigated.

10 **CONCLUSION**

*Refer to the Recommendations on Safe Use of Pesticides in Ships, approved by the Maritime Safety Committee of the Organization by circular MSC/Circ.612, as amended by MSC/Circ.689 and MSC/Circ.746.
Failure to observe simple procedures can lead to people being unexpectedly overcome when entering enclosed spaces. Observance of the principles outlined above will form a reliable basis for assessing risks in such spaces and for taking necessary precautions.
ANNEX

EXAMPLE OF AN ENCLOSED SPACE ENTRY PERMIT

This permit relates to entry into any enclosed space and should be completed by the master or responsible officer and by the person entering the space or authorized team leader.

### General

Location/Name of enclosed space..........................................................................................................................................

Reason for entry..........................................................................................................................................................................

This permit is valid From:.............hrs Date.............
To ..........hrs Date.............
(See note 1)

### Section 1 - Pre-entry preparation

(To be checked by the master or nominated responsible person) Yes No

- Has the space been thoroughly ventilated ?

- Has the space been segregated by blanking off or isolating all connecting pipelines or valves and electrical power/equipment ?

- Has the space been cleaned where necessary ?

- Has the space been tested and found safe for entry ? (See note 2)

- Pre-entry atmosphere test readings:
  - oxygen.......................% vol (21%) By:.............
  - hydrocarbon..............% LFL (less than 1%)
  - toxic gases.................ppm (specific gas and PEL) Time:.............

(See note 3)

- Have arrangements been made for frequent atmosphere checks to be made while the space is occupied and after work breaks ?

- Have arrangements been made for the space to be continuously ventilated throughout the period of occupation and during work breaks ?

- Are access and illumination adequate ?
### Section 2 - Pre-entry checks

(To be checked by the person entering the space or authorized team leader)

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have received instructions or permission from the master or nominated responsible person to enter the enclosed space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 1 of this permit has been satisfactorily completed by the master or nominated responsible person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have agreed and understand the communication procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have agreed upon a reporting interval of............................minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency and evacuation procedures have been agreed and are understood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am aware that the space must be vacated immediately in the event of ventilation failure or if atmosphere tests show a change from agreed safe criteria</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 3 - Breathing apparatus and other equipment
(To be checked jointly by the master or nominated responsible person and the person who is to enter the space)

Yes       No

- Those entering the space are familiar with the breathing apparatus to be used

- The breathing apparatus has been tested as follows:
  - gauge and capacity of air supply
  - low pressure audible alarm
  - face mask - under positive pressure and not leaking

- The means of communication has been tested and emergency signals agreed

- All personnel entering the space have been provided with rescue harnesses and, where practicable, lifelines

Signed upon completion of sections 1, 2 and 3 by:

Master or nominated responsible person............... Date............... Time............... 

Responsible person supervising entry .................. Date............... Time............... 

Person entering the space or authorized team leader ................. Date............... Time............... 

Section 4 - Personnel entry
(To be completed by the responsible person supervising entry)

<table>
<thead>
<tr>
<th>Names</th>
<th>Time in</th>
<th>Time out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Section 5 - Completion of Job

(To be completed by the responsible person supervising entry)

- **Job completed**
  
  Date..........................  Time.........................

- **Space secured against entry**
  
  Date..........................  Time.........................

- **The officer of the watch has been duly informed**
  
  Date..........................  Time.........................

Signed upon completion of sections 4 and 5 by:

  
  Responsible person supervising entry  .........................  Date...................  Time................

---

**THIS PERMIT IS RENDERED INVALID SHOULD VENTILATION OF THE SPACE STOP OR IF ANY OF THE CONDITIONS NOTED IN THE CHECKLIST CHANGE**

---

**Notes:**

1. The permit should contain a clear indication as to its maximum period of validity.

2. In order to obtain a representative cross-section of the space's atmosphere, samples should be taken from several levels and through as many openings as possible. Ventilation should be stopped for about 10 minutes before the pre-entry atmosphere tests are taken.

3. Tests for specific toxic contaminants, such as benzene or hydrogen sulphide, should be undertaken depending on the nature of the previous contents of the space.
STOP!
Have you been through the drill?

You should NEVER enter any enclosed space unless an Enclosed Space Entry Permit has been issued.

Enclosed spaces can kill!

Do not ignore or forget it —

you may end up like this ———

***
ANNEX 20

RESOLUTION MSC.56(66)
(adopted on 3 June 1996)

ADOPTION OF AMENDMENTS TO RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EMERGENCY POSITION-INDICATING RADIO BEACONS (EPIRBs) OPERATING ON 406 MHz (RESOLUTION A.810(19))

THE MARITIME SAFETY COMMITTEE,

RECALLING resolution A.825(19), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

HAVING CONSIDERED resolution A.810(19) on Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz and reviewed the code assignment method recommended in paragraph 4, part B of the Annex to resolution A.810(19),

ADOPTS the Amendments to the Recommendation on performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz, annexed to resolution A.810(19), set out in the Annex to the present resolution.
ANNEX

AMENDMENTS TO THE RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EMERGENCY POSITION-INDICATING RADIO BEACONS (EPIRBs) OPERATING ON 406 MHz (RESOLUTION A.810(19))

ANNEX TO RESOLUTION A.810(19)

1 In paragraph 4 of part B of the Annex:

.1 the expression "Until 1 February 1999", in the second sentence, is deleted; and

.2 the fourth sentence "After 1 February 1999, all new beacon installations should be in accordance with method .1" is deleted.

2 Footnote 1 is deleted.

***
ANNEX 21

DRAFT ASSEMBLY RESOLUTION

GUIDANCE TO ADMINISTRATIONS ON DEVELOPMENT OF A SHORE-BASED SAR TELECOMMUNICATION INFRASTRUCTURE

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

RECALLING ALSO that, in order to reduce time delays and enable more efficient search and rescue (SAR) operations, it is necessary to improve the efficiency of the SAR telecommunication infrastructure on an end-to-end basis including the preservation of priority handling of SAR traffic in the landline systems,

RECOGNIZING that emerging technologies, such as display of caller identification, automatic decoding of certain message parameters and retrieval of emergency data from associated databases, would enhance the SAR communications system thereby improving life-saving capabilities of SAR operations,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-sixth session,

RECOMMENDS that, where practicable to enhance the processing of distress alerts and the effectiveness of SAR co-ordination and operations, Administrations consider implementing some or all of the following options:

(a) the use of switching and software arrangements for land connections to rescue co-ordination centres (RCCs) from shore facilities like coast earth stations, DSC coast stations, and mission control centres to preserve the message priority;

(b) equipping RCCs with ship-earth stations in areas of unreliable landline operation to facilitate emergency communications between RCCs and coast earth stations, and to enable direct communications with ships when required;

(c) arranging for distribution of alerts in accordance with the IMO SAR Plan where they apply, or otherwise to associated RCCs or search and rescue points of contacts (SPOCs) and study the possibility for:

(i) appropriate software to automatically decode any message parameters not in plain language prior to or upon delivery of distress alerts to the RCC; and

(ii) appropriate software to automatically retrieve supporting emergency data on distressed ships from available databases prior to or upon delivery of distress alerts to the RCC.
ANNEX 22

PROPOSED AMENDMENTS TO THE IGC AND GC CODES

1 IGC Code

1.1 In chapter 19, in column "f" of the table, for the product "Butadiene", the entry "F" is replaced by "F + T".

2 GC Code

2.1 In chapter XIX, in column "f" of the table, for the product "Butadiene" the entry "I" is replaced by "I + T".

***
ANNEX 23

PROPOSED AMENDMENTS TO SOLAS REGULATIONS II-2/56, 59 AND 62

CHAPTER II-2

CONSTRUCTION - FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART D - FIRE SAFETY MEASURES FOR TANKERS

Regulation 56 - Location and separation of spaces

1 The sentence below the title is replaced by the following:

"(This regulation applies to ships constructed on or after 1 February 1992, except that paragraph 9 applies to ships constructed on or after [date of entry into force of the amendments])."

2 The following new paragraph 9 is added after paragraph 8.3:

"9 On every ship to which this regulation applies, where there is permanent access from a pipe tunnel to the main pump-room, a watertight door shall be fitted complying with the requirements of regulation II-1/25-9.2 and in addition with the following:

.1 in addition to bridge operation, the watertight door shall be capable of being manually closed from outside the main pump-room entrance; and

.2 the watertight door shall be kept closed during normal operations, of the ship except when access to the pipe tunnel is required".

Regulation 59 - Venting, purging, gas-freeing and ventilation

3 The following text is added after the title of the regulation:

"(Paragraphs 1.6.2 to 1.6.4 apply to ships constructed on or after [date of entry into force of the amendments]. Paragraphs 1.6.2 to 1.6.4 apply to ships constructed before [date of entry into force of the amendments] [on the date of the first scheduled dry-docking thereafter, but not later than 5 years after date of entry into force of the amendments])."

4 In paragraph 1.3.2, the following text is added after the second sentence:

"The control system operated shall provide indication on the operational status of such valves. Where tanks have been isolated, it shall be ensured that relevant isolating valves are opened before any cargo loading and ballasting or discharging is commenced."

