Attached are annexes 15 to 37 to the report of the Maritime Safety Committee on its seventy-eighth session (MSC 78/26).

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ANNEX

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(See document MSC 78/26/Add.1 for annexes 1 to 14)

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ANNEX 15

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE FOR THE
CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES
IN BULK (IGC CODE)

Chapter 3 – Ship arrangements

1 In paragraph 3.6.4, the reference to “10.2.5.4” is replaced by “10.1.4”.

Chapter 10 - Electrical installations

2 In paragraph 10.1.4, in the first sentence, the words “when the exceptions listed in 10.2 are permitted” are deleted.

3 The following new sentence is added at the end of paragraph 10.1.4:

“Electrical equipment, cables and wiring should not be installed in hazardous locations unless it conforms with the standards not inferior to those acceptable to the Organization*. However, for locations not covered by such standards, electrical equipment, cables and wiring which do not conform to the standards may be installed in hazardous locations based on a risk assessment to the satisfaction of the Administration, to ensure that an equivalent level of safety is assured.”


4 Existing paragraph 10.2 is deleted.

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1 Note by the Secretariat:
In paragraph 10.1.2, at the end of the first sentence, the following footnote is added:

“* Refer to the relevant standards of the International Electrotechnical Commission, in particular publication 60092-502.”

In paragraph 10.1.3, the footnote at the end of the paragraph is deleted.
ANNEX 16

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

INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

1 The complete text of the IBC Code is replaced by the following:

“PREAMBLE

1 The purpose of this Code is to provide an international standard for the safe carriage, in bulk by sea, of dangerous chemicals and noxious liquid substances listed in chapter 17 of the Code. The Code prescribes the design and construction standards of ships, regardless of tonnage, involved in such carriage and the equipment they shall carry to minimize the risk to the ship, its crew and the environment, having regard to the nature of the products involved.

2 The basic philosophy of the Code is to assign, to each chemical tanker, one of the ship types according to the degree of the hazards of the products carried by such ships. Each of the products may have one or more hazardous properties, including flammability, toxicity, corrosivity and reactivity, as well as the hazard they may present to the environment.

3 Throughout the development of the Code it was recognized that it must be based upon sound naval architectural and engineering principles and the best understanding available as to the hazards of the various products covered. Furthermore, chemical tanker design technology is not only a complex technology, but is rapidly evolving and therefore the Code should not remain static. Thus, the Organization will periodically review the Code, taking into account both experience and technical developments.

4 Amendments to the Code involving requirements for new products and their conditions of carriage will be circulated as recommendations, on an interim basis, when adopted by the Maritime Safety Committee (MSC) and the Marine Environment Protection Committee (MEPC) of the Organization, in accordance with the provisions of article VIII of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74) and article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol relating thereto (MARPOL 73/78), respectively, pending the entry into force of these amendments.

5 The Code primarily deals with ship design and equipment. In order to ensure the safe transport of the products, the total system must, however, be appraised. Other important facets of the safe transport of the products, such as training, operation, traffic control and handling in port, are being, or will be, examined further by the Organization.
6 The development of the Code has been greatly assisted by a number of organizations in consultative status such as the International Association of Classification Societies (IACS) and the International Electrotechnical Commission (IEC).

7 Chapter 16 of the Code, dealing with operational requirements of chemical tankers, highlights the regulations in other chapters that are operational in nature and mentions those other important safety features that are peculiar to chemical tanker operation.

8 The layout of the Code is in line with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), adopted by the Maritime Safety Committee at its forty-eighth session. Gas carriers may also carry in bulk liquid chemicals covered by this Code, as prescribed in the IGC Code.

9 The 1998 edition of the Code was based on the original text as adopted by MSC resolution MSC.4(48). In response to resolution 15 of the International Conference on Marine Pollution, 1973, the MEPC, at its twenty-second session, adopted, by resolution MEPC.19(22), the IBC Code extended to cover marine pollution prevention aspects for the implementation of Annex II to MARPOL 73/78.

10 This edition of the Code includes amendments adopted by the following resolutions:

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Adoption</th>
<th>Deemed acceptance</th>
<th>Entry into force</th>
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<tr>
<td>1</td>
<td>MSC.10(54)</td>
<td>29 April 1987</td>
<td>29 April 1988</td>
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<tr>
<td>2</td>
<td>MSC.14(57)</td>
<td>11 April 1989</td>
<td>12 April 1990</td>
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<td>MEPC.32(27)</td>
<td>17 March 1989</td>
<td>12 April 1990</td>
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<tr>
<td>3</td>
<td>MSC.28(61)</td>
<td>11 December 1992</td>
<td>1 January 1994</td>
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<td>MEPC.55(33)</td>
<td>30 October 1992</td>
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<td>MEPC.69(38)</td>
<td>10 July 1996</td>
<td>1 January 1998</td>
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<td>5</td>
<td>MSC.58(67)</td>
<td>5 December 1996</td>
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<td>6</td>
<td>MSC.102(73)</td>
<td>5 December 2000</td>
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<td>MSC ....</td>
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<td>MEPC ....</td>
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11 As from the date of entry into force of the 1983 amendments to SOLAS 74 (i.e. 1 July 1986) and the date of implementation of Annex II of MARPOL 73/78 (i.e. 6 April 1987), this Code became subject to mandatory requirements under these Conventions. Amendments to the Code, whether from the point of view of safety or of marine pollution, must therefore be adopted and brought into force in accordance with the procedures laid down in article VIII of SOLAS 74 and article 16 of MARPOL 73/78 respectively.
CHAPTER 1
GENERAL

1.1 Application

1.1.1 The Code applies to ships regardless of size, including those of less than 500 gross tonnage, engaged in the carriage of bulk cargoes of dangerous chemicals or noxious liquid substances (NLS), other than petroleum or similar flammable products as follows:

1 products having significant fire hazards in excess of those of petroleum products and similar flammable products;

2 products having significant hazards in addition to or other than flammability.

1.1.2 Products that have been reviewed and determined not to present safety and pollution hazards to such an extent as to warrant the application of the Code are found in chapter 18.

1.1.3 Liquids covered by the Code are those having a vapour pressure not exceeding 0.28 MPa absolute at a temperature of 37.8°C.

1.1.4 For the purpose of the 1974 SOLAS Convention, the Code does not apply to ships which are engaged in the carriage of products included in chapter 17 solely on the basis of their pollution characteristics and identified as such by an entry of P only in column d.

1.1.5 For the purposes of MARPOL 73/78, the Code applies only to NLS tankers, as defined in regulation 1.10 of Annex II thereof, which are engaged in the carriage of Noxious Liquid Substances identified as such by an entry of X, Y or Z in column c of chapter 17.

1.1.6 For a product proposed for carriage in bulk, but not listed in chapters 17 or 18, the Administration and port Administrations involved in such carriage shall prescribe the preliminary suitable conditions for the carriage, having regard to the criteria for hazard evaluation of bulk chemicals. For the evaluation of the pollution hazard of such a product and assignment of its pollution category, the procedure specified in regulation 6.3 of Annex II of MARPOL 73/78 must be followed. The Organization shall be notified of the conditions for consideration for inclusion of the product in the Code.

1.1.7 Unless expressly provided otherwise, the Code applies to ships, the keels of which are laid or which are at the stage where:

1 construction identifiable with the ship begins; and

2 assembly has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less;

on or after 1 July 1986.
1.1.8 A ship, irrespective of the date of construction, which is converted to a chemical tanker on or after 1 July 1986 shall be treated as a chemical tanker constructed on the date on which such conversion commences. This conversion provision does not apply to the modification of a ship referred to in regulation 1(15) of Annex II of MARPOL 73/78.

1.1.9 Where reference is made in the Code to a paragraph, all the provisions of the subparagraphs of that designation shall apply.

1.2 Hazards

Hazards of products covered by the Code include:

1.2.1 Fire hazard, defined by flashpoint, flammability limits and autoignition temperature of the chemical.

1.2.2 Health hazard, defined by:

.1 corrosive effects on the skin in the liquid state; or

.2 acute toxic effect, taking into account values of:

LD_{50} (oral): a dose, which is lethal to 50% of the test subjects when administered orally;

LD_{50} (dermal): a dose, which is lethal to 50% of the test subjects when administered to the skin;

LC_{50} (inhalation): the concentration which is lethal by inhalation to 50% of the test subjects; or

.3 Other health effects such as carcinogenicity and sensitization.

1.2.3 Reactivity hazard, defined by reactivity:

.1 with water;

.2 with air;

.3 with other products; or

.4 of the product itself (e.g. polymerization).

1.2.4 Marine pollution hazard, as defined by:

.1 bioaccumulation

.2 lack of ready biodegradibility;

.3 acute toxicity to aquatic organisms;
.4 chronic toxicity to aquatic organisms;
.5 long term human health effects; and
.6 physical properties resulting in the product floating or sinking and so adversely affecting marine life.

1.3 Definitions

The following definitions apply unless expressly provided otherwise. (Additional definitions are given in individual chapters).

1.3.1 Accommodation spaces are those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, barber shops, pantries containing no cooking appliances and similar spaces. Public spaces are those portions of the accommodation spaces which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

1.3.2 Administration means the Government of the State whose flag the ship is entitled to fly. For Administration (Port) see Port Administration.

1.3.3 Anniversary date means the day and the month of each year, which will correspond to the date of expiry of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.

1.3.4 Boiling point is the temperature at which a product exhibits a vapour pressure equal to the atmospheric pressure.

1.3.5 Breadth (B) means the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material. The breadth (B) shall be measured in metres.

1.3.6 Cargo area is that part of the ship that contains cargo tanks, slop tanks, cargo pump-rooms including pump-rooms, cofferdams, ballast or void spaces adjacent to cargo tanks or slop tanks and also deck areas throughout the entire length and breadth of the part of the ship over the above-mentioned spaces. Where independent tanks are installed in hold spaces, cofferdams, ballast or void spaces at the after end of the aftermost hold space or at the forward end of the forward-most hold space are excluded from the cargo area.

1.3.7 Cargo pump-room is a space containing pumps and their accessories for the handling of the products covered by the Code.

1.3.8 Cargo service spaces are spaces within the cargo area used for workshops, lockers and store-rooms of more than 2 m² in area, used for cargo-handling equipment.

1.3.9 Cargo tank is the envelope designed to contain the cargo.

1.3.10 Chemical tanker is a cargo ship constructed or adapted and used for the carriage in bulk of any liquid product listed in chapter 17.
1.3.11 **Cofferdam** is the isolating space between two adjacent steel bulkheads or decks. This space may be a void space or a ballast space.

1.3.12 **Control stations** are those spaces in which ship's radio or main navigating equipment or the emergency source of power is located or where the fire-recording or fire-control equipment is centralized. This does not include special fire-control equipment which can be most practically located in the cargo area.

1.3.13 **Dangerous chemicals** means any liquid chemicals designated as presenting a safety hazard, based on the safety criteria for assigning products to chapter 17.

1.3.14 **Density** is the ratio of the mass to the volume of a product, expressed in terms of kilograms per cubic metre. This applies to liquids, gases and vapours.

1.3.15 **Flammability limits** are the conditions defining the state of fuel-oxidant mixture at which application of an adequately strong external ignition source is only just capable of producing flammability in a given test apparatus.

1.3.16 **Flashpoint** is the temperature in degrees Celsius at which a product will give off enough flammable vapour to be ignited. Values given in the Code are those of “closed-cup test” determined by an approved flashpoint apparatus.

1.3.17 **Hold space** is the space enclosed by the ship's structure in which an independent cargo tank is situated.

1.3.18 **Independent** means that a piping or venting system, for example, is in no way connected to another system and that there are no provisions available for the potential connection to other systems.

1.3.19 **Length (L)** means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreshore of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel, the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres.

1.3.20 **Machinery spaces of category A** are those spaces and trunks to such spaces which contain:

1. internal-combustion machinery used for main propulsion; or

2. internal-combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

3. any oil-fired boiler or oil fuel unit or any oil fired equipment other than boilers, such as inert gas generators, incinerators etc.

1.3.21 **Machinery spaces** are all machinery spaces of category A and all other spaces containing propelling machinery, boilers, oil fuel units, steam and internal-combustion...
engines, generators and major electrical machinery, oil filling station, refrigerating, stabilizing, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces.

1.3.22 *MARPOL* means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended.

1.3.23 *Noxious Liquid Substance* means any substance indicated in the Pollution Category column of chapters 17 or 18 of the International Bulk Chemical Code, or the current MEPC.2/Circular or provisionally assessed under the provisions of MARPOL regulation II/6.3 as falling into categories X, Y or Z.

1.3.24 *Oil fuel unit* is the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal-combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a gauge pressure of more than 0.18 MPa.

1.3.25 *Organization* is the International Maritime Organization (IMO).

1.3.26 *Permeability* of a space means the ratio of the volume within that space which is assumed to be occupied by water to the total volume of that space.

1.3.27 *Port administration* means the appropriate authority of the country in the port of which the ship is loading or unloading.

1.3.28 *Products* is the collective term used to cover both Noxious Liquid Substances and Dangerous Chemicals.

1.3.29 *Pump-room* is a space, located in the cargo area, containing pumps and their accessories for the handling of ballast and oil fuel.

1.3.30 *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.

1.3.31 *Reference temperature* is the temperature at which the vapour pressure of the cargo corresponds to the set pressure of the pressure-relief valve.

1.3.32 *Separate* means that a cargo piping system or cargo vent system, for example, is not connected to another cargo piping or cargo vent system.

1.3.33 *Service spaces* are those spaces used for galleys, pantries containing cooking appliances, lockers, mail and specie rooms, store-rooms, workshops other than those forming part of the machinery spaces and similar spaces and trunks to such spaces.

1.3.34 *SOLAS* means the International Convention for the Safety of Life at Sea, 1974, as amended.
1.3.35 Vapour pressure is the equilibrium pressure of the saturated vapour above a liquid expressed in Pascals (Pa) at a specified temperature.

1.3.36 Void space is an enclosed space in the cargo area external to a cargo tank, other than a hold space, ballast space, oil fuel tank, cargo pump-room, pump-room, or any space in normal use by personnel.

1.4 Equivalents

1.4.1 Where the Code requires that a particular fitting, material, appliance, apparatus, item of equipment or type thereof shall be fitted or carried in a ship, or that any particular provision shall be made, or any procedure or arrangement shall be complied with, the Administration may allow any other fitting, material, appliance, apparatus, item of equipment or type thereof to be fitted or carried, or any other provision, procedure or arrangement to be made in that ship, if it is satisfied by trial thereof or otherwise that such fitting, material, appliance, apparatus, item of equipment or type thereof or that any particular provision, procedure or arrangement is at least as effective as that required by the Code. However, the Administration may not allow operational methods or procedures to be made an alternative to a particular fitting, material, appliance, apparatus, item of equipment, or type thereof, which are prescribed by the Code, unless such substitution is specifically allowed by the Code.

1.4.2 When the Administration allows any fitting, material, appliance, apparatus, item of equipment, or type thereof, or provision, procedure, or arrangement, or novel design or application to be substituted, it shall communicate to the Organization the particulars thereof, together with a report on the evidence submitted, so that the Organization may circulate the same to other Contracting Governments to SOLAS and Parties to MARPOL for the information of their officers.

1.5 Surveys and certification

1.5.1 Survey procedure

1.5.1.1 The survey of ships, so far as regards the enforcement of the provisions of the regulations and granting of exemptions therefrom, shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it.

1.5.1.2 The recognized organization, referred to in Regulation 8.2.1 of MARPOL Annex II shall comply with the guidelines adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the specification adopted by the Organization by resolution A.789(19), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article 16 of MARPOL and article VIII of SOLAS concerning the amendment procedures applicable to this Code.

1.5.1.3 The Administration nominating surveyors or recognizing organizations to conduct surveys shall, as a minimum, empower any nominated surveyor or recognized organization to:
1. require repairs to a ship; and

2. carry out surveys if requested by the appropriate authorities of a port State.

The Administration shall notify the Organization of the specific responsibilities and conditions of the authority delegated to nominated surveyors or recognized organizations for circulation to the Contracting Governments.

1.5.1.4 When a nominated surveyor or recognized organization determines that the condition of a ship or its equipment does not correspond substantially with the particulars of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or is such that the ship is not fit to proceed to sea without danger to the ship, or persons on board, or without presenting unreasonable threat of harm to the marine environment, such surveyor or organization shall immediately ensure that corrective action is taken and shall, in due course, notify the Administration. If such corrective action is not taken the Certificate shall be withdrawn and the Administration shall be notified immediately. If the ship is in a port of another Contracting Government, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this paragraph. When applicable, the Government of the port State concerned shall take such steps as will ensure that the ship does not sail until it can proceed to sea or leave the port for the purpose of proceeding to the nearest appropriate repair yard available without danger to the ship or persons on board or without presenting an unreasonable threat of harm to the marine environment.

1.5.1.5 In every case, the Administration shall guarantee the completeness and efficiency of the survey, and shall undertake to ensure the necessary arrangements to satisfy this obligation.

1.5.2 Survey requirements

1.5.2.1 The structure, equipment, fittings, arrangements and material (other than items in respect of which a Cargo Ship Safety Construction Certificate, Cargo Ship Safety Equipment Certificate and Cargo Ship Safety Radio Certificate or Cargo Ship Safety Certificate are issued) of a chemical tanker shall be subjected to the following surveys:

1. An initial survey before the ships is put in service or before the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk is issued for the first time, which shall include a complete examination of its structure, equipment, fittings, arrangements and material in so far as the ship is covered by the Code. This survey shall be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable provisions of the Code.

2. A renewal survey at intervals specified by the Administration, but not exceeding 5 years, except where 1.5.6.2.2, 1.5.6.5, 1.5.6.6 or 1.5.6.7 is applicable. The renewal survey shall be such as to ensure that the
structure, equipment, fittings, arrangements and material fully comply with the applicable provisions of the Code.

.3 An intermediate survey within 3 months before or after the second anniversary date or within 3 months before or after the third anniversary date of the Certificate, which shall take the place of one of the annual surveys specified in 1.5.2.1.4. The intermediate survey shall be such as to ensure that the safety equipment, and other equipment, and associate pump and piping systems fully comply with the applicable provisions of the Code and are in good working order. Such intermediate surveys shall be endorsed on the Certificate issued under 1.5.4 or 1.5.5.

.4 An annual survey within 3 months before or after each anniversary date of the Certificate, including a general inspection of the structure, equipment, fittings, arrangements and material referred to in 1.5.2.1.1 to ensure that they have been maintained in accordance with 1.5.3 and that they remain satisfactory for the service for which the ship is intended. Such annual surveys shall be endorsed on the Certificate issued under 1.5.4 or 1.5.5.

.5 An additional survey, either general or partial according to the circumstances, shall be made when required after an investigation prescribed in 1.5.3.3, or whenever any important repairs or renewals are made. Such a survey shall ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are satisfactory; and that the ship is fit to proceed to sea without danger to the ship or persons on board or without presenting unreasonable threat of harm to the marine environment.

1.5.3 Maintenance of conditions after survey

1.5.3.1 The conditions of the ship and its equipment shall be maintained to conform with the provisions of the Code to ensure that the ship will remain fit to proceed to sea without danger to the ship or persons on board or without presenting an unreasonable threat of harm to the marine environment.

1.5.3.2 After any survey of the ship under 1.5.2 has been completed, no change shall be made in the structure, equipment, fittings, arrangements and material covered by the survey, without the sanction of the Administration, except by direct replacement.

1.5.3.3 Whenever an accident occurs to a ship or a defect is discovered, either of which affects the safety of the ship or the efficiency or completeness of its life-saving appliances or other equipment covered by the Code, the master or owner of the ship shall report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the Certificate, who shall cause investigations to be initiated to determine whether a survey, as required by 1.5.2.1.5, is necessary. If the ship is in a port of another Contracting Government, the master or owner shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such a report has been made.
1.5.4 Issue or endorsement of International Certificate of Fitness

1.5.4.1 An International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk shall be issued after an initial or renewal survey to a chemical tanker engaged in international voyages which complies with the relevant provisions of the Code.

1.5.4.2 Such a Certificate shall be drawn up in the form corresponding to the model given in the appendix. If the language used is not English, French or Spanish, the text shall include the translation into one of these languages.

1.5.4.3 The Certificate issued under provisions of this section shall be available on board for examination at all times.

1.5.4.4 Notwithstanding any other provisions of the amendments to this Code adopted by the Marine Environment Protection Committee (MEPC) by resolution MEPC.40(29) and the Maritime Safety Committee (MSC) by resolution MSC.16(58), any International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, which is current when these amendments enter into force, shall remain valid until it expires under the terms of this Code prior to the amendments entering into force.

1.5.5 Issue or endorsement of International Certificate of Fitness by another Government

1.5.5.1 A Government that is both a Contracting Government to the 1974 SOLAS Convention and a Party to MARPOL 73/78 may, at the request of another such Government, cause a ship entitled to fly the flag of the other State to be surveyed and, if satisfied that the provisions of the Code are complied with, issue or authorize the issue of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk to the ship, and, where appropriate, endorse or authorize the endorsement of the Certificate on board the ship in accordance with the Code. Any Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Government of the State whose flag the ship is entitled to fly.

1.5.6 Duration and validity of International Certificate of Fitness

1.5.6.1 An International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk shall be issued for a period specified by the Administration which shall not exceed 5 years.

1.5.6.2.1 Notwithstanding the provisions of 1.5.6.1, when the renewal survey is completed within 3 months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate.

1.5.6.2.2 When the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate.

1.5.6.2.3 When the renewal survey is completed more than 3 months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of
completion of the renewal survey to a date not exceeding 5 years from the date of completion of the renewal survey.

1.5.6.3 If a Certificate is issued for a period of less than 5 years, the Administration may extend the validity of the Certificate beyond the expiry date to the maximum period specified in 1.5.6.1, provided that the surveys referred to in 1.5.2.1.3 and 1.5.2.1.4, applicable when a Certificate is issued for a period of 5 years, are carried out as appropriate.

1.5.6.4 If a renewal survey has been completed and a new Certificate cannot be issued or placed on board the ship before the expiry date of the existing Certificate, the person or organization authorized by the Administration may endorse the existing Certificate. Such a Certificate shall be accepted as valid for a further period which shall not exceed 5 months from the expiry date.

1.5.6.5 If a ship, at the time when a Certificate expires, is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the Certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so.

1.5.6.6 A Certificate, issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this section, may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing Certificate before the extension was granted.

1.5.6.7 In special circumstances, as determined by the Administration, a new Certificate need not be dated from the date of expiry of the existing Certificate as required by 1.5.6.2.2, 1.5.6.5 or 1.5.6.6. In these special circumstances, the new Certificate shall be valid to a date not exceeding 5 years from the date of completion of the renewal survey.

1.5.6.8 If an annual or intermediate survey is completed before the period specified in 1.5.2, then:

1. the anniversary date shown on the Certificate shall be amended by endorsement to a date which shall not be more than 3 months later than the date on which the survey was completed;

2. the subsequent annual or intermediate survey required by 1.5.2 shall be completed at the intervals prescribed by that section using the new anniversary date;

3. the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by 1.5.2 are not exceeded.

1.5.6.9 A Certificate issued under 1.5.4 or 1.5.5 shall cease to be valid in any of the following cases:
1. if the relevant surveys are not completed within the periods specified under 1.5.2;

2. if the Certificate is not endorsed in accordance with 1.5.2.1.3 or 1.5.2.1.4;

3. upon transfer of the ship to the flag of another State. A new certificate shall only be issued when the Government issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements of 1.5.3.1 and 1.5.3.2. In the case of a transfer between Governments that are both a Contracting Government to the 1974 SOLAS Convention and a Party to MARPOL 73/78, if requested within 3 months after the transfer has taken place, the Government of the State whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

CHAPTER 2

SHIP SURVIVAL CAPABILITY AND LOCATION OF CARGO TANKS

2.1 General

2.1.1 Ships, subject to the Code, shall survive the normal effects of flooding following assumed hull damage caused by some external force. In addition, to safeguard the ship and the environment, the cargo tanks of certain types of ships shall be protected from penetration in the case of minor damage to the ship resulting, for example, from contact with a jetty or tug, and given a measure of protection from damage in the case of collision or stranding, by locating them at specified minimum distances inboard from the ship's shell plating. Both the assumed damage and the proximity of the cargo tanks to the ship's shell shall be dependent upon the degree of hazard presented by the products to be carried.

2.1.2 Ships subject to the Code shall be designed to one of the following standards:

1. A type 1 ship is a chemical tanker intended to transport chapter 17 products with very severe environmental and safety hazards which require maximum preventive measures to preclude an escape of such cargo.

2. A type 2 ship is a chemical tanker intended to transport chapter 17 products with appreciably severe environmental and safety hazards which require significant preventive measures to preclude an escape of such cargo.

3. A type 3 ship is a chemical tanker intended to transport chapter 17 products with sufficiently severe environmental and safety hazards which require a moderate degree of containment to increase survival capability in a damaged condition.
Thus, a type 1 ship is a chemical tanker intended for the transportation of products considered to present the greatest overall hazard and type 2 and type 3 for products of progressively lesser hazards. Accordingly, a type 1 ship shall survive the most severe standard of damage and its cargo tanks shall be located at the maximum prescribed distance inboard from the shell plating.

2.1.3 The ship type required for individual products is indicated in column e in the table of chapter 17.

2.1.4 If a ship is intended to carry more than one product listed in chapter 17, the standard of damage shall correspond to that product having the most stringent ship type requirement. The requirements for the location of individual cargo tanks, however, are those for ship types related to the respective products intended to be carried.

2.2 Freeboard and intact stability

2.2.1 Ships subject to the Code may be assigned the minimum freeboard permitted by the International Convention on Load Lines in force. However, the draught associated with the assignment shall not be greater than the maximum draught otherwise permitted by this Code.

2.2.2 The stability of the ship in all seagoing conditions shall be to a standard which is acceptable to the Administration.

2.2.3 When calculating the effect of free surfaces of consumable liquids for loading conditions it shall be assumed that, for each type of liquid, at least one transverse pair or a single centre tank has a free surface and the tank or combination of tanks to be taken into account shall be those where the effect of free surfaces is the greatest. The free surface effect in undamaged compartments shall be calculated by a method acceptable to the Administration.

2.2.4 Solid ballast shall not normally be used in double-bottom spaces in the cargo area. Where, however, because of stability considerations, the fitting of solid ballast in such spaces becomes unavoidable, then its disposition shall be governed by the need to ensure that the impact loads resulting from bottom damage are not directly transmitted to the cargo tank structure.

2.2.5 The master of the ship shall be supplied with a loading and stability information booklet. This booklet shall contain details of typical service and ballast conditions, provisions for evaluating other conditions of loading and a summary of the ship's survival capabilities. In addition, the booklet shall contain sufficient information to enable the master to load and operate the ship in a safe and seaworthy manner.

2.3 Shipside discharges below the freeboard deck

2.3.1 The provision and control of valves fitted to discharges led through the shell from spaces below the freeboard deck or from within the super-structures and deck-houses on the freeboard deck fitted with weather-tight doors shall comply with the requirements of the relevant regulation of the International Convention on Load Lines in force, except that the choice of valves shall be limited to:
.1 one automatic non-return valve with a positive means of closing from above the freeboard deck; or

.2 where the vertical distance from the summer load waterline to the inboard end of the discharge pipe exceeds 0.01L, two automatic non-return valves without positive means of closing, provided that the inboard valve is always accessible for examination under service conditions.

2.3.2 For the purpose of this chapter, “summer load line” and “freeboard deck” have the meanings as defined in the International Convention on Load Lines in force.

2.3.3 The automatic non-return valves referred to in 2.3.1.1 and 2.3.1.2 shall be fully effective in preventing admission of water into the ship, taking into account the sinkage, trim and heel in survival requirements in 2.9, and shall comply with recognized standards.

2.4 Conditions of loading

Damage survival capability shall be investigated on the basis of loading information submitted to the Administration for all anticipated conditions of loading and variations in draught and trim. Ballast conditions where the chemical tanker is not carrying products covered by the Code, or is carrying only residues of such products, need not be considered.

2.5 Damage assumptions

2.5.1 The assumed maximum extent of damage shall be:

<table>
<thead>
<tr>
<th>.1 Side damage:</th>
<th>.1.1 Longitudinal extent: 1/3L&lt;sup&gt;2/3&lt;/sup&gt; or 14.5 m, whichever is less</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1.2 Transverse extent</td>
<td>B/5 or 11.5 m, whichever is less</td>
</tr>
<tr>
<td>.1.3 Vertical extent: upwards without limit (measured from the moulded line of the bottom shell plating at centreline)</td>
<td></td>
</tr>
</tbody>
</table>
2.5.2 If any damage of a lesser extent than the maximum damage specified in 2.5.1 would result in a more severe condition, such damage shall be considered.

2.6 Location of cargo tanks

2.6.1 Cargo tanks shall be located at the following distances inboard:

   .1 Type 1 ships: from the side shell plating, not less than the transverse extent of damage specified in 2.5.1.1.2, and from the moulded line of the bottom shell plating at centreline, not less than the vertical extent of damage specified in 2.5.1.2.3, and nowhere less than 760 mm from the shell plating. This requirement does not apply to the tanks for diluted slops arising from tank washing.

   .2 Type 2 ships: from the moulded line of the bottom shell plating at centreline, not less than the vertical extent of damage specified in 2.5.1.2.3, and nowhere less than 760 mm from the shell plating. This requirement does not apply to the tanks for diluted slops arising from tank washing.

   .3 Type 3 ships: no requirement.

2.6.2 Except for type 1 ships, suction wells installed in cargo tanks may protrude into the vertical extent of bottom damage specified in 2.5.1.2.3 provided that such wells are as small as practicable and the protrusion below the inner bottom plating does not exceed 25% of the depth of the double bottom or 350 mm, whichever is less. Where there is no double bottom, the protrusion of the suction well of independent tanks below the upper limit of bottom damage shall not exceed 350 mm. Suction wells installed in accordance with this paragraph may be ignored in determining the compartments affected by damage.

2.7 Flooding assumptions

2.7.1 The requirements of 2.9 shall be confirmed by calculations which take into consideration the design characteristics of the ship; the arrangements, configuration and contents of the damaged compartments; the distribution, relative densities and the free surface effects of liquids; and the draught and trim for all conditions of loading.
2.7.2 The permeabilities of spaces assumed to be damaged shall be as follows:

<table>
<thead>
<tr>
<th>Spaces</th>
<th>Permeabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriated to stores</td>
<td>0.60</td>
</tr>
<tr>
<td>Occupied by accommodation</td>
<td>0.95</td>
</tr>
<tr>
<td>Occupied by machinery</td>
<td>0.85</td>
</tr>
<tr>
<td>Voids</td>
<td>0.95</td>
</tr>
<tr>
<td>Intended for consumable liquids</td>
<td>0 to 0.95*</td>
</tr>
<tr>
<td>Intended for other liquids</td>
<td>0 to 0.95*</td>
</tr>
</tbody>
</table>

2.7.3 Wherever damage penetrates a tank containing liquids it shall be assumed that the contents are completely lost from that compartment and replaced by salt water up to the level of the final plane of equilibrium.