5 Paragraph 1.6 is renumbered as paragraph 1.6.1.

6 The following new paragraphs 1.6.2 to 1.6.4 are added after the renumbered paragraph:
"1.6.2 The venting arrangements as required in paragraph 1.2.2 shall be provided with a secondary means for pressure/vacuum relief.

1.6.3 If cargo loading and ballasting or discharging of a cargo tank is intended, which is isolated from a common venting system, that cargo tank or cargo tank group shall be fitted with an additional means of pressure/vacuum relief for the purpose described in paragraph 1.2.2, so that the redundancy principle as per paragraph 1.6.2 is satisfied.

1.6.4 In lieu of the secondary means of pressure/vacuum relief as required in paragraph 1.6.2, pressure sensors may be fitted in each tank protected by the arrangements required in 1.2.2 with indicating devices in the ship's cargo control room or the position from which cargo operations are normally carried out. Monitoring equipment shall also provide an alarm facility indicating over-pressure and under pressure conditions within each tank."

Regulation 62 - Inert gas systems

7 In paragraph 11.2.1, the following text is added at the end:

"The control system operated shall provide positive indication of the operational status of such valves."

***
ANNEX 24

PROPOSED AMENDMENTS TO THE IBC AND IGC CODES

PROPOSED AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (IBC CODE)

CHAPTER 1 - GENERAL

1 The following new paragraph 1.3.22A is added after existing paragraph 1.3.22:

"1.3.22A Recognized standards are applicable international or national standards acceptable to the Administration or standards laid down and maintained by an organization which complies with the standards adopted by the Organization* and which is recognized by the Administration.

* Refer to the Minimum Standards for Recognized Organizations Acting on Behalf of the Administration, set out in appendix 1 to the Guidelines for the Authorization of Organizations Acting on Behalf of the Administration, adopted by the Organization by resolution A.739(18)."

CHAPTER 2 - SHIP SURVIVAL CAPABILITY AND LOCATION OF CARGO TANKS

2 In paragraph 2.3.3, the words "should be a type acceptable to the Administration and" are deleted and the words "and should comply with recognized standards" are added at the end of the paragraph.

CHAPTER 3 - SHIP ARRANGEMENTS

3 In paragraph 3.2.3, in the fourth sentence, the words "permitted by the Administration" are replaced by the word "fitted".

4 In paragraph 3.7.1, in the first sentence, the words "Subject to the approval of the Administration," are deleted and the word "cargo" is replaced by the word "Cargo".

CHAPTER 4 - CARGO CONTAINMENT

5 In paragraph 4.1.3, in the third sentence, the words "according to the standards of the Administration" are replaced by the words "according to recognized standards".

6 In paragraph 4.1.4, in the second sentence, the words "according to the standards of the Administration" are replaced by the words "according to recognized standards".
CHAPTER 5 - CARGO TRANSFER

7 In paragraph 5.1.1, the definition of the efficiency factor "e" is replaced by the following:

"e = efficiency factor equal to 1.0 for seamless pipes and for longitudinally or spirally welded pipes, delivered by approved manufacturers of welded pipes, which are considered equivalent to seamless pipes when non-destructive testing on welds is carried out in accordance with recognized standards. In other cases, an efficiency factor of less than 1.0, in accordance with recognized standards, may be required depending on the manufacturing process."

8 In paragraph 5.1.6.1, the asterisk and related footnote are deleted.

9 In paragraph 5.1.6.3, the words "to a standard acceptable to the Administration" are replaced by the words "in accordance with recognized standards".

10 In paragraph 5.2.1, in the second sentence, the words "However, the Administration may accept relaxations from these requirements" are replaced by the words "However, relaxations from these requirements may be accepted in accordance with recognized standards".

11 In paragraph 5.2.3.2, in the first sentence, the words "satisfactory to the Administration" are replaced by the words "in accordance with recognized standards".

12 In paragraph 5.2.3.3, the words "acceptable to the Administration" are replaced by the words "in accordance with recognized standards".

13 The existing text of paragraph 5.2.4.1 is replaced by the following:

"1 Bellows in accordance with recognized standards may be specially considered."

14 In paragraph 5.3.2, the words "standards acceptable to the Administration" are replaced by the words "recognized standards".

15 The existing text of the second sentence of paragraph 5.4.1 is replaced by the following:

"However, relaxations from these requirements may be accepted in accordance with recognized standards for piping inside tanks and open-ended piping."

16 In paragraph 5.5.2, in the last sentence, the existing text of the introductory phrase is replaced by the following:

"A totally enclosed hydraulically-operated valve located outside the cargo tank may, however, be accepted, provided that the valve is:"

CHAPTER 6 - MATERIALS OF CONSTRUCTION

17 In paragraph 6.1.1, in the first sentence, the words "to the satisfaction of the Administration"
are replaced by the words "in accordance with recognized standards".

18 In paragraph 6.2.5, in the second sentence, the words "may be permitted by the Administration" are replaced by the words "may be fitted".

CHAPTER 8 - CARGO TANK VENT SYSTEMS

19 In paragraph 8.3.4, the words "of a type approved by the Administration" are replaced by the words "of an approved type".

CHAPTER 10 - ELECTRICAL INSTALLATIONS

20 In paragraph 10.2.3.4.2, in the second sentence, the words "to the satisfaction of the Administration" are replaced by the words "in accordance with recognized standards".

CHAPTER 11 - FIRE PROTECTION AND FIRE EXTINCTION

21 In paragraph 11.2.3, in the first sentence, the words "it can be demonstrated to the Administration that" are deleted and the words "halogenated hydrocarbons" are replaced by the words "equivalent media".

CHAPTER 15 - SPECIAL REQUIREMENTS

22 In paragraph 15.8.8, in the first sentence, the words "or other materials acceptable to the Administration" are replaced by the words "in accordance with recognized standards" and the second sentence is deleted.

23 In paragraph 15.8.9, in the third sentence, the words "by the Administration" are deleted.

24 In paragraph 15.12.1.4, the words "of a type approved by the Administration" are replaced by the words "of an approved type".

25 In paragraph 15.19.7.3, the words "port Administrations" are replaced by the words "port State authority".
I:\MSC\66\24-A2
CHAPTER 5 - PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR AND PRESSURE PIPING SYSTEMS

8 In paragraph 5.2.2.1, in the definition of the efficiency factor "e", the existing text of the last sentence is replaced by the following:

"In other cases an efficiency factor of less than 1.0, in accordance with recognized standards, may be required depending on the manufacturing process."

9 In the paragraph 5.2.4.4, in the first sentence, the words "be to a standard acceptable to the Administration" are replaced by the words "should comply with recognized standards" and at the end of the second sentence, the words "by the Administration" are deleted.

10 In paragraph 5.4.1, the existing text of the second sentence is replaced by the following:

"Relaxations from these requirements may be accepted, in accordance with recognized standards, for piping inside cargo tanks and open-ended piping."

11 In paragraph 5.4.2.2, the words "satisfactory to the Administration" are replaced by the words "in accordance with recognized standards".

12 In paragraph 5.4.2.3, the words "acceptable to the Administration" are replaced by the words "complying with recognized standards".

13 In paragraph 5.4.3.2, in the first sentence, the words "standards acceptable to the Administration" are replaced by the words "recognized standards".

14 In paragraph 5.6.4, in the sixth sentence, the words "with 30 s of actuation" are replaced by the words "within 30 s of actuation".

CHAPTER 8 - CARGO TANK VENT SYSTEMS

15 In paragraph 8.2.2, the words "to the satisfaction of the Administration" are replaced by the words "complying with recognized standards".

CHAPTER 11 - FIRE PROTECTION AND FIRE EXTINCTION

16 In paragraph 11.2.4, in the second sentence, the words "All pipes, valves nozzles" are replaced by the words "All pipes, valves, nozzles".

CHAPTER 13 - INSTRUMENTATION (GAUGING, GAS DETECTION)

17 In paragraph 13.3.1, in the last sentence, the word "Administration" is deleted and the words "port Administration" are replaced by the words "port State authority".

18 In paragraph 13.6.9, the expression "column h" is replaced by the expression "column i".
CHAPTER 14 - PERSONNEL PROTECTION

19 In paragraph 14.4.1, the expression "column h" is replaced by the expression "column i".

CHAPTER 16 - USE OF CARGO AS FUEL

20 In paragraph 16.5.6, in the second sentence, the words "and these arrangements should be to the satisfaction of the Administration" are deleted.

CHAPTER 17 - SPECIAL REQUIREMENTS

21 In paragraph 17.20.3.1, in the first sentence, the words "or other material acceptable to the Administration" are replaced by the words "in accordance with recognized standards," and the second sentence is deleted.

22 In paragraph 17.20.14, in the first sentence, the words "filling limits" are replaced by the words "loading limits".

CHAPTER 19 - SUMMARY OF MINIMUM REQUIREMENTS

23 In column "f" of the table, for the product "Butadiene", the entry "F" is replaced by the entry "F+T".

***
ANNEX 25

TERMS OF REFERENCE OF THE CORRESPONDENCE GROUP
ON THE FORMAL SAFETY ASSESSMENT

1 Continue developing the guidelines for FSA application to the IMO rule-making process.

2 Collect the results of research studies.

3 Co-ordinate trial applications of the guidelines for the selected ship type(s).

4 Define the strategy to gather feedback information and data.

5 Identify the priorities for further work related to FSA developments.

6 Make proposals for adoption by the Committee.

***
ANNEX 26

INTERIM GUIDELINES FOR THE SYSTEMATIC APPLICATION OF THE GRANDFATHER CLAUSES

A systematic approach towards improving the safety standards, including pollution prevention standards, of existing ships in the case when new constructional requirements have been proposed for new ships

Preamble

1 Article VIII(e) of the International Convention for the Safety of Life at Sea (SOLAS), 1974 and article 16(6) of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), state that, unless expressly provided otherwise, any amendment to the Conventions, which relates to the structure of a ship, shall apply only to ships which can be considered to be built, on or after the date on which the amendment enters into force. These so called "grandfather clauses" provide the shipping industry with some certainty when making investments.

2 In recent times, however, the acceptability of the grandfather clauses has been queried. With each constructional improvement of new ships, the gap in standards, i.e. safety and pollution prevention standards, between new and existing ships increases. Recognizing that it is often the record of existing ships that demonstrates the compelling need to improve on certain aspects of their standards, it seems quite unjustifiable that existing ships should be deliberately exempted from improvements of their standards. So, on the one hand, extensive and costly constructional modifications should be avoided on existing ships, while on the other hand the standards of an existing ships may become unacceptable when compared to requirements adopted for new ships only.

3 The Interim guidelines for the systematic application of the grandfather clauses, hereafter "the guidelines", provide a strategy for avoiding undue gaps in standards between new and existing ships. The strategy aims to ensure that when such gaps could increase through the adoption of more stringent constructional requirements for new ships, the standards of existing ships would be likewise improved to an acceptable extent, although the measures to be taken may differ in nature from those agreed for new ships. Ideally, this would in the long run result in equivalent standards for new and existing ships.

4 In order to close or minimize the safety gap and evaluate requirements proposed for existing ships, a number of relevant aspects (paragraph 1.4 of the guidelines) have been introduced in the guidelines. These relevant aspects should be taken into account when making a decision whether or not a safety or pollution prevention requirement proposed for existing ships can be considered to be consistent with the intent of resolution A.500(XII) concerning costs to the marine industry and the burden on Member States. To facilitate a more systematic and objective way of decision-making, a method of weighing has been introduced in appendix 2 of the guidelines.

Irrespective of proposals made for new ships, the method of weighing may also be used as a stand-alone tool to assist in determining whether or not a safety or pollution prevention requirement can be considered to be an appropriate requirement for existing ships within the context of resolution A.500(XII).

5 The guidelines also aim to implement the essence of resolution A.777(18), in ensuring a fuller, more active and more informed participation by all Member States in the work of the Organization, in
particular in any decision-making process. In particular, the guidelines ensure that relevant documentation (paragraph 1.5 of the guidelines) will be available in order to facilitate that well-informed decisions can be made.

6 The Guidelines, in particular paragraphs 2.1 up to 2.3 and appendix 1, have been developed as a complementary instrument so as to safeguard consistency with the relevant provisions of the guidelines on organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies.

7 The guidelines will assist the Committees and their subsidiary bodies in following a uniform decision-making process on the complex issue of the application of grandfather clauses. The way in which the guidelines resolve this may be rather unfamiliar. The guidelines should therefore be applied on an interim, case-by-case trial basis, so that experience may be gained on their application and necessary modifications be made when the need arises.
1 INTRODUCTION

1.1 Purpose

The purpose of the guidelines is to facilitate the complex decision-making process wherein a well-informed decision should be made on the question as to what extent the improvement of the safety, i.e. the safety of life, property or the environment, that would result from the implementation of proposed constructional measures on new ships, should be achieved on existing ships as well. The guidelines provide a decision-making tool aimed at improving the safety of existing ships in the case when improvements of the safety of new ships are proposed. The purpose of the guidelines is also to indicate which actions should be taken by the relevant Committee and sub-committee(s) respectively.

1.2 Scope

In the case when the relevant Committee is satisfied that it is appropriate to consider proposals for new requirements or amendments to existing requirements for new ships and when such proposals relate to the construction of the ship, the Committee may decide that these guidelines should be used. After confirming that a compelling need has been demonstrated as required by resolutions A.500(XII) and A.777(18) in accordance with the Guidelines on organization and method of work of the Maritime Safety Committee and Marine Environment Protection Committee and their subsidiary bodies, the guidelines may then serve to enable the Committees to make well-informed decisions on suitable measures for existing ships.

1.3 Definitions

The following definitions apply:

1.3.1 Safety issue: an issue relating to the safety of life, property or the environment for which safety measures have been proposed for new ships. If nothing would be done to resolve the safety issue on existing ships as well, the implementation of a proposed constructional requirement on new ships will result in a safety gap, possibly on top of already existing safety gaps between the various categories of existing ships.

1.3.2 Safety measure: a means that contributes in resolving the safety issue. A safety measure may be an operational requirement, a requirement for an item of equipment or a constructional requirement.

1.3.3 Relevant aspect: an aspect that should be considered in determining the acceptability of a proposed safety measure for existing ships. The relevant aspects to be considered are listed in paragraph 1.4.

1.3.4 Acceptable safety measure: a safety measure for existing ships which the relevant sub-committee, after balancing all relevant aspects of paragraph 1.4 (step 11 of the step-by-step procedure given in appendix 1), considers acceptable for implementation on existing ships. An acceptable safety measure contributes in resolving the safety issue on existing ships and, thereby, bridging the safety gap that will be brought about by the implementation of a proposed constructional requirement on new ships.
1.3.5 **Contribution in resolving the safety issue:** the predicted improvement of the safety, resulting from the implementation of a particular safety measure proposed for resolving the safety issue, expressed as an estimated percentage, i.e. "this particular safety measure will resolve the safety issue for 25%".

1.4 **Relevant aspects**

In determining the acceptability of a safety measure proposed for the purpose of resolving elements of the safety issue on existing ships, the following relevant aspects should be considered:

.1 cost of measures, demonstration of the need for, and effectiveness of the measure in relation to its contribution in resolving the safety issue;

.2 availability of an item of equipment on which the measure depends;

.3 enforceability of the measure;

.4 burden on the legislative and administrative resources of Member States;

.5 undesirability of modifying conventions too frequent or too soon;

.6 time for implementation;

.7 ease of maintaining the measure;

.8 reliability of the measure; and

.9 whether it would be more appropriate to apply specific requirements relying on improved operational standards

1.5 **Documentation**

1.5.1 The sub-committee, instructed to consider proposed construction-related safety measures for new ships, should use the following documentation in following the step-by-step procedure given in appendix 1:

.1 clearly described elements of the safety issue to be resolved by the safety measures proposed for new ships, that should also be resolved for existing ships; and

.2 clear description of safety measures proposed for existing ships to resolve those elements of the safety issue referred to paragraph 1.5.1.1, including data to allow the assessment of the acceptability of each such measure.

1.5.2 The sub-committee referred to in paragraph 1.5.1 should submit the following documentation to the Committee for its consideration and to facilitate a well-informed decision:
1 clear description of safety measures proposed for existing ships to resolve those elements of the safety issue referred to in paragraph 1.5.1.1. It should include for each such measure:

1.1 the outcome of the assessment of its acceptability; and

1.2 a clear indication of its contribution in resolving the safety issue; and

2 clear explanation and justification of the lacking of acceptable safety measures for a particular element of the safety issue.

2 ACTIONS TO BE TAKEN BY THE MEMBER STATES, COMMITTEES AND SUB-COMMITTEE(S) RESPECTIVELY

2.1 In accordance with the scope of paragraph 1.2, the Committee should decide whether or not these interim guidelines are to be used. When it has been decided in a particular case to use the guidelines, the Committee should:

1 decide on the question to what extent the safety issue should be resolved on existing ships as well. To that end, the Committee should, where possible, identify those elements of the safety issue that should be resolved on existing ships as well. When the safety issue under consideration makes it not readily possible to identify elements of the safety issue, the Committee may choose to postpone its decision. It should then instruct the relevant sub-committee to advise how the safety issue could be fully resolved on existing ships. This would enable the Committee to make its decisions after having received the advice of the relevant sub-committee;

2 invite Member States and the industry to propose safety measures for existing ships to resolve elements of the safety issue. As a rule these measures should be submitted for consideration on the next session of the sub-committee(s) involved. However, the Committee may extend the period for submission by deciding that such measures may be submitted for consideration on any later session of the sub-committee(s) involved;

3 clearly instruct the relevant sub-committee(s) in accordance with its decision. Further instructions may be needed to facilitate the work in the relevant sub-committee(s), such as instructions on the target dates, the priority, the type and size of the existing ships on which the identified elements of the safety issue should be resolved. The Committee may consider to set target completion dates in such a way that the constructional measures for new ships and equivalent measures for existing ships will be developed sufficiently in parallel. This would allow for a possible reconsideration as intended in the next paragraph; and

4 reconsider the necessity for resolving the element of the safety issue on existing ships, in those cases when the sub-committee(s) could not found acceptable safety measures for resolving a particular element of the safety issue as instructed. It may then also reconsider whether the particular element of the safety issue should be resolved on new ships.
2.2 A sub-committee instructed according to paragraph 2.1.3 should:

.1 follow the instructions of the Committee closely. When a sub-committee is unable to reach unanimous agreement, each minority view should be presented to the Committee;

.2 determine the acceptability of each safety measure proposed for existing ships by balancing the relevant aspects given in paragraph 1.4;

.3 communicate to the Committee in detail why an acceptable safety measure for resolving a particular element of the safety issue could not be agreed upon; and

.4 feel encouraged to use a method of weighing with the aim of balancing the various relevant aspects in a more objective way and gaining experience with such methods in order to improve the guidelines. For this purpose an outline of a method of weighing has been introduced in appendix 2.