2.7.4 Every watertight division within the maximum extent of damage defined in 2.5.1 and considered to have sustained damage in positions given in 2.8.1 shall be assumed to be penetrated. Where damage less than the maximum is being considered in accordance with 2.5.2, only watertight divisions or combinations of watertight divisions within the envelope of such lesser damage shall be assumed to be penetrated.

2.7.5 The ship shall be so designed as to keep unsymmetrical flooding to the minimum consistent with efficient arrangements.

2.7.6 Equalization arrangements requiring mechanical aids such as valves or cross-levelling pipes, if fitted, shall not be considered for the purpose of reducing an angle of heel or attaining the minimum range of residual stability to meet the requirements of 2.9 and sufficient residual stability shall be maintained during all stages where equalization is used. Spaces which are linked by ducts of large cross-sectional area may be considered to be common.

2.7.7 If pipes, ducts, trunks or tunnels are situated within the assumed extent of damage penetration, as defined in 2.5, arrangements shall be such that progressive flooding cannot thereby extend to compartments other than those assumed to be flooded for each case of damage.

2.7.8 The buoyancy of any superstructure directly above the side damage shall be disregarded. The unflooded parts of superstructures beyond the extent of damage, however, may be taken into consideration provided that:

- they are separated from the damaged space by watertight divisions and the requirements of 2.9.3 in respect of these intact spaces are complied with; and

* The permeability of partially filled compartments shall be consistent with the amount of liquid carried in the compartment.
.2 openings in such divisions are capable of being closed by remotely operated sliding watertight doors and unprotected openings are not immersed within the minimum range of residual stability required in 2.9; however, the immersion of any other openings capable of being closed weathertight may be permitted.

2.8 Standard of damage

2.8.1 Ships shall be capable of surviving the damage indicated in 2.5 with the flooding assumptions in 2.7 to the extent determined by the ship's type according to the following standards:

.1 A type 1 ship shall be assumed to sustain damage anywhere in its length.

.2 A type 2 ship of more than 150 m in length shall be assumed to sustain damage anywhere in its length.

.3 A type 2 ship of 150 m in length or less shall be assumed to sustain damage anywhere in its length except involving either of the bulkheads bounding a machinery space located aft.

.4 A type 3 ship of more than 225 m in length shall be assumed to sustain damage anywhere in its length.

.5 A type 3 ship of 125 m in length or more but not exceeding 225 m in length shall be assumed to sustain damage anywhere in its length except involving either of the bulkheads bounding a machinery space located aft.

.6 A type 3 ship below 125 m in length shall be assumed to sustain damage anywhere in its length except involving damage to the machinery space when located aft. However, the ability to survive the flooding of the machinery space shall be considered by the Administration.

2.8.2 In the case of small type 2 and type 3 ships which do not comply in all respects with the appropriate requirements of 2.8.1.3 and 2.8.1.6, special dispensation may only be considered by the Administration provided that alternative measures can be taken which maintain the same degree of safety. The nature of the alternative measures shall be approved and clearly stated and be available to the port Administration. Any such dispensation shall be duly noted on the International Certificate of Fitness referred to in 1.5.4.

2.9 Survival requirements

2.9.1 Ships subject to the Code shall be capable of surviving the assumed damage specified in 2.5 to the standard provided in 2.8 in a condition of stable equilibrium and shall satisfy the following criteria.
2.9.2 In any stage of flooding:

.1 the waterline, taking into account sinkage, heel and trim, shall be below the lower edge of any opening through which progressive flooding or downflooding may take place. Such openings shall include air pipes and openings which are closed by means of weathertight doors or hatch covers and may exclude those openings closed by means of watertight manhole covers and watertight flush scuttles, small watertight cargo tank hatch covers which maintain the high integrity of the deck, remotely operated watertight sliding doors, and sidescuttles of the non-opening type;

.2 the maximum angle of heel due to unsymmetrical flooding shall not exceed 25°, except that this angle may be increased to 30° if no deck immersion occurs;

.3 the residual stability during intermediate stages of flooding shall be to the satisfaction of the Administration. However, it shall never be significantly less than that required by 2.9.3.

2.9.3 At final equilibrium after flooding:

.1 the righting-lever curve shall have a minimum range of 20° beyond the position of equilibrium in association with a maximum residual righting lever of at least 0.1 m within the 20° range; the area under the curve within this range shall not be less than 0.0175 m radians. Unprotected openings shall not be immersed within this range unless the space concerned is assumed to be flooded. Within this range, the immersion of any of the openings listed in 2.9.2.1 and other openings capable of being closed weathertight may be permitted; and

.2 the emergency source of power shall be capable of operating.

CHAPTER 3

SHIP ARRANGEMENTS

3.1 Cargo segregation

3.1.1 Unless expressly provided otherwise, tanks containing cargo or residues of cargo subject to the Code shall be segregated from accommodation, service and machinery spaces and from drinking water and stores for human consumption by means of a cofferdam, void space, cargo pump-room, pump-room, empty tank, oil fuel tank or other similar space.

3.1.2 Cargo piping shall not pass through any accommodation, service or machinery space other than cargo pump-rooms or pump-rooms.

3.1.3 Cargoes, residues of cargoes or mixtures containing cargoes, which react in a hazardous manner with other cargoes, residues or mixtures, shall:
be segregated from such other cargoes by means of a cofferdam, void space, cargo pump-room, pump-room, empty tank, or tank containing a mutually compatible cargo;

have separate pumping and piping systems which shall not pass through other cargo tanks containing such cargoes, unless encased in a tunnel; and

have separate tank venting systems.

3.1.4 If cargo piping systems or cargo ventilation systems are to be separated. This separation may be achieved by the use of design or operational methods. Operational methods shall not be used within a cargo tank and shall consist of one of the following types:

removing spool-pieces or valves and blanking the pipe ends;

arrangement of two spectacle flanges in series, with provisions for detecting leakage into the pipe between the two spectacle flanges.

3.1.5 Cargoes subject to the Code shall not be carried in either the fore or aft peak tank.

3.2 Accommodation, service and machinery spaces and control stations

3.2.1 No accommodation or service spaces or control stations shall be located within the cargo area except over a cargo pump-room recess or pump-room recess that complies with regulation II-2/56 of the 1983 SOLAS amendments and no cargo or slop tank shall be aft of the forward end of any accommodation.

3.2.2 In order to guard against the danger of hazardous vapours, due consideration shall be given to the location of air intakes and openings into accommodation, service and machinery spaces and control stations in relation to cargo piping and cargo vent systems.

3.2.3 Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations shall not face the cargo area. They shall be located on the end bulkhead not facing the cargo area and/or on the outboard side of the superstructure or deck-house at a distance of at least 4% of the length (L) of the ship but not less than 3 m from the end of the superstructure or deck-house facing the cargo area. This distance, however, need not exceed 5 m. No doors shall be permitted within the limits mentioned above, except that doors to those spaces not having access to accommodation and service spaces and control stations, such as cargo control stations and store-rooms, may be fitted. Where such doors are fitted, the boundaries of the space shall be insulated to “A-60” standard. Bolted plates for removal of machinery may be fitted within the limits specified above. Wheelhouse doors and wheelhouse windows may be located within the limits specified above so long as they are so designed that a rapid and efficient gas- and vapour-tightening of the wheelhouse can be ensured. Windows and sidescuttles facing the cargo area and on the sides of the superstructures and deck-houses within the limits specified above shall be of the fixed (non-opening) type. Such sidescuttles in the first tier on the main deck shall be fitted with inside covers of steel or equivalent material.
3.3 Cargo pump-rooms

3.3.1 Cargo pump-rooms shall be so arranged as to ensure:

.1 unrestricted passage at all times from any ladder platform and from the floor; and

.2 unrestricted access to all valves necessary for cargo handling for a person wearing the required personnel protective equipment.

3.3.2 Permanent arrangements shall be made for hoisting an injured person with a rescue line while avoiding any projecting obstacles.

3.3.3 Guard railings shall be installed on all ladders and platforms.

3.3.4 Normal access ladders shall not be fitted vertical and shall incorporate platforms at suitable intervals.

3.3.5 Means shall be provided to deal with drainage and any possible leakage from cargo pumps and valves in cargo pump-rooms. The bilge system serving the cargo pump-room shall be operable from outside the cargo pump-room. One or more slop tanks for storage of contaminated bilge water or tank washings shall be provided. A shore connection with a standard coupling or other facilities shall be provided for transferring contaminated liquids to onshore reception facilities.

3.3.6 Pump discharge pressure gauges shall be provided outside the cargo pump-room.

3.3.7 Where machinery is driven by shafting passing through a bulkhead or deck, gastight seals with efficient lubrication or other means of ensuring the permanence of the gas seal shall be fitted in way of the bulkhead or deck.

3.4 Access to spaces in the cargo area

3.4.1 Access to cofferdams, ballast tanks, cargo tanks and other spaces in the cargo area shall be direct from the open deck and such as to ensure their complete inspection. Access to double-bottom spaces may be through a cargo pump-room, pump-room, deep cofferdam, pipe tunnel or similar compartments, subject to consideration of ventilation aspects.

3.4.2 For access through horizontal openings, hatches or manholes, the dimensions shall be sufficient to allow a person wearing a self-contained air-breathing apparatus and protective equipment to ascend or descend any ladder without obstruction and also to provide a clear opening to facilitate the hoisting of an injured person from the bottom of the space. The minimum clear opening shall be not less than 600 mm by 600 mm.

3.4.3 For access through vertical openings, or manholes providing passage through the length and breadth of the space, the minimum clear opening shall be not less than 600 mm by 800 mm at a height of not more than 600 mm from the bottom shell plating unless gratings or other footholds are provided.
3.4.4 Smaller dimensions may be approved by the Administration in special circumstances, if the ability to traverse such openings or to remove an injured person can be proved to the satisfaction of the Administration.

3.5 Bilge and ballast arrangements

3.5.1 Pumps, ballast lines, vent lines and other similar equipment serving permanent ballast tanks shall be independent of similar equipment serving cargo tanks and of cargo tanks themselves. Discharge arrangements for permanent ballast tanks sited immediately adjacent to cargo tanks shall be outside machinery spaces and accommodation spaces. Filling arrangements may be in the machinery spaces provided that such arrangements ensure filling from tank deck level and non-return valves are fitted.

3.5.2 Filling of ballast in cargo tanks may be arranged from deck level by pumps serving permanent ballast tanks, provided that the filling line has no permanent connection to cargo tanks or piping and that non-return valves are fitted.

3.5.3 Bilge pumping arrangements for cargo pump-rooms, pump-rooms, void spaces, slop tanks, double-bottom tanks and similar spaces shall be situated entirely within the cargo area except for void spaces, double-bottom tanks and ballast tanks where such spaces are separated from tanks containing cargo or residues of cargo by a double bulkhead.

3.6 Pump and pipeline identification

Provisions shall be made for the distinctive marking of pumps, valves and pipelines to identify the service and tanks which they serve.

3.7 Bow or stern loading and unloading arrangements

3.7.1 Cargo piping may be fitted to permit bow or stern loading and unloading. Portable arrangements shall not be permitted.

3.7.2 Bow or stern loading and unloading lines shall not be used for the transfer of products required to be carried in type 1 ships. Bow and stern loading and unloading lines shall not be used for the transfer of cargoes emitting toxic vapours required to comply with 15.12.1, unless specifically approved by the Administration.

3.7.3 In addition to 5.1, the following provisions apply:

.1 The piping outside the cargo area shall be fitted at least 760 mm inboard on the open deck. Such piping shall be clearly identified and fitted with a shutoff valve at its connection to the cargo piping system within the cargo area. At this location, it shall also be capable of being separated by means of a removable spool-piece and blank flanges when not in use.

.2 The shore connection shall be fitted with a shutoff valve and a blank flange.
3. The piping shall be full-penetration butt-welded, and fully radiographed. Flange connections in the piping shall only be permitted within the cargo area and at the shore connection.

4. Spray shields shall be provided at the connections specified in 3.7.3.1 as well as collecting trays of sufficient capacity, with means for the disposal of drainage.

5. The piping shall be self-draining to the cargo area and preferably into a cargo tank. Alternative arrangements for draining the piping may be accepted by the Administration.

6. Arrangements shall be made to allow such piping to be purged after use and maintained gas-safe when not in use. The vent pipes connected with the purge shall be located in the cargo area. The relevant connections to the piping shall be provided with a shutoff valve and blank flange.

3.7.4 Entrances, air inlets and openings to accommodation, service and machinery spaces and control stations shall not face the cargo shore-connection location of bow or stern loading and unloading arrangements. They shall be located on the outboard side of the superstructure or deck-house at a distance of at least 4% of the length of the ship but not less than 3 m from the end of the house facing the cargo shore-connection location of the bow or stern loading and unloading arrangements. This distance, however, need not exceed 5 m. Sidescuttles facing the shore-connection location and on the sides of the superstructure or deck-house within the distance mentioned above shall be of the fixed (non-opening) type. In addition, during the use of the bow or stern loading and unloading arrangements, all doors, ports and other openings on the corresponding superstructure or deck-house side shall be kept closed. Where, in the case of small ships, compliance with 3.2.3 and this paragraph is not possible, the Administration may approve relaxations from the above requirements.

3.7.5 Air pipes and other openings to enclosed spaces not listed in 3.7.4 shall be shielded from any spray which may come from a burst hose or connection.

3.7.6 Escape routes shall not terminate within the coamings required by 3.7.7 or within a distance of 3 m beyond the coamings.

3.7.7 Continuous coamings of suitable height shall be fitted to keep any spills on deck and away from the accommodation and service areas.

3.7.8 Electrical equipment within the coamings required by 3.7.7 or within a distance of 3 m beyond the coamings shall be in accordance with the requirements of chapter 10.

3.7.9 Fire-fighting arrangements for the bow or stern loading and unloading areas shall be in accordance with 11.3.16.

3.7.10 Means of communication between the cargo control station and the cargo shore-connection location shall be provided and certified safe, if necessary. Provision shall be made for the remote shutdown of cargo pumps from the cargo shore-connection location.
CHAPTER 4
CARGO CONTAINMENT

4.1 Definitions

4.1.1 Independent tank means a cargo-containment envelope, which is not contiguous with, or part of, the hull structure. An independent tank is built and installed so as to eliminate whenever possible (or in any event to minimize) its stressing as a result of stressing or motion of the adjacent hull structure. An independent tank is not essential to the structural completeness of the ship's hull.

4.1.2 Integral tank means a cargo-containment envelope which forms part of the ship's hull and which may be stressed in the same manner and by the same loads which stress the contiguous hull structure and which is normally essential to the structural completeness of the ship's hull.

4.1.3 Gravity tank means a tank having a design pressure not greater than 0.07 MPa gauge at the top of the tank. A gravity tank may be independent or integral. A gravity tank shall be constructed and tested according to recognized standards, taking account of the temperature of carriage and relative density of the cargo.

4.1.4 Pressure tank means a tank having a design pressure greater than 0.07 MPa gauge. A pressure tank shall be an independent tank and shall be of a configuration permitting the application of pressure-vessel design criteria according to recognized standards.

4.2 Tank type requirements for individual products

Requirements for both installation and design of tank types for individual products are shown in column $f$ in the table of chapter 17.

CHAPTER 5
CARGO TRANSFER

5.1 Piping scantlings

5.1.1 Subject to the conditions stated in 5.1.4, the wall thickness (t) of, pipes shall not be less than:

$$t = t_0 + b + c \left( \frac{a}{100} \right) (\text{mm})$$
where:

\[ t_o = \text{theoretical thickness} \]

\[ t_o = \frac{PD}{2Ke+P} \text{ (mm)} \]

with

\[ P = \text{design pressure (MPa) referred to in 5.1.2} \]

\[ D = \text{outside diameter (mm)} \]

\[ K = \text{allowable stress (N/mm}^2\text{) referred to in 5.1.5} \]

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

\[ b = \text{allowance for bending (mm). The value of } b \text{ shall be chosen so that the calculated stress in the bend, due to internal pressure only, does not exceed the allowable stress. Where such justification is not given, } b \text{ shall be not less than:} \]

\[ b = \frac{Dt_o}{2.5r} \text{ (mm)} \]

with

\[ r = \text{mean radius of the bend (mm).} \]

\[ c = \text{corrosion allowance (mm). If corrosion or erosion is expected, the wall thickness of piping shall be increased over that required by the other design requirements.} \]

\[ a = \text{negative manufacturing tolerance for thickness (}).\]

5.1.2 The design pressure \( P \) in the formula for \( t_o \) in 5.1.1 is the maximum gauge pressure to which the system may be subjected in service, taking into account the highest set pressure on any relief valve on the system.

5.1.3 Piping and piping-system components which are not protected by a relief valve, or which may be isolated from their relief valve, shall be designed for at least the greatest of:

\[ \text{1 for piping systems or components, which may contain some liquid, the saturated vapour pressure at 45°C;} \]
.2 the pressure setting of the associated pump discharge relief valve;

.3 the maximum possible total pressure head at the outlet of the associated pumps when a pump discharge relief valve is not installed.

5.1.4 The design pressure shall not be less than 1 MPa gauge except for open-ended lines, where it shall be not less than 0.5 MPa gauge.

5.1.5 For pipes, the allowable stress K to be considered in the formula for \( t_o \) in 5.1.1 is the lower of the following values:

\[
\frac{R_m}{A} \quad \text{or} \quad \frac{R_e}{B}
\]

where:

\( R_m = \) specified minimum tensile strength at ambient temperature (N/mm²)

\( R_e = \) specified minimum yield stress at ambient temperature (N/mm²). If the stress-strain curve does not show a defined yield stress, the 0.2% proof stress applies.

A and B shall have values of at least \( A = 2.7 \) and \( B = 1.8 \).

5.1.6.1 The minimum wall thickness shall be in accordance with recognized standards.

5.1.6.2 Where necessary for mechanical strength to prevent damage, collapse, excessive sag or buckling of pipes due to weight of pipes and content and to superimposed loads from supports, ship deflection or other causes, the wall thickness shall be increased over that required by 5.1.1 or, if this is impracticable or would cause excessive local stresses, these loads shall be reduced, protected against or eliminated by other design methods.

5.1.6.3 Flanges, valves and other fittings shall be in accordance with recognized standards, taking into account the design pressure defined under 5.1.2.

5.1.6.4 For flanges not complying with a standard, the dimensions for flanges and associated bolts shall be to the satisfaction of the Administration.

5.2 Piping fabrication and joining details

5.2.1 The requirements of this section apply to piping inside and outside the cargo tanks. However, relaxations from these requirements may be accepted in accordance with recognized standards for open-ended piping and for piping inside cargo tanks except for cargo piping serving other cargo tanks.

5.2.2 Cargo piping shall be joined by welding except:

.1 for approved connections to shutoff valves and expansion joints; and
5.2.3 The following direct connections of pipe lengths without flanges may be considered:

.1 Butt-welded joints with complete penetration at the root may be used in all applications.

.2 Slip-on welded joints with sleeves and related welding having dimensions in accordance with recognized standards shall only be used for pipes with an external diameter of 50 mm or less. This type of joint shall not be used when crevice corrosion is expected to occur.

.3 Screwed connections, in accordance with recognized standards, shall only be used for accessory lines and instrumentation lines with external diameters of 25 mm or less.

5.2.4 Expansion of piping shall normally be allowed for by the provision of expansion loops or bends in the piping system.

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

.2 Slip joints shall not be used.

5.2.5 Welding, post-weld heat treatment and non-destructive testing shall be performed in accordance with recognized standards.

5.3 Flange connections

5.3.1 Flanges shall be of the welded-neck, slip-on or socket-welded type. However, socket-welded-type flanges shall not be used in nominal size above 50 mm.

5.3.2 Flanges shall comply with recognized standards as to their type, manufacture and test.

5.4 Test requirements for piping

5.4.1 The test requirements of this section apply to piping inside and outside cargo tanks. However, relaxations from these requirements may be accepted in accordance with recognized standards for piping inside tanks and open-ended piping.

5.4.2 After assembly, each cargo piping system shall be subject to a hydrostatic test to at least 1.5 times the design pressure. When piping systems or parts of systems are completely manufactured and equipped with all fittings, the hydrostatic test may be conducted prior to installation aboard the ship. Joints welded on board shall be hydrostatically tested to at least 1.5 times the design pressure.
5.4.3 After assembly on board, each cargo piping system shall be tested for leaks to a pressure depending on the method applied.

5.5 Piping arrangements

5.5.1 Cargo piping shall not be installed under deck between the out-board side of the cargo-containment spaces and the skin of the ship unless clearances required for damage protection (see 2.6) are maintained; but such distances may be reduced where damage to the pipe would not cause release of cargo provided that the clearance required for inspection purposes is maintained.

5.5.2 Cargo piping located below the main deck may run from the tank it serves and penetrate tank bulkheads or boundaries common to longitudinally or transversally adjacent cargo tanks, ballast tanks, empty tanks, pump-rooms or cargo pump-rooms provided that inside the tank it serves it is fitted with a stop-valve operable from the weather deck and provided cargo compatibility is assured in the event of piping failure. As an exception, where a cargo tank is adjacent to a cargo pump-room, the stop valve operable from the weather deck may be situated on the tank bulkhead on the cargo pump-room side, provided an additional valve is fitted between the bulkhead valve and the cargo pump. A totally enclosed hydraulically operated valve located outside the cargo tank may, however, be accepted, provided that the valve is:

.1 designed to preclude the risk of leakage;
.2 fitted on the bulkhead of the cargo tank which it serves;
.3 suitably protected against mechanical damage;
.4 fitted at a distance from the shell as required for damage protection; and
.5 operable from the weather deck.

5.5.3 In any cargo pump-room where a pump serves more than one tank, a stop valve shall be fitted in the line to each tank.

5.5.4 Cargo piping installed in pipe tunnels shall also comply with the requirements of 5.5.1 and 5.5.2. Pipe tunnels shall satisfy all tank requirements for construction, location and ventilation and electrical hazard requirements. Cargo compatibility shall be assured in the event of a piping failure. The tunnel shall not have any other openings except to the weather deck and cargo pump-room or pump-room.

5.5.5 Cargo piping passing through bulkheads shall be so arranged as to preclude excessive stresses at the bulkhead and shall not utilize flanges bolted through the bulkhead.

5.6 Cargo-transfer control systems

5.6.1 For the purpose of adequately controlling the cargo, cargo-transfer systems shall be provided with:
.1 one stop-valve capable of being manually operated on each tank filling and discharge line, located near the tank penetration; if an individual deepwell pump is used to discharge the contents of a cargo tank, a stop-valve is not required on the discharge line of that tank;

.2 one stop valve at each cargo-hose connection;

.3 remote shutdown devices for all cargo pumps and similar equipment.

5.6.2 The controls necessary during transfer or transport of cargoes covered by the Code other than in cargo pump-rooms which have been dealt with elsewhere in the Code shall not be located below the weather deck.

5.6.3 For certain products, additional cargo-transfer control requirements are shown in column o in the table of chapter 17.

5.7 Ship's cargo hoses

5.7.1 Liquid and vapour hoses used for cargo transfer shall be compatible with the cargo and suitable for the cargo temperature.

5.7.2 Hoses subject to tank pressure or the discharge pressure of pumps shall be designed for a bursting pressure not less than 5 times the maximum pressure the hose will be subjected to during cargo transfer.

5.7.3 For cargo hoses installed on board ships on or after 1 July 2002, each new type of cargo hose, complete with end-fittings, shall be prototype-tested at a normal ambient temperature with 200 pressure cycles from zero to at least twice the specified maximum working pressure. After this cycle pressure test has been carried out, the prototype test shall demonstrate a bursting pressure of at least 5 times its specified maximum working pressure at the extreme service temperature. Hoses used for prototype testing shall not be used for cargo service. Thereafter, before being placed in service, each new length of cargo hose produced shall be hydrostatically tested at ambient temperature to a pressure not less than 1.5 times its specified maximum working pressure but not more than two-fifths of its bursting pressure. The hose shall be stencilled or otherwise marked with the date of testing, its specified maximum working pressure and, if used in services other than the ambient temperature services, its maximum and minimum service temperature, as applicable. The specified maximum working pressure shall not be less than 1 MPa gauge.

CHAPTER 6

MATERIALS OF CONSTRUCTION, PROTECTIVE LININGS AND COATINGS

6.1 Structural materials used for tank construction, together with associated piping, pumps, valves, vents and their jointing materials, should be suitable at the temperature and pressure for the cargo to be carried in accordance with recognized standards. Steel is assumed to be the normal material of construction.
6.2 The shipyard is responsible for providing compatibility information to the ship operator and/or master. This must be done in a timely manner before delivery of the ship or on completion of a relevant modification of the material of construction.

6.3 Where applicable, the following should be taken into account in selecting the material of construction:

.1 notch ductility at the operating temperature;
.2 corrosive effect of the cargo; and
.3 possibility of hazardous reactions between the cargo and the material of construction.

6.4 The shipper of the cargo is responsible for providing compatibility information to the ship operator and/or master. This must be done in a timely manner before transportation of the product. The cargo shall be compatible with all materials of construction such that:

.1 no damage to the integrity of the materials of construction is incurred; and/or
.2 no hazardous, or potentially hazardous reaction is created.

6.5 When a product is submitted to IMO for evaluation, and where compatibility of the product with materials referred to in paragraph 6.1 renders special requirements, the GESAMP/EHS Product Data Reporting form shall provide information on the required materials of construction. These requirements shall be reflected in chapter 15 and consequentially be referred to in column o of chapter 17. The reporting form shall also indicate if no special requirements are necessary. The producer of the product is responsible for providing the correct information.

CHAPTER 7

CARGO TEMPERATURE CONTROL

7.1 General

7.1.1 When provided, any cargo heating or cooling systems shall be constructed, fitted and tested to the satisfaction of the Administration. Materials used in the construction of temperature-control systems shall be suitable for use with the product intended to be carried.

7.1.2 Heating or cooling media shall be of a type approved for use with the specific cargo. Consideration shall be given to the surface temperature of heating coils or ducts to avoid dangerous reactions from localized overheating or overcooling of cargo. (See also 15.13.6).
7.1.3 Heating or cooling systems shall be provided with valves to isolate the system for each tank and to allow manual regulation of flow.

7.1.4 In any heating or cooling system, means shall be provided to ensure that, when in any condition other than empty, a higher pressure can be maintained within the system than the maximum pressure head that could be exerted by the cargo tank contents on the system.

7.1.5 Means shall be provided for measuring the cargo temperature.

.1 The means for measuring the cargo temperature shall be of restricted or closed type, respectively, when a restricted or closed gauging device is required for individual substances, as shown in column j in the table of chapter 17.

.2 A restricted temperature-measuring device is subject to the definition for a restricted gauging device in 13.1.1.2 (e.g. a portable thermometer lowered inside a gauge tube of the restricted type).

.3 A closed temperature-measuring device is subject to the definition for a closed gauging device in 13.1.1.3 (e.g. a remote-reading thermometer of which the sensor is installed in the tank).

.4 When overheating or overcooling could result in a dangerous condition, an alarm system which monitors the cargo temperature shall be provided. (See also operational requirements in 16.6).

7.1.6 When products for which 15.12, 15.12.1 or 15.12.3 are listed in column o in the table of chapter 17 are being heated or cooled, the heating or cooling medium shall operate in a circuit:

.1 which is independent of other ship's services, except for another cargo heating or cooling system, and which does not enter the machinery space; or

.2 which is external to the tank carrying toxic products; or

.3 where the medium is sampled to check for the presence of cargo before it is recirculated to other services of the ship or into the machinery space. The sampling equipment shall be located within the cargo area and be capable of detecting the presence of any toxic cargo being heated or cooled. Where this method is used, the coil return shall be tested not only at the commencement of heating or cooling of a toxic product, but also on the first occasion the coil is used subsequent to having carried an unheated or uncooled toxic cargo.

7.2 Additional requirements

For certain products, additional requirements contained in chapter 15 are shown in column o in the table of chapter 17.
CHAPTER 8

CARGO TANK VENTING AND GAS-FREEING ARRANGEMENTS

8.1 Application

8.1.1 Unless expressly provided otherwise, this chapter applies to ships constructed on or after 1 January 1994.

8.1.2 Ships constructed before 1 January 1994 shall comply with the requirements of chapter 8 of this Code which were in force prior to the said date.

8.1.3 For the purpose of this regulation, the term “ship constructed” is as defined in SOLAS regulation II-1/1.3.1.

8.1.4 Ships constructed on or after 1 July 1986 but before 1 January 1994 which fully comply with the requirements of the Code applicable at that time may be regarded as complying with the requirements of SOLAS regulation II-2/59.

8.1.5 For ships to which the Code applies, the requirements of this chapter shall apply in lieu of SOLAS regulations II-2/59.1 and 59.2.

8.1.6 Ships constructed on or after 1 July 1986, but before 1 July 2002 shall comply with the requirements of 8.3.3.

8.2 Cargo tank venting

8.2.1 All cargo tanks shall be provided with a venting system appropriate to the cargo being carried and these systems shall be independent of the air pipes and venting systems of all other compartments of the ship. Tank venting systems shall be designed so as to minimize the possibility of cargo vapour accumulating about the decks, entering accommodation, service and machinery spaces and control stations and, in the case of flammable vapours, entering or collecting in spaces or areas containing sources of ignition. Tank venting systems shall be arranged to prevent entrance of water into the cargo tanks and, at the same time, vent outlets shall direct the vapour discharge upwards in the form of unimpeded jets.

8.2.2 The venting systems shall be connected to the top of each cargo tank and as far as practicable the cargo vent lines shall be self-draining back to the cargo tanks under all normal operational conditions of list and trim. Where it is necessary to drain venting systems above the level of any pressure/vacuum valve, capped or plugged drain cocks shall be provided.

8.2.3 Provision shall be made to ensure that the liquid head in any tank does not exceed the design head of the tank. Suitable high-level alarms, overflow control systems or spill valves, together with gauging and tank filling procedures, may be accepted for this purpose. Where the means of limiting cargo tank overpressure includes an automatic closing valve, the valve shall comply with the appropriate provisions of 15.19.
8.2.4 Tank venting systems shall be designed and operated so as to ensure that neither pressure nor vacuum created in the cargo tanks during loading or unloading exceeds tank design parameters. The main factors to be considered in the sizing of a tank venting system are as follows:

1. design loading and unloading rate;
2. gas evolution during loading: this shall be taken account of by multiplying the maximum loading rate by a factor of at least 1.25;
3. density of the cargo vapour mixture;
4. pressure loss in vent piping and across valves and fittings; and
5. pressure/vacuum settings of relief devices.