2.3 So as not to delay the adoption of safety measures for new ships, Member States proposing such measures for new ships relating to the construction of a ship, are encouraged to simultaneously submit possible measures for existing ships, together with data that would facilitate the application of the guidelines.
APPENDIX 1

A STEP-BY-STEP PROCEDURE

1 To facilitate the process of making a well-informed decision on the question to what extent the safety issue should be resolved on existing ships as well, the step-by-step procedure given in this appendix may be used. Following the procedure step-by-step will contribute in making the decision in a fair and balanced way.

2 The procedure should be regarded as a tool to reach a fair compromise in situations in which the views of the Member States may differ substantially.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>identify elements of the safety issue, if possible</td>
</tr>
<tr>
<td>2</td>
<td>decide on which elements of the safety issue should be resolved (When such elements can not be identified, the Committee may regard the safety issue itself as the one element that should be resolved)</td>
</tr>
<tr>
<td>3</td>
<td>decide on which categories of existing ships those elements should be resolved (e.g. which type, age and size of ships)</td>
</tr>
<tr>
<td>4</td>
<td>decide on the lead sub-committee, probably the sub-committee instructed to consider proposed construction-related safety measures for new ships</td>
</tr>
<tr>
<td>5</td>
<td>set the target date, priority, etc. The Committee may consider to set target completion dates in such a way that the constructional measures for new ships and equivalent measures for existing ships will be developed sufficiently in parallel. This would allow for a possible reconsideration as intended in step 14</td>
</tr>
<tr>
<td>6</td>
<td>instruct the relevant sub-committees in accordance with the outcome of step 2 to step 5</td>
</tr>
<tr>
<td>7</td>
<td>set the final date for submitting proposals for resolving the selected elements of the safety issue on existing ships</td>
</tr>
<tr>
<td>8</td>
<td>invite Member States and the industry to submit proposals for resolving the selected elements of the safety issue on existing ships</td>
</tr>
</tbody>
</table>
### On instruction of the Committee, the sub-committee(s) should:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>collect and complement the relevant data, i.e. the proposals and data to allow the assessment of the acceptability of these proposals (paragraph 1.5.1 of the guidelines)</td>
</tr>
<tr>
<td>10</td>
<td>decide on the application of a method of weighing. If the sub-committee so decides, it may be guided by appendix 2</td>
</tr>
<tr>
<td>11</td>
<td>agree on the acceptability of each proposed safety measure by balancing the relevant aspects given in paragraph 1.4 of the guidelines</td>
</tr>
<tr>
<td>12</td>
<td>prepare and submit the documentation as described in paragraph 1.5.2 of the guidelines</td>
</tr>
</tbody>
</table>

### On receiving the data from the sub-committee(s), the Committee should:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>decide on the adoption of the acceptable safety measures for existing ships</td>
</tr>
<tr>
<td>14</td>
<td>decide on the necessity to resolve the element(s) of the safety issue for which the sub-committee could not find acceptable safety measures. The Committee may even reconsider whether those elements should be resolved on new ships.</td>
</tr>
</tbody>
</table>
APPENDIX 2

AN OUTLINE OF A METHOD OF WEIGHING

1 Bearing in mind the intent of the grandfather clauses as well as resolution A.500(XII), every safety measure proposed for resolving elements of the safety issue on existing ships should be checked so as to determine whether the measure is suited for existing ships. In determining this suitability the relevant sub-committee should consider and balance carefully the relevant aspects given in paragraph 1.4 of the guidelines. However, balancing the relevant aspects is a difficult task of a subjective nature. To facilitate this balancing and to reduce the subjectivity, an outline of a method of weighing have been given in this appendix.

2 The presented outline of a method of weighing attempts to put a total score to a safety measure. If the total score of a safety measure exceeds a predetermined acceptability level, the measure is considered to be an acceptable safety measure, i.e. suited for implementation on existing ships.

3 A total score is merely the summation of the weighted scores of the safety measure on the relevant aspects, whereas each weighted score is the outcome of the multiplication of the relative weight of the relevant aspect under consideration and the score of the safety measure on that particular relevant aspect. Each score is, therefore, just a value indicating, for instance, how costly or enforceable a safety measure is. To give an example, the range of the costs might be divided in several sub-ranges, say sub-ranges "A" to "E". Let sub-range "A" be the sub-range indicating the lowest cost, whereas sub-range "E" indicates the highest cost. A proposed safety measure involving high costs that would fall within the limits of sub-range "E" should then be given a score 0. With that the contribution of such a costly safety measure in determining its acceptability will be minimal. If the costs would have been nominal, a score "4" should have been given, resulting in a maximum contribution.

4 To assist the sub-committee in establishing such ranges, sub-ranges and, eventually, scores, a range for each relevant aspect is suggested:

- cost of the measure in relation to its contribution in resolving the element of the safety issue

  Range: nominal - high but not excessive

- availability of an item of equipment on which the measure depends

  Range: available on one continent only, one manufacturer - available on all continents, many manufacturers

- enforceability of the measure

  Range: enforceable through visual examination - not enforceable, e.g., a procedure which can not be witnessed nor verified
- time for implementation

  *Range: implementation simultaneously with the implementation of measure(s) for new ships - implementation 12 or more years later than the implementation of measure(s) for new ships*

- burden on the legislative and administrative resources of Member States

  *Range: amendment restricted to only one provision of one IMO-instrument and one category of ships - for several categories of ships, different amendments to several provisions of several IMO-conventions, coming into force on different dates*

- undesirability of modifying conventions too frequent

  *Range: more than 5 years of experience with a provision of a convention to be modified to resolve the safety issue - relevant provision of a convention to be modified for resolving the issue at hand has been modified recently, for other purposes, but not yet been put in force*

- ease of maintaining the measure

  *Range: the measure can be maintained at nominal cost - the measure can only be maintained at high costs*

- reliability of the measure

  *Range: the measure is not susceptible to breakdown in a marine environment - the measure is highly susceptible to breakdown*

The suggested ranges should be divided in a number of sub-ranges. In many cases, the sub-committee may find that three to five sub-range suffice.

5 The relative weights of the relevant aspects and the acceptability level should be chosen by the sub-committee. The relative weights indicate how important the sub-committee finds the particular relevant aspect. To give an example, where the sub-committee chooses a relative weight of 1 for the relevant aspect "enforceability", it may value the relevant aspect "costs" at 5. In choosing these values, the sub-committee may determine the outcome of the method of weighing for a number of safety measures proposed for existing ships. The sub-committee may adjust the values until it is satisfied with the outcome. The sub-committee can then use the established values to determine the acceptability of all other proposed safety measures.

6 Establishing the *contribution in resolving the safety issue* of a safety measure is very difficult and of a subjective nature. The sub-committee may, therefore, consider the use of more objective techniques like Formal Safety Assessment or risk assessment and event trees.
A CALCULATION SHEET FOR WEIGHING THE RELEVANT ASPECTS FOR A PARTICULAR SAFETY MEASURE

Description of the safety issue to be resolved:

Description of the element of the safety issue to be resolved by the safety measure:

Description of the safety measure:

Scope of ships to which the safety measure applies:
Type of existing ships:
Size of existing ships:
Age of existing ships:
Number of passenger allowed to be carried:

<table>
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<tr>
<th>Relevant aspect</th>
<th>Relative weight</th>
<th>Score</th>
<th>Weighted score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs of the measure (in relation to its contribution in resolving the element of the safety or pollution prevention issue)</td>
<td>rw₁</td>
<td>s₁</td>
<td>rw₁ x s₁</td>
</tr>
<tr>
<td>Availability of an item of equipment on which the measure depends</td>
<td>rw₂</td>
<td>s₂</td>
<td>rw₂ x s₂</td>
</tr>
<tr>
<td>Enforceability of the measure</td>
<td>rw₃</td>
<td>s₃</td>
<td>rw₃ x s₃</td>
</tr>
<tr>
<td>Time for implementation</td>
<td>rw₄</td>
<td>s₄</td>
<td>rw₄ x s₄</td>
</tr>
<tr>
<td>Burden on the legislative and administrative resources of Member States</td>
<td>rw₅</td>
<td>s₅</td>
<td>rw₅ x s₅</td>
</tr>
<tr>
<td>Undesirability of modifying conventions too frequent or too soon</td>
<td>rw₆</td>
<td>s₆</td>
<td>rw₆ x s₆</td>
</tr>
<tr>
<td>Ease of maintaining the measure</td>
<td>rw₇</td>
<td>s₇</td>
<td>rw₇ x s₇</td>
</tr>
<tr>
<td>Reliability of the measure</td>
<td>rw₈</td>
<td>s₈</td>
<td>rw₈ x s₈</td>
</tr>
</tbody>
</table>

Total score: \( \sum_{i=1}^{8} rw_i \times s_i \)

Contribution of the particular measure in resolving the safety issue

Acceptable safety measure?: yes/no
## ANNEX 27

### WORK PROGRAMMES OF THE SUB-COMMITTEES

**Sub-Committee on Bulk Liquids and Gases (BLG)**

<table>
<thead>
<tr>
<th>Target completion date</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub-Committee on Bulk Liquids and Gases (BLG)</strong></td>
<td></td>
</tr>
<tr>
<td>1 Evaluation of safety and pollution hazard of chemicals and preparation of consequential amendments</td>
<td>Continuous</td>
</tr>
<tr>
<td>H. Additional safety measures for tankers</td>
<td>1997</td>
</tr>
<tr>
<td>1 Tanker pump-room safety</td>
<td>1997</td>
</tr>
<tr>
<td>H. Revision of MARPOL regulations I/22 to 24 in the light of the probabilistic methodology for oil outflow analysis</td>
<td>1998</td>
</tr>
<tr>
<td>H. Review of Annexes I and II of MARPOL 73/78</td>
<td>2000</td>
</tr>
<tr>
<td>H. Environmental and safety aspects of alternative tanker designs under MARPOL 73/78 regulation I/13F</td>
<td></td>
</tr>
<tr>
<td>.1 development of the final guidelines</td>
<td>1998</td>
</tr>
<tr>
<td>.2 assessment of the alternative tanker designs</td>
<td>Continuous</td>
</tr>
<tr>
<td>H. Revision of carriage requirements for carbon disulphide in the IBC Code</td>
<td>1997</td>
</tr>
<tr>
<td>L. Requirements for personal protection involved in transportation of cargoes containing toxic substances in oil tankers</td>
<td>1997</td>
</tr>
<tr>
<td>L. Review of existing ships' safety standards: amendments to SOLAS regulations VII/9 and VII/12</td>
<td>1997</td>
</tr>
<tr>
<td>L. Review of specifications for crude oil washing systems</td>
<td>1997</td>
</tr>
<tr>
<td>L. Amendments to the IGC and GC Codes</td>
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Note:  "H." means a high priority item and "L." means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
### Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC)

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*Subject to the outcome of consideration, by ECOSOC in 1996, of the periodicity of amendments to the IMDG Code.*
To be decided by the MEPC.
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L.1 Review of reporting requirements in IMO instruments and development of guidelines on criteria for including reporting requirements in IMO non-mandatory documents (in co-operation with all sub-committees)
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| H.3 | Performance standards for shipborne radio equipment and review of GMDSS equipment performance | 1997 |


| H.5 | VTS and automatic ship identification transponder/transceiver systems (co-ordinated by NAV) | 1997 |

| H.6 | Review of resolution A.703(17) on training of radio personnel in the GMDSS | 1997 |

| H.7 | Rescue operations to be carried out inside wrecks | 1997 |

| H.8 | IMO standard marine communication phrases (co-ordinated by NAV) | 1997 |

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.2 co-ordination of the MERSAR manual and the Guide to Helicopter/Ship Operations  

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**Note:** Item "Role of the human element in maritime casualties" has not been included in the work programme as no specific tasks have been identified (refer to MSC 65/22/2, paragraph 10).
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### H.1 Prevention of strandings at sea

| 1996 | NAV 41/23, section 4 |

### H.2 International Code of Signals: development of a special signal for use by ships under attack or threat of attack by pirates and armed robbers (in co-operation with COMSAR)

| 1996 | MSC 66/24, paragraphs 6.65 to 6.76 |

### H.3 Revision of SOLAS chapter V

| 1996 | NAV 41/23, paragraphs 14.1 to 14.3 |

### H.4 Role of the human element in maritime casualties

| 1997 | NAV 41/23, paragraphs 9.1 to 9.2 |

### H.5 IMO standard marine communication phrases (in co-operation with COMSAR and STW)

| 1996 | NAV 41/23, paragraphs 13.1 to 13.8 |

### H.6 Removal of wrecks and towage of offshore installations, structures and platforms

| 1996 | NAV 41/23, paragraphs 14.1 to 14.3 |

### H.7 Development of measures complementary to the INF Code

| 1997 | MSC 66/24, paragraph 21.17; NAV 41/23, paragraphs 15.1 to 15.22 |

### H.8 Automatic ship identification transponder/transceiver systems (in co-operation with COMSAR)

| 1997 | NAV 41/23, paragraphs 6.65 to 6.76 |

### H.9 Code for safe navigation and watchkeeping (in co-operation with STW)

| 1997 | NAV 41/23, paragraphs 18.1 to 18.5 |

### H.10 World-wide navigation system

| 1996 | MSC 66/24, paragraph 7.15; NAV 41/23, paragraphs 6.1 to 6.21 |

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H.1 Ro-ro ferry safety
   1 standards regarding the manning of fast rescue boats 1997 MSC 66/24, paragraph 7.25; NAV 41/23, paragraph 7.19
   .2 voyage data recorders (co-ordinated by DE) 1998 NAV 41/23, paragraphs 7.21 to 7.23

H.1 Revision of the HSC Code (co-ordinated by DE) 1999 MSC 66/24, paragraph 21.27

H.1 Amendments to the MERSAR manual (in co-operation with COMSAR) 1997 MSC 66/24, paragraph 21.55

L.1 Electronic chart display and information systems 1997 NAV 41/23, paragraphs 6.31 to 6.36

L.2 Performance standards for navigational systems and equipment
   .1 development of new performance standards for electromagnetic compasses 1997 NAV 41/23, paragraphs 6.47 to 6.49
   .2 development of new performance standards for IBS and INS 1997 NAV 41/23, paragraphs 6.59 to 6.60
   .3 performance standards for radar equipment 1996 MSC 66/24, paragraph 7.20; NAV 41/23, paragraphs 6.37 to 6.38
   .4 performance standards for a shipborne automatic identification system using VHF/DSC techniques 1996 MSC 66/24, paragraph 7.22; NAV 41/23, paragraph 6.67

L.3 Operational aspects of wing-in-ground (WIG) craft (co-ordinated by DE) 1996 NAV 41/23, paragraphs 16.1 to 16.6

L.4 Safety of passenger submersible craft (co-ordinated by DE) 1996 NAV 41/23, paragraph 17

L.5 Updating of information for electronic navigational charts 1996 NAV 41/23, paragraphs 6.22 to 6.30

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<td>structural integrity of ships ballast water exchange (resolution A.774(18) on preventing the introduction of unwanted aquatic organisms from ships’ ballast water) (in co-operation with SLF)</td>
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<td>.2</td>
<td>corrosion prevention requirements on ballast tanks of existing ships</td>
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<th>Role of the human element in maritime casualties: guidelines for engine-room layout, design and arrangement</th>
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<td>Recommendations for emergency alarm and public address system cabling</td>
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<td>H.1</td>
<td>Low-powered radio homing devices for liferafts on ro-ro passenger ships (co-ordinated by COMSAR)</td>
<td>1997</td>
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<tr>
<td>H.1</td>
<td>Development of measures complementary to the INF Code (in co-operation with DSC and NAV)</td>
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<td>H.1</td>
<td>Revision of the HSC Code (in co-operation with COMSAR, FP, NAV and SLF)</td>
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<td>L.1</td>
<td>Guidelines for safe ocean towing</td>
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<td>L.2</td>
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<td>L.3</td>
<td>Safety of passenger submersible craft (in co-operation with FP, COMSAR, NAV and SLF)</td>
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<tr>
<td>L.4</td>
<td>Role of the human element in maritime casualties: guidelines for the on-board use and application of computers (in co-operation with NAV*, COMSAR and SLF)</td>
<td>1997</td>
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<tr>
<td>L.5</td>
<td>Symbols related to life-saving appliances and arrangements</td>
<td>1997</td>
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<tr>
<td>L.6</td>
<td>Recommendations on suitable design arrangements for container securing operations aboard ships</td>
<td>1997</td>
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<tr>
<td>L.7</td>
<td>International approval procedures for life-saving appliances</td>
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<td>L.8</td>
<td>Development of code of polar navigation</td>
<td>1998</td>
</tr>
<tr>
<td>L.9</td>
<td>Standards and requirements for thermal protective lifejackets</td>
<td>1998</td>
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</table>

**Note:** The general subitem "Future development of life-saving appliances" under item "Ro-ro ferry safety" has been replaced by specific work items H.7, H.8, H.9 and H.10.