8.2.5 Tank vent piping connected to cargo tanks of corrosion-resistant material, or to tanks which are lined or coated to handle special cargoes as required by the Code, shall be similarly lined or coated or constructed of corrosion-resistant material.

8.2.6 The master shall be provided with the maximum permissible loading and unloading rates for each tank or group of tanks consistent with the design of the venting systems.

8.3 Types of tank venting systems

8.3.1 An open tank venting system is a system which offers no restriction except for friction losses to the free flow of cargo vapours to and from the cargo tanks during normal operations. An open venting system may consist of individual vents from each tank, or such individual vents may be combined into a common header or headers, with due regard to cargo segregation. In no case shall shutoff valves be fitted either to the individual vents or to the header.

8.3.2 A controlled tank venting system is a system in which pressure- and vacuum-relief valves or pressure/vacuum valves are fitted to each tank to limit the pressure or vacuum in the tank. A controlled venting system may consist of individual vents from each tank or such individual vents on the pressure side only as may be combined into a common header or headers, with due regard to cargo segregation. In no case shall shut-off valves be fitted either above or below pressure- or vacuum-relief valves or pressure/vacuum valves. Provision may be made for bypassing a pressure- or vacuum-relief valve or pressure/vacuum valve under certain operating conditions provided that the requirement of 8.3.6 is maintained and that there is suitable indication to show whether or not the valve is bypassed.

8.3.3 Controlled tank venting systems shall consist of a primary and a secondary means of allowing full flow relief of vapour to prevent over-pressure or under-pressure in the event of failure of one means. Alternatively, the secondary means may consist of pressure sensors fitted in each tank with a monitoring system in the ship's cargo control room or position from which cargo operations are normally carried out. Such monitoring equipment shall also
provide an alarm facility which is activated by detection of over-pressure or under-pressure conditions within a tank.

8.3.4 The position of vent outlets of a controlled tank venting system shall be arranged:

.1 at a height of not less than 6 m above the weather deck or above a raised walkway if fitted within 4 m of the raised walkway;

.2 at a distance of at least 10 m measured horizontally from the nearest air intake or opening to accommodation, service and machinery spaces and ignition sources.

8.3.5 The vent outlet height referred to in 8.3.4.1 may be reduced to 3 m above the deck or a raised walkway, as applicable, provided that high-velocity venting valves of an approved type, directing the vapour/air mixture upwards in an unimpeded jet with an exit velocity of at least 30 m/s, are fitted.

8.3.6 Controlled tank venting systems fitted to tanks to be used for cargoes having a flashpoint not exceeding 60°C (closed-cup test) shall be provided with devices to prevent the passage of flame into the cargo tanks. The design, testing and locating of the devices shall comply with the requirements of the Administration, which shall contain at least the standards adopted by the Organization.

8.3.7 In designing venting systems and in the selection of devices to prevent the passage of flame for incorporation into the tank venting system, due attention shall be paid to the possibility of the blockage of these systems and fittings by, for example, the freezing of cargo vapour, polymer build-up, atmospheric dust or icing up in adverse weather conditions. In this context it shall be noted that flame arresters and flame screens are more susceptible to blockage. Provisions shall be made such that the system and fittings may be inspected, operationally checked, cleaned or renewed as applicable.

8.3.8 Reference in 8.3.1 and 8.3.2 to the use of shutoff valves in the venting lines shall be interpreted to extend to all other means of stoppage, including spectacle blanks and blank flanges.

8.4 Venting requirements for individual products

Venting requirements for individual products are shown in column g, and additional requirements in column o in the table of chapter 17.

8.5 Cargo tank gas-freeing

8.5.1 The arrangements for gas-freeing cargo tanks used for cargoes other than those for which open venting is permitted shall be such as to minimize the hazards due to the dispersal of flammable or toxic vapours in the atmosphere and to flammable or toxic vapour mixtures in a cargo tank. Accordingly, gas-freeing operations shall be carried out such that vapour is initially discharged:

.1 through the vent outlets specified in 8.3.4 and 8.3.5; or
through outlets at least 2 m above the cargo tank deck level with a vertical efflux velocity of at least 30 m/s maintained during the gas-freeing operation; or

through outlets at least 2 m above the cargo tank deck level with a vertical efflux velocity of at least 20 m/s which are protected by suitable devices to prevent the passage of flame.

When the flammable vapour concentration at the outlets has been reduced to 30% of the lower flammable limit and, in the case of a toxic product, the vapour concentration does not present a significant health hazard, gas-freeing may thereafter be continued at cargo tank deck level.

8.5.2 The outlets referred to in 8.5.1.2 and 8.5.1.3 may be fixed or portable pipes.

8.5.3 In designing a gas-freeing system in conformity with 8.5.1, particularly in order to achieve the required exit velocities of 8.5.1.2 and 8.5.1.3, due consideration shall be given to the following:

1. materials of construction of system;
2. time to gas-free;
3. flow characteristics of fans to be used;
4. the pressure losses created by ducting, piping, cargo tank inlets and outlets;
5. the pressure achievable in the fan driving medium (e.g. water or compressed air); and
6. the densities of the cargo vapour/air mixtures for the range of cargoes to be carried.

CHAPTER 9
ENVIRONMENTAL CONTROL

9.1 General

9.1.1 Vapour spaces within cargo tanks and, in some cases, spaces surrounding cargo tanks may require to have specially controlled atmospheres.

9.1.2 There are four different types of control for cargo tanks, as follows:

1. Inerting: by filling the cargo tank and associated piping systems and, where specified in chapter 15, the spaces surrounding the cargo tanks, with a gas or vapour which will not support combustion and which will not react with the cargo, and maintaining that condition.
.2 **Padding**: by filling the cargo tank and associated piping systems with a liquid, gas or vapour which separates the cargo from the air, and maintaining that condition.

.3 **Drying**: by filling the cargo tank and associated piping systems with moisture-free gas or vapour with a dewpoint of -40°C or below at atmospheric pressure, and maintaining that condition.

.4 **Ventilation**: forced or natural.

9.1.3 Where inerting or padding of cargo tanks is required:

.1 An adequate supply of inert gas for use in filling and discharging the cargo tanks shall be carried or shall be manufactured on board unless a shore supply is available. In addition, sufficient inert gas shall be available on the ship to compensate for normal losses during transportation.

.2 The inert gas system on board the ship shall be able to maintain a pressure of at least 0.007 MPa gauge within the containment system at all times. In addition, the inert gas system shall not raise the cargo tank pressure to more than the tank's relief-valve setting.

.3 Where padding is used, similar arrangements for supply of the padding medium shall be made as required for inert gas in 9.1.3.1 and 9.1.3.2.

.4 Means shall be provided for monitoring ullage spaces containing a gas blanket to ensure that the correct atmosphere is being maintained.

.5 Inerting or padding arrangements or both, where used with flammable cargoes, shall be such as to minimize the creation of static electricity during the admission of the inerting medium.

9.1.4 Where drying is used and dry nitrogen is used as the medium, similar arrangements for supply of the drying agent shall be made to those required in 9.1.3. Where drying agents are used as the drying medium on all air inlets to the tank, sufficient medium shall be carried for the duration of the voyage, taking into consideration the diurnal temperature range and the expected humidity.

9.2 **Environmental control requirements for individual products**

The required types of environmental control for certain products are shown in *column h* in the table of chapter 17.
CHAPTER 10

ELECTRICAL INSTALLATIONS

10.1 General

10.1.1 The provisions of this chapter are applicable to ships carrying cargoes which are inherently, or due to their reaction with other substances, flammable or corrosive to the electrical equipment, and shall be applied in conjunction with applicable electrical requirements of part D of chapter II-1 of SOLAS.

10.1.2.1 Electrical installations shall be such as to minimize the risk of fire and explosion from flammable products.∗. Electrical installations complying with this chapter shall not be considered a source of ignition for the purposes of 10.2.2.3, having regard to 10.1.4.

10.1.2.2 Where the specific cargo is liable to damage the materials normally used in electrical apparatus, due consideration shall be given to the particular characteristics of the materials chosen for conductors, insulation, metal parts, etc. As far as necessary, these components shall be protected to prevent contact with gases or vapours liable to be encountered.

10.1.3 The Administration shall take appropriate steps to ensure uniformity in the implementation and the application of the provisions of this chapter in respect of electrical installations.

10.1.4 Electrical equipment, cables and wiring should not be installed in the hazardous locations unless it conforms with the standards not inferior to those acceptable to the Organization. However, for locations not covered by such standards, electrical equipment, cables and wiring which do not conform to the standards may be installed in hazardous locations based on a risk assessment to the satisfaction of the Administration, to ensure that an equivalent level of safety is assured.

10.1.5 Where electrical equipment is installed in hazardous locations, as permitted in this chapter, it shall be to the satisfaction of the Administration and certified by the relevant authorities recognized by the Administration for operation in the flammable atmosphere concerned, as indicated in column i in the table of chapter 17.

10.1.6 Absence of information on temperature class and apparatus group in column i in the table of chapter 17 means that data are not currently available, and this shall not be confused with the non-flammable (NF) notation describing some substances. For guidance, indication is given if the flashpoint of a substance is in excess of 60°C. In the case of heated cargo, carriage conditions might need to be established and the requirements for cargoes having a flashpoint not exceeding 60°C applied.

* Reference is made to the recommendations published by the International Electrotechnical Commission, in particular to Publication 92-502.
10.2 Bonding

Independent cargo tanks shall be electrically bonded to the hull. All gasketed cargo-pipe joints and hose connections shall be electrically bonded.

10.3 Electrical requirements for individual products

Electrical requirements for individual products are shown in column i in the table of chapter 17.

CHAPTER 11

FIRE PROTECTION AND FIRE EXTINCTION

11.1 Application

11.1.1 The requirements for tankers in chapter II-2 of the 1983 SOLAS amendments shall apply to ships covered by the Code, irrespective of tonnage, including ships of less than 500 tons gross tonnage, except that:

.1 regulations 60, 61, 62 and 63 shall not apply;

.2 regulation 56.2, i.e. the requirements for location of the main cargo control station, need not apply;

.3 regulation 4, as applicable to cargo ships and regulation 7 shall apply as they would apply to tankers of 2,000 tons gross tonnage and over;

.4 the provisions of 11.3 shall apply in lieu of regulation 61; and

.5 the provisions of 11.2 shall apply in lieu of regulation 63.

11.1.2 Notwithstanding the provisions of 11.1.1, ships engaged solely in the carriage of products which are non-flammable (entry NF in column i of the table of minimum requirements) need not comply with part D of chapter II-2 of the 1983 SOLAS amendments, provided that they comply with part C of that chapter, except that regulation 53 need not apply to such ships and 11.2 and 11.3, hereunder, need not apply.

11.1.3 For ships engaged solely in the carriage of products with flashpoint above 60°C (entry “yes” in column i of the table of minimum requirements), the requirements of chapter II-2 of the 1983 SOLAS amendments may apply as specified in regulation II-2/55.4 in lieu of the provisions of this chapter.

11.2 Cargo pump-rooms

11.2.1 The cargo pump-room of any ship shall be provided with a fixed fire--extinguishing system as follows:
a carbon dioxide system as specified in regulation II-2/5.1 and .2 of the 1983 SOLAS amendments. A notice shall be exhibited at the controls stating that the system is only to be used for fire-extinguishing and not for inerting purposes, due to the electrostatic ignition hazard. The alarms referred to in regulation II-2/5.1.6 of the 1983 SOLAS amendments shall be safe for use in a flammable cargo vapour/air mixture. For the purpose of this requirement, an extinguishing system shall be provided which would be suitable for machinery spaces. However, the amount of gas carried shall be sufficient to provide a quantity of free gas equal to 45% of the gross volume of the cargo pump-room in all cases; or

a halogenated hydrocarbon system as specified in regulation II-2/5.1 and .3 of the 1983 SOLAS amendments. A notice shall be exhibited at the controls stating that the system is only to be used for fire-extinguishing and not for inerting purposes, due to the electrostatic ignition hazard. The alarms referred to in regulation II-2/5.1.6 of the 1983 SOLAS amendments shall be safe for use in a flammable cargo vapour/air mixture. For the purpose of this requirement, an extinguishing system shall be provided which would be suitable for machinery spaces but utilizing the following minimum design quantities, based on the gross volume of the cargo pump-room:

<p>| | |</p>
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<tbody>
<tr>
<td>Halon 1301</td>
<td>75</td>
</tr>
<tr>
<td>Halon 1211</td>
<td>5.5%</td>
</tr>
<tr>
<td>Halon 2402</td>
<td>0.3 kg.m³</td>
</tr>
</tbody>
</table>

11.2.2 Cargo pump-rooms of ships which are dedicated to the carriage of a restricted number of cargoes shall be protected by an appropriate fire-extinguishing system approved by the Administration.

11.2.3 A fire-extinguishing system consisting of either a fixed pressure water-spray system or a high-expansion foam system could be provided for a cargo pump-room if cargoes will be carried which are not suited to extinguishment by carbon dioxide or equivalent media. The International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk shall reflect this conditional requirement.

11.3 Cargo area

11.3.1 Every ship shall be provided with a fixed deck foam system in accordance with the requirements of 11.3.2 to 11.3.12.

11.3.2 Only one type of foam concentrate shall be supplied, and it shall be effective for the maximum possible number of cargoes intended to be carried. For other cargoes for which foam is not effective or is incompatible, additional arrangements to the satisfaction of the Administration shall be provided. Regular protein foam shall not be used.
11.3.3 The arrangements for providing foam shall be capable of delivering foam to the entire cargo tanks deck area as well as into any cargo tank, the deck of which is assumed to be ruptured.

11.3.4 The deck foam system shall be capable of simple and rapid operation. The main control station for the system shall be suitably located outside of the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fires in the areas protected.

11.3.5 The rate of supply of foam solution shall be not less than the greatest of the following:

.1 2 l/min per square metre of the cargo tanks deck area, where cargo tanks deck area means the maximum breadth of the ship times the total longitudinal extent of the cargo tank spaces;

.2 20 l/min per square metre of the horizontal sectional area of the single tank having the largest such area;

.3 10 l/min per square metre of the area protected by the largest monitor, such area being entirely forward of the monitor, but not less than 1,250 l/min. For ships less than 4,000 gross tonnage, the minimum capacity of the monitor shall be to the satisfaction of the Administration.

11.3.6 Sufficient foam concentrate shall be supplied to ensure at least 30 min of foam generation when using the highest of the solution rates stipulated in 11.3.5.1, 11.3.5.2 and 11.3.5.3.

11.3.7 Foam from the fixed foam system shall be supplied by means of monitors and foam applicators. At least 50% of the foam rate required in 11.3.5.1 or 11.3.5.2 shall be delivered from each monitor. The capacity of any monitor shall be at least 10 l/min of foam solution per square metre of deck area protected by that monitor, such area being entirely forward of the monitor. Such capacity shall be not less than 1,250 l/min. For ships less than 4,000 gross tonnage, the minimum capacity of the monitor shall be to the satisfaction of the Administration.

11.3.8 The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall be not more than 75% of the monitor throw in still air conditions.

11.3.9 A monitor and hose connection for a foam applicator shall be situated both port and starboard at the poop front or accommodation spaces facing the cargo area.

11.3.10 Applicators shall be provided for flexibility of action during fire-fighting operations and to cover areas screened from the monitors. The capacity of any applicator shall be not less than 400 l/min and the applicator throw in still air conditions shall be not less than 15 m. The number of foam applicators provided shall be not less than four. The number and disposition of foam main outlets shall be such that foam from at least two applicators can be directed to any part of the cargo tanks deck area.
11.3.11 Valves shall be provided in the foam main, and in the fire main where this is an integral part of the deck foam system, immediately forward of any monitor position to isolate damaged sections of those mains.

11.3.12 Operation of a deck foam system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.

11.3.13 Ships which are dedicated to the carriage of a restricted number of cargoes shall be protected by alternative provisions to the satisfaction of the Administration when they are just as effective for the products concerned as the deck foam system required for the generality of flammable cargoes.

11.3.14 Suitable portable fire-extinguishing equipment for the products to be carried shall be provided and kept in good operating order.

11.3.15 Where flammable cargoes are to be carried, all sources of ignition shall be excluded from hazardous locations if it conforms with 10.1.4.

11.3.16 Ships fitted with bow or stern loading and unloading arrangements shall be provided with one additional foam monitor meeting the requirements of 11.3.7 and one additional applicator meeting the requirements of 11.3.10. The additional monitor shall be located to protect the bow or stern loading and unloading arrangements. The area of the cargo line forward or aft of the cargo area shall be protected by the above-mentioned applicator.

11.4 Special requirements

All fire-extinguishing media determined to be effective for each product are listed in column 1 in the table of chapter 17.

CHAPTER 12

MECHANICAL VENTILATION IN THE CARGO AREA

For ships to which the Code applies, the requirements of this chapter replace the requirements of regulation II-2/59.3 of the 1983 SOLAS amendments.

However, for products addressed under paragraphs 11.1.2 and 11.1.3, except acids and products for which paragraph 15.17 applies, regulation II-2/59.3 of the 1983 SOLAS amendments may apply in lieu of the provisions of this chapter.

12.1 Spaces normally entered during cargo-handling operations

12.1.1 Cargo pump-rooms and other enclosed spaces which contain cargo-handling equipment and similar spaces in which work is performed on the cargo shall be fitted with mechanical ventilation systems, capable of being controlled from outside such spaces.
12.1.2 Provision shall be made to ventilate such spaces prior to entering the compartment and operating the equipment and a warning notice requiring the use of such ventilation shall be placed outside the compartment.

12.1.3 Mechanical ventilation inlets and outlets shall be arranged to ensure sufficient air movement through the space to avoid the accumulation of toxic or flammable vapours or both (taking into account their vapour densities) and to ensure sufficient oxygen to provide a safe working environment, but in no case shall the ventilation system have a capacity of less than 30 changes of air per hour, based upon the total volume of the space. For certain products, increased ventilation rates for cargo pump-rooms are prescribed in 15.17.

12.1.4 Ventilation systems shall be permanent and shall normally be of the extraction type. Extraction from above and below the floor plates shall be possible. In rooms housing motors driving cargo pumps, the ventilation shall be of the positive-pressure type.

12.1.5 Ventilation exhaust ducts from spaces within the cargo area shall discharge upwards in locations at least 10 m in the horizontal direction from ventilation intakes and openings to accommodation, service and machinery spaces and control stations and other spaces outside the cargo area.

12.1.6 Ventilation intakes shall be so arranged as to minimize the possibility of recycling hazardous vapours from any ventilation discharge opening.

12.1.7 Ventilation ducts shall not be led through accommodation, service and machinery spaces or other similar spaces.

12.1.8 Electric motors driving fans shall be placed outside the ventilation ducts if the carriage of flammable products is intended. Ventilation fans and fan ducts, in way of fans only, for hazardous locations referred to in chapter 10 shall be of non-sparking construction, defined as:

.1 impellers or housing of non-metallic construction, due regard being paid to the elimination of static electricity;

.2 impellers and housing of non-ferrous materials;

.3 impellers and housing of austenitic stainless steel; and

.4 ferrous impellers and housing with not less than 13 mm design tip clearance.

Any combination of an aluminium or a magnesium alloy fixed or rotating component and a ferrous fixed or rotating component, regardless of tip clearance, is considered a sparking hazard and shall not be used in these places.

12.1.9 Sufficient spare parts shall be carried for each type of fan on board required by this chapter.
12.1.10 Protection screens of not more than 13 mm square mesh shall be fitted in outside openings of ventilation ducts.

12.2 Pump-rooms and other enclosed spaces normally entered

Pump-rooms and other enclosed spaces normally entered which are not covered by 12.1.1 shall be fitted with mechanical ventilation systems, capable of being controlled from outside such spaces and complying with the requirements of 12.1.3, except that the capacity shall not be less than 20 changes of air per hour, based upon the total volume of the space. Provision shall be made to ventilate such spaces prior to personnel entering.

12.3 Spaces not normally entered

Double bottoms, cofferdams, duct keels, pipe tunnels, hold spaces and other spaces where cargo may accumulate shall be capable of being ventilated to ensure a safe environment when entry into the spaces is necessary. Where a permanent ventilation system is not provided for such spaces, approved means of portable mechanical ventilation shall be provided. Where necessary, owing to the arrangement of spaces, for instance hold spaces, essential ducting for ventilation shall be permanently installed. For permanent installations the capacity of eight air changes per hour shall be provided and for portable systems the capacity of 16 air changes per hour. Fans or blowers shall be clear of personnel access openings, and shall comply with 12.1.8.

CHAPTER 13

INSTRUMENTATION

13.1 Gauging

13.1.1 Cargo tanks shall be fitted with one of the following types of gauging devices:

1. Open device: which makes use of an opening in the tanks and may expose the gauger to the cargo or its vapour. An example of this is the ullage opening.

2. Restricted device: which penetrates the tank and which, when in use, permits a small quantity of cargo vapour or liquid to be exposed to the atmosphere. When not in use, the device is completely closed. The design shall ensure that no dangerous escape of tank contents (liquid or spray) can take place in opening the device.

3. Closed device: which penetrates the tank, but which is part of a closed system and keeps tank contents from being released. Examples are the float-type systems, electronic probe, magnetic probe and protected sight-glass. Alternatively, an indirect device which does not penetrate the tank shell and which is independent of the tank may be used. Examples are weighing of cargo, pipe flow meter.

13.1.2 Gauging devices shall be independent of the equipment required under 15.19.
13.1.3 Open gauging and restricted gauging shall be allowed only where:

.1 open venting is allowed by the Code; or

.2 means are provided for relieving tank pressure before the gauge is operated.

13.1.4 Types of gauging for individual products are shown in column \( j \) in the table of chapter 17.

13.2 Vapour detection

13.2.1 Ships carrying toxic or flammable products or both shall be equipped with at least two instruments designed and calibrated for testing for the specific vapours in question. If such instruments are not capable of testing for both toxic concentrations and flammable concentrations, then two separate sets of instruments shall be provided.

13.2.2 Vapour-detection instruments may be portable or fixed. If a fixed system is installed, at least one portable instrument shall be provided.

13.2.3 When toxic-vapour-detection equipment is not available for some products which require such detection, as indicated in column \( k \) in the table of chapter 17, the Administration may exempt the ship from the requirement, provided an appropriate entry is made on the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk. When granting such an exemption, the Administration shall recognize the necessity for additional breathing-air supply and an entry shall be made on the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk drawing attention to the provisions of 14.2.4 and 16.4.2.2.

13.2.4 Vapour-detection requirements for individual products are shown in column \( k \) in the table of chapter 17.

CHAPTER 14

PERSONNEL PROTECTION

14.1 Protective equipment

14.1.1 For the protection of crew members who are engaged in loading and discharging operations, the ship shall have on board suitable protective equipment consisting of large aprons, special gloves with long sleeves, suitable footwear, coveralls of chemical-resistant material, and tight-fitting goggles or face shields or both. The protective clothing and equipment shall cover all skin so that no part of the body is unprotected.

14.1.2 Work clothes and protective equipment shall be kept in easily accessible places and in special lockers. Such equipment shall not be kept within accommodation spaces, with the exception of new, unused equipment and equipment which has not been used since undergoing a thorough cleaning process. The Administration may, however,
approve storage rooms for such equipment within accommodation spaces if adequately segregated from living spaces such as cabins, passageways, dining rooms, bathrooms, etc.

14.1.3 Protective equipment shall be used in any operation, which may entail danger to personnel.

14.2 Safety equipment

14.2.1 Ships carrying cargoes for which 15.12, 15.12.1 or 15.12.3 is listed in column o in the table of chapter 17 shall have on board sufficient but not less than three complete sets of safety equipment, each permitting personnel to enter a gas-filled compartment and perform work there for at least 20 min. Such equipment shall be in addition to that required by regulation II-2/17 of the 1983 SOLAS amendments.

14.2.2 One complete set of safety equipment shall consist of:

.1 one self-contained air-breathing apparatus (not using stored oxygen);
.2 protective clothing, boots, gloves and tight-fitting goggles;
.3 fireproof lifeline with belt resistant to the cargoes carried; and
.4 explosion-proof lamp.

14.2.3 For the safety equipment required in 14.2.1, all ships shall carry either:

.1 one set of fully charged spare air bottles for each breathing apparatus;
.2 a special air compressor suitable for the supply of high-pressure air of the required purity;
.3 a charging manifold capable of dealing with sufficient spare air bottles for the breathing apparatus; or
.4 fully charged spare air bottles with a total free air capacity of at least 6,000 l for each breathing apparatus on board in excess of the requirements of regulation II-2/17 of the 1983 SOLAS amendments.

14.2.4 A cargo pump-room on ships carrying cargoes which are subject to the requirements of 15.18 or cargoes for which in column k in the table of chapter 17 toxic-vapour-detection equipment is required but is not available shall have either:

.1 a low-pressure line system with hose connections suitable for use with the breathing apparatus required by 14.2.1. This system shall provide sufficient high-pressure air capacity to supply, through pressure-reduction devices, enough low-pressure air to enable two men to work in a gas-dangerous space for at least 1 h without using the air bottles of the breathing apparatus. Means shall be provided for recharging the fixed air bottles and the breathing apparatus air bottles from a special ai
compressor suitable for the supply of high-pressure air of the required purity; or

2 an equivalent quantity of spare bottled air in lieu of the low-pressure air line.

14.2.5 At least one set of safety equipment as required by 14.2.2 shall be kept in a suitable clearly marked locker in a readily accessible place near the cargo pump-room. The other sets of safety equipment shall also be kept in suitable, clearly marked, easily accessible places.

14.2.6 The breathing apparatus shall be inspected at least once a month by a responsible officer, and the inspection recorded in the ship's log-book. The equipment shall be inspected and tested by an expert at least once a year.

### 14.3 Emergency equipment

14.3.1 Ships carrying cargoes, for which “Yes” is indicated in column 17, shall be provided with suitable respiratory and eye protection sufficient for every person on board for emergency escape purposes, subject to the following:

1 filter-type respiratory protection is unacceptable;

2 self-contained breathing apparatus shall have normally at least a duration of service of 15 min;

3 emergency escape respiratory protection shall not be used for fire-fighting or cargo-handling purposes and shall be marked to that effect.

14.3.2 The ship shall have on board medical first-aid equipment, including oxygen resuscitation equipment and antidotes for cargoes to be carried, based on the guidelines developed by the Organization.

14.3.3 A stretcher which is suitable for hoisting an injured person up from spaces such as the cargo pump-room shall be placed in a readily accessible location.

14.3.4 Suitably marked decontamination showers and an eyewash shall be available on deck in convenient locations. The showers and eyewash shall be operable in all ambient conditions.

* Reference is made to the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), which provides advice on the treatment of casualties in accordance with the symptoms exhibited as well as equipment and antidotes that may be appropriate for treating the casualty.
CHAPTER 15

SPECIAL REQUIREMENTS

15.1 The provisions of this chapter are applicable where specific reference is made in column o in the table of chapter 17. These requirements are additional to the general requirements of the Code.

15.2 Ammonium nitrate solution (93% or less)

15.2.1 The ammonium nitrate solution shall contain at least 7% by weight of water. The acidity (pH) of the cargo when diluted with ten parts of water to one part of cargo by weight shall be between 5.0 and 7.0. The solution shall not contain more than 10 ppm chloride ions, 10 ppm ferric ions, and shall be free of other contaminants.

15.2.2 Tanks and equipment for ammonium nitrate solution shall be independent of tanks and equipment containing other cargoes or combustible products. Equipment which may, in service or when defective, release combustible products into the cargo (e.g. lubricants) shall not be used. Tanks shall not be used for seawater ballast.

15.2.3 Except where expressly approved by the Administration, ammonium nitrate solutions shall not be transported in tanks which have previously contained other cargoes unless tanks and associated equipment have been cleaned to the satisfaction of the Administration.

15.2.4 The temperature of the heat-exchanging medium in the tank heating system shall not exceed 160°C. The heating system shall be provided with a control system to keep the cargo at a bulk mean temperature of 140°C. High-temperature alarms at 145°C and 150°C and a low-temperature alarm at 125°C shall be provided. Where the temperature of the heat-exchanging medium exceeds 160°C, an alarm shall also be given. Temperature alarms and controls shall be located on the navigating bridge.

15.2.5 If the bulk mean cargo temperature reaches 145°C, a cargo sample shall be diluted with ten parts of distilled or demineralized water to one part of cargo by weight and the pH shall be determined by means of a narrow-range indicator paper or stick. Acidity measurements shall then be taken every 24 hours. If the pH is found to be below 4.2, ammonia gas shall be injected into the cargo until the pH of 5.0 is reached.

15.2.6 A fixed installation shall be provided to inject ammonia gas into the cargo. Controls for this system shall be located on the navigation bridge. For this purpose, 300 kg of ammonia per 1,000 tonnes of ammonium nitrate solution shall be available on board.

15.2.7 Cargo pumps shall be of the centrifugal deepwell type or of the centrifugal type with water-flushed seals.

15.2.8 Vent piping shall be fitted with approved weatherhoods to prevent clogging. Such weatherhoods shall be accessible for inspection and cleaning.
15.2.9 Hot work on tanks, piping and equipment which have been in contact with ammonium nitrate solution shall only be done after all traces of ammonium nitrate have been removed, inside as well as outside.

15.3 Carbon disulphide

Carbon disulphide may be carried either under a water pad or under a suitable inert gas pad as specified in the following paragraphs.

Carriage under water pad

15.3.1 Provision shall be made to maintain a water pad in the cargo tank during loading, unloading and transit. In addition, an inert-gas pad shall be maintained in the ullage space during transit.

15.3.2 All openings shall be in the top of the tank, above the deck.

15.3.3 Loading lines shall terminate near the bottom of the tank.

15.3.4 A standard ullage opening shall be provided for emergency sounding.

15.3.5 Cargo piping and vent lines shall be independent of piping and vent lines used for other cargo.

15.3.6 Pumps may be used for discharging cargo, provided they are of the deepwell or hydraulically driven submersible types. The means of driving a deepwell pump shall not present a source of ignition for carbon disulphide and shall not employ equipment that may exceed a temperature of 80°C.

15.3.7 If a cargo discharge pump is used, it shall be inserted through a cylindrical well extending from the tank top to a point near the tank bottom. A water pad shall be formed in this well before attempting pump removal unless the tank has been certified as gas-free.

15.3.8 Water or inert-gas displacement may be used for discharging cargo, provided the cargo system is designed for the expected pressure and temperature.

15.3.9 Safety relief valves shall be of stainless steel construction.

15.3.10 Because of its low ignition temperature and close clearances required to arrest its flame propagation, only intrinsically safe systems and circuits are permitted in the hazardous locations described in 10.2.3.