* This item is scheduled to be completed by the NAV Sub-Committee in 1996.
### Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF)

<table>
<thead>
<tr>
<th>Target completion date</th>
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<tr>
<td>Continuous</td>
<td>SLF 39/18, paragraphs 4.16 and 4.17</td>
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<td>Continuous</td>
<td>SLF 39/18, section 6</td>
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<td>Continuous</td>
<td>SLF 39/18, paragraph 15.4 and annex 7</td>
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</table>

1. **Analysis of intact stability casualty records**
   - **H.1** Harmonization of damage stability provisions in IMO instruments (probabilistic method)
     1. Explanatory notes for cargo ships of less than 100 m in length
        - Completed: 1998
        - Reference: SLF 39/18, paragraph 5.7
     2. Development of a revised SOLAS chapter II-1, parts A, B and B-1
        - Completed: 1996
        - Reference: SLF 39/18, paragraphs 5.4 and 15.3

2. **Analysis of damage cards**

3. **Improved stability criteria and systematic model tests**

4. **H.2** Revision of technical regulations of the 1966 LL Convention
   - Completed: 1996
   - Reference: SLF 39/18, section 7 and paragraph 15.3

5. **H.3** Revision of the fishing vessel safety Code and voluntary Guidelines
   - Completed: 1996
   - Reference: SLF 39/18, section 8 and paragraph 15.2

6. **H.4** Stability aspects of ships engaged in ballast water exchange (resolution A.774(18) on preventing the introduction of unwanted aquatic organisms from ships' ballast water) (in co-operation with DE)
   - Completed: 1996
   - Reference: MSC 63/23, paragraph 21.61; MEPC 36/22, paragraphs 18.5 and 18.10; SLF39/18, section 13

7. **H.5** Ro-ro ferry safety
   1. High-efficiency drainage systems (co-ordinated by DE)
      - Completed: 1997
      - Reference: MSC 65/25, paragraph 22.45; MSC 65/WP.9, annex 7, paragraphs 1 and 2; MSC 65/WP.11/Add. 1
   2. Problems in relation to retrofitting of transverse bulkheads (co-ordinated by DE)
      - Completed: 1996

8. **H.6** Bulk carrier safety
   1. Guidelines on equivalence of subdivision and damage stability standards
      - Completed: 1998
      - Reference: MSC 66/24, paragraph 21.71

9. **H.7** Role of the human element in maritime casualties
   1. Improvements of general requirements in SOLAS chapter II-1
      - Completed: 1996
   2. Review of SOLAS 74 and LL 66 regarding language and format of stability information
      - Completed: 1998
### SLF Sub-Committee (continued)

<table>
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<tr>
<th>SLF Sub-Committee</th>
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<tbody>
<tr>
<td>.3 application of computers in determining ship stability</td>
<td>1998</td>
<td></td>
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<tr>
<td>.4 guidelines for the on-board use and application of computers (co-ordinated by DE)</td>
<td>1996</td>
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<tr>
<td>H.8 Revision of the HSC Code (co-ordinated by DE)</td>
<td>1999</td>
<td>MSC 66/24, paragraph 21.27</td>
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<tr>
<td>H.9 Subdivision and damage stability of passenger ships (deterministic requirements)</td>
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<tr>
<td>.1 maximum number of persons permitted on new one-compartment standard passenger ships</td>
<td>1996</td>
<td>SLF 39/18, paragraphs 4.3 to 4.12</td>
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<tr>
<td>L.1 Model stability booklets and loading manuals</td>
<td>1996</td>
<td>MSC 64/22, paragraph 19.50; SLF 39/18, paragraphs 17.12 and 17.13</td>
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<tr>
<td>L.2 Harmonization of damage stability provisions in IMO instruments (probabilistic method)</td>
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<td>.1 harmonization of damage stability provisions in other IMO instruments, including the 1993 Torremolinos Protocol</td>
<td>1998</td>
<td>SLF 37/25, paragraph 22.2; MSC 65/25, paragraph 21.23</td>
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<td>.2 feasibility of regulations for cargo ships of less than 80 m in length</td>
<td>1998</td>
<td>SLF 38/20, paragraph 5.8; SLF 39/18, paragraph 18.2.4</td>
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<td>L.3 Review of existing ships' safety standards: revision of vague expressions in the SOLAS Convention</td>
<td>1998</td>
<td>SLF 39/18, section 10</td>
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<td>L.4 Safety of passenger submersible craft (co-ordinated by DE)</td>
<td>1996</td>
<td>MSC 63/23, paragraph 21.62; SLF 39/18, section 14</td>
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<td>L.5 Review of reporting requirements in IMO instruments (co-ordinated by FSI)</td>
<td>1996</td>
<td>MSC 64/22, paragraphs 16.8 and 19.29; SLF 39/18, paragraphs 17.9 to 17.11</td>
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<tr>
<td>L.6 Review of the Intact Stability Code</td>
<td>1998</td>
<td>SLF 39/18, paragraphs 3.3 to 3.6</td>
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</table>
Note: The subitems under item "Bulk carrier safety" regarding the development of a new part B-2 of SOLAS chapter II-1 and possibility of amending the 1966 LL Convention to assign one freeboard and the item "Hull structural integrity of tankers and bulk carriers" have not been included in the work programme in view of the developments on bulk carrier safety at MSC 66 (sections 4 and 9 of MSC 66/24).
### Sub-Committee on Standards of Training and Watchkeeping (STW)

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<td>STW 27/16, paragraph 16.2.2.1</td>
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<td>1998</td>
<td>MSC 59/33, paragraph 30.86; STW 27/16, paragraph 15.9</td>
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<td>1996</td>
<td>MSC 61/21, paragraph 4.11; STW 27/16, section 6</td>
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<td>MSC 64/22, paragraph 9.20; STW 27/16, paragraph 15.9 and annex 2</td>
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<td>MSC 58/25, paragraph 14.16; STW 27/16, section 10</td>
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<td>1998</td>
<td>MSC 64/22, paragraph 19.53; STW 27/16, paragraph 15.9</td>
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<tr>
<td>1998</td>
<td>MSC 64/22, paragraphs 9.34 and 19.54; STW 27/16, paragraph 15.9</td>
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<td>1996</td>
<td>C 74; STW 27/16, paragraphs 15.11 and 16.2.3</td>
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### Validation of model training course content
- Target completion date: Continuous
- Reference: MSC 50/27, paragraph 12.10; STW 27/16, section 7

### Revision of resolution A.578(14) on the guidelines for vessel traffic services
- Target completion date: 1998
- Reference: STW 27/16, paragraph 16.2.2.1

### Drug use and alcohol abuse
- Target completion date: 1996
- Reference: MSC 59/33, paragraph 30.86; STW 27/16, paragraph 15.9

### Simulator training
- Target completion date: 1997
- Reference: MSC 61/21, paragraph 4.11; STW 27/16, section 6

### IMO standard marine communication phrases (co-ordinated by NAV)
- Target completion date: 1996
- Reference: MSC 64/22, paragraph 9.20; STW 27/16, paragraph 15.9 and annex 2

### Role of the human element in maritime casualties (including on-board communication problems)
- Target completion date: 1996
- Reference: MSC 58/25, paragraph 14.16; STW 27/16, section 10

### Harmonized standards of training in maritime safety and emergency preparedness for all personnel of MOUs
- Target completion date: 1998
- Reference: MSC 64/22, paragraph 19.53; STW 27/16, paragraph 15.9

### Code for safe navigation and watchkeeping (co-ordinated by NAV)
- Target completion date: 1998
- Reference: MSC 64/22, paragraphs 9.34 and 19.54; STW 27/16, paragraph 15.9

### Follow up action to the 1995 STCW Conference

1. Guidance regarding communication of information (regulation I/7)
- Target completion date: 1996
- Reference: C 74; STW 27/16, paragraphs 15.11 and 16.2.3

2. Terms of reference for evaluation of information communicated (regulation I/7)
- Target completion date: 1996

3. Guidance regarding transitional provisions (regulation I/15)
- Target completion date: 1996

4. Special training requirements for ro-ro personnel
- Target completion date: 1996

5. Development of an IMO training record book
- Target completion date: 1996
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<td>.6 passenger ship training</td>
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<tr>
<td>.7 guidance for Administrations on implications of regulation I/14</td>
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<td>.8 guidance for companies on implications of regulation I/14</td>
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<td>.9 development of an STCW circular indicating when provisions of the 1995 amendments come into force</td>
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<td>.10 development of a standard database for certificate registration (regulations I/9 and I/10)</td>
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<td>.11 recommendation on alternative formats for endorsements (regulation I/2, paragraph 4)</td>
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<td>.12 guidance on the promotion of technical knowledge, skills and professionalism of seafarers</td>
<td>1996</td>
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<td>.13 guidance regarding revalidation of certificates (regulation I/11)</td>
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<td>.14 guidance on the conduct of assessments (regulation I/6)</td>
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<td>.15 guidance regarding recognition of certificates (regulation I/10)</td>
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<td>.16 training requirements for maritime personnel employed on mobile offshore units</td>
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<td>.17 development of international standards of medical fitness for seafarers</td>
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<td>.18 guidance on assessor and supervisor training (regulation I/6)</td>
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<td>.19 review of chapter VII</td>
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<td>.20 training requirements for maritime pilots, VTS personnel (resolution 10)</td>
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<td>.21 revision of Model Training Courses (resolution 13)</td>
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<td>.22 clarification of STCW Convention and STCW Code provisions</td>
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<tr>
<td>Follow up action to the 1995 STCW-F Conference*</td>
<td>C 74; STW 27/16, paragraphs 15.11 and 16.2.3</td>
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</table>


2. guidelines and recommendations based on the STCW Code specifically addressed to personnel on fishing vessels, including:
   - the use of simulators;
   - training of radio operators;
   - proficiency in survival craft and rescue boats;
   - emergency occupational safety, medical care and safety functions
   - watchkeeping; and
   - prevention of fatigue (resolution 3) 1998

3. recommendations for the training and certification of fishing vessel personnel on vessels of 12 metres in length and over but less than 24 metres (resolution 3) 1998

4. guidance on training, certification and watchkeeping standards for fishing vessel personnel serving on board large fishing vessels (resolution 6) 1998

5. requirements for officers in charge of an engineering watch and watchkeeping provisions (resolution 7) 1998

6. review of the recommendation on training of deck hands on board fishing vessels of 24 metres in length and over (resolution 4) 1998

7. clarification of STCW-F Convention Continuous requirements

* Most of the items listed under "STCW-F Conference" could be considered during the revision of the FAO/ILO/IMO Document for Guidance.
### STW Sub-Committee (continued)

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<td>MSC 65/25, paragraphs 5.15 and 22.45; MSC 65/WP.8</td>
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<td>.1 review of resolution A.481(XII) on Principles of safe manning</td>
<td>1997</td>
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<tr>
<td>.2 development of requirements for bulk carrier endorsement</td>
<td>1997</td>
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<td><strong>L.1</strong> Guidelines for the design and operation of passenger ships to respond to elderly and disabled persons' needs (co-ordinated by DE)</td>
<td>1996</td>
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<tr>
<td><strong>L.2</strong> Review of reporting requirements in IMO instruments (co-ordinated by FSI)</td>
<td>1997</td>
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<td><strong>L.3</strong> SAR training</td>
<td>1998</td>
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<tr>
<td><strong>L.4</strong> Training of officers and ratings responsible for cargo handling on ships carrying dangerous and hazardous substances in solid form in bulk or in packaged form (resolution A.537(13)), including training in controlled temperature requirements of section 21 of the IMDG Code</td>
<td>1998</td>
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<td><strong>L.5</strong> Standardization of the layout of essential bridge instrumentation (co-ordinated by NAV)</td>
<td>1996</td>
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ANNEX 28

STATEMENT BY THE INMARSAT OBSERVER

As you know, Inmarsat is engaged in a process of evolution towards a corporate structure that is more robust and able to survive in the business conditions that prevail today and are expected during the foreseeable future.

A significant milestone in that process was the eleventh session of the Inmarsat Assembly which took place in London, under the Chairmanship of Mr. Vonau of Poland, at the end of February this year. The Inmarsat paper MSC 66/10/2 is a report of the relevant outcomes of that session.

In particular, the Assembly considered, inter alia, the provision of distress and safety services and the future structure of Inmarsat.

The Assembly took note of the document prepared by the IMO Maritime Safety Committee at its sixty-fifth session, "Obligation of Inmarsat to Continue to Provide Maritime Distress, Safety and General Communications Services" in which the Committee expressed deep concern that the possible institutional changes under consideration by Inmarsat could affect maritime distress, safety and general communication services, as presently provided by Inmarsat.

The Assembly decided to request the Council to take into account the Maritime Safety Committee's request in its work on the future structure so as to ensure that Inmarsat's distress and safety services are guaranteed.

With regard to the future structure of Inmarsat, the Assembly decided, inter alia:

.1 that there is an urgent need to introduce changes to the Organization's structure in order for Inmarsat to continue to remain commercially viable in the long term; and

.2 to convene a Twelfth (Extraordinary) Session of the Inmarsat Assembly of Parties in late 1996/early 1997 to decide on the future structure of Inmarsat.

The Assembly further decided that, irrespective of what the future structure of the Organization may be, it is prerequisite that certain basic principles and public service obligations must be retained, including:

.1 the continued provision of global maritime distress and safety services, and support of the GMDSS; and

.2 the Organization shall seek to serve all areas where there is a need for mobile satellite communications.

The Assembly also decided that, in addition to the basic principles referred to above, certain essential elements must be taken into consideration in any future structure, including:

.1 the intergovernmental character of the Organization should be preserved; and

.2 the intergovernmental regulatory oversight of the Assembly should be continued for the basic principles and public service obligations as listed above.
Paragraph 7 of the paper includes a summary of these points and I request that the Committee takes note of this information and includes it in its report.

Mr. Chairman, your Committee has very properly expressed its interest in the changes being proposed in my Organization and, since there has been further progress made at other meetings since the eleventh Assembly, I would like to give you a brief verbal report of the latest situation, including the results of the sixtieth session of the Inmarsat Council which met only last week.

First of all, the Inmarsat Council, at its fifty-ninth session (26-29 March 1996) decided that an international public corporation (IPC) structure would satisfy the decisions of the Inmarsat Assembly of Parties with respect, *inter alia*, to the requirements for continued support for GMDSS services and maintenance of the intergovernmental character of the organization, while providing commercial viability in the long term.

Essential characteristics of the IPC structure, as determined by the Council included the following:

"The treaty establishing the Intergovernmental Organization (IGO) would continue in an amended form and Party oversight would be exercised through the Assembly. Assembly oversight in the IPC structure would be focused on public service obligations and the organization would be free to pursue commercial opportunities in the interests of its shareholders.

The company, registered under a national law jurisdiction, would protect the basic principles and public service obligations, as determined by the Assembly through binding contractual agreements and through principles entrenched in the Memorandum and Articles of Association of the Company and in the Shareholders' Agreement. Collectively, all of these mechanisms, operating together, would ensure that governmental interests would continue to be safeguarded."

At its sixtieth session (21-24 May 1996), the Inmarsat Council considered draft legal instruments designed to implement an IPC structure; these instruments included:

.1 an amended Convention, which provides for the Inmarsat Assembly to oversee the continued provision of GMDSS services by the future company; and

.2 an agreement between the Inmarsat intergovernmental organization and the future corporate entity to provide for suitable enforcement mechanisms enabling the Assembly to ensure that the corporate entity complies with the GMDSS requirements; these mechanisms provide for:

.1 defining the precise scope of Inmarsat's GMDSS obligations as prescribed in the SOLAS amendments and related IMO resolutions, including resolutions on charging; my Director General is consulting with the Secretary-General of IMO on such definition; and

.2 review of the relevant activities by the Inmarsat Assembly and consultations with the corporate entity leading to arbitration in the event of any non-compliance with the GMDSS obligations.

The Council did not reach a decision to approve the drafts of the above instruments and they remain as work in progress together with other legal instruments.
The Inmarsat Intersessional Working Group of Parties and Signatories, at its fifteenth session (1-4 July 1996), will review progress on the future structure, and in particular will consider the extent to which the IPC structure decided by the Council satisfies the basic principles determined by the Assembly of Parties at its eleventh session. The Secretary-General of IMO has been invited to participate in the IWG as Observer.

After the IWG, further meetings will be held of the Council and IWG to finalize the legal instruments necessary to implement the IPC model with the view to having the amended Convention adopted at an Extraordinary Session of the Inmarsat Council in the first quarter of 1997.

Mr. Chairman, in conclusion, my Director General, Mr. Grace had wanted to be here today to answer questions from the Committee. He has been prevented from being with us by a prior commitment in Tokyo. He is travelling back to London at the earliest opportunity and will be present here on next Thursday, the last day of your session, to hear any points that you or the Members of the Committee may wish to put to him. In the meantime I will do my best to answer any questions you may have.

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ANNEX 29

STATEMENT BY THE DELEGATION OF LEBANON

Mr Chairman,

The Ambassador of Lebanon has submitted to the I.M.O. on 18 April 1996 a note from the Government of Lebanon concerning the Israeli sea blockade of the Lebanese coast. His Excellency’s note was circulated by the I.M.O. Secretariat under Circular letter No. 1898 dated 25 April 1996 to all I.M.O. members.

The Israeli sea blockade of the Lebanese coast was intensified on 13 April 1996 in conjunction with Israeli military operations and stayed in place until 27 April. Israeli boats patrolled Lebanese territorial waters day and night. They intercepted commercial vessels serving the ports of Beirut, Sidon and Tyre. They have also prevented Lebanese vessels from fishing on the coast extending from the capital Beirut to south of the port of Tyre.