Carriage under suitable inert gas pad

15.3.11 Carbon disulphide shall be carried in independent tanks with a design pressure of not less than 0.06 MPa gauge.

15.3.12 All openings shall be located on the top of the tank, above the deck.
15.3.13 Gaskets used in the containment system shall be of a material which does not react with, or dissolve in, carbon disulphide.

15.3.14 Threaded joints shall not be permitted in the cargo containment system, including the vapour lines.

15.3.15 Prior to loading, the tank(s) shall be inerted with suitable inert gas until the oxygen level is 2% by volume or lower. Means shall be provided to automatically maintain a positive pressure in the tank using suitable inert gas during loading, transport and discharge. The system shall be able to maintain this positive pressure between 0.01 and 0.02 MPa, and shall be remotely monitored and fitted with over/underpressure alarms.

15.3.16 Hold spaces surrounding an independent tank carrying carbon disulphide shall be inerted by a suitable inert gas until the oxygen level is 2% or less. Means shall be provided to monitor and maintain this condition throughout the voyage. Means shall also be provided to sample these spaces for carbon disulphide vapour.

15.3.17 Carbon disulphide shall be loaded, transported and discharged in such a manner that venting to the atmosphere does not occur. If carbon disulphide vapour is returned to shore during loading or to the ship during discharge, the vapour return system shall be independent of all other containment systems.

15.3.18 Carbon disulphide shall be discharged only by submerged deepwell pumps or by a suitable inert gas displacement. The submerged deepwell pumps shall be operated in a way that prevents heat build-up in the pump. The pump shall also be equipped with a temperature sensor in the pump housing with remote readout and alarm in the cargo control room. The alarm shall be set at 80°C. The pump shall also be fitted with an automatic shut-down device to be activated if the tank pressure falls below atmospheric pressure during the discharge.

15.3.19 Air shall not be allowed to enter the cargo tank, cargo pump or lines while carbon disulphide is contained in the system.

15.3.20 No other cargo handling, tank cleaning or deballasting shall take place concurrent with loading or discharge of carbon disulphide.

15.3.21 A water spray system of sufficient capacity shall be provided to blanket effectively the area surrounding the loading manifold, the exposed deck piping associated with product handling and the tank domes. The arrangement of piping and nozzles shall be such as to give an uniform distribution rate of 10 \( l/m^2/min \). Remote manual operation shall be arranged such that remote starting of pumps supplying the water-spray system and remote operation of any normally closed valves in the system can be carried out from a suitable location outside the cargo area adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected. The water-spray system shall be capable of both local and remote manual operation, and the arrangement shall ensure that any spilled cargo is washed away. Additionally, a water hose with pressure to the nozzle when atmospheric temperature permits, shall be connected ready for immediate use during loading and unloading operations.
15.3.22 No cargo tanks shall be more than 98% liquid-full at the reference temperature (R).

15.3.23 The maximum volume ($V_L$) of cargo to be loaded in a tank shall be:

$$V_L = 0.98 \frac{V \rho_R}{\rho_L}$$

where:

- $V$ = volume of the tank
- $\rho_R$ = density of cargo at the reference temperature (R)
- $\rho_L$ = density of cargo at the loading temperature
- $R$ = reference temperature

15.3.24 The maximum allowable tank filling limits for each cargo tank shall be indicated for each loading temperature which may be applied, and for the applicable maximum reference temperature, on a list approved by the Administration. A copy of the list shall be permanently kept on board by the master.

15.3.25 Zones on open deck, or semi-enclosed spaces on open deck within three metres of a tank outlet, gas or vapour outlet, cargo pipe flange or cargo valve of a tank certified to carry carbon disulphide, shall comply with the electrical equipment requirements specified for carbon disulphide in column i, chapter 17. Also, within the specified zone, no other heat sources, like steam piping with surface temperatures in excess of 80°C shall be allowed.

15.3.26 Means shall be provided to ullage and sample the cargo without opening the tank or disturbing the positive suitable inert gas blanket.

15.3.27 The product shall be transported only in accordance with a cargo handling plan that has been approved by the Administration. Cargo handling plans shall show the entire cargo piping system. A copy of the approved cargo handling plan shall be available on board. The International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk shall be endorsed to include reference to the approved cargo handling plan.

15.4 Diethyl ether

15.4.1 Unless inerted, natural ventilation shall be provided for the voids around the cargo tanks while the vessel is under way. If a mechanical ventilation system is installed, all blowers shall be of non-sparking construction. Mechanical ventilation equipment shall not be located in the void spaces surrounding the cargo tanks.

15.4.2 Pressure-relief-valve settings shall not be less than 0.02 MPa gauge for gravity tanks.
15.4.3 Inert-gas displacement may be used for discharging cargo from pressure tanks provided the cargo system is designed for the expected pressure.

15.4.4 In view of the fire hazard, provision shall be made to avoid any ignition source or heat generation or both in the cargo area.

15.4.5 Pumps may be used for discharging cargo, provided that they are of a type designed to avoid liquid pressure against the shaft gland or are of a hydraulically operated submerged type and are suitable for use with the cargo.

15.4.6 Provision shall be made to maintain the inert-gas pad in the cargo tank during loading, unloading and transit.

15.5 **Hydrogen peroxide solutions**

15.5.1 *Hydrogen peroxide solutions over 60% but not over 70% by mass*

15.5.1.1 Hydrogen peroxide solutions over 60% but not over 70% by mass shall be carried in dedicated ships only and no other cargoes shall be carried.

15.5.1.2 Cargo tanks and associated equipment shall be either pure aluminium (99.5%) or solid stainless steel (304L, 316, 316L or 316Ti), and passivated in accordance with approved procedures. Aluminium shall not be used for piping on deck. All nonmetallic materials of construction for the containment system shall neither be attacked by hydrogen peroxide nor contribute to its decomposition.

15.5.1.3 Pump-rooms shall not be used for cargo-transfer operations.

15.5.1.4 Cargo tanks shall be separated by cofferdams from oil fuel tanks or any other space containing flammable or combustible materials.

15.5.1.5 Tanks intended for the carriage of hydrogen peroxide shall not be used for seawater ballast.

15.5.1.6 Temperature sensors shall be installed at the top and bottom of the tank. Remote temperature readouts and continuous monitoring shall be located on the navigating bridge. If the temperature in the tanks rises above 35°C, visible and audible alarms shall be activated on the navigating bridge.

15.5.1.7 Fixed oxygen monitors (or gas-sampling lines) shall be provided in void spaces adjacent to tanks to detect leakage of the cargo into these spaces. Remote readouts, continuous monitoring (if gas-sampling lines are used, intermittent sampling is satisfactory) and visible and audible alarms similar to those for the temperature sensors shall also be located on the navigating bridge. The visible and audible alarms shall be activated if the oxygen concentration in these void spaces exceeds 30% by volume. Two portable oxygen monitors shall also be available as back-up systems.

15.5.1.8 As a safeguard against uncontrolled decomposition, a cargo-jettisoning system shall be installed to discharge the cargo overboard. The cargo shall be jettisoned if the
temperature rise of the cargo exceeds a rate of 2°C per hour over a 5-hour period or when the temperature in the tank exceeds 40°C.

15.5.1.9 Cargo tank venting systems shall have pressure/vacuum-relief valves for normal controlled venting, and rupture discs or a similar device for emergency venting, should tank pressure rise rapidly as a result of uncontrolled decomposition. Rupture discs shall be sized on the basis of tank design pressure, tank size and anticipated decomposition rate.

15.5.1.10 A fixed water-spray system shall be provided for diluting and washing away any concentrated hydrogen peroxide solution spilled on deck. The areas covered by the water-spray shall include the manifold/hose connections and the tank tops of those tanks designated for carrying hydrogen peroxide solutions. The minimum application rate shall satisfy the following criteria:

.1 The product shall be diluted from the original concentration to 35% by mass within 5 minutes of the spill.

.2 The rate and estimated size of the spill shall be based upon maximum anticipated loading and discharge rates, the time required to stop flow of cargo in the event of tank overfill or a piping/hose failure, and the time necessary to begin application of dilution water with actuation at the cargo control location or on the navigating bridge.

15.5.1.11 Only those hydrogen peroxide solutions which have a maximum decomposition rate of 1% per year at 25°C shall be carried. Certification from the shipper that the product meets this standard shall be presented to the master and kept on board. A technical representative of the manufacturer shall be on board to monitor the transfer operations and have the capability to test the stability of the hydrogen peroxide. He shall certify to the master that the cargo has been loaded in a stable condition.

15.5.1.12 Protective clothing that is resistant to hydrogen peroxide solutions shall be provided for each crewmember involved in cargo-transfer operations. Protective clothing shall include nonflammable coveralls, suitable gloves, boots and eye protection.

15.5.2 Hydrogen peroxide solutions over 8% but not over 60% by mass

15.5.2.1 The ship's shell plating shall not form any boundaries of tanks containing this product.

15.5.2.2 Hydrogen peroxide shall be carried in tanks thoroughly and effectively cleaned of all traces of previous cargoes and their vapours or ballast. Procedures for inspection, cleaning, passivation and loading of tanks shall be in accordance with MSC/Circ.394. A certificate shall be on board the vessel indicating that the procedures in the circular have been followed. The passivation requirement may be waived by an Administration for domestic shipments of short duration. Particular care in this respect is essential to ensure the safe carriage of hydrogen peroxide:

.1 When hydrogen peroxide is carried no other cargoes shall be carried simultaneously.
.2 Tanks which have contained hydrogen peroxide may be used for other cargoes after cleaning in accordance with the procedures outlined in MSC/Circ.394.

.3 Consideration in design shall provide minimum internal tank structure, free draining, no entrapment and ease of visual inspection.

15.5.2.3 Cargo tanks and associated equipment shall be either pure aluminium (99.5%) or solid stainless steel of types suitable for use with hydrogen peroxide (e.g. 304, 304L, 316, 316L, 316Ti). Aluminium shall not be used for piping on deck. All nonmetallic materials of construction for the containment system shall neither be attacked by hydrogen peroxide nor contribute to its decomposition.

15.5.2.4 Cargo tanks shall be separated by a cofferdam from fuel oil tanks or any other space containing materials incompatible with hydrogen peroxide.

15.5.2.5 Temperature sensors shall be installed at the top and bottom of the tank. Remote temperature readouts and continuous monitoring shall be located on the navigating bridge. If the temperature in the tank rises above 35°C, visible and audible alarms shall activate on the navigating bridge.

15.5.2.6 Fixed oxygen monitors (or gas-sampling lines) shall be provided in void spaces adjacent to tanks to detect leakage of the cargo into these spaces. The enhancement of flammability by oxygen enrichment shall be recognized. Remote readouts, continuous monitoring (if gas-sampling lines are used, intermittent sampling is satisfactory) and visible and audible alarms similar to those for the temperature sensors shall also be located on the navigating bridge. The visible and audible alarms shall activate if the oxygen concentration in these void spaces exceeds 30% by volume. Two portable oxygen monitors shall also be available as back-up systems.

15.5.2.7 As a safeguard against uncontrolled decomposition, a cargo-jettisoning system shall be installed to discharge the cargo overboard. The cargo shall be jettisoned if the temperature rise of the cargo exceeds a rate of 2°C per hour over a 5-hour period or when the temperature in the tank exceeds 40°C.

15.5.2.8 Cargo tank venting systems with filtration shall have pressure/vacuum-relief valves for normal controlled venting, and a device for emergency venting, should tank pressure rise rapidly as a result of an uncontrolled decomposition rate, as stipulated in 15.5.2.7. These venting systems shall be designed in such a manner that there is no introduction of seawater into the cargo tank even under heavy sea conditions. Emergency venting shall be sized on the basis of tank design pressure and tank size.

15.5.2.9 A fixed water-spray system shall be provided for diluting and washing away any concentrated solution spilled on deck. The areas covered by the water-spray shall include the manifold/hose connections and the tank tops of those tanks designated for the carriage of hydrogen peroxide solutions. The minimum application rate shall satisfy the following criteria:
.1 The product shall be diluted from the original concentration to 35% by mass within 5 minutes of the spill.

.2 The rate and estimated size of the spill shall be based upon maximum anticipated loading and discharge rates, the time required to stop flow of the cargo in the event of tank overfill or a piping/hose failure, and the time necessary to begin application of dilution water with actuation at the cargo control location or on the navigating bridge.

15.5.2.10 Only those hydrogen peroxide solutions which have a maximum decomposition rate of 1% per year at 25°C shall be carried. Certification from the shipper that the product meets this standard shall be presented to the master and kept on board. A technical representative of the manufacturer shall be on board to monitor the transfer operations and have the capability to test the stability of the hydrogen peroxide. He shall certify to the master that the cargo has been loaded in a stable condition.

15.5.2.11 Protective clothing that is resistant to hydrogen peroxide shall be provided for each crew member involved in cargo-transfer operations. Protective clothing shall include coveralls that are nonflammable, suitable gloves, boots and eye protection.

15.5.2.12 During transfer of hydrogen peroxide the related piping system shall be separated from all other systems. Cargo hoses used for transfer of hydrogen peroxide shall be marked “FOR HYDROGEN PEROXIDE TRANSFER ONLY”.

15.5.3 Procedures for inspection, cleaning, passivation and loading of tanks for the carriage of hydrogen peroxide solutions 8-60%, which have contained other cargoes, or for the carriage of other cargoes after the carriage of hydrogen peroxide

15.5.3.1 Tanks having contained cargoes other than hydrogen peroxide shall be inspected, cleaned and passivated before re-use for the transport of hydrogen peroxide solutions. The procedures for inspection and cleaning, as given in paragraphs 15.5.3.2 to 15.5.3.8 below, apply to both stainless steel and pure aluminium tanks (see paragraph 15.5.2.2 of the IBC Code). Procedures for passivation are given in paragraph 15.5.3.9 for stainless steel and 15.5.3.10 for aluminium. Unless otherwise specified, all steps apply to the tanks and to all associated equipment having been in contact with the other cargo.

15.5.3.2 After unloading the previous cargo the tank shall be rendered safe and inspected for any residues, scale and rust.

15.5.3.3 Tanks and associated equipment shall be washed with clean filtered water. The water to be used shall at least have the quality of potable water with a low chlorine content.

15.5.3.4 Trace residues and vapours of the previous cargo shall be removed by steaming of tank and equipment.

15.5.3.5 Tank and equipment are washed again with clean water (quality as above) and dried, using filtered, oil-free air.
15.5.3.6 The atmosphere in the tank shall be sampled and investigated for the presence of organic vapours and oxygen concentration.

15.5.3.7 The tank shall be checked again by visual inspection for residues of the previous cargo, scale and rust as well as for any smell of the previous cargo.

15.5.3.8 If inspection or measurements indicate the presence of residues of the previous cargo or its vapours, actions described in paragraphs 15.5.3.3 to 15.5.3.5 shall be repeated.

15.5.3.9 Tank and equipment made from stainless steel which have contained other cargoes than hydrogen peroxide or which have been under repair shall be cleaned and passivated, regardless of any previous passivation, according to the following procedure:

1. New welds and other repaired parts shall be cleaned and finished using stainless steel wire brush, chisel, sandpaper or buff. Rough surfaces shall be given a smooth finish. A final polishing is necessary.

2. Fatty and oily residues shall be removed by the use of appropriate organic solvents or detergent solutions in water. The use of chlorine-containing compounds shall be avoided as they can seriously interfere with passivation.

3. The residues of the degreasing agent shall be removed, followed by a washing with water.

4. In the next step, scale and rust shall be removed by the application of acid (e.g. a mixture of nitric and hydrofluoric acids), followed again by a washing with clean water.

5. All the metal surfaces which can come into contact with hydrogen peroxide shall be passivated by the application of nitric acid of a concentration between 10 and 35% by mass. The nitric acid must be free from heavy metals, other oxidizing agents or hydrogen fluoride. The passivation process shall continue for 8 to 24 hours, depending upon the concentration of acid, the ambient temperature and other factors. During this time a continuous contact between the surfaces to be passivated and the nitric acid shall be ensured. In the case of large surfaces this may be achieved by recirculating the acid. Hydrogen gas may be evolved in the passivation process, leading to the presence of an explosive atmosphere in the tanks. Therefore, appropriate measures must be taken to avoid the build-up or the ignition of such an atmosphere.

6. After passivation the surfaces shall be thoroughly washed with clean filtered water. The washing process shall be repeated until the effluent water has the same pH value as the incoming water.

7. Surfaces treated according to the above steps may cause some decomposition when coming into contact with hydrogen peroxide for the first time. This decomposition will cease after a short time (usually within
two or three days). Therefore an additional flushing with hydrogen peroxide for a period of at least two days is recommended.

.8 Only degreasing agents and acid cleaning agents which have been recommended for this purpose by the manufacturer of the hydrogen peroxide shall be used in the process.

15.5.3.10 Tanks and equipment made from aluminium and which have contained cargoes other than hydrogen peroxide, or which have been under repair, shall be cleaned and passivated. The following is an example of a recommended procedure:

.1 The tank shall be washed with a solution of a sulphonated detergent in hot water, followed by a washing with water.

.2 The surface shall then be treated for 15 to 20 min with a solution of sodium hydroxide of a concentration of 7% by mass or treated for a longer period with a less concentrated solution (e.g. for 12 h with 0.4 to 0.5% sodium hydroxide). To prevent excessive corrosion at the bottom of the tank when treating with more concentrated solutions of sodium hydroxide, water shall be added continuously to dilute the sodium hydroxide solution which collects there.

.3 The tank shall be thoroughly washed with clean, filtered water. As soon as possible after washing, the surface shall be passivated by the application of nitric acid of a concentration between 30 and 35% by mass. The passivation process shall continue for 16 to 24 h. During this time a continuous contact between the surfaces to be passivated and the nitric acid shall be ensured.

.4 After passivation the surfaces shall be thoroughly washed with clean, filtered water. The washing process shall be repeated until the effluent water has the same pH value as the incoming water.

.5 A visual inspection shall be made to ensure that all surfaces have been treated. It is recommended that an additional flushing is carried out for a minimum of 24 h with dilute hydrogen peroxide solution of a concentration approximately 3% by mass.

15.5.3.11 The concentration and stability of the hydrogen peroxide solution to be loaded shall be determined.

15.5.3.12 The hydrogen peroxide is loaded under intermittent visual supervision of the interior of the tank from an appropriate opening.

15.5.3.13 If substantial bubbling is observed which does not disappear within 15 min after the completion of loading, the contents of the tank shall be unloaded and disposed of in an environmentally safe manner. The tank and equipment shall then be repassivated as described above.
15.5.3.14 The concentration and stability of the hydrogen peroxide solution shall be determined again. If the same values are obtained within the limits of error as in paragraph 15.5.3.10, the tank is considered to be properly passivated and the cargo ready for shipment.

15.5.3.15 Actions described in paragraphs 15.5.3.2 to 15.5.3.8 shall be carried out under the supervision of the master or shipper. Actions described in paragraphs 15.5.3.9 to 15.5.3.15 shall be carried out under the on-site supervision and responsibility of a representative of the hydrogen peroxide manufacturer or under supervision and responsibility of another person familiar with the safety-relevant properties of hydrogen peroxide.

15.5.3.16 The following procedure shall be applied when tanks having contained hydrogen peroxide solution are to be used for other products (unless otherwise specified, all steps apply to the tanks and to all associated equipment having been in contact with hydrogen peroxide):

.1 Hydrogen peroxide cargo residue shall be drained as completely as possible from tanks and equipment.

.2 Tanks and equipment shall be rinsed with clean water, and subsequently thoroughly washed with clean water.

.3 The interior of the tank shall be dried and inspected for any residues.

Steps .1 to .3, in 15.5.3.16, shall be carried out under the supervision of the master or the shipper. Step .3 in paragraph 15.5.3.16 shall be carried out by a person familiar with the safety-relevant properties of the chemical to be transported and of hydrogen peroxide.

SPECIAL CAUTIONS :

1 Hydrogen peroxide decomposition may enrich the atmosphere with oxygen and appropriate precautions shall be observed.

2 Hydrogen gas may be evolved in the passivation processes described in paragraphs 15.5.3.9.5, 15.5.3.10.2 and 15.5.3.10.4, leading to the presence of an explosive atmosphere in the tank. Therefore, appropriate measures must be taken to avoid the build-up or the ignition of such an atmosphere.

15.6 Motor fuel anti-knock compounds (containing lead alkyls)

15.6.1 Tanks used for these cargoes shall not be used for the transportation of any other cargo except those commodities to be used in the manufacture of motor fuel anti-knock compounds containing lead alkyls.

15.6.2 If a cargo pump-room is located on deck level according to 15.18, the ventilation arrangements shall be in compliance with 15.17.
15.6.3 Entry into cargo tanks used for the transportation of these cargoes is not permitted unless approved by the Administration.

15.6.4 Air analysis shall be made for lead content to determine if the atmosphere is satisfactory prior to allowing personnel to enter the cargo pump-room or void spaces surrounding the cargo tank.

15.7 Phosphorus, yellow or white

15.7.1 Phosphorus shall, at all times, be loaded, carried and discharged under a water pad of 760 mm minimum depth. During discharge operations, arrangements shall be made to ensure that water occupies the volume of phosphorus discharged. Any water discharged from a phosphorus tank shall be returned only to a shore installation.

15.7.2 Tanks shall be designed and tested to a minimum equivalent water head of 2.4 m above the top of the tank, under designed loading conditions, taking into account the depth, relative density and method of loading and discharge of the phosphorus.

15.7.3 Tanks shall be so designed as to minimize the interfacial area between the liquid phosphorus and its water pad.

15.7.4 A minimum ullage space of 1% shall be maintained above the water pad. The ullage space shall be filled with inert gas or naturally ventilated by two cowled standpipes terminating at different heights but at least 6 m above the deck and at least 2 m above the pump-house top.

15.7.5 All openings shall be at the top of cargo tanks, and fittings and joints attached thereto shall be of materials resistant to phosphorus pentoxide.

15.7.6 Phosphorus shall be loaded at a temperature not exceeding 60°C.

15.7.7 Tank heating arrangements shall be external to tanks and have a suitable method of temperature control to ensure that the temperature of the phosphorus does not exceed 60°C. A high-temperature alarm shall be fitted.

15.7.8 A water drench system acceptable to the Administration shall be installed in all void spaces surrounding the tanks. The system shall operate automatically in the event of an escape of phosphorus.

15.7.9 Void spaces referred to in 15.7.8 shall be provided with effective means of mechanical ventilation which shall be capable of being sealed off quickly in an emergency.

15.7.10 Loading and discharge of phosphorus shall be governed by a central system on the ship which, in addition to incorporating high-level alarms, shall ensure that no overflow of tanks is possible and that such operations can be stopped quickly in an emergency from either ship or shore.
15.7.11 During cargo transfer, a water hose on deck shall be connected to a water supply and kept flowing throughout the operation so that any spillage of phosphorus may be washed down with water immediately.

15.7.12 Ship-to-shore loading and discharge connections shall be of a type approved by the Administration.

15.8 Propylene oxide and mixtures of ethylene oxide/propylene oxide with an ethylene oxide content of not more than 30% by mass

15.8.1 Products transported under the provisions of this section shall be acetylene-free.

15.8.2 Unless cargo tanks are properly cleaned, these products shall not be carried in tanks which have contained as one of the three previous cargoes any products known to catalyse polymerization, such as:

1. mineral acids (e.g. sulphuric, hydrochloric, nitric);
2. carboxylic acids and anhydrides (e.g. formic, acetic);
3. halogenated carboxylic acids (e.g. chloracetic);
4. sulphonlic acids (e.g. benzenesulphonic);
5. caustic alkalis (e.g. sodium hydroxide, potassium hydroxide);
6. ammonia and ammonia solutions;
7. amines and amine solutions; and
8. oxidizing substances.

15.8.3 Before loading, tanks shall be thoroughly and effectively cleaned, to remove all traces of previous cargoes from tanks and associated pipework, except where the immediately prior cargo has been propylene oxide or ethylene oxide/propylene oxide mixtures. Particular care shall be taken in the case of ammonia in tanks made of steel other than stainless steel.

15.8.4 In all cases, the effectiveness of cleaning procedures for tanks and associated pipework shall be checked by suitable testing or inspection, to ascertain that no traces of acidic or alkaline materials remain that might create a hazardous situation in the presence of these products.

15.8.5 Tanks shall be entered and inspected prior to each initial loading of these products to ensure freedom from contamination, heavy rust deposits and visible structural defects. When cargo tanks are in continuous service for these products, such inspections shall be performed at intervals of not more than two years.

15.8.6 Tanks for the carriage of these products shall be of steel or stainless steel construction.
15.8.7 Tanks for the carriage of these products may be used for other cargoes after thorough cleaning of tanks and associated pipework systems by washing or purging.

15.8.8 All valves, flanges, fittings and accessory equipment shall be of a type suitable for use with the products and shall be constructed of steel or stainless steel in accordance with recognized standards. Discs or disc faces, seats and other wearing parts of valves shall be made of stainless steel containing not less than 11% chromium.

15.8.9 Gaskets shall be constructed of materials which do not react with, dissolve in, or lower the autoignition temperature of these products and which are fire-resistant and possess adequate mechanical behaviour. The surface presented to the cargo shall be polytetrafluoroethylene (PTFE), or materials giving a similar degree of safety by their inertness. Spirally wound stainless steel, with a filler of PTFE or similar fluorinated polymer, may be accepted.

15.8.10 Insulation and packing, if used, shall be of a material which does not react with, dissolve in, or lower the autoignition temperature of these products.

15.8.11 The following materials are generally found unsatisfactory for gaskets, packing and similar uses in containment systems for these products and would require testing before being approved by the Administration:

   .1 neoprene or natural rubber, if it comes into contact with the products.
   .2 asbestos, or binders used with asbestos.
   .3 materials containing oxides of magnesium, such as mineral wools.

15.8.12 Threaded joints shall not be permitted in the cargo liquid and vapour lines.

15.8.13 Filling and discharge piping shall extend to within 100 mm of the bottom of the tank or any sump pit.

15.8.14.1 The containment system for a tank containing these products shall have a valved vapour-return connection.

15.8.14.2 The products shall be loaded and discharged in such a manner that venting of the tanks to atmosphere does not occur. If vapour return to shore is used during tank loading, the vapour-return system connected to a containment system for the product shall be independent of all other containment systems.

15.8.14.3 During discharge operations, the pressure in the cargo tank must be maintained above 0.007 MPa gauge.

15.8.15 The cargo may be discharged only by deepwell pumps, hydraulically operated submerged pumps, or inert-gas displacement. Each cargo pump shall be arranged to ensure that the product does not heat significantly if the discharge line from the pump is shut off or otherwise blocked.
15.8.16 Tanks carrying these products shall be vented independently of tanks carrying other products. Facilities shall be provided for sampling the tank contents without opening the tank to atmosphere.

15.8.17 Cargo hoses used for transfer of these products shall be marked “FOR ALKYLENE OXIDE TRANSFER ONLY”.

15.8.18 Cargo tanks, void spaces and other enclosed spaces adjacent to an integral gravity cargo tank carrying propylene oxide shall either contain a compatible cargo (those cargoes specified in 15.8.2 are examples of substances considered incompatible) or be inerted by injection of a suitable inert gas. Any hold space in which an independent cargo tank is located shall be inerted. Such inerted spaces and tanks shall be monitored for these products and oxygen. The oxygen content of these spaces shall be maintained below 2%. Portable sampling equipment is satisfactory.

15.8.19 In no case shall air be allowed to enter the cargo pump or piping system while these products are contained within the system.

15.8.20 Prior to disconnecting shore-lines, the pressure in liquid and vapour lines shall be relieved through suitable valves installed at the loading header. Liquid and vapour from these lines shall not be discharged to atmosphere.

15.8.21 Propylene oxide may be carried in pressure tanks or in independent or integral gravity tanks. Ethylene oxide/propylene oxide mixtures shall be carried in independent gravity tanks or pressure tanks. Tanks shall be designed for the maximum pressure expected to be encountered during loading, conveying and discharging cargo.

15.8.22.1 Tanks for the carriage of propylene oxide with a design pressure less than 0.06 MPa gauge and tanks for the carriage of ethylene oxide/propylene oxide mixtures with a design pressure of less than 0.12 MPa gauge shall have a cooling system to maintain the cargo below the reference temperature.

15.8.22.2 The refrigeration requirement for tanks with a design pressure less than 0.06 MPa gauge may be waived by the Administration for ships operating in restricted areas or on voyages of restricted duration, and account may be taken in such cases of any insulation of the tanks. The area and times of year for which such carriage would be permitted shall be included in the conditions of carriage of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.

15.8.23.1 Any cooling system shall maintain the liquid temperature below the boiling temperature at the containment pressure. At least two complete cooling plants, automatically regulated by variations within the tanks, shall be provided. Each cooling plant shall be complete with the necessary auxiliaries for proper operation. The control system shall also be capable of being manually operated. An alarm shall be provided to indicate malfunctioning of the temperature controls. The capacity of each cooling system shall be sufficient to maintain the temperature of the liquid cargo below the reference temperature of the system.
15.8.23.2 An alternative arrangement may consist of three cooling plants, any two of which shall be sufficient to maintain the liquid temperature below the reference temperature.

15.8.23.3 Cooling media which are separated from the products by a single wall only shall be nonreactive with the products.

15.8.23.4 Cooling systems requiring compression of the products shall not be used.

15.8.24 Pressure-relief-valve settings shall not be less than 0.02 MPa gauge and for pressure tanks not greater than 0.7 MPa gauge for the carriage of propylene oxide and not greater than 0.53 MPa gauge for the carriage of propylene oxide/ethylene oxide mixtures.

15.8.25.1 The piping system for tanks to be loaded with these products shall be separated (as defined in 3.1.4) from piping systems for all other tanks, including empty tanks. If the piping system for the tanks to be loaded is not independent (as defined in 1.3.18), the required piping separation shall be accomplished by the removal of spool-pieces, valves, or other pipe section and the installation of blank flanges at these locations. The required separation applies to all liquid and vapour piping, liquid and vapour vent lines and any other possible connections, such as common inert-gas supply lines.

15.8.25.2 These products may be transported only in accordance with cargo-handling plans that have been approved by the Administration. Each intended loading arrangement shall be shown on a separate cargo-handling plan. Cargo-handling plans shall show the entire cargo piping system and the locations for installation of blank flanges needed to meet the above piping separation requirements. A copy of each approved cargo-handling plan shall be maintained on board the ship. The International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk shall be endorsed to include reference to the approved cargo-handling plans.

15.8.25.3 Before each initial loading of these products and before every subsequent return to such service, certification verifying that the required piping separation has been achieved shall be obtained from a responsible person acceptable to the port Administration and carried on board the ship. Each connection between a blank flange and a pipeline flange shall be fitted with a wire and seal by the responsible person to ensure that inadvertent removal of the blank flange is impossible.