This illegal maritime blockade has caused harassment, restrictions and delays for navigation traffic to Lebanon. Ships were arrested a few miles from Beirut port. Some were allowed to continue, others were delayed for extended periods, while still others were delayed for 24-48 hours. This caused disruption in the serviceability of the Beirut port authorities with entailing delays in the schedules of all vessels concerned.

The number of ships serving Beirut harbor was reduced to 92 vessels whereas in April 1995 of last year the number had reached 148. Other vessels such as Thrake Heino, Pulipride, and City of Tunis, which happened to carry large containers had to turn back and discharge their cargoes in other ports.

Israeli naval military operations in the South against civilians and civilian infrastructure along the coastal road had led to the forcible closure of the ports of Sidon and Tyre to all commercial maritime traffic at a time when the port of Sidon alone expected to receive 20 vessels.
Southern fishermen lost their nets and equipment which they had spread at sea before the start of military operations and consequently were bottled up in the ports of Sidon and Tyre with no chance of pursuing their livelihood.

The I.M.O. Secretariat has circulated the response of the Israeli Embassy to the Note of the Ambassador of Lebanon (Circular Letter No. 1986 dated 30 May 1994). It is most regrettable that the Israeli Ambassador accesses the Lebanese complaint of baseless allegations when a factual presentation of the events taking place in Lebanese territorial waters has been fully detailed.

My delegation was more than amazed by the boldness of the Israeli note whose contents defy every logic: it looks as if Lebanon attacked Israel in 1978 and occupied 1/10 of its territory or as if Lebanon went in its aggression as far as Tel Aviv in 1982... or as if Lebanon displaced half a million Israeli citizens in 1955 or as if Lebanon attacked the UN base on 18 April this year and killed more than 168 innocent civilians. Isn’t amazing to notice how easy is it for Israel to turn upside down the facts?! (Enough is enough!).

Lebanon was and still is the victim of Israeli aggression by sea and land waged by so-called Israeli Defense Forces (I.D.F.). Self-defense does not apply here; it is rather a flagrant aggression against the sovereignty and independence of Lebanon, in its airspace, on its territorial sea and on international maritime safety of ships and passengers. No one is ready to believe Israeli allegations. Israel should be asked to respect international law, the U.N. charter, and withdraw its naval vessels from Lebanese sea coast.

Lebanon is exercising its legitimate right to resist the forces of occupation inside occupied Lebanese territory. One has to ask why Israel is still occupying 10% of Lebanese territory in defiance of UN Resolution 425 and 426 which call for immediate and unconditional withdrawal from Southern Lebanon?

The massacre of Lebanese women and children in the UN compound at Qana negates the allegations by Israel that it is a victim of terrorist acts or that it is acting in self-defense. It is Israeli occupation and attacks against Lebanon which constitute terrorist acts.
Despite all the above, Lebanon has fully subscribed to the peace process and has repeatedly declared its willingness and ability to maintain peace and security once Israeli occupation forces withdraw from Southern Lebanon.

Because of the gravity of this threat to international and national maritime safety, to the reputation of the port of Beirut and other Lebanese ports, and the harmful consequences at various political, economic and social levels,

... and considering that in February 1995, the Israeli Navy had already imposed a maritime blockade on the coast of South Lebanon and in particular on the fisherens and commercial fishing ports of Sidon and Tyre, and that a complaint on this matter was lodged with I.M.O., as evidenced in the Legal Committee’s Final Report L.C. No. LRG 72/9 dated 16 April 1995, the Maritime Safety Committee Final Report MSC 65/WP.10/Add.2 dated 16 May 1995, and in the Council’s Report C(74)/5/Add.1 dated 30 May 1995,

... and since these illegal practices might be repeated or might continue we request that these actions be declared contrary to the aims of I.M.O., that they threaten the safety of navigation and international maritime trade and constitute an act of aggression against the sovereignty of Lebanon in its inland and territorial waters, that they are having a serious effect on the present situation in Lebanon at all levels, that they must cease immediately, and that Israeli patrol boats must leave the territorial sea of Lebanon once and for all.

Moreover, Lebanon reserves the right to claim for the serious damage that these acts of aggression have caused it.

Thank you, Mr. Chairman.

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ANNEX 30

STATEMENT BY THE DELEGATION OF ISRAEL

Thank you Mr. Chairman,

In reply to the inaccurate view of Lebanon, I wish to refer to the circular letter of Israel No. 1906 of 30 May 1996 and to make two points.

Firstly, Israel only speaks in response here because we feel that IMO is not the correct place to discuss such issues. Such issues are outside the competence and professional role of specialized agencies like IMO. The success of IMO lies in that fact.

Secondly, I wish to remind delegates that all Israel's actions are in self-defence. These actions are only taken because Lebanon is unable or unwilling to stop terror attacks on Israel by sea and land from its territory.

Of course, Israel hopes that all problems between Israel and Lebanon will be solved in the Peace Process.

Finally, I ask that a summary of this statement be included in the Committee's report. The best way to do that is to annex Israel's circular letter No. 1906 to the report.

Thank you, Mr. Chairman.
Circular letter No.1906  
30 May 1996

Ref. T1/1.02  
96/10561

To: All IMO Members

Subject: Letter dated 28 May 1996 from the Ambassador of Israel

By letter dated 28 May 1996 from the Ambassador of Israel in London, the Secretary-General has been requested to circulate the attached note.
Subject: Seaborne and Other Terrorist Activities Emanating From Lebanon.

By a letter dated 18 April 1996 and subsequently distributed as IMO circular letter No.1898 of 25 April, the Ambassador of Lebanon in London has made certain incorrect and misleading allegations of fact and law concerning Israel's actions in self-defence against seaborne and other terrorist activities emanating from Lebanon. In response, Israel wishes to clarify the picture available to IMO members.

1. It is a fundamental principle of International Law that no state may permit its territory to be used for acts which threaten or harm the territorial integrity or political independence of another state. Lebanon has a duty in International Law which, unfortunately, it has continually proved itself incapable of fulfilling, to prevent such attacks, including seaborne terror activities, on a neighbouring country. This principle has been restated in the Declaration of Principles of International Law Concerning Friendly Relations Between States in accordance with the Charter of the United Nations of 1970, and later in UN resolutions 3314 (XXIX) of 1974, regarding the definition of aggression. Regrettably, Lebanon has been unable or unwilling to comply with its obligations to eliminate the presence of terrorists acting from within its territory. In fact, the Lebanese Government has openly encouraged and supported such activity.

2. Faced with continued acts of terror, and after it has become evident that diplomatic and other means of ending the attacks have failed, Israel has been forced to act in order to protect its civilians. As IMO members are doubtless aware, Israeli actions are purely defensive and solely in response to repeated missile attacks by terrorists emanating from Lebanese territory against civilian populated areas in Israel.

Israel's actions are in accordance with the right of self-defence, as enshrined in Article 51 of the UN charter and in the rules of customary International Law.

3. Recently the Israeli navy undertook specific security activities off the coast of Lebanon. These activities were restricted to limited sectors including specifically the areas near the approaches to Israel and other areas which have in practice been frequently used by terrorists for their hostile and murderous activities. They involve making enquiries, identifications and the occasional delay of vessels.

4. All activities in this regard have been carried out solely because Lebanon is unable to effectively guarantee that its waters will not serve as a passage for hostile terrorist attacks on Israel or other terrorist activities. Lebanon cannot claim the privileges of sovereignty without fulfilling its concomitant obligations. In particular, it cannot ignore the acts of terror emanating from within its territory, and at the same time protest against such attacks. The use of Lebanese territorial waters for launching such attacks in the past should be a cause for international concern and condemnation.
5. So long as these dangerous circumstances prevail, it is the obligation and duty of Israel, as of any other state under such circumstances, to act in accordance with the right of self-defence in International Law to maintain such limited and necessary measures as are needed to guarantee the safety and security of Israel and her civilian population, which has so often been the object and victim of terror.

In conclusion, in the view of Israel, the IMO is not the proper forum for these political and security issues which are being dealt with directly by the parties involved. Moreover, Israel expresses the hope that a solution to all problems between Israel and Lebanon will soon be found within the framework of the Middle East Peace Process. Israel trusts that Lebanon will be able, in due course, to find the confidence to resume direct negotiations with Israel, and thereby join its other Arab neighbours who have entered into peaceful relationships with Israel, which relationships include ongoing cooperation in the sphere of maritime affairs.
ANNEX 31

STATEMENT BY THE DELEGATION OF THE SYRIAN ARAB REPUBLIC

Mr. Chairman
Distinguished Delegates,

In the briefest terms, my delegation support the just position of the Lebanese delegation. Aloof from political considerations, the Israeli sea blockade imposed on Lebanese coast and ports, in our view, constitutes a serious threat to navigation and human lives at sea which is the noblest pursuit of your good endeavours as Organization, Member States and Maritime Community.

No one can contest that this is not in your jurisdiction to look after since it has a purely maritime aspect.

We hope that our concern will be reflected in the fairest way in your MSC final report. We hope also the situation will be relaxed very soon with your understanding and objective support.

Thank you.