15.8.26.1 No cargo tanks shall be more than 98% liquid-full at the reference temperature.

15.8.26.2 The maximum volume to which a cargo tank shall be loaded is:

\[ V_L = 0.98V \frac{\rho_R}{\rho_L} \]

Where \( V_L \) = maximum volume to which the tank may be loaded
\( V \) = volume of the tank
\[ \rho_R = \text{density of cargo at the reference temperature} \]
\[ \rho_L = \text{density of cargo at the loading temperature and pressure} \]

15.8.26.3 The maximum allowable tank filling limits for each cargo tank shall be indicated for each loading temperature which may be applied and for the applicable maximum reference temperature, on a list to be approved by the Administration. A copy of the list shall be permanently kept on board by the master.

15.8.27 The cargo shall be carried under a suitable protective padding of nitrogen gas. An automatic nitrogen make-up system shall be installed to prevent the tank pressure falling below 0.007 MPa gauge in the event of product temperature fall due to ambient conditions or maloperation of refrigeration systems. Sufficient nitrogen shall be available on board to satisfy the demand of the automatic pressure control. Nitrogen of commercially pure quality (99.9% by volume) shall be used for padding. A battery of nitrogen bottles connected to the cargo tanks through a pressure-reduction valve satisfies the intention of the expression “automatic” in this context.

15.8.28 The cargo tank vapour space shall be tested prior to and after loading to ensure that the oxygen content is 2% by volume or less.

15.8.29 A water-spray system of sufficient capacity shall be provided to blanket effectively the area surrounding the loading manifold, the exposed deck piping associated with product handling, and the tank domes. The arrangement of piping and nozzles shall be such as to give a uniform distribution rate of 10 l/m²/min. Remote manual operation shall be arranged such that remote starting of pumps supplying the water-spray system and remote operation of any normally closed valves in the system can be carried out from a suitable location outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected. The water-spray system shall be capable of both local and remote manual operation, and the arrangement shall ensure that any spilled cargo is washed away. Additionally, a water hose with pressure to the nozzle, when atmospheric temperatures permit, shall be connected ready for immediate use during loading and unloading operations.

15.8.30 A remotely operated, controlled closing-rate, shutoff valve shall be provided at each cargo-hose connection used during cargo transfer.

15.9 Sodium chlorate solution (50% or less by mass)

15.9.1 Tanks and associated equipment, which have contained this product may be used for other cargoes after thorough cleaning by washing or purging.

15.9.2 In the event of spillage of this product, all spilled liquid shall be thoroughly washed away without delay. To minimize fire risk, spillage shall not be allowed to dry out.
15.10 Sulphur (molten)

15.10.1 Cargo tank ventilation shall be provided to maintain the concentration of hydrogen sulphide below one half of its lower explosive limit throughout the cargo tank vapor space for all conditions of carriage (i.e. below 1.85% by volume).

15.10.2 Where mechanical ventilation systems are used for maintaining low gas concentrations in cargo tanks, an alarm system shall be provided to give warning if the system fails.

15.10.3 Ventilation systems shall be so designed and arranged as to preclude depositing of sulphur within the system.

15.10.4 Openings to void spaces adjacent to cargo tanks shall be so designed and fitted as to prevent the entry of water, sulphur or cargo vapour.

15.10.5 Connections shall be provided to permit sampling and analysing of vapour in void spaces.

15.10.6 Cargo temperature controls shall be provided to ensure that the temperature of the sulphur does not exceed 155°C.

15.10.7 Sulphur (molten) has a flashpoint above 60°C; however, electrical equipment shall be certified safe for gases evolved.

15.11 Acids

15.11.1 The ship's shell plating shall not form any boundaries of tanks containing mineral acids.

15.11.2 Proposals for lining steel tanks and related piping systems with corrosion-resistant materials may be considered by the Administration. The elasticity of the lining shall not be less than that of the supporting boundary plating.

15.11.3 Unless constructed wholly of corrosion-resistant materials or fitted with an approved lining, the plating thickness shall take into account the corrosivity of the cargo.

15.11.4 Flanges of the loading and discharge manifold connections shall be provided with shields, which may be portable, to guard against the danger of the cargo being sprayed; and in addition, drip trays shall also be provided to guard against leakage on to the deck.

15.11.5 Because of the danger of evolution of hydrogen when these substances are being carried, the electrical arrangements shall comply with 10.1.4. The certified safe type equipment shall be suitable for use in hydrogen/air mixtures. Other sources of ignition shall not be permitted in such spaces.

15.11.6 Substances subjected to the requirements of this section shall be segregated from oil fuel tanks, in addition to the segregation requirements in 3.1.1.
15.11.7 Provision shall be made for suitable apparatus to detect leakage of cargo into adjacent spaces.

15.11.8 The cargo pump-room bilge pumping and drainage arrangements shall be of corrosion-resistant materials.

15.12 Toxic products

15.12.1 Exhaust openings of tank vent systems shall be located:

.1 at a height of B/3 or 6 m, whichever is greater, above the weather deck or, in the case of a deck tank, the access gangway;

.2 not less than 6 m above the fore-and-aft gangway, if fitted within 6 m of the gangway;

.3 15 m from any opening or air intake to any accommodation and service spaces; and

.4 the vent height may be reduced to 3 m above the deck or fore-and-aft gangway, as applicable, provided high-velocity vent valves of an approved type, directing the vapour/air mixture upwards in an unimpeded jet with an exit velocity of at least 30 m/s, are fitted.

15.12.2 Tank venting systems shall be provided with a connection for a vapour-return line to the shore installation.

15.12.3 Products shall:

.1 not be stowed adjacent to oil fuel tanks;

.2 have separate piping systems; and

.3 have tank vent systems separate from tanks containing nontoxic products.

(See also 3.7.2)

15.12.4 Cargo tank relief-valve settings shall be a minimum of 0.02 MPa gauge.

15.13 Cargoes protected by additives

15.13.1 Certain cargoes with a reference in column o in the table of chapter 17, by the nature of their chemical make-up, tend, under certain conditions of temperature, exposure to air or contact with a catalyst, to undergo polymerization, decomposition, oxidation or other chemical changes. Mitigation of this tendency is carried out by introducing small amounts of chemical additives into the liquid cargo or controlling the cargo tank environment.
15.13.2 Ships carrying these cargoes shall be so designed as to eliminate from the cargo tanks and cargo-handling system any material of construction or contaminants which could act as a catalyst or destroy the inhibitor.

15.13.3 Care shall be taken to ensure that these cargoes are sufficiently protected to prevent deleterious chemical change at all times during the voyage. Ships carrying such cargoes shall be provided with a certificate of protection from the manufacturer, and kept during the voyage, specifying:

.1 the name and amount of additive present;
.2 whether the additive is oxygen-dependent;
.3 date additive was put in the product and duration of effectiveness;
.4 any temperature limitations qualifying the additives' effective lifetime; and
.5 the action to be taken shall the length of voyage exceed the effective lifetime of the additives.

15.13.4 Ships using the exclusion of air as the method of preventing oxidation of the cargo shall comply with 9.1.3.

15.13.5 A product containing an oxygen-dependent additive shall be carried without inertion (in tanks of a size not greater than 3,000 m³). Such cargoes shall not be carried in a tank requiring inertion under the requirements of SOLAS chapter II-2*.

15.13.6 Venting systems shall be of a design that eliminates blockage from polymer build-up. Venting equipment shall be of a type that can be checked periodically for adequacy of operation.

15.13.7 Crystallization or solidification of cargoes normally carried in the molten state can lead to depletion of inhibitor in parts of the tank's contents. Subsequent remelting can thus yield pockets of uninhibited liquid, with the accompanying risk of dangerous polymerization. To prevent this, care shall be taken to ensure that at no time are such cargoes allowed to crystallize or solidify, either wholly or partially, in any part of the tank. Any required heating arrangements shall be such as to ensure that in no part of the tank does cargo become overheated to such an extent that any dangerous polymerization can be initiated. If the temperature from steam coils would induce overheating, an indirect low-temperature heating system shall be used.

15.14 Cargoes with a vapour pressure greater than 0.1013 MPa absolute at 37.8°C

15.14.1 For a cargo referenced in column o in the table of chapter 17 to this section, a mechanical refrigeration system shall be provided unless the cargo system is designed to withstand the vapour pressure of the cargo at 45°C. Where the cargo system is designed to withstand the vapour pressure of the cargo at 45°C, and no refrigeration system is

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* For equivalency arrangements for the carriage of styrene monomer, see MSC/Circ.879 and MSC/Circ.879/Corr.1
provided, a notation shall be made in the conditions of carriage on the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk to indicate the required relief-valve setting for the tanks.

15.14.2 A mechanical refrigeration system shall maintain the liquid temperature below the boiling temperature at the cargo tank design pressure.

15.14.3 When ships operate in restricted areas and at restricted times of the year, or on voyages of limited duration, the Administration involved may agree to waive requirements for a refrigeration system. A notation of any such agreement, listing geographic area restrictions and times of the year, or voyage duration limitations, shall be included in the conditions of carriage on the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.

15.14.4 Connections shall be provided for returning expelled gases to shore during loading.

15.14.5 Each tank shall be provided with a pressure gauge which indicates the pressure in the vapour space above the cargo.

15.14.6 Where the cargo needs to be cooled, thermometers shall be provided at the top and bottom of each tank.

15.14.7.1 No cargo tanks shall be more than 98% liquid-full at the reference temperature (R).

15.14.7.2 The maximum volume \( V_L \) of cargo to be loaded in a tank shall be:

\[
V_L = 0.98 V \frac{\rho_R}{\rho_L}
\]

Where \( V \) = volume of the tank

\( \rho_R \) = density of cargo at the reference temperature (R)

\( \rho_L \) = density of cargo at the loading temperature

\( R \) = reference temperature

15.14.7.3 The maximum allowable tank filling limits for each cargo tank shall be indicated for each loading temperature which may be applied, and for the applicable maximum reference temperature, on a list approved by the Administration. A copy of the list shall be permanently kept on board by the master.

15.15 Cargoes with low ignition temperature and wide flammability range

Deleted.
15.16 Cargo contamination

15.16.1 Where column o in the table of chapter 17 refers to this section, alkaline or acidic materials, such as caustic soda or sulphuric acid, shall not be allowed to contaminate the cargo.

15.16.2 Where column o in the table of chapter 17 refers to this section, water shall not be allowed to contaminate this cargo. In addition, the following provisions apply:

.1 Air inlets to pressure/vacuum-relief valves of tanks containing the cargo shall be situated at least 2 m above the weather deck.

.2 Water or steam shall not be used as the heat-transfer media in a cargo temperature control system required by chapter 7.

.3 The cargo shall not be carried in cargo tanks adjacent to permanent ballast or water tanks unless the tanks are empty and dry.

.4 The cargo shall not be carried in tanks adjacent to slop tanks or cargo tanks containing ballast or slops or other cargoes containing water which may react in a dangerous manner. Pumps, pipes or vent lines serving such tanks shall be separate from similar equipment serving tanks containing the cargo. Pipelines from slop tanks or ballast lines shall not pass through tanks containing the cargo unless encased in a tunnel.

15.17 Increased ventilation requirements

For certain products, the ventilation system as described in 12.1.3 shall have a minimum capacity of at least 45 changes of air per hour, based upon the total volume of space. The ventilation system exhaust ducts shall discharge at least 10 m away from openings into accommodation spaces, work areas or other similar spaces, and intakes to ventilation systems, and at least 4 m above the tank deck.

15.18 Special cargo pump-room requirements

For certain products, the cargo pump-room shall be located on the deck level or cargo pumps shall be located in the cargo tank. The Administration may give special consideration to cargo pump-rooms below deck.

15.19 Overflow control

15.19.1 The provisions of this section are applicable where specific reference is made in column o in the table of chapter 17, and are in addition to the requirements for gauging devices.

15.19.2 In the event of a power failure on any system essential for safe loading, an alarm shall be given to the operators concerned.

15.19.3 Loading operations shall be terminated at once in the event of any system essential for safe loading becoming inoperative.
15.19.4 Level alarms shall be capable of being tested prior to loading.

15.19.5 The high-level alarm system required under 15.19.6 shall be independent of the overflow-control system required by 15.19.7 and shall be independent of the equipment required by 13.1.

15.19.6 Cargo tanks shall be fitted with a visual and audible high-level alarm which complies with 15.19.1 to 15.19.5 and which indicates when the liquid level in the cargo tank approaches the normal full condition.

15.19.7 A tank overflow-control system required by this section shall:

.1 come into operation when the normal tank loading procedures fail to stop the tank liquid level exceeding the normal full condition;

.2 give a visual and audible tank-overflow alarm to the ship's operator; and

.3 provide an agreed signal for sequential shutdown of onshore pumps or valves or both and of the ship's valves. The signal, as well as the pump and valve shutdown, may be dependent on operator's intervention. The use of shipboard automatic closing valves shall be permitted only when specific approval has been obtained from the Administration and the port State authority concerned.

15.19.8 The loading rate (LR) of the tank shall not exceed:

\[
LR = \frac{3600U}{t} \quad (m^3 / h)
\]

where \(U\) = ullage volume (m\(^3\)) at operating signal level;

\(t\) = time(s) needed from the initiating signal to fully stopping the cargo flow into the tank, being the sum of times needed for each step in sequential operations such as operator's responses to signals, stopping pumps and closing valves;

and shall also take into account the pipeline system design pressure.

15.20 Alkyl (C\(_7\)-C\(_9\)) nitrates, all isomers

15.20.1 The carriage temperature of the cargo shall be maintained below 100°C to prevent the occurrence of a self-sustaining, exothermic decomposition reaction.

15.20.2 The cargo may not be carried in independent pressure vessels permanently affixed to the vessel's deck unless:

.1 the tanks are sufficiently insulated from fire; and
the vessel has a water deluge system for the tanks such that the cargo temperature is maintained below 100°C and the temperature rise in the tanks does not exceed 1.5°C/h for a fire of 650°C.

15.21 Temperature sensors

Temperature sensors shall be used to monitor the cargopump temperature to detect overheating due to pump failures.

CHAPTER 16

OPERATIONAL REQUIREMENTS

16.1 Maximum allowable quantity of cargo per tank

16.1.1 The quantity of a cargo required to be carried in a type 1 ship shall not exceed 1,250 m³ in any one tank.

16.1.2 The quantity of cargo required to be carried in a type 2 ship shall not exceed 3,000 m³ in any one tank.

16.1.3 Tanks carrying liquids at ambient temperatures shall be so loaded as to avoid the tank becoming liquid-full during the voyage, having due regard to the highest temperature which the cargo may reach.

16.2 Cargo information

16.2.1 A copy of this Code, or national regulations incorporating the provisions of this Code, shall be on board every ship covered by this Code.

16.2.2 Any cargo offered for bulk shipment shall be indicated in the shipping documents by the name, under which it is listed in the Code or under which it has been provisionally assessed. Where the cargo is a mixture, an analysis indicating the dangerous components contributing significantly to the total hazard of the product shall be provided, or a complete analysis if this is available. Such an analysis shall be certified by the manufacturer or by an independent expert acceptable to the Administration.

16.2.3 Information shall be on board, and available to all concerned, giving the necessary data for the safe carriage of the cargo in bulk. Such information shall include a cargo stowage plan, to be kept in an accessible place, indicating all cargo on board, including each dangerous chemical carried:

.1 a full description of the physical and chemical properties, including reactivity, necessary for the safe containment of the cargo;

.2 action to be taken in the event of spills or leaks;

.3 countermeasures against accidental personal contact;
4 fire-fighting procedures and fire-fighting media;

5 procedures for cargo transfer, tank cleaning, gas-freeing and ballasting;

6 for those cargoes required to be stabilized or inhibited, the cargo shall be refused if the certificate required by these paragraphs is not supplied.

16.2.4 If sufficient information, necessary for the safe transportation of the cargo, is not available, the cargo shall be refused.

16.2.5 Cargoes which evolve highly toxic imperceptible vapours shall not be transported unless perceptible additives are introduced into the cargo.

16.2.6 Where column o in the table of chapter 17 refers to this paragraph, the cargo's viscosity at 20°C shall be specified on a shipping document, and if the cargo's viscosity exceeds 50 mPa·s at 20°C, the temperature at which the cargo has a viscosity of 50 mPa·s shall be specified in the shipping document.

16.2.7 Where column o in the table of chapter 17 refers to this paragraph, the cargo's melting point shall be indicated in the shipping document.

16.3 Personnel training

16.3.1 All personnel shall be adequately trained in the use of protective equipment and have basic training in the procedures appropriate to their duties necessary under emergency conditions.

16.3.2 Personnel involved in cargo operations shall be adequately trained in handling procedures.

16.3.3 Officers shall be trained in emergency procedures to deal with conditions of leakage, spillage or fire involving the cargo and a sufficient number of them shall be instructed and trained in essential first aid for cargoes carried, based on the guidelines developed by the Organization*.

16.4 Opening of and entry into cargo tanks

16.4.1 During handling and carriage of cargoes producing flammable and/or toxic vapours or when ballasting after the discharge of such cargo, or when loading or unloading cargo, cargo tank lids shall always be kept closed. With any hazardous cargo, cargo tank lids, ullage and sighting ports and tank washing access covers shall be open only when necessary.

16.4.2 Personnel shall not enter cargo tanks, void spaces around such tanks, cargo-handling spaces or other enclosed spaces unless:

* Refer to the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), which provides advice on the treatment of casualties in accordance with the symptoms exhibited as well as equipment and antidotes that may be appropriate for treating the casualty and to the relevant provisions of the STCW Code, parts A and B.
.1 the compartment is free of toxic vapours and not deficient in oxygen; or
.2 personnel wear breathing apparatus and other necessary protective equipment, and the entire operation is under the close supervision of a responsible officer.

16.4.3 Personnel shall not enter such spaces when the only hazard is of a purely flammable nature, except under the close supervision of a responsible officer.

16.5 **Stowage of cargo samples**

16.5.1 Samples which have to be kept on board shall be stowed in a designated space situated in the cargo area or, exceptionally, elsewhere, subject to the approval of the Administration.

16.5.2 The stowage space shall be:

.1 cell-divided in order to avoid shifting of the bottles at sea;
.2 made of material fully resistant to the different liquids intended to be stowed; and
.3 equipped with adequate ventilation arrangements.

16.5.3 Samples which react with each other dangerously shall not be stowed close to each other.

16.5.4 Samples shall not be retained on board longer than necessary.

16.6 **Cargoes not to be exposed to excessive heat**

16.6.1 Where the possibility exists of a dangerous reaction of a cargo, such as polymerization, decomposition, thermal instability or evolution of gas, resulting from local overheating of the cargo in either the tank or associated pipelines, such cargo shall be loaded and carried adequately segregated from other products whose temperature is sufficiently high to initiate a reaction of such cargo (see 7.1.5.4).

16.6.2 Heating coils in tanks carrying this product shall be blanked off or secured by equivalent means.

16.6.3 Heat-sensitive products shall not be carried in deck tanks, which are not insulated.

16.6.4 In order to avoid elevated temperatures, this cargo shall not be carried in deck tanks.
CHAPTER 17

SUMMARY OF MINIMUM REQUIREMENTS

Mixtures of noxious liquid substances presenting pollution hazards only, and which are provisionally assessed under regulation 6.3 of MARPOL Annex II, may be carried under the requirements of the Code applicable to the appropriate position of the entry in this chapter for Noxious Liquid Substances, not otherwise specified (n.o.s.).

EXPLANATORY NOTES

<table>
<thead>
<tr>
<th>Product name (column a)</th>
<th>In some cases, the product names are not identical with the names given in previous issues of the Code.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number (column b)</td>
<td>Deleted</td>
</tr>
<tr>
<td>Pollution Category (column c)</td>
<td>The letter X, Y, Z means the Pollution Category assigned to each product under MARPOL Annex II</td>
</tr>
<tr>
<td>Hazards (column d)</td>
<td>“S” means that the product is included in the Code because of its safety hazards; “P” means that the product is included in the Code because of its pollution hazards; and “S/P” means that the product is included in the Code because of both its safety and pollution hazards.</td>
</tr>
</tbody>
</table>
| Ship type (column e)   | 1: ship type 1 (2.1.2)  
2: ship type 2 (2.1.2)  
3: ship type 3 (2.1.2) |
| Tank type (column f)   | 1: independent tank (4.1.1)  
2: integral tank (4.1.2)  
G: gravity tank (4.1.3)  
P: pressure tank (4.1.4) |
| Tank vents (column g)  | Open: open venting  
Cont.: controlled venting  
SR: safety relief valve |
| Tank environmental control (column h) | Inert: inerting (9.1.2.1)  
Pad: liquid or gas padding (9.1.2.2)  
Dry: drying (9.1.2.3)  
Vent: natural or forced ventilation (9.1.2.4) |
| Electrical equipment (column i) | T1 to T6: temperature classes  
IIA, IIB or IIC: apparatus groups  
NF: nonflammable product (10.1.6)  
Yes: flashpoint exceeding 60°C (10.1.6)  
No: flashpoint not exceeding 60°C (10.1.6) |
| Gauging (column j)     | O: open gauging (13.1.1.1)  
R: restricted gauging (13.1.1.2)  
C: closed gauging (13.1.1.3)  
I: indirect gauging (13.1.1.3) |

* Temperature classes and apparatus groups as defined in the International Electrotechnical Commission Publication 79 (part 1, appendix D, parts 4,8 and 12). A ‘-’ indicates that no special class or group is required.
<table>
<thead>
<tr>
<th>Vapour detection (column k)</th>
<th>F: flammable vapours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T: toxic vapours</td>
</tr>
<tr>
<td></td>
<td>No: indicates no requirements</td>
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<tr>
<td>Fire protection (column l)</td>
<td>A: alcohol-resistant foam or multi-purpose foam</td>
</tr>
<tr>
<td></td>
<td>B: regular foam; encompasses all foams that are not of an alcohol-resistant type, including fluoro-protein and aqueous-film-forming foam (AFFF)</td>
</tr>
<tr>
<td></td>
<td>C: water-spray</td>
</tr>
<tr>
<td></td>
<td>D: dry chemical**</td>
</tr>
<tr>
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<td>No: no special requirements under this Code</td>
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<tr>
<td>Materials of construction (column m)</td>
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<tr>
<td>Emergency escape (column n)</td>
<td>Yes: see 14.3.1</td>
</tr>
<tr>
<td></td>
<td>No: no special requirements under this Code</td>
</tr>
</tbody>
</table>

** Dry chemical powder systems, when used, may require an additional water system for boundary cooling. This normally provided in sufficient quantities by the standard fire-main system required by regulation II-2/4 of SOLAS.
### Chapter 17

| Substance                                      | C | D | E | F | G | H | I | I' | I'' | J | K | L | M | N | O                                                                 |
|------------------------------------------------|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---------------------------------------------------------------------|
| Acetic acid                                     | Z | S | 3 | 2G| Cont| No| T1| IIA| No | R  | F | A | Y| Z | E | 15.11.2 to 15.11.4, 15.11.6 to 15.11.8, 15.19.6                   |
| Acetic anhydride                                | Z | S | 2 | 2G| Cont| No| T2| IIA| No | R  | F-T| A | Y | 1 | E | 15.11.2 to 15.11.4, 15.11.6 to 15.11.8, 15.19.6                 |
| Acetone cyanohydrin                             | Y | S/P| 2 | 2G| Cont| No| T1| IIA| Yes| C  | T | A | Y | E | 15.1 | 1, 15.12, 15.17 to 15.19, 16.6.1 to 16.6.3                      |
| Acetonitrile                                    | Z | S | 2 | 2G| Cont| No| T2| IIA| No | R  | F-T| A | No | 15.12, 15.19.6                                                  |
| Acrylonitrile solution (50% or less)            | Y | S | 2 | 2G| Open| No|   |   | NF | C  | No | No| No| 15.12.3, 15.13, 15.16.1, 15.19.6, 16.6.1                        |
| Acrylic acid                                    | Y | S | 2 | 2G| Cont| No| T2| IIA| No | R  | F-T| A | Y | 1 | No | 15.13, 15.19.6, 16.6.1                                          |
| Acrylonitrile                                   | Y | S/P| 2 | 2G| Cont| No| T1| IIB| No | C  | F-T| A | N3| Z | E | 15.12, 15.13, 15.17, 15.19                                      |
| Acrylonitrile-Styrene copolymer dispersion in polyether polyol | Y | P | 3 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Adiponitrile                                    | Y | S | 3 | 2G| Cont| No| IIB| Yes| R  | T  | A | No| 15.19.6                                                         |
| Alachlor technical (90% or more)                | X | S/P| 2 | 2G| Open| No|   |   | Yes| O  | No | A,C| Y| 1 | No | 15.19.6, 16.2.6, 16.2.9, 16A.2.2                                |
| Alcohol (C9-C11) poly (2.5-9) ethoxylate        | Y | P | 3 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6, 16.2.6                                                 |
| Alcohol (C6-C17) (secondary) poly(3-6)ethoxylates | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Alcohol (C6-C17) (secondary) poly(7-12)ethoxylates | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6, 16.2.6, 16.2.9                                        |
| Alcohol (C12-C16) poly(1-4)ethoxylates         | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Alcohol (C12-C16) poly(20+)ethoxylates         | Y | P | 3 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Alcohol (C12-C16) poly(7-19)ethoxylates        | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6, 16.2.6, 16A.2.2                                       |
| Alcoholols (C13+)                                | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Alkanes (C6-C9)                                  | Y | P | 2 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
| Iso- and cyclo-alkanes (C10-C11)                 | Z | P | 3 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
| Iso- and cyclo-alkanes (C12+)                    | Z | P | 3 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
| n-Alkanes (C10+)                                 | Y | P | 3 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
| Alkaryl polymers (C9-C20)                        | Y | P | 2 | 2G| Open| No|   |   | Yes| O  | No | A,B| No| 15.19.6, 16.2.6                                                 |
| Alkenyl (C11+) amide                             | X | P | 2 | 2G| Open| No|   |   | Yes| C  | T | No| E | 15.12, 15.17, 15.19                                            |
| Alkenyl (C16-C20) succinic anhydride             | Y | S | 3 | 2G| Cont| No|   |   | Yes| C  | T | No| E | 15.12, 15.17, 15.19                                            |
| Alkyl acrylate-vinylpyridine copolymer in toluene | Y | P | 3 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
| Alkylaryl phosphate mixtures (more than 40% Diphenyl tolly phosphate, less than 0.02% ortho-isomers) | X | S/P| 1 | 2G| Cont| No| T1| IIA| Yes| C  | T | ABC| No | 15.12, 15.17, 15.19                                             |
| Alkylated (C4-C9) hindered phenols              | Z | S | 3 | 2G| Open| No|   |   | Yes| O  | No | BD| No| 15.19.6                                                        |
| Alkylbenzene, alkylfene, alkylidine mixture (each C12-C17) | Y | P | 3 | 2G| Open| No|   |   | Yes| O  | No | A | No| 15.19.6                                                         |
| Alkyl (C3-C4) benzenes                          | Y | P | 2 | 2G| Cont| No|   |   | No | R  | F | A | No| 15.19.6                                                         |
### Chapter 17

<table>
<thead>
<tr>
<th>Substance</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
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<tr>
<td>Alkyl (C5-C8) benzenes</td>
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<td>Alkyl(C9+)benzenes</td>
<td>Y</td>
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<td>3G</td>
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<td>O</td>
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<td>Alkyl (C11-C17) benzene sulphonic acid</td>
<td>Y</td>
<td>S/P</td>
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<td>2G</td>
<td>Open</td>
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<td>Alkylbenzene sulphonic acid, sodium salt solution</td>
<td>Y</td>
<td>P</td>
<td>2G</td>
<td>2G</td>
<td>Open</td>
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<td>O</td>
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<td>Alkyl (C12+) dimethylamine</td>
<td>X</td>
<td>S/P</td>
<td>1G</td>
<td>2G</td>
<td>Cont</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
<td>C</td>
<td>T</td>
<td>BCD</td>
<td>E</td>
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<td>Alkyl dithiocarbamate (C19-C35)</td>
<td>Y</td>
<td>P</td>
<td>3G</td>
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<td>Open</td>
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<td>Alkyl dithiodiazole (C6-C24)</td>
<td>Z</td>
<td>P</td>
<td>2G</td>
<td>2G</td>
<td>Open</td>
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<td>Alkyl dithiodiazole (C6-C24)</td>
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<td>Open</td>
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<td>Yes</td>
<td>O</td>
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<td>Alkyl ester copolymer (C4-C20)</td>
<td>Y</td>
<td>P</td>
<td>2G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
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<td>Yes</td>
<td>O</td>
<td>No</td>
<td>A</td>
<td>No</td>
</tr>
<tr>
<td>Alkyl (C8-C10)/(C11-C14):(40% or less/60% or more) polyglucoside solution (55% or less)</td>
<td>Y</td>
<td>P</td>
<td>3G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
<td>-</td>
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<td>O</td>
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<tr>
<td>Alkyl (C8-C10)/(C11-C14):(60% or more/40% or less) polyglucoside solution (55% or less)</td>
<td>Y</td>
<td>P</td>
<td>3G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
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<td>Yes</td>
<td>O</td>
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<tr>
<td>Alkyl (C7-C9) nitrates</td>
<td>Y</td>
<td>S/P</td>
<td>2G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
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<td>Yes</td>
<td>O</td>
<td>No</td>
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<td>B</td>
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<td>Alkyl(C7-C11)phenol poly(4-12) ethoxylate</td>
<td>Y</td>
<td>P</td>
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<td>2G</td>
<td>Open</td>
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<td>Alkyl (C8-C9) phenylamine in aromatic solvents</td>
<td>Y</td>
<td>P</td>
<td>2G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
<td>R</td>
<td>F</td>
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<tr>
<td>Alkyl (C9-C15) phenyl propoxylate</td>
<td>Y</td>
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<td>Open</td>
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<td>Yes</td>
<td>O</td>
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<td>A</td>
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<tr>
<td>Alkyl (C8-C10)/(C11-C14):(50% or 50%)/polyglucoside solution (55% or less)</td>
<td>Y</td>
<td>P</td>
<td>3G</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
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<td>P</td>
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<td>P</td>
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<td>Alkyl(C10-C20), saturated and unsaturated) phosphite</td>
<td>Y</td>
<td>P</td>
<td>2G</td>
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<td>Alkyl sulphonic acid ester of phenol</td>
<td>Y</td>
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## Chapter 17

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|------------------------------------------------|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|
| Cyclopentene                                   | Y | P | 2 | 2G| Cont| No| No| R | F  | A | No| 15.19.6 |
| p-Cymene (bb)                                  | Y | P | 2 | 2G| Cont| No| No| R | F  | A | No| 15.19.6 |
| Decahydranaphthalene                           | Y | P | 2 | 2G| Cont| No| - | - | No| R  | F | A | No| 15.19.6 |
| Decanoic acid                                  | X | P | 2 | 2G| Open| No| Yes| O | No| A | No| 16.2.7 to 16.2.9 |
| Decyl acrylate                                 | X | S/P| 1 | 2G| Open| No| T1 | IIA| Yes| O | No| A,C,D| N2| No| 15.13, 15.19.6, 16.6.1, 16.6.2 |
| Decyl alcohol (all isomers)                    | Y | P | 2 | 2G| Open| No| Yes| O | No| A | No| 15.19.6, 16.2.9(s) |
| Decyloxytetrahydrothiophene dioxide            | X | S/P| 2 | 2G| Cont| No| - | - | No| R  | F | A | No| 15.19.6 |
| Diacetonitrile                                 | Z | P | 3 | 2G| Cont| No| - | - | No| R  | F | A | No| 15.19.6 |
| Dialkyl (C8-C9) diphenylamines                 | Y | P | 3 | 2G| Open| No| - | - | Yes| O | No| A | No| 15.19.6 |
| Dialkyl(C7-C13) phthalates                     | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No| 15.19.6 |
| Dibromomethane                                 | Y | S/P| 2 | 2G| Cont| No| NF | R | T  | No| N3| No| 15.12.3, 15.19 |
| Dibutylamine                                    | Y | S/P| 3 | 2G| Cont| No| T2 | IIA| Yes| R | T | No| A,C,D| N4| No| 15.19.6 |
| Dibutyl hydrogen phosphonate                   | Y | P | 3 | 2G| Open| No| Yes| O | No| A | No| 15.19.6, 16.2.6 |
| 2,6-Di-tert-butylphenol                        | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| ABCD| No| 15.19 |
| Dibutyl phthalate                              | X | P | 2 | 2G| Open| No| Yes| O | No| A | No| 15.19.6 |
| Dichlorobenzene (all isomers)                  | X | S/P| 2 | 2G| Cont| No| T1 | IIA| Yes| R | T | A,B,D| N5| No| 15.19.6, 16.2.6(x), 16.2.9(y), 16A2.2(z) |
| 3.4-Dichloro-1-butene                          | Y | S/P| 2 | 2G| Cont| No| No| C  | F-T| ABC| E | 15.12.3, 15.17, 15.19.6 |
| 1.1-Dichloroethane                             | Z | S | 3 | 2G| Cont| No| T2 | IIA| No| R  | F-T| A | No| 15.19.6 |
| Dichloroethyl ether                            | Y | S/P| 2 | 2G| Cont| No| T2 | IIA| No| R  | F-T| A | No| N5| 15.19.6 |
| 1.1,2-Dichlorobenzene                          | Y | S/P| 2 | 2G| Cont| No| No| R  | T  | A  | B  | No| 15.19.6 |
| 2.2'-Dichloroisopropyl ether                   | Y | S/P| 2 | 2G| Cont| No| Yes| R  | T  | A  | C,D| N5| No| 15.12, 15.17, 15.19 |
| Dichloromethane                                | Y | S | 3 | 2G| Cont| No| T1 | IIA| Yes| R  | T  | No| No| 15.19.6 |
| 2,4-Dichlorophenol                             | Y | S/P| 2 | 2G| Cont| Dry| Yes| R  | T  | A  | N1| No| 15.19.6 |
| 2,4-Dichlorophenoxyacetic acid, diethanolamine salt solution | Y | S/P| 3 | 2G| Open| No| NF | O  | No| N1| No| 15.19.6 |
| 2,4-Dichlorophenoxyacetic acid, dimethylamine salt solution | Y | S/P| 3 | 2G| Open| No| NF | O  | No| N1| No| 15.19.6 |
| 2,4-Dichlorophenoxyacetic acid, trisopropylamine salt solution | Y | S/P| 3 | 2G| Open| No| NF | O  | No| N1| No| 15.19.6 |
| 1,1-Dichloropropane                            | Y | S/P| 2 | 2G| Cont| No| No| R  | F-T| A,B | Z  | No| 15.12, 15.19.6 |
| 1,2-Dichloropropane                            | Y | S/P| 2 | 2G| Cont| No| T1 | IIA| No| R  | F-T| A,B | Z  | No| 15.12, 15.19.6 |
| 1,3-Dichloropropane                            | Y | S | 2 | 2G| Cont| No| T1 | IIA| No| R  | F-T| A,B | No| 15.12, 15.19.6 |
| 1,3-Dichloropropene                            | X | S/P| 2 | 2G| Cont| No| T2 | IIA| No| C  | F-T| A,B | E  | 15.12, 15.17 to 15.19 |
| Substance                                                                 | C | D | E | F | G | H | I | I' | I'' | J | K | L | M | N | O |
|--------------------------------------------------------------------------|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|
| Dichloropropene/Dichloropropane mixtures                                  | X | S/P | 2 | 2G | Cont | No | No | C | F-T | A,B,D | E | 15.12, 15.17 to 15.19 |
| 2.2-Dichloropropionic acid                                                | Y | S | 3 | 2G | Cont | Dry | Yes | R | No | A | Y5 | No | 15.11.2, 15.11.4, 15.11.6 to 15.11.8 |
| Diethanolamine                                                            | Y | S | 3 | 2G | Open | No | T1 | II A | Yes | O | No | A | N2 | No | |
| Diethylamine                                                              | Y | S/P | 3 | 2G | Cont | No | T2 | II A | No | R | F-T | A | N1 | E | 15.12, 15.19.6 |
| Diethylamine oxide                                                        | Y | S/P | 2 | 2G | Cont | No | T2 | II A | No | R | F-T | A,C | N1 | No | 15.19.6 |
| 2,6-Diethylamine                                                          | Y | S/P | 3 | 2G | Open | No | - | - | Yes | O | No | A | N4 | No | 15.19.6, 16.2.9 |
| Diethylbenzene                                                            | Y | P | 2 | 2G | Cont | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Diethylene glycol dibutyl ether                                           | Y | P | 3 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Diethylene glycol diethyl ether                                           | Z | P | 3 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Diethylenetriamine                                                        | Y | S | 3 | 2G | Open | No | T2 | II A | Yes | O | No | A | N2 | No | |
| Diethylenetriamine pentaoctane acid, pentasodium salt solution           | Z | P | 3 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Diethyl ether                                                             | Z | S | 2 | 1G | Cont | Inert | T4 | II B | No | C | F-T | A | N7 | E | 15.4, 15.14, 15.19 |
| Dl-(2-ethylhexyl) adipate                                                 | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Dl-(2-ethylhexyl) phosphoric acid                                         | Y | S/P | 2 | 2G | Open | No | - | - | Yes | O | No | A,D | N2 | No | |
| Diethyl phthalate                                                        | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Diethyl sulphate                                                          | Y | S/P | 2 | 2G | Cont | No | - | - | Yes | C | T | A | N3 | No | 15.19.6 |
| Diglycidyl ether of bisphenol A                                           | X | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6, 16.2.6 |
| Diglycidyl ether of bisphenol F                                           | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6, 16.2.6 |
| Diheptyl phthalate                                                       | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Di-n-hexyl adipate                                                        | X | P | 1 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Dihexyl phthalate                                                        | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| 1,4-Dihydro-9,10-dihydroxynaphthalene, disodium salt solution            | Z | P | 3 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Disobutylamine                                                            | Y | S/P | 2 | 2G | Cont | No | - | - | Yes | O | No | A | No | 15.12.3, 15.19.6 |
| Disobutylene                                                             | Y | P | 2 | 2G | Cont | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Disobutyl ketone                                                          | Y | P | 3 | 2G | Cont | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Disobutyl phthalate                                                       | X | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6, 16.2.6 |
| Dismononyl adipate                                                        | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Disooctyl phthalate                                                       | Y | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |
| Disopropanolamine                                                         | Y | S/P | 3 | 2G | Open | No | T2 | II A | No | C | F-T | A | N2 | E | 15.12, 15.19 |
| Disopropylamine                                                           | Y | S/P | 2 | 2G | Cont | No | T2 | II A | No | C | F-T | A | N2 | No | 16.2.7 to 16.2.9 |
| Disopropylbenzene (all isomers)                                          | X | P | 2 | 2G | Open | No | - | - | Yes | O | No | A | No | 15.19.6 |</p>
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### Chapter 17

#### Fatty acids, essentially linear C6-C18, 2-ethylhexyl ester.
- Y
- P
- 2
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Ferric chloride solutions
- Y
- S/P
- 3
- 2G
- Open
- No
- -
- NF
- O
- No
- No
- No
- 15.11, 15.19.6, 16.2.9

#### Ferric nitrate/Nitric acid solution
- Y
- S/P
- 2
- 2G
- Cont
- No
- -
- NF
- R
- T
- No
- E
- 15.11, 15.19

#### Formaldehyde solutions (45% or less)
- Y
- S/P
- 3
- 2G
- Cont
- No
- -
- T2
- IIB
- No
- R
- F-T
- A
- E(e)
- 15.16.1, 15.19.6, 16.2.9

#### Formamide
- Y
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Formic acid
- Y
- S
- 3
- 2G
- Cont
- No
- -
- T1
- IIA
- No
- R
- T(v)
- A
- Y2
- Y3
- E
- 15.11.2 to 15.11.4, 15.11.6 to 15.11.8, 15.19.6

#### Fumaric adduct of rosin, water dispersion
- Y
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- No
- No
- 15.19.6, 16.2.6

#### Furfural
- Y
- S/P
- 3
- 2G
- Cont
- No
- -
- T2
- IIB
- No
- R
- F-T
- A
- No
- 15.16.1, 15.19.6

#### Furfuryl alcohol
- Y
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No

#### Glutaraldehyde solutions (50% or less)
- Y
- S
- 3
- 2G
- Open
- No
- -
- NF
- O
- No
- No
- No
- 15.16.1

#### Glycerol monooleate
- Y
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Glyceric acid ester of C10 trialkylacetic acid
- Y
- P
- 2
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Glycine, sodium salt solution
- Z
- S
- 3
- 2G
- Open
- No
- -
- NF
- O
- No
- No
- No
- 15.19.6

#### Glycolic acid solution (70% or less)
- Z
- S
- 3
- 2G
- Open
- No
- -
- NF
- O
- No
- No
- No
- 15.19.6

#### Glyoxal solution (40% or less)
- Y
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Glyoxalic acid solution (50 % or less)
- Y
- S
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- ACD
- Y5
- No
- 15.11.2 to 15.11.4, 15.11.6 to 15.11.8, 15.16.1, 16.6.1 to 16.6.3

#### Glyphosate solution (not containing surfactant)
- Y
- P
- 2
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Heptane (all isomers) (bb)
- Y
- P
- 3
- 2G
- Cont
- No
- -
- No
- R
- F
- A
- No
- 15.19.6

#### Heptanol (all isomers) (q)
- Y
- P
- 3
- 2G
- Cont
- No
- -
- No
- R
- F
- A
- No
- 15.19.6

#### Heptene (all isomers) (bb)
- Y
- P
- 3
- 2G
- Cont
- No
- -
- No
- R
- F
- A
- No
- 15.19.6

#### Heptyl acetate
- Y
- P
- 2
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### 1-Hexadecynaphthalene / 1,4-bis(hexadecyl)naphthalene mixture
- Y
- P
- 2
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No
- 15.19.6

#### Hexamethylenediamine (molten)
- Y
- S/P
- 2
- 2G
- Cont
- No
- -
- Yes
- C
- T
- C
- N1
- E
- 15.12, 15.17, 15.18, 15.19.6, 16.2.7, 16.2.9

#### Hexamethylenediamine adipate (50% in water)
- Z
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No

#### Hexamethylenediamine solution
- Y
- S/P
- 3
- 2G
- Cont
- No
- -
- Yes
- R
- T
- A
- N2
- No
- 15.19.6, 16.2.9

#### Hexamethylene disocyanate
- Y
- S/P
- 2
- 1G
- Cont
- Dry
- T1
- IIB
- Yes
- C
- T
- A,
- C(c)
- Y4
- E
- 15.12, 15.17, 15.18, 15.19

#### Hexamethylene glycol
- Z
- P
- 3
- 2G
- Open
- No
- -
- Yes
- O
- No
- A
- No

#### Hexamethyleneimine
- Y
- S/P
- 2
- 2G
- Cont
- No
- -
- No
- R
- F-T
- A,C
- N1
- No
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### Chapter 17

<p>| Substance                                                                 | C | D | E | F | G | H | I | I' | I'' | J | K | L | M | N | O |
|--------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tridecanoic acid                                                        | Y | P | 2 | 2G| Open| No| - | - | Yes| O | No| A |   |   |   |15.19.6, 16.2.6, 16.2.9, 16A.2.2|
| Undecanoic acid                                                         | Y | P | 2 | 2G| Open| No| - | - | Yes| O | No| A |   |   |   |15.19.6|
| Triethylamine                                                           | Z | S | 3 | 2G| Open| No| - | - | No | A | No|   |   |   |   |  |
| Triethylamine solution (30% or less)                                     | Z | S/P| 2 | 2G| Cont| No| - | - | Yes| O | No| A |   |   |   |15.19.6|
| Triethylbenzene                                                         | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Triisooctylamine                                                         | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Triisooctylated phenyl phosphates (containing less than 1% ortho-isomer) | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Trimethylacetic acid                                                    | Y | S | 3 | 2G| Cont| No| - | - | Yes| R | No| A |   |Y1|   |15.11.2 to 15.11.8|
| Trisopropylamine                                                        | Y | S/P| 2 | 2G| Cont| No| - | - | Yes| R | No| A | No|   |   |15.12.1, 15.19.6|
| 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate                           | Y | P | 3 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| 2,2,4-Trimethyl-1,3-pentanediol-1-isobutyrate                           | Y | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |   |
| 1,3,5-Trioxane                                                          | Y | S | 3 | 2G| Cont| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Tripropylene glycol                                                     | Z | P | 3 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |   |
| Tryptophosphate                                                         | X | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19|
| Urea/Ammonium mono- and di-hydrogen phosphate/Potassium chloride solution| Y | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Urea/Ammonium nitrate solution                                           | Y | P | 2 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|
| Vegetable protein solution (hydrolysed                                  | Z | P | 3 | 2G| Open| No| - | - | Yes| O | No| A | No|   |   |15.19.6|</p>
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<td>Open</td>
<td>No</td>
<td>IIA</td>
<td>Yes</td>
<td>O</td>
<td>No</td>
<td>A,B</td>
<td>No</td>
<td>15.19.6, 16.2.9, 16A.2.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc alkaryl dithiophosphate (C7-C16)</td>
<td>Y</td>
<td>P</td>
<td>2</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>Yes</td>
<td>O</td>
<td>No</td>
<td>A,B</td>
<td>No</td>
<td>16.2.7, 16.2.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc alkenyl carboxamide</td>
<td>Y</td>
<td>P</td>
<td>2</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
<td>O</td>
<td>No</td>
<td>A</td>
<td>No</td>
<td>15.19.6</td>
<td></td>
</tr>
<tr>
<td>Zinc alkyl dithiophosphate (C3-C14)</td>
<td>Y</td>
<td>P</td>
<td>2</td>
<td>2G</td>
<td>Open</td>
<td>No</td>
<td>Yes</td>
<td>O</td>
<td>No</td>
<td>A,B</td>
<td>No</td>
<td>15.19.6, 16.2.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
a Applies to ammonia aqueous (28% or less), but not below 10%.

Ammonia aqueous (28% or less)

b If the product to be carried contains flammable solvents such that the flashpoint does not exceed 60°C, then special electrical systems and a flammable-vapour detector shall be provided.

Diphenylmethane diisocyanate
Polymethylene polyphenyl isocyanate

c Although water is suitable for extinguishing open-air fires involving chemicals to which this footnote applies, water shall not be allowed to contaminate closed tanks containing these chemicals because of the risk of hazardous gas generation.

Diphenylmethane diisocyanate
Toluene diisocyanate
Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-isomers)

d Deleted

e Applies to formaldehyde solutions (45% or less), but not below 5%.

Formaldehyde solutions (45% or less)

f Applies to hydrochloric acid not below 10%.

Aluminium chloride (30% or less)/Hydrochloric acid (20% or less) solution
Hydrochloric acid

g Dry chemical cannot be used because of the possibility of an explosion.

Maleic anhydride

h Deleted

i Deleted

j Deleted

k Phosphorus, yellow or white is carried above its autoignition temperature and therefore flashpoint is not appropriate. Electrical equipment requirements may be similar to those for substances with a flashpoint above 60°C.

Phosphorus, yellow or white

l Deleted

m Deleted
Requirements are based on those isomers having a flashpoint of 60°C c.c., or less; some isomers have a flashpoint greater than 60°C c.c., and therefore the requirements based on flammability would not apply to such isomers.

Heptanol (all isomers)

Decyl alcohol (all isomers)

Dry chemical shall not be used as fire-extinguishing media.

Confined spaces shall be tested for both formic acid vapours and carbon monoxide gas, a decomposition product.

Formic acid

Xylenes

Applications to p-xylene only.

Dichlorobenzene (all isomers)

Applications to p-isomer and mixtures containing p-isomer the melting point of which is 0°C and above
CHAPTER 18

LIST OF LIQUID SUBSTANCES TO WHICH THE CODE DOES NOT APPLY

1 The following are liquid substances, which have been reviewed for their safety and pollution hazards and determined not to present hazards to such an extent as to warrant application of the Code.

2 Although the liquid substances listed in this chapter fall outside the scope of the Code, the attention of Administrations is drawn to the fact that some safety precautions may be needed for their safe transportation. Accordingly, Administrations shall prescribe appropriate safety requirements.

3 Some liquid substances are identified as falling into pollution category Z and, therefore, subject to certain operational requirements of MARPOL Annex II.

4 Liquid mixtures which are provisionally assessed under regulation 6.3 of MARPOL Annex II as falling into pollution category OS, and which do not present safety hazards, may be carried under the entry for “Non-Noxious Liquid Substances, not otherwise specified (n.o.s.)” in this chapter.

EXPLANATORY NOTES

<table>
<thead>
<tr>
<th>Product name (column a)</th>
<th>In some cases, the product names are not identical with the names given in previous issues of the Code.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number (column b)</td>
<td>Deleted.</td>
</tr>
<tr>
<td>Pollution category (column c)</td>
<td>The letter Z means the pollution category assigned to each product under MARPOL Annex II. OS means the product was evaluated and found to fall outside the categories X, Y, or Z.</td>
</tr>
</tbody>
</table>
### Chapter 18

<table>
<thead>
<tr>
<th>Substance</th>
<th>Pollution Category</th>
<th>UN No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Alcoholic beverages, n.o.s.</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Animal and fish oils, n.o.s., including:* to be considered at MEPC 52</td>
<td>NED</td>
<td></td>
</tr>
<tr>
<td>Apple juice</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Butyl alcohol (all isomers)</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>n-Butyl alcohol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>sec-Butyl alcohol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Calcium nitrate solutions (50% or less)</td>
<td>Z 1454</td>
<td></td>
</tr>
<tr>
<td>Clay slurry</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Coal slurry</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Ethylene carbonate</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Glucose solution</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Glycerine</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Hexamethylenetetramine solutions</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Hexylene glycol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Kaolin slurry</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Magnesium hydroxide slurry</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>N-Methylglucamine solution (70% or less)</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Molasses</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Polyaluminium chloride solution</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Potassium formate solutions</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Propylene carbonate</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Sodium acetate solutions</td>
<td>Z</td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 18

<table>
<thead>
<tr>
<th>Substance</th>
<th>Pollution Category</th>
<th>UN No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium sulphate solutions</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Tetraethyl silicate monomer/oligomer (20% in ethanol)</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>Triethylene glycol</td>
<td>Z</td>
<td></td>
</tr>
<tr>
<td>[Vegetable oils, n.o.s., including:]* to be considered at MEPC 52</td>
<td>NED</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Z</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 19
INDEX OF DANGEROUS PRODUCTS CARRIED IN BULK

1 Column I of the index gives the names of products listed in chapters 17 and 18 of the Code.

.1 Products listed in these chapters as well as abbreviations are shown in capitals. Alternative names are shown in lower case letters with an initial capital. If the product in column I is listed in chapter 17 or chapter 18 the relevant reference is indicated in column 2. Where no reference to an appropriate chapter is given in column 2, the name of the basic product is given and the column references and conditions of carriage for that chemical are applicable. An asterisk (*) alongside a chemical name signifies that the name conforms with the system of nomenclature of the International Union of Pure and Applied Chemistry (IUPAC).

.2 Prefixes forming an integral part of the name are shown in ordinary (roman) type and are taken into account in determining the alphabetical order of entries. These include such prefixes as:

Mono Di Tri Tetra Penta Iso Bis Neo Ortho

.3 Prefixes that are disregarded for purposes of alphabetical order are in italics and include the following:

n- (normal-)
sec- (secondary-)
tert- (tertiary-)
o- (ortho-)
m- (meta-)
p- (para-)
N-  
O-  
sym- (symmetrical)
uns- (unsymmetrical)
dl-  
cis-  
trans-  
(E)-
(Z)-
alpha- ($\alpha$)  
beta- ($\beta$)  
gamma- ($\gamma$)  
epsilon- ($\varepsilon$)

2 Column 3 of the index gives those UN numbers of products, which were available up to February 2001*.

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* The reason for this decision is given in paragraph 7.10 of BLG 6/16.
INDEX OF CHEMICALS

(To be compiled and added by the Secretariat at a later date).

CHAPTER 20

TRANSPORT OF LIQUID CHEMICAL WASTES

20.1 Preamble

20.1.1 Maritime transport of liquid chemical wastes could present a threat to human health and to the environment.

20.1.2 Liquid chemical wastes shall, therefore, be transported in accordance with relevant international conventions and recommendations and, in particular, where it concerns maritime transport in bulk, with the requirements of this Code.

20.2 Definitions

For the purpose of this chapter:

20.2.1 Liquid chemical wastes are substances, solutions or mixtures, offered for shipment, containing or contaminated with one or more constituents which are subject to the requirements of this Code and for which no direct use is envisaged but which are carried for dumping, incineration or other methods of disposal other than at sea.

20.2.2 Transboundary movement means maritime transport of wastes from an area under the national jurisdiction of one country to or through an area under the national jurisdiction of another country, or to or through an area not under the national jurisdiction of any country, provided at least two countries are concerned by the movement.

20.3 Applicability

20.3.1 The requirements of this chapter are applicable to the transboundary movement of liquid chemical wastes in bulk by seagoing ships and shall be considered in conjunction with all other requirements of this Code.

20.3.2 The requirements of this chapter do not apply to:

.1 wastes derived from shipboard operations which are covered by MARPOL requirements; and

.2 substances, solutions or mixtures containing or contaminated with radioactive materials which are subject to the applicable requirements for radioactive materials.
20.4 Permitted shipments

20.4.1 Transboundary movement of wastes is permitted to commence only when:

.1 notification has been sent by the competent authority of the country of origin, or by the generator or exporter through the channel of the competent authority of the country of origin, to the country of final destination; and

.2 the competent authority of the country of origin, having received the written consent of the country of final destination stating that the wastes will be safely incinerated or treated by other methods of disposal, has given authorization to the movement.

20.5 Documentation

20.5.1 In addition to the documentation specified in 16.2 of this Code, ships engaged in transboundary movement of liquid chemical wastes shall carry on board a waste movement document issued by the competent authority of the country of origin.

20.6 Classification of liquid chemical wastes

20.6.1 For the purpose of the protection of the marine environment, all liquid chemical wastes transported in bulk shall be treated as category X noxious liquid substances, irrespective of the actual evaluated category.

20.7 Carriage and handling of liquid chemical wastes

20.7.1 Liquid chemical wastes shall be carried in ships and cargo tanks in accordance with the minimum requirements for liquid chemical wastes specified in chapter 17, unless there are clear grounds indicating that the hazards of the wastes would warrant:

.1 carriage in accordance with the ship type 1 requirements; or

.2 any additional requirements of this Code applicable to the substance or, in case the of a mixture, its constituent presenting the predominant hazard.

CHAPTER 21

CRITERIA FOR ASSIGNING CARRIAGE REQUIREMENTS FOR PRODUCTS SUBJECT TO THE IBC CODE

21.1 Introduction

21.1.1 The following criteria are guidelines for the determination of pollution classification and assignment of appropriate carriage requirements for bulk liquid cargoes being considered as candidates for entry into the IBC Code or annexes 1, 3 or 4 of MEPC.2/Circs.
21.1.2 In developing such criteria, every effort has been made to follow the criteria and cut off points developed under the Global Harmonized System (GHS).

21.1.3 Although the criteria are intended to be closely defined in order to establish a uniform approach, it must be emphasized that these are guidelines only and, where human experience or other factors indicates the need for alternative arrangements, these shall always be taken into account. Where deviations from the criteria have been recognized, they shall be properly recorded with justifications.

21.2 Contents

21.2.1 This annex contains the following sections and appendices:

.1 minimum safety and pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code;

.2 criteria used to assign the minimum carriage requirements for products, which meet the safety or pollution criteria to make them subject to chapter 17 of the IBC Code;

.3 special requirements in chapter 15 of the IBC Code to be included in column o of chapter 17 of the IBC Code;

.4 special requirements in chapter 16 of the IBC Code to be included in column o of chapter 17 of the IBC Code; and

.5 definitions of properties used within this annex.

21.3 Minimum safety and pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code

21.3.1 Bulk liquid cargoes are deemed to be hazardous and subject to chapter 17 of the IBC Code if they meet one or more of the following criteria:

.1 inhalation LC50 < 20 mg/l/4 hr (see definitions in paragraph 21.7.1.1);

.2 dermal LD50 < 2000 mg/kg (see definitions in paragraph 21.7.1.2);

.3 oral LD50 < 2000 mg/kg (see definitions in paragraph 21.7.1.3);

.4 toxic to mammals by prolonged exposure (see definitions in paragraph 21.7.2);

.5 cause skin sensitization (see definitions in paragraph 21.7.3);

.6 cause respiratory sensitization (see definitions in paragraph 21.7.4);

.7 corrosive to skin (see definitions in paragraph 21.7.5);
have a Water Reactive Index (WRI) of $\geq 1$ (see definitions in paragraph 21.7.6);

require inertion, inhibition, stabilization, temperature control or tank environmental control in order to prevent a hazardous reaction (see definitions in paragraph 21.7.10);

flash point $< 23^\circ C$; and have an explosive/flammability range (expressed as a percentage by volume in air) of $\geq 20\%$;

autoignition temperature of $\leq 200^\circ C$; and

classified as pollution category X or Y or meeting the criteria for rules 11 to 13 under paragraph 21.4.5.1.

21.4 Criteria used to assign the minimum carriage requirements for products, which meet the minimum safety or pollution criteria to make them subject to chapter 17 of the IBC Code.

21.4.1 Column a - Product Name

21.4.1.1 The IUPAC name shall be used as far as possible but, where this is unnecessarily complex, then a technically correct and unambiguous alternative chemical name may be used.

21.4.2 Column b - Deleted

21.4.3 Column c - Pollution Category

21.4.3.1 Column c identifies the pollution category assigned to each product under MARPOL Annex II.

21.4.4 Column d - Hazards

21.4.4.1 An $S$ is assigned to column $d$ if any of the safety criteria described in paragraphs 21.3.1.1 to 21.3.1.11 are met.

21.4.4.2 A $P$ is assigned to column $d$ if the product is classified as pollution category X or Y, as referred to in paragraph 21.3.1.12.

21.4.5 Column e - Ship Type

21.4.5.1 The basic criteria for assigning Ship Types based on the GESAMP Hazard Profile are shown in the table below. An explanation of the details in the columns is provided in appendix 1 of Annex II to MARPOL 73/78. Selected rules, identified in this table, are specified in section 21.4.5.2 for assigning specific Ship Types.
21.4.5.2 The ship type is assigned according to the following criteria:

Ship type 1:

Inhalation LC$_{50}$ $< 0.5$ mg/l/4h; and/or
Dermal LD$_{50}$ $\leq 50$ mg/kg; and/or
Oral LD$_{50}$ $\leq 5$ mg/kg; and/or
Autoignition temperature $\leq 65^\circ$C; and/or
 Explosive range $\geq 50\%$ v/v in air and the flash point $< 23^\circ$C; and/or
Rules 1 or 2 of the table shown in 21.4.5.1

Ship type 2:

Inhalation LC$_{50}$ $> 0.5$mg/l/4h - $\leq 2$mg/l/4h; and/or
Dermal LD$_{50}$ $> 50$ mg/kg - $\leq 1000$ mg/kg; and/or
Oral LD$_{50}$ $> 5$mg/kg - $\leq 300$ mg/kg; and/or
WRI=2;
Autoignition temperature $\leq 200^\circ$C; and/or
 Explosive range $\geq 40\%$ v/v in air and the flash point $< 23^\circ$C; and/or
Any of the rules 3 to 10 of the table shown in 21.4.5.1

Ship type 3:

Any of the minimum safety or pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code not meeting the requirements for ship types 1 or 2 and not meeting rule 15 of the table shown in 21.4.5.1.
21.4.6 Column f - Tank type

21.4.6.1 The tank type is assigned according to the following criteria:

Tank type 1G: Inhalation LC\(_{50}\) \(< 0.5\) mg/l/4h; and/or
Dermal LD\(_{50}\) \(< 200\) mg/kg; and/or
Autoignition temperature \(< 65\)°C; and/or
Explosive range \(\geq 40\)% v/v in air and the flash point \(< 23\)°C; and/or
WRI=2

Tank type 2G: Any of the minimum safety or pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code not meeting the requirements for tank type 1G.

21.4.7 Column g - Tank vents

21.4.7.1 The tank venting arrangements are assigned according to the following criteria:

Controlled: Inhalation LC\(_{50}\) \(< 10\) mg/l/4h; and/or
Toxic to mammals by prolonged exposure; and/or
Respiratory sensitizer; and/or
Special carriage control needed; and/or
Flash point \(< 60\)°C
Corrosive to skin (\(< 4\) h exposure)

Open: Any of the minimum safety or pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code not meeting the requirements for controlled tank vents.

21.4.8 Column h - Tank environmental control

21.4.8.1 The Tank environmental control conditions are assigned according to the following criteria:

Inert: Autoignition temperature \(< 200\)°C; and/or
Reacts with air to cause a hazard; and/or
Explosive range \(\geq 40\)% and the flash point \(< 23\)°C.

Dry: WRI\(\geq 1\)

Pad: Only applies to specific products identified on a case by case basis.

Vent: Only applies to specific products identified on a case by case basis.

21.4.9 Column i - Electrical equipment

21.4.9.1 If the flash point of the product is \(\leq 60\)°C or the product is heated to within 15°C of its flash point then the electrical equipment required are assigned according to the following criteria, else ‘-’ is assigned:
.1 **Column i’** - Temperature class:

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Autoignition temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>≥ 450°C</td>
</tr>
<tr>
<td>T2</td>
<td>≥ 300°C but &lt; 450°C</td>
</tr>
<tr>
<td>T3</td>
<td>≥ 200°C but &lt; 300°C</td>
</tr>
<tr>
<td>T4</td>
<td>≥ 135°C but &lt; 200°C</td>
</tr>
<tr>
<td>T5</td>
<td>≥ 100°C but &lt; 135°C</td>
</tr>
<tr>
<td>T6</td>
<td>≥ 85°C but &lt; 100°C</td>
</tr>
</tbody>
</table>

.2 **Column i’’** - Apparatus group:

<table>
<thead>
<tr>
<th>Apparatus group</th>
<th>MESG at 20°C (mm)</th>
<th>MIC ratio product/methane</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA</td>
<td>&gt;0.9</td>
<td>&gt;0.8</td>
</tr>
<tr>
<td>IIB</td>
<td>&gt;0.5 to &lt;0.9</td>
<td>≥0.45 to ≤0.8</td>
</tr>
<tr>
<td>IIC</td>
<td>≤0.5</td>
<td>&lt;0.45</td>
</tr>
</tbody>
</table>

.2.1 The tests shall be carried out in accordance with the procedures described in IEC 79-1A and IEC 79-3.

.2.2 For gases and vapours it is sufficient to make only one determination of either MESG or MIC provided that:

- for Group IIA: the MESG > 0.9 mm or the MIC ratio >0.9.
- for Group IIB: the MESG is ≥0.55 mm and ≤0.9 mm; or the MIC ratio is ≥0.5 and ≤0.8.
- for Group IIC: the MESG is < 0.5 mm or the MIC ratio is <0.45.

.2.3 It is necessary to determine both the MESG and the MIC ratio when:

.1 The MIC ratio determination only has been made, and the ratio is between 0.8 and 0.9, when an MESG determination will be required;
.2 The MIC ratio determination only has been made, and the ratio is between 0.45 and 0.5, when an MESG determination will be required; or
.3 The MESG only has been found, and is between 0.5 mm and 0.55 mm, when an MIC ratio determination will be required.

.3 **Column i’’’** Flash point:

<table>
<thead>
<tr>
<th>Flash point</th>
<th>Yes</th>
<th>No</th>
<th>NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 60 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 60 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-flammable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
21.4.10 **Column j - Gauging**

21.4.10.1 The type of gauging equipment permitted is assigned according to the following criteria:

- **Closed:** Inhalation LC$_{50} \leq 2$ mg/l/4 h; and/or Dermal LD$_{50} \leq 1000$ mg/kg; and/or Toxic to mammals by prolonged exposure; and/or Respiratory sensitizer; and/or Corrosive to skin ($\leq 3$ min exposure).

- **Restricted:** Inhalation LC$_{50} > 2$ - $\leq 10$ mg/l/4 h; and/or Special carriage control indicates Inerting required; and/or Corrosive to skin ($>3$ min - $\leq 1$ h exposure); and/or Flash point $< 60^\circ$C.

- **Open:** Any of the minimum safety or pollution criteria for bulk liquid cargoes subject to chapter 17 of the IBC Code not meeting the requirements for closed or restricted gauging.

21.4.11 **Column k - Vapour detection**

21.4.11.1 The type of vapour detection equipment required is determined by the following criteria:

- **Toxic(T):** Inhalation LC$_{50} \leq 10$ mg/l/4 h, and/or Respiratory sensitizer; and/or Toxic by prolonged exposure.

- **Flammable(F):** Flash point $< 60^\circ$C

21.4.12 **Column l - Fire protection equipment**

21.4.12.1 The appropriate fire-fighting media are defined as being appropriate according to the following criteria related to the properties of the product:

- **Solubility >10% (>100000 mg/l):** A Alcohol-resistant foam.

- **Solubility <10% (<100000 mg/l):** A Alcohol-resistant foam; and/or B Regular foam.

- **WRI = 0:** C Water spray (generally used as a coolant and can be used under .1 and .2 providing that the WR = 0).

- **WRI $\geq 1:** D Dry powder

Note: all appropriate media will be listed
21.4.13 **Column m** - Deleted

21.4.14 **Column n - Personnel safety equipment for emergencies**

21.4.14.1 The requirement to have personnel safety equipment for emergencies on board is identified by ‘Yes’ in *column o* according to the following criteria:

- Inhalation LC$_{50} \leq 2$ mg/l/4 h; and/or
- Respiratory sensitiser; and/or
- Corrosive to skin ($\leq 3$ min exposure); and/or
- WRI = 2

21.5 **Special requirements in chapter 15 to be included in column o**

21.5.1 The assignment of special requirements in *column o* shall normally follow clear criteria based on the data supplied in the reporting form. Where it is considered appropriate to deviate from such criteria, this shall be clearly documented in such a way that it can easily be retrieved on demand.

21.5.2 The criteria for making reference to the special requirements identified in chapters 15 and 16 are defined below with comments where relevant.

21.5.3 **Paragraphs 15.2 to 15.10**

21.5.3.1 Paragraphs 15.2 to 15.10 identify specific products by name with special carriage requirements that cannot be easily accommodated in any other way.

21.5.4 **Paragraph 15.11 - Acids**

21.5.4.1 Paragraph 15.11 applies to all acids unless they:

.1 are organic acids - when only paragraphs 15.11.2 - 15.11.4 and paragraphs 15.11.6 - 15.11.8 apply; or
.2 do not evolve hydrogen - when paragraph 15.11.5 need not apply

21.5.5 **Paragraph 15.12 - Toxic products**

21.5.5.1 All of paragraph 15.12 is added to *column o* according to the following criteria:

- Inhalation LC$_{50} \leq 2$ mg/l/4 h; and/or
- the product is a Respiratory Sensitizer; and/or
- the product is Toxic to mammals by prolonged exposure.

21.5.5.2 Paragraph 15.12.3 is added to *column o* according to the following criteria:

- Inhalation LC$_{50} > 2 \leq 10$ mg/l/4 h; and/or
- Dermal LD$_{50} \leq 1000$ mg/kg; and/or
- Oral LD$_{50} \leq 300$ mg/kg.
21.5.5.3 Paragraph 15.12.4 is added to column o according to the following criterion:

inhalation LC50 >2 - ≤10 mg/l/4 h.

21.5.6 Paragraph 15.13 - Cargoes protected by additives

21.5.6.1 The requirement to assign paragraph 15.13 to column o is based on the information related to the products tendency to polymerise, decompose, oxidise or undergo other chemical changes which may cause a hazard under normal carriage conditions and which would be prevented by the addition of appropriate additives.

21.5.7 Paragraph 15.14 - Cargoes with a vapour pressure greater than atmospheric at 37.8°C

21.5.7.1 The requirement to assign paragraph 15.14 to column o is based on the following criterion:

Boiling point ≤37.8°C

21.5.8 Paragraph 15.16 - Prevention of cargo contamination

21.5.8.1 Paragraph 15.16.1 is deleted.

21.5.8.2 Paragraph 15.16.2 is added to column o according to the following criterion:

\[ \text{WRI} \geq 1 \]

21.5.9 Paragraph 15.17 - Increased ventilation requirements

21.5.9.1 Paragraph 15.17 shall be added to column o according to the following criteria:

Inhalation LC50 >0.5 - ≤2 mg/l/4 h; and/or
Respiratory sensitizer; and/or
Toxic to mammals by prolonged exposure; and/or
Corrosive to skin (≤1 h exposure time).

21.5.10 Paragraph 15.18 - Special cargo pump-room requirements

21.5.10.1 Paragraph 15.18 shall be added to column o according to the following criterion:

Inhalation LC50 ≤0.5 mg/l/4 h

21.5.11 Paragraph 15.19 - Overflow control

21.5.11.1 Paragraph 15.19 shall be added to column o according to the following criteria:
Inhalation LC\textsubscript{50} < 2 mg/l/4 h; and/or
Dermal LD\textsubscript{50} < 1000 mg/kg; and/or
Oral LD\textsubscript{50} < 300 mg/kg; and/or
Respiratory sensitizer; and/or
Corrosive to skin (≤ 3 min exposure); and/or
Autoignition temperature ≤ 200°C; and/or
Explosive range ≥ 40% v/v in air and flash point < 23°C; and/or
Classified as ship type 1 on pollution grounds.

21.5.11.2 Only paragraph 15.19.6 shall apply if the product has any of the following properties:

Inhalation LC\textsubscript{50} > 2 mg/l/4 h - < 10 mg/l/4 h; and/or
Dermal LD\textsubscript{50} > 1000 mg/kg - ≤ 2000 mg/kg; and/or
Oral LD\textsubscript{50} > 300 mg/kg - ≤ 2000 mg/kg; and/or
Skin sensitizer; and/or
Corrosive to skin (> 3 min - ≤ 1 h exposure); and/or
Flash point < 60°C; and/or
Classified as ship type 2 on pollution grounds; and/or
Pollution category X or Y.

21.5.12 Paragraph 15.21

21.5.12.1 Paragraph 15.21 is added to column o according to the heat sensitivity of the product. This requirement is related to pumps in cargo pump rooms only.

21.6 Special requirements in chapter 16 to be included in column o

21.6.1 Paragraphs 16.1 to 16.2.5 and 16.3 to 16.5

21.6.1.1 These apply to all cargoes and so are not referenced specifically in column o.

21.6.2 Paragraph 16.2.6

21.6.2.1 Paragraph 16.2.6 is added to column o for products, which meet the following criteria:

Pollution category Y and viscosity ≥ 50 mPa.s at 20°C

21.6.3 Paragraph 16.2.9

21.6.3.1 Paragraph 16.2.9 is added to column o for products, which meet the following criterion:

Melting point ≥ 0°C.

21.6.4 Paragraph 16.6

Paragraphs 16.6.2 to 16.6.4 are added to column o for products, which are identified as requiring temperature control during carriage.
21.7 Definitions

21.7.1 Acute mammalian toxicity

21.7.1.1 Acutely toxic by inhalation

<table>
<thead>
<tr>
<th>Inhilation toxicity (LC&lt;sub&gt;50&lt;/sub&gt;)</th>
<th>Hazard level</th>
<th>mg/l/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>≤0.5</td>
<td></td>
</tr>
<tr>
<td>Moderately high</td>
<td>&gt;0.5 - &lt;2</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>&gt;2 - ≤10</td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td>&gt;10 - &lt;20</td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>&gt;20</td>
<td></td>
</tr>
</tbody>
</table>

21.7.1.2 Acutely toxic in contact with skin

<table>
<thead>
<tr>
<th>Dermal toxicity (LD&lt;sub&gt;50&lt;/sub&gt;)</th>
<th>Hazard Level</th>
<th>mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>≤50</td>
<td></td>
</tr>
<tr>
<td>Moderately high</td>
<td>&gt;50 - ≤200</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>&gt;200 - ≤1000</td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td>&gt;1000 - ≤2000</td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>&gt;2000</td>
<td></td>
</tr>
</tbody>
</table>

21.7.1.3 Acutely toxic if swallowed

<table>
<thead>
<tr>
<th>Oral toxicity (LD&lt;sub&gt;50&lt;/sub&gt;)</th>
<th>Hazard Level</th>
<th>mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>≤5</td>
<td></td>
</tr>
<tr>
<td>Moderately High</td>
<td>&gt;5 - ≤50</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>&gt;50 - ≤300</td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td>&gt;300 - ≤2000</td>
<td></td>
</tr>
<tr>
<td>Negligible</td>
<td>&gt;2000</td>
<td></td>
</tr>
</tbody>
</table>

21.7.2 Toxic to mammals by prolonged exposure

21.7.2.1 A product is classified as toxic by prolonged exposure if it meets any of the following criteria: it is known to be, or suspected of being a carcinogen, mutagen, reprotoxic, neurotoxic, immunotoxic or exposure below the lethal dose is known to cause specific organ oriented systemic toxicity (TOST) or other related effects.

21.7.2.2 Such effects may be identified from the GESAMP Hazard Profile of the product or other recognized sources of such information.

* Note: All inhalation toxicity data are assumed to be associated with vapours and not mists or sprays, unless indicated otherwise.
21.7.3 Skin sensitization

21.7.3.1 A product is classified as a skin sensitizer:

.1 if there is evidence in humans that the substance can induce sensitization by skin contact in a substantial number of persons; or

.2 where there are positive results from an appropriate animal test.

21.7.3.2 When an adjuvant type test method for skin sensitization is used, a response of at least 30% of the animals is considered as positive. For a non-adjuvant test method a response of at least 15% of the animals is considered positive.

21.7.3.3 When a positive result is obtained from the Mouse Ear Swelling Test (MEST) or the Local Lymph Node Assay (LLNA), this may be sufficient to classify the product as a skin sensitizer.

21.7.4 Respiratory sensitization

21.7.4.1 A product is classified as a respiratory sensitizer:

.1 if there is evidence in humans that the substance can induce specific respiratory hypersensitivity; and/or

.2 where there are positive results from an appropriate animal test; and/or

.3 where the product is identified as a skin sensitizer and there is no evidence to show that it is not a respiratory sensitizer.

21.7.5 Corrosive to skin∗

<table>
<thead>
<tr>
<th>Hazard Level</th>
<th>Exposure time to cause full thickness necrosis of skin</th>
<th>Observation time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severely corrosive to skin</td>
<td>≤ 3 min</td>
<td>≤ 1 h</td>
</tr>
<tr>
<td>Highly corrosive to skin</td>
<td>&gt; 3 min - ≤ 1 h</td>
<td>≤ 14 days</td>
</tr>
<tr>
<td>Moderately corrosive to skin</td>
<td>&gt; 1 h - ≤ 4 h</td>
<td>≤ 14 days</td>
</tr>
</tbody>
</table>

∗ Note: Products that are corrosive to skin are, for the purpose of assigning relevant carriage requirements, deemed to be corrosive by inhalation.
21.7.6 Water reactive substances

21.7.6.1 These are classified into three groups as follows:

<table>
<thead>
<tr>
<th>Water reactive index (WRI)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Any chemical which, in contact with water, may produce a toxic, flammable or corrosive gas or aerosol.</td>
</tr>
<tr>
<td>1</td>
<td>Any chemical which, in contact with water, may generate heat or produce a non-toxic, non-flammable or non corrosive gas.</td>
</tr>
<tr>
<td>0</td>
<td>Any chemical which, in contact with water, would not undergo a reaction to justify a value of 1 or 2.</td>
</tr>
</tbody>
</table>

21.7.7 Air reactive substances

21.7.7.1 Air reactive substances are products which react with air to cause a potentially hazardous situation, e.g. the formation of peroxides which may cause an explosive reaction.

21.7.8 Electrical apparatus - Temperature Class (for products which either have a flashpoint of ≤60°C or are heated to within 15°C of their flashpoint)

21.7.8.1 The Temperature Class is defined by the International Electrotechnical Commission (IEC) as:

The highest temperature attained under practical conditions of operation within the rating of the apparatus (and recognized overloads, if any, associated therewith) by any part of any surface, the exposure of which to an explosive atmosphere may involve a risk.

21.7.8.2 The Temperature Class of the electrical apparatus is assigned by selecting the Maximum Surface Temperature which is closest to, but less than, the product's autoignition temperature (see 21.4.9.1.1).

21.7.9 Electrical apparatus - Apparatus group (for products with a flashpoint of ≤60°C)

21.7.9.1 This refers to intrinsically safe and associated electrical apparatus for explosive gas atmospheres which the IEC divide into the following groups:

Group I: for mines susceptible to firedamp (not used by IMO); and

Group II: for applications in other industries - further sub-divided according to its Maximum Experimental Safe Gap (MESG) and/or the Minimum Igniting Current (MIC) of the gas/vapour into groups IIA, IIB and IIC.
21.7.9.2 This property cannot be determined from other data associated with the product; it has to be either measured or assigned by assimilation with related products in an homologous series (see paragraph 21.4.9.2.2).

21.7.10 **Special carriage control conditions**

21.7.10.1 Special carriage control conditions refer to specific measures that need to be taken in order to either prevent a hazardous reaction. They include:

.1 **Inhibition:** the addition of a compound (usually organic) that retards or stops an undesired chemical reaction such as corrosion, oxidation or polymerisation;

.2 **Stabilization:** the addition of a substance (stabilizer) that tends to keep a compound, mixture or solution from changing its form or chemical nature. Such stabilizers may retard a reaction rate, preserve a chemical equilibrium, act as antioxidants, keep pigments and other components in emulsion form or prevent the particles in colloidal suspension from precipitating;

.3 **Inertion:** the addition of a gas (usually nitrogen) in the ullage space of a tank that prevents the formation of a flammable cargo/air mixture;

.4 **Temperature control:** the maintenance of a specific temperature range for the cargo in order to prevent a hazardous reaction or to keep the viscosity low enough to allow the product to be pumped; and

.5 **Padding and venting:** only applies to specific products identified on a case by case basis.

21.7.11 **Flammable cargoes**

21.7.11.1 A cargo is defined as flammable according to the following criteria:

<table>
<thead>
<tr>
<th>IBC Code descriptor</th>
<th>Flash point (degrees Centigrade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly flammable</td>
<td>&lt; 23</td>
</tr>
<tr>
<td>Flammable</td>
<td>≤ 60 but ≥ 23</td>
</tr>
</tbody>
</table>

21.7.11.2 It should be noted that the flash point of mixtures and aqueous solutions need to be measured unless all of the components are non-flammable.

21.7.11.3 It should be noted that the carriage of bulk liquid cargoes which have a flash point of ≤60°C are subject to other SOLAS regulations.
APPENDIX

MODEL FORM OF INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

(Official seal)

Issued under the provisions of the

INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK

(resolutions MSC….(…) and MEPC….(…) )

under the authority of the Government of

……………………………………………………………………………………………………………………………………………………………………………………

(full official designation of country)

by……………………………………………………………………………………………………………………………………………………………………………………

(full designation of the competent person or organization recognized by the Administration)

Particulars of ship$^1$

Name of ship ………………………………………

Distinctive number or letters ………………………………………

Port of registry ………………………………………

Gross tonnage ………………………………………

Ship type (Code paragraph 2.1.2) ………………………………………

IMO Number$^2$ ………………………………………

Date on which keel was laid or on which the ship was at a similar stage of construction or (in the case of a converted ship) date on which conversion to chemical tanker was commenced ………………………………………

The ship also complies fully with the following amendments to the Code:

……………………………………………………………………………………………………………………………………………………………………………………

$^1$ Alternatively, the particulars of the ship may be placed horizontally in boxes.

$^2$ In accordance with IMO ship identification number scheme adopted by the Organization by resolution A.600(15).
The ship is exempted from compliance with the following provisions of the Code:


THIS IS TO CERTIFY:

1  That the ship has been surveyed in accordance with the provisions of section 1.5 of the Code;

2  That the survey showed that the construction and equipment of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the relevant provisions of the Code;

3  That the ship has been provided with a manual in accordance with Appendix 4 of Annex II as called for by regulation 14 of Annex II of MARPOL 73/78, and that the arrangements and equipment of the ship prescribed in the Manual are in all respects satisfactory;

4  That the ship meets the requirements for the carriage in bulk of the following products, provided that all relevant operational provisions of the Code and Annex II of MARPOL 73/78 are observed:

<table>
<thead>
<tr>
<th>Product</th>
<th>Conditions of carriage (tank numbers etc.)</th>
<th>Pollution Category</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

Continued on attachment 1, additional signed and dated sheets
Tank numbers referred to in this list are identified on attachment 2, signed and dated tank plan.

5  That, in accordance with 1.4 / 2.8.2, the provisions of the Code are modified in respect of the ship in the following manner:


6  That the ship must be loaded:

   .1  in accordance with the loading conditions provided in the approved loading manual, stamped and dated ................. and signed by a responsible officer of the Administration, or of an organization recognized by the Administration;

3  Delete as appropriate.
Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions should be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition\(^3\).

This Certificate is valid until .................................................................\(^5\)
subject to surveys in accordance with 1.5 of the Code.

Completion date of the survey on which this certificate is based: .........................
\((dd/mm/yyyy)\)

Issued at .................................................................
\((Place of issue of certificate)\)

........................................
\((Signature of authorized official
issuing the certificate)\)

\((Seal or stamp of the authority, as appropriate)\)

Notes on completion of Certificate:

1 The Certificate can be issued only to ships entitled to fly the flags of States which are both a Contracting Government to the 1974 SOLAS Convention and a Party to MARPOL 73/78.

2 Ship Type: Any entry under this column must relate to all relevant recommendations, e.g. an entry “Type 2” should mean Type 2 in all respects prescribed by the Code.

3 Products: products listed in chapter 17 of the Code, or which have been evaluated by the Administration in accordance with 1.1.6 of the Code, should be listed. In respect of the latter “new” products, any special requirements provisionally prescribed should be noted.

4 Products: The list of products the ship is suitable to carry should include the noxious liquid substances of Category Z which are not covered by the Code and should be identified as “chapter 18 Category Z”.

---

\(^3\) Instead of being incorporated in the Certificate, this text may be appended to the Certificate if signed and stamped.

\(^5\) Insert the date of expiry as specified by the Administration in accordance with 1.5.6.1 of the Code. The day and the month of this day correspond to the anniversary date as defined in 1.3.3 of the Code, unless amended in accordance with 1.5.6.8 of the Code.
ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by 1.5.2 of the Code the ship was found to comply with the relevant provisions of the Code.

Annual survey: Signed .................................................................
(Signature of duly authorized official)
Place ..........................................................
Date (dd/mm/yyyy) .........................................................
(Seal or stamp of the Authority, as appropriate)

Annual/Intermediate\(^3\) survey: Signed .................................................................
(Signature of duly authorized official)
Place ..........................................................
Date (dd/mm/yyyy) .........................................................
(Seal or stamp of the Authority, as appropriate)

Annual/Intermediate\(^3\) survey: Signed .................................................................
(Signature of duly authorized official)
Place ..........................................................
Date (dd/mm/yyyy) .........................................................
(Seal or stamp of the Authority, as appropriate)

Annual survey: Signed .................................................................
(Signature of duly authorized official)
Place ..........................................................
Date (dd/mm/yyyy) .........................................................
(Seal or stamp of the Authority, as appropriate)

\(^3\) Delete as appropriate.
ANNUAL/INTERMEDIATE SURVEY IN ACCORDANCE WITH PARAGRAPH 1.5.6.8.3

This is to certify that, at an annual/intermediate survey in accordance with paragraph 1.5.6.8.3 of the Code, the ship was found to comply with the relevant provisions of the Convention:

Signed .................................................................
   (Signature of duly authorized official)
Place .................................................................
Date (dd/mm/yyyy) ..............................................

(Seal or stamp of the Authority, as appropriate)

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN 5 YEARS WHERE PARAGRAPH 1.5.6.3 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with paragraph 1.5.6.3 of the Code, be accepted as valid until

Signed .................................................................
   (Signature of duly authorized official)
Place .................................................................
Date (dd/mm/yyyy) ..............................................

(Seal or stamp of the Authority, as appropriate)

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND PARAGRAPH 1.5.6.4 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with paragraph 1.5.6.4 of the Code, be accepted as valid until

Annual survey: Signed .................................................................
   (Signature of duly authorized official)
Place .................................................................
Date (dd/mm/yyyy) ..............................................

(Seal or stamp of the Authority, as appropriate)

---

3 Delete as appropriate.
ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE PARAGRAPH 1.5.6.5 OR 1.5.6.6 APPLIES

This Certificate shall, in accordance with paragraph 1.5.6.5/1.5.6.6 of the Code, be accepted as valid until ……………………….

Signed ……………………………………………………………
   (Signature of duly authorized official)

Place ……………………………………………………………

Date (dd/mm/yyyy) ………………………………………

(Seal or stamp of the Authority, as appropriate)

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE PARAGRAPH 1.5.6.8 APPLIES

In accordance with paragraph 1.5.6.8 of the Code, the new anniversary date is ……………………………

Signed ……………………………………………………………
   (Signature of duly authorized official)

Place ……………………………………………………………

Date (dd/mm/yyyy) ………………………………………

(Seal or stamp of the Authority, as appropriate)

In accordance with paragraph 1.5.6.8, the new anniversary date is ………………………………………

Signed ……………………………………………………………
   (Signature of duly authorized official)

Place ……………………………………………………………

Date (dd/mm/yyyy) ………………………………………

(Seal or stamp of the Authority, as appropriate)

3 Delete as appropriate.
ATTACHMENT 1
TO THE
INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK

Continued list of products to those specified in section 3, and their conditions of carriage.

<table>
<thead>
<tr>
<th>Products</th>
<th>Conditions of carriage (tank numbers etc.)</th>
<th>Pollution Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Date ................................................. ..............................................................
(as for Certificate) (Signature of official issuing the Certificate
and/or seal of issuing authority)
ATTACHMENT 2
TO THE
INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
DANGEROUS CHEMICALS IN BULK

TANK PLAN (specimen)

Name of ship: ..............................................................................................................

Distinctive number or letters: ..................................................................................

Date (as for Certificate) ................................................................................................

(Signature of official issuing the Certificate and/or seal of issuing authority)”

***
ANNEX 17

DRAFT AMENDMENT TO REGULATION VII/10 OF THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

CHAPTER VII
CARRIAGE OF DANGEROUS GOODS

Regulation 10 - Requirements for chemical tankers

1 The following sentence is deleted from paragraph 1 of the regulation:

“For the purpose of this regulation, the requirements of the Code shall be treated as mandatory.”

***
ANNEX 18

DRAFT AMENDMENTS TO THE CERTIFICATES CONTAINED IN IMO INSTRUMENTS REGARDING THE DATE OF COMPLETION OF THE SURVEY

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

APPENDIX

CERTIFICATES

1 In the forms of the Passenger Ship Safety Certificate, the Cargo Ship Safety Construction Certificate, the Cargo Ship Safety Equipment Certificate and the Cargo Ship Safety Radio Certificate, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

2 In the forms of the Nuclear Passenger Ship Safety Certificate and the Nuclear Cargo Ship Safety Certificate, the following new section is inserted between the section commencing with the words “This certificate is issued under the authority” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974

APPENDIX

MODIFICATIONS AND ADDITIONS TO THE APPENDIX TO THE ANNEX TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974

1 In the forms of the Passenger Ship Safety Certificate, the Cargo Ship Safety Construction Certificate, the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Certificate, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

I:\MSC\78\26-Add.2.doc
DRAFT AMENDMENTS TO THE
INTERNATIONAL CONVENTION ON LOAD LINES, 1966

ANNEX III

CERTIFICATES

1 In the forms of the International Load Line Certificate (1966) and the International Load Line Exemption Certificate (1966), the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE
INTERNATIONAL CONVENTION ON LOAD LINES, 1966

ANNEX III

CERTIFICATES

1 In the forms of the International Load Line Certificate and the International Load Line Exemption Certificate, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (BCH CODE), AS AMENDED

APPENDIX

MODEL FORM OF CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

1 In the form of the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

I:\MSC\78\26-Add.2.doc
DRAFT AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (IBC CODE), AS AMENDED

APPENDIX

MODEL FORM OF INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK

1 In the form of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (GAS CARRIER CODE), AS AMENDED

APPENDIX

MODEL FORM OF CERTIFICATE OF FITNESS FOR THE CARRIAGE OF LIQUEFIED GASES IN BULK

1 In the form of the Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“ Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (IGC CODE), AS AMENDED

APPENDIX

MODEL FORM OF INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF LIQUEFIED GASES IN BULK

1 In the form of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.
DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 1994 (1994 HSC CODE), AS AMENDED

ANNEX 1

FORM OF HIGH-SPEED CRAFT SAFETY CERTIFICATE AND RECORD OF EQUIPMENT

1 In the form of the High-Speed Craft Safety Certificate, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000 (2000 HSC CODE)

ANNEX 1

FORM OF HIGH-SPEED CRAFT SAFETY CERTIFICATE AND RECORD OF EQUIPMENT

1 In the form of the High-Speed Craft Safety Certificate, the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE FOR THE SAFE CARRIAGE OF PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND HIGH-LEVEL RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE), AS AMENDED

APPENDIX

FORM OF INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF INF CARGO

1 In the form of the International Certificate of Fitness for the Carriage of INF Cargo, the following new section is inserted between the section commencing with the words “This certificate is issued” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

I:\MSC\78\26-Add.2.doc
DRAFT AMENDMENTS TO THE INTERNATIONAL MANAGEMENT CODE FOR THE SAFE
OPERATION OF SHIPS AND FOR POLLUTION PREVENTION
(INTERNATIONAL SAFETY MANAGEMENT (ISM) CODE), AS AMENDED

APPENDIX

FORM OF THE DOCUMENT OF COMPLIANCE, THE SAFETY MANAGEMENT CERTIFICATE,
THE INTERIM DOCUMENT OF COMPLIANCE AND THE INTERIM SAFETY MANAGEMENT CERTIFICATE

1 In the form of the Document of Compliance (DOC), the following new section is inserted
between the section commencing with the words “This Document of Compliance is valid until”
and the section commencing with the words “Issued at”:

“Completion date of the verification on which this certificate is based: dd/mm/yyyy”.

2 In the form of the Safety Management Certificate (SMC), the following new section is
inserted between the section commencing with the words “This Safety Management Certificate is
valid until” and the section commencing with the words “Issued at”:

“Completion date of the verification on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS (SPS CODE), AS AMENDED

APPENDIX

FORM OF SAFETY CERTIFICATE FOR SPECIAL PURPOSE SHIPS

1 In the form of the Special Purpose Ship Safety Certificate, the following new section is
inserted between the section commencing with the words “This certificate is valid until” and the
section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE GUIDELINES FOR THE TRANSPORT AND HANDLING OF LIMITED AMOUNTS OF HAZARDOUS AND NOXIOUS LIQUID SUBSTANCES IN BULK ON OFFSHORE SUPPORT VESSELS

APPENDIX 2

MODEL FORM OF CERTIFICATE OF FITNESS

1 In the form of the Certificate of Fitness, the following new section is inserted between the
section commencing with the words “This certificate is valid until” and the section commencing
with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

I:\MSC\78\26-Add.2.doc
DRAFT AMENDMENTS TO THE CODE OF SAFETY FOR DIVING SYSTEMS

APPENDIX

MODEL FORM OF DIVING SYSTEM SAFETY CERTIFICATE

1 In the form of the Diving System Safety Certificate, the following new section is inserted between the section commencing with the words “This Certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE CODE OF SAFETY FOR DYNAMICALLY SUPPORTED CRAFT, AS AMENDED

ANNEX I

SAMPLE OF THE DYNAMICALLY SUPPORTED CRAFT CONSTRUCTION AND EQUIPMENT CERTIFICATE

1 In the form of the Dynamically Supported Craft Construction and Equipment Certificate, the following new section is inserted between the section commencing with the words “It will remain in force until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

DRAFT AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS (MODU CODE), AS AMENDED

APPENDIX

MODEL FORM OF MOBILE OFFSHORE DRILLING UNIT SAFETY CERTIFICATE (1989)

1 In the form of the Mobile Offshore Drilling Unit Safety Certificate (1989), the following new section is inserted between the section commencing with the words “This certificate is valid until” and the section commencing with the words “Issued at”:

“Completion date of the survey on which this certificate is based: dd/mm/yyyy”.

***
1 The following new regulation 3-1 is added after the existing regulation 3:

“Regulation 3-1
Company and/or registered owner identification number

1 This regulation applies to Companies and registered owners of seagoing ships of 100 gross tonnage and upwards.

2 Every Company shall be provided with an identification number which conforms to the IMO Unique Company and Registered Owner Identification Number Scheme adopted by the Organization.

3 The Company’s identification number shall be inserted on the certificates and certified copies thereof issued under regulation I/12 or regulation I/13.

4 This regulation shall take effect when [a DOC as defined in regulation IX/4.1 or a SMC as defined in regulation IX/4.3 are issued or verified.][the certificates referred to in paragraph 3 are renewed following the first survey on or after [1 January 2006]].

5 For the purpose of this regulation, registered owners shall be as specified by the Administration and Company as defined in regulation IX/1.”

Regulation 5 - Continuous Synopsis Record

2 In paragraph 3 of the regulation, the following new subparagraphs .7 and .10 are inserted as follows:

“.7 the registered owner’s unique identification number;” and

“.10 the unique company identification number;”.

3 In paragraph 3 of the regulation, the existing subparagraphs .7 and .8 are renumbered as subparagraphs .8 and .9 and the existing subparagraphs .9 to .13 are renumbered as subparagraphs .11 to .15.
DRAFT AMENDMENTS TO THE INTERNATIONAL SAFETY MANAGEMENT CODE (ISM CODE)

Appendix


1 After “Name and address of the Company” in the Document of Compliance and Interim Document of Compliance, the following is added:

“Unique Company Identification Number ………………………..”.

2 After “Name and address of the Company” in the Safety Management Certificate and Interim Safety Management Certificate, the following is added:

“Unique Company Identification Number………………………..”.

DRAFT AMENDMENTS TO THE INTERNATIONAL PORT FACILITY SECURITY CODE (ISPS CODE)

Appendix 1

1 After “Name and address of Company” in the form of the International Ship Security Certificate, the following is added:

“Unique Company Identification Number …………………..……”.

Appendix 2

2 After “Name and address of company” in the form of the Interim International Ship Security Certificate” the following is added:

“Unique Company Identification Number ………………………..”.

DRAFT AMENDMENTS TO RESOLUTION A.959(23)

1 The existing forms 1 and 2 in the appendix to the annex are replaced by the following:
**FORM 1**

**CONTINUOUS SYNOPSIS RECORD (CSR) DOCUMENT NUMBER ..........**

**FOR THE SHIP WITH IMO NUMBER: IMO .................**

Dates should be in the format yyyy/mm/dd.

<table>
<thead>
<tr>
<th><strong>Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> This document applies from (date):</td>
</tr>
<tr>
<td><strong>2</strong> Flag State:</td>
</tr>
<tr>
<td><strong>3</strong> Date of registration with the State indicated in 2:</td>
</tr>
<tr>
<td><strong>4</strong> Name of ship:</td>
</tr>
<tr>
<td><strong>5</strong> Port of registration:</td>
</tr>
<tr>
<td><strong>6</strong> Name of current registered owner(s):</td>
</tr>
<tr>
<td>Registered address(es):</td>
</tr>
<tr>
<td><strong>7</strong> Registered Owner’s Unique Identification Number</td>
</tr>
<tr>
<td><strong>8</strong> If applicable, name of current registered bareboat charterer(s):</td>
</tr>
<tr>
<td>Registered address(es):</td>
</tr>
<tr>
<td><strong>9</strong> Name of Company (International Safety Management):</td>
</tr>
<tr>
<td>Registered address(es):</td>
</tr>
<tr>
<td>Address(es) of its safety management activities:</td>
</tr>
<tr>
<td><strong>10</strong> Company Unique Identification Number</td>
</tr>
<tr>
<td><strong>11</strong> Name of all classification societies with which the ship is classed:</td>
</tr>
<tr>
<td><strong>12</strong> Administration/Government/Recognized Organization which issued Document of Compliance:</td>
</tr>
<tr>
<td>Body which carried out audit (if different):</td>
</tr>
<tr>
<td><strong>13</strong> Administration/Government/Recognized Organization which issued Safety Management Certificate:</td>
</tr>
<tr>
<td>Body which carried out audit (if different):</td>
</tr>
<tr>
<td><strong>14</strong> Administration/Government/Recognized Security Organization which issued International Ship Security Certificate:</td>
</tr>
<tr>
<td>Body which carried out verification (if different):</td>
</tr>
<tr>
<td><strong>15</strong> Date on which the ship ceased to be registered with the State indicated in 2:</td>
</tr>
</tbody>
</table>

**THIS IS TO CERTIFY THAT** this record is correct in all respects

Issued by the Administration of: ........................................

Place and date of issue: .......................... ........................................

Signature of authorized person: ........................................

Name of authorized person: ........................................

This document was received by the ship and attached to the ship's CSR file on the following date (fill in): .................. Signature: ........................................
FORM 2

AMENDMENTS TO THE CONTINUOUS SYNOPSIS RECORD (CSR) DOCUMENT
NUMBER ...... FOR THE SHIP WITH IMO NUMBER:
IMO ............................

The amendments are shown in the table. Indicate N/C for all items not being changed. Dates should be in the format yyyy/mm/dd.

<table>
<thead>
<tr>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
| 6 | Name of current registered owner(s):
   Registered address(es): |
| 7 | Registered Owner’s Unique Identification Number |
| 8 | If applicable, name of current registered bareboat charterer(s):
   Registered address(es): |
| 9 | Name of Company (International Safety Management):
   Registered address(es):
   Address(es) of its safety management activities: |
| 10 | Company Unique Identification Number |
| 11 | Name of all classification societies with which the ship is classed: |
| 12 | Administration/Government/Recognized Organization
   which issued Document of Compliance:
   Body which carried out audit (if different): |
| 13 | Administration/Government/Recognized Organization
   which issued Safety Management Certificate:
   Body which carried out audit (if different): |
| 14 | Administration/Government/Recognized Security
   Organization which issued International Ship Security
   Certificate:
   Body which carried out verification (if different): |
| 15 | Date on which the ship ceased to be registered with the State indicated in 2: |

THIS IS TO CERTIFY THAT this record is correct in all respects

Issued by the Company or master: ..................................................
Date of issue: .................................................................
Signature of authorized person: ..............................................
Name of authorized person: ..................................................

***
ANNEX 20

RESOLUTION MSC.160(78)
(adopted on 20 May 2004)

ADOPTION OF THE IMO UNIQUE COMPANY AND REGISTERED OWNER IDENTIFICATION NUMBER SCHEME

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee in relation to regulations and guidelines concerning maritime safety, security and the prevention and control of marine pollution from ships,

BELIEVING that the enhancement of maritime safety, security and pollution prevention and the prevention of maritime fraud could be facilitated if a permanent identification number were assigned to companies and registered owners which would remain unchanged and would be inserted on ships’ certificates,

HAVING CONSIDERED the recommendations made by the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea, 1974 on Maritime Security (Conference resolution 3 on Further work by the Organization pertaining to the enhancement of maritime security),

1. ADOPTS the IMO unique company and registered owner identification number scheme, as set out in the Annex to the present resolution, for implementation on a voluntary basis;

2. RECOMMENDS Governments concerned to implement the scheme as far as is practicable, and to inform IMO of measures taken in this respect.
ANNEX

IMO UNIQUE COMPANY AND REGISTERED OWNER IDENTIFICATION NUMBER SCHEME

INTRODUCTION

1 The purpose of the scheme is to enhance maritime safety and security and pollution prevention and to facilitate the prevention of maritime fraud. It is not intended to prejudice matters of liability, civil law or other commercial considerations in the operation of companies and registered owners.

APPLICATION

2 The scheme may be applied by Administrations on a voluntary basis for new or existing companies and registered owners, managing ships of 100 gross tonnage and upwards under their flag, involved in international voyages. Administrations may also wish to assign the IMO numbers to companies and registered owners engaged solely in domestic trade and to insert the number in the national certificates.

ASSIGNMENT OF IMO UNIQUE COMPANY AND REGISTERED OWNER IDENTIFICATION NUMBER

3 The IMO unique company and registered owner identification number is a number, allocated at the time of issuance of a document listed in paragraph 6, with the prefix IMO (e.g. IMO 8712345). Administrations which have decided to implement the scheme are invited to assign all appropriate companies and registered owners managing ships entitled to fly their flags, or cause them to be assigned, the IMO unique company and registered owner identification number and to insert them on ships’ certificates.

4 For new companies and registered owners, the assignment of the IMO unique company and registered owner identification number should be made when the company’s ship is entitled to fly its flag. For existing companies and registered owners, the assignment of the IMO unique company and registered owner identification number should be made at an early convenient date, such as when the certificates listed in this resolution are issued or renewed.

5 Administrations implementing the scheme are invited to inform the Organization accordingly, for circulation to other Administrations.

DOCUMENTS ON WHICH THE IMO UNIQUE COMPANY AND REGISTERED OWNER IDENTIFICATION NUMBER IS TO BE INSERTED

6 The IMO unique company and registered owner identification number should be inserted on the following documents:


   2. Continuous Synopsis Record required by SOLAS chapter XI-1, regulation 5; and
ANNEX 21

NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

NEW TRAFFIC SEPARATION SCHEME OFF RA’S AL KUH

(Reference chart: British Admiralty Chart No: 2851
Note: This chart is based on World Geodetic System 1984 Datum (WGS 84))

The new traffic separation scheme (TSS) off Ra’s al Kuh consists of:

- Two traffic lanes 2 miles wide;
- One intermediate traffic separation zone 2 miles wide;
- One associated inshore zone.

The direction of the navigation is:

- TSS inner traffic lane: 320°(T) inbound course and 330°(T) outbound course towards the Strait of Hormuz; and
- TSS outer traffic lane: 150°(T) inbound and 140°(T) outbound course towards the Gulf of Oman.

Description of the new traffic separation scheme off Ra’s al Kuh:

(a) Outer traffic separation line bounded by a line connecting the following geographical positions:

(1) 25° 45’.50 N 057° 03’.30 E
(2) 25° 39’.60 N 057° 07’.10 E
(3) 25° 34’.05 N 057° 12’.00 E

(b) Traffic separation zone bounded by a line connecting the following geographical positions:

(4) 25° 47’.50 N 057° 07’.20 E
(5) 25° 42’.25 N 057° 10’.55 E
(6) 25° 36’.65 N 057° 15’.55 E
(7) 25° 35’.30 N 057° 13’.80 E
(8) 25° 40’.90 N 057° 08’.80 E
(9) 25° 46’.50 N 057° 05’.30 E

(c) The limits of the inshore traffic zone along the coastline lies between the following geographical positions:

(10) 25° 48’.45 N 057° 09’.15 E
(12) 25° 39’.30 N 057° 19’.10 E
(13) 25° 52’.50 N 057° 17’.30 E
(14) 25° 45’.30 N 057° 26’.70 E
(d) An outer traffic lane for south-east-bound shipping established between the separation zones described in (a) and (b).

(e) An inner traffic lane for north-west-bound shipping established between the traffic separation zone described in (b) and the associated inshore traffic zone described in (c).

NEW TRAFFIC SEPARATION SCHEME FOR THE APPROACHES TO THE PORT OF RA’S AL KHAFJI

(Reference chart: British Admiralty Chart No: 3774 published June 1999
Note: This chart is based on World Geodetic System 1984 Datum (WGS 84))

The new traffic separation scheme for the Ra’s Al Khafji approaches will consist of:

Two traffic lanes and one traffic separation zone between them.

The direction of navigation will be:

- inbound traffic lane, 270°(T) from the seaward limit of the scheme to the turning point 5 miles NNW of the Umm al Gharabi shoal, thence 210°(T) to the southern limit of the scheme immediately north of the tanker anchorage;

- outbound traffic lane, 030°(T) as far as the turning point 3.5 miles NNW of the Umm al Gharabi shoal, thence between 090°(T) and 093°(T) to the seaward limit of the scheme.

Description of the new traffic separation scheme for Ra’s Al Khafji approaches:

(a) A separation zone bounded by a line connecting the following geographical positions:

(1) 28° 38’24 N 049° 07’00 E
(2) 28° 38’24 N 048° 45’50 E
(3) 28° 30’18 N 048° 40’40 E
(4) 28° 30’04 N 048° 41’07 E
(5) 28° 38’12 N 048° 46’18 E
(6) 28° 38’12 N 049° 07’00 E

(b) A traffic lane for inbound traffic between the separation zone and the following geographical positions:

(7) 28° 39’24 N 049° 07’00 E
(8) 28° 39’24 N 048° 45’02 E
(9) 28° 30’49 N 048° 39’35 E

(c) A traffic lane for outbound traffic between the separation zone and the following geographical positions:

(10) 28° 29’36 N 048° 42’03 E
(11) 28° 37’10 N 048° 46’54 E
(12) 28° 36’06 N 049° 07’00 E
NEW TRAFFIC SEPARATION SCHEMES IN THE ADRIATIC SEA

IN THE NORTH ADRIATIC SEA – EASTERN PART


The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

4. A separation zone is bounded by a line connecting the following geographical positions:

(4a) 44° 05’’.90 N 014° 03’’.97 E  (4c) 44° 55’’.30 N 013° 21’’.17 E
(4b) 44° 06’’.70 N 014° 05’’.77 E  (4d) 44° 54’’.80 N 013° 19’’.57 E

5. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(5a) 44° 08’’.20 N 014° 08’’.77 E  (5b) 44°56’’.90 N 013° 24’’.67 E

6. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(6a) 44° 04’’.40 N 014° 00’’.97 E  (6b) 44° 53’’.20 N 013° 16’’.17 E

The established directions of traffic flow are: 327°-147°

IN THE NORTH ADRIATIC SEA – WESTERN PART


The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

8. A separation zone is bounded by a line connecting the following geographical positions:

(8a) 43° 58’’.30 N 013° 52’’.47 E  (8d) 44° 44’’.50 N 012° 55’’.67 E
(8b) 44° 00’’.80 N 013° 54’’.97 E  (8e) 44° 43’’.80 N 012° 53’’.50 E
(8c) 44° 28’’.00 N 013° 06’’.77 E  (8f) 44° 26’’.00 N 013° 03’’.47 E

9. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(9a) 44° 02’’.80 N 013° 57’’.37 E  (9c) 44° 45’’.40 N 012° 59’’.40 E
(9b) 44° 30’’.50 N 013° 08’’.47 E
10. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(10a) 43° 55'.80 N 013° 49'.97 E  
(10b) 44° 23'.50 N 013° 00'.97 E  
(10c) 44° 43'.10 N 012° 50'.20 E  

The established directions of traffic flow are: 308° - 128°  
336° - 159°

PRECAUTIONARY AREA AT THE SOUTHERN LIMITS OF THE TRAFFIC SEPARATION SCHEME

Description of the precautionary area

Precautionary area is established by a line connecting the following geographical position:

(3) 43° 49'.65 N 014° 01'.18 E  
(4) 43° 59'.85 N 014° 16'.61 E  
(5a) 44° 08'.20 N 014° 08'.77 E  
(4b) 44° 06'.70 N 014° 05'.77 E  
(4a) 44° 05'.90 N 014° 03'.97 E  
(6a) 44° 04'.40 N 014° 00'.97 E  
(8a) 43° 58'.30 N 013° 52'.47 E  
(8b) 44° 00'.80 N 013° 54'.97 E  
(10a) 43° 55'.80 N 013° 49'.97 E  
(9a) 44° 02'.80 N 013° 57'.37 E  

APPROACHES TO GULF OF TRIESTE


The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

11. A separation zone is bounded by a line connecting the following geographical positions:

(11a) 45° 08'.60 N 013° 06'.47 E  
(11b) 45° 09'.40 N 013° 10'.97 E  
(11c) 45° 23'.20 N 013° 06'.47 E  
(11d) 45° 21'.50 N 013° 02'.57 E  

12. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(12a) 45° 10'.50 N 013° 17'.17 E  
(12b) 45° 22'.50 N 013° 13'.27 E  

13. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(13a) 45° 07'.50 N 013° 00'.37 E  
(13b) 45° 19'.00 N 012°56'.87 E  

The established directions of traffic flow are: 347° - 167°
APPROACHES TO GULF OF VENICE


The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

14. A separation zone is bounded by a line connecting the following geographical positions:

(14a) 44° 55’.30 N 012° 43’.97 E  (14c) 45° 12’.70 N 012° 35’.97 E
(14b) 44° 56’.80 N 012° 47’.97 E  (14d) 45° 11’.30 N 012° 31’.97 E

15. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(15a) 44° 57’.50 N 012° 50’.47 E  (15b) 45° 13’.60 N 012° 38’.77 E

16. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(16a) 44° 54’.20 N 012° 41’.47 E  (16b) 45° 10’.40 N 012° 29’.47 E

The established directions of traffic flow are: 333° - 153°

IN THE GULF OF TRIESTE


The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

17. A separation zone is bounded by a line connecting the following geographical positions:

(17a) 45° 31’.34 N 013° 20’.90 E  (17c) 45° 36’.97 N 013° 32’.83 E
(17b) 45° 35’.48 N 013° 32’.62 E  (17d) 45° 32’.84 N 013° 20’.00 E

18. A traffic lane for north-east-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(18a) 45° 29’.30 N 013° 22’.10 E  (18b) 45° 34’.24 N 013° 32’.20 E
19. A traffic lane for south-west-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(19a) 45° 34’74 N 013° 18’90 E  (19b) 45° 38’74 N 013° 32’80 E

The established directions of traffic flow are: 058° - 248°

**APPROACHES TO/FROM KOPER**


**The co-ordinates listed below are in WGS 84.**

**Description of the traffic separation scheme**

21. A separation zone is bounded by a line connecting the following geographical positions:

(21a) 45° 35’24 N 013° 35’00 E  (21c) 45° 36’44 N 013° 37’50 E
(21b) 45° 35’04 N 013° 39’50 E

23. A traffic lane for eastbound traffic is established between the separation zone and a line connecting the following geographical positions:

(23a) 45° 34’24 N 013° 35’00 E  (23b) 45° 33’94 N 013° 39’40 E

24. A traffic lane for northwestbound traffic is established between the separation zone as defined in Paragraph 21. and a separation zone connecting the following geographical positions:

(24a) 45° 36’34 N 013° 39’70 E  (24c) 45° 36’34 N 013° 41’80 E
(24b) 45° 35’44 N 013° 41’00 E

The established directions of traffic flow are: 094° - 315°

**APPROACHES TO/FROM MONFALCONE**

25. A separation zone is bounded by a line connecting the following geographical positions:

(25a) 45° 40’34 N 013° 38’00 E  (25c) 45° 42’74 N 013° 37’30 E
(25b) 45° 40’34 N 013° 37’30 E  (25d) 45° 42’74 N 013° 38’00 E

26. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(26a) 45° 4 0’34 N 013° 38’65 E  (26b) 45° 42’74 N 013° 38’65 E
27. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(27a) 45° 42’.74 N 013° 36’50 E  
(27b) 45° 40’.34 N 013° 36’50 E

The established directions of traffic flow are: 360° - 180°

PRECAUTIONARY AREA IN THE GULF OF TRIESTE

Description of the precautionary area

A precautionary area is established by a line connecting the following geographical positions:

(18b) 45° 34’.92 N 013° 32’.20 E  
(17b) 45° 35’.48 N 013° 32’.62 E  
(17c) 45° 36’.97 N 013° 32’.83 E  
(19b) 45° 38’.74 N 013° 32’.80 E  
(21c) 45° 36’.44 N 013° 37’.50 E  
(21a) 45° 35’.24 N 013° 35’.00 E  
(23a) 45° 34’.24 N 013° 35’.00 E

AREA TO BE AVOIDED

IN THE NORTH ADRIATIC SEA


The co-ordinates listed below are in WGS 84.

Description of the area to be avoided

7. In order to avoid the risk of pollution due to damage of oil rigs, oil and gas pipelines in this area the area described below should be avoided by ships of more than 200 gross tonnage. The area to be avoided is bounded by a line connecting the following geographical positions:

(7a) 44° 13’.50 N 013° 38’.67 E  
(7b) 44° 17’.00 N 013° 43’.77 E  
(7c) 44° 25’.30 N 013° 37’.47 E  
(7d) 44° 34’.50 N 013° 25’.47 E  
(7e) 44° 41’.90 N 013° 24’.97 E  
(7f) 44° 52’.00 N 013° 17’.07 E  
(7g) 44° 52’.00 N 013° 05’.77 E  
(7h) 44° 30’.50 N 013° 08’.47 E

OTHER ROUTEING MEASURES

RECOMMENDED DIRECTIONS OF TRAFFIC FLOW IN THE CHANNEL OF OTRANTO, SOUTHERN AND CENTRAL ADRIATIC SEA


The co-ordinates listed below are in WGS 84.
Description of the recommended directions of traffic flow

1. Recommended directions of traffic flow, which should remain as in the present, are established between the parallels of latitudes:

   (1a) 40° 25’.00 N  (1b) 43° 10’.01 N

2. Recommended directions of traffic flow, which should be in accordance with the description as per chart in appendix 1 of document NAV 49/3/7, are established between the parallel of latitude:

   (2a) 43° 10’.01 N

and the precautionary area at the southern limits of the traffic separation scheme.

AMENDMENT TO TRAFFIC SEPARATION SCHEME BETWEEN KORSOER AND SPROGOE

(Reference chart: Danish chart 143 (INT 1369), 14th edition 1999
Note: This chart is based on World Geodetic System 1984 datum (WGS 84))

Description of the traffic separation scheme

(a) A separation line connects the following geographical positions:

   (1) 55°21.’75 N, 011°02’.13 E  (2) 55°19’.23 N, 011°02’.19 E

(b) A traffic lane for northbound traffic is established between the separation line and a line connecting the following geographical positions:

   (3) 55°21’.70 N, 011°02’.77 E  (4) 55°19’.49 N, 011°02’.80 E

(c) A traffic lane for southbound traffic is established between the separation line and a line connecting the following geographical positions:

   (6) 55°21’.02 N, 011°01’.59 E  (8) 55°18’.91 N, 011°01’.42 E

Notes:

1. See mandatory ship reporting system “In the Great Belt Traffic area” in part G, section I.

2. The minimum free water depth in the northbound traffic lane is 17 m and in the southbound traffic lane 19 m.

3. Ships should reduce speed to maximum 20 knots before entering the appropriate lane of the scheme.
AMENDMENT TO TRAFFIC SEPARATION SCHEME IN THE SINGAPORE STRAIT
(MAIN STRAIT)

(Reference charts: Indonesian Chart 40, November 1977 edition
Note: This chart is based on World Geodetic System Datum (WGS 84))

1 Amend the existing Traffic Separation Zone to establish an anchorage area in the
separation zone as follows:

A separation zone bounded by the following:

(a) Outer co-ordinates:

<p>| | | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>(85)</td>
<td>01°10’.35 N 103°34’.90 E</td>
<td>(89)</td>
<td>01°05’.90 N 103°43’.38 E</td>
</tr>
<tr>
<td>(86)</td>
<td>01°10’.35 N 103°39’.85 E</td>
<td>(90)</td>
<td>01°03’.60 N 103°38’.98 E</td>
</tr>
<tr>
<td>(87)</td>
<td>01°07’.50 N 103°43’.72 E</td>
<td>(91)</td>
<td>01°07’.06 N 103°32’.96 E</td>
</tr>
<tr>
<td>(88)</td>
<td>01°08’.60 N 103°45’.43 E</td>
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</table>

(b) Inner co-ordinates:

<p>| | | | |</p>
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<td>01°09’.40 N 103°36’.60 E</td>
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<td></td>
</tr>
<tr>
<td>(86a)</td>
<td>01°09’.10 N 103°38’.60 E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(89a)</td>
<td>01°05’.50 N 103°40’.80 E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(90a)</td>
<td>01°04’.50 N 103°38’.90 E</td>
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<tr>
<td>(91a)</td>
<td>01°06’.80 N 103°35’.00 E</td>
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</table>

***
ANNEX 22

ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

MANDATORY AREA TO BE AVOİDED OFF THE NORTH-EAST COAST OF THE NORTH ISLAND OF NEW ZEALAND

Note: This chart is based on World Geodetic System 1984 Datum (WGS 84))

Description of the mandatory area to be avoided

In order to avoid risk of pollution and damage to the environment of this sensitive area, all vessels greater than 45 metres in length (except as specified below) should avoid the following area.

In the vicinity of the Poor Knights Islands

The area bounded by a line connecting the following geographical positions is designated as a mandatory area to be avoided, the westward boundary of which is delineated by mean high water springs.

(1) 35º 51’30 S 174º 35’50 E
(2) 35º 34’55 S 174º 49’20 E
(3) 35º 29’60 S 174º 50’80 E
(4) 35º 24’70 S 174º 50’20 E
(5) 35º 10’20 S 174º 20’10 E

Exceptions: The following exemptions are granted in respect of vessels entering the mandatory area to be avoided:

- All vessels of the Royal New Zealand Navy. The exemption granted in respect of vessels of the Royal New Zealand Navy applies to “any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on Government non-commercial service”.

- All fishing vessels engaged in fishing operations.

- Barges under tow, provided the cargo is not oil or other harmful liquid substances as defined in Annexes I & II of MARPOL 73/78.

TWO-WAY ROUTE IN THE GREAT NORTH-EAST CHANNEL, TORRES STRAIT

Relevant chart numbers and datums:

AUS 376: On AGD 66 Jan 1984 edition
AUS 839: On WGS 84 Aug 1997 edition
AUS 840: On WGS 84 Aug 1997 edition
The following geographical positions (in WGS 84) define the proposed two-way route:

A) The northern limits are bound by the line joining the following geographical positions:

(1) 10° 29’.70 S 142° 22’.63 E  
(2) 10° 29’.14 S 142° 25’.76 E  
(3) 10° 27’.80 S 142° 28’.45 E  
(4) 10° 26’.40 S 142° 31’.30 E  
(5) 10° 21’.90 S 142° 41’.50 E  
(6) 10° 19’.37 S 142° 47’.97 E  
(7) 10° 18’.14 S 142° 50’.82 E  
(8) 10° 13’.38 S 142° 54’.96 E  
(9) 10° 00’.50 S 143° 03’.42 E  
(10) 09° 47’.73 S 143° 10’.40 E  
(11) 09° 12’.47 S 143° 51’.34 E

B) The southern limits are bound by the line joining the following geographical positions:

(13) 10° 30’.45 S 142° 24’.02 E  
(14) 10° 28’.38 S 142° 28’.66 E  
(15) 10° 27’.38 S 142° 31’.85 E  
(16) 10° 22’.85 S 142° 41’.95 E  
(17) 10° 19’.80 S 142° 48’.23 E  
(18) 10° 17’.63 S 142° 53’.29 E  
(19) 10° 09’.78 S 143° 05’.55 E  
(20) 09° 53’.97 S 143° 15’.61 E  
(21) 09° 46’.02 S 143° 18’.48 E  
(22) 09° 37’.96 S 143° 21’.97 E  
(23) 09° 27’.60 S 143° 32’.15 E  
(24) 09° 13’.95 S 143° 52’.62 E

C) The centre polygon is defined by the following geographical positions:

(25) 10° 16’.10 S 142° 53’.82 E  
(26) 10° 13’.79 S 142° 55’.85 E  
(27) 10° 01’.05 S 143° 04’.20 E  
(28) 09° 48’.10 S 143° 11’.30 E  
(29) 09° 41’.04 S 143° 18’.87 E  
(30) 09° 45’.72 S 143° 17’.51 E  
(31) 09° 53’.84 S 143° 14’.50 E  
(32) 10° 09’.15 S 143° 04’.70 E
AREA TO BE AVOIDED IN THE PARACAS NATIONAL RESERVE

227, 1st edition, April 2002

Description of the area to be avoided

In order to avoid the risk of pollution and damage to the environment in the Peruvian Paracas National Reserve, ships of more than 200 gross tonnage carrying hydrocarbons and hazardous liquids in bulk, should avoid the area bounded by a line connecting the following geographical positions and the coastal borderline:

(a) 13°47′20″ S 076°17′40″ W
(b) 13°46′52″ S 076°17′40″ W
(c) 13°46′52″ S 076°30′00″ W
(d) 14°26′42″ S 076°30′00″ W
(e) 14°26′42″ S 076°00′00″ W

***
ANNEX 23

RESOLUTION MSC.161(78)
(adopted on 17 May 2004)

AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEM
“THE TORRES STRAIT AND INNER ROUTE OF THE GREAT BARRIER REEF”

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO regulation V/11 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning the adoption by the Organization of ship reporting systems,

RECALLING FURTHER resolution A.858(20) which authorizes the Committee to perform the function of adopting ship reporting systems on behalf of the Organization,

TAKING INTO ACCOUNT of the amendments to the existing Guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64), as amended by resolution MSC.111(73),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS, in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting system “the Torres strait and inner route of the Great Barrier Reef” (REEFREP), as described in the Annex to the present resolution;

2. DECIDES that the said amendments to the existing mandatory ship reporting system will enter into force at 0000 hours UTC on 1 December 2004;

3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Member Governments and Contracting Governments to the SOLAS Convention.
ANNEX

AMENDMENTS TO EXISTING MANDATORY SHIP REPORTING SYSTEM
“THE TORRES STRAIT AND INNER ROUTE OF THE GREAT BARRIER REEF”

AMENDMENTS TO ANNEX 1 OF RESOLUTION MSC.52(66)

1 Replace sections 3, 4, 5 and 7 of resolution MSC.52(66) with the following new text and add a new section 9 as follows:

3 FORMAT AND CONTENT OF REPORT TIMES AND GEOGRAPHICAL POSITIONS FOR SUBMITTING REPORTS, AUTHORITY TO WHOM REPORTS SHOULD BE SENT AND AVAILABLE SERVICES

The ship report short title "REEFREP" will be made to the REEFREP VTS centre (REEFCENTRE) located at Hay Point in Queensland. Examples of the format and content of all required reports are shown at appendix 2. A ship may elect, for reasons of commercial confidentiality, to communicate that section of the REEFREP ENTRY report, which provides information on cargo (line P) by non-verbal means prior to entering the system. This can be achieved by including cargo information in the AUSREP Sailing Plan (SP) message.

3.1 Entry and exit reports

Ships will be required to provide a full REEFREP Position Report (PR) at least two hours prior to entering the REEFREP area from seaward or when sailing from a port within the area.

Ships will also be encouraged to provide a passage plan as described below when providing an Entry Report. However, it is recognized that at this stage in their passage, they are unlikely to have a pilot on board and are therefore unable to provide a detailed passage plan.

When finally departing the REEFREP area, or entering a port within the area, the REEFREP system will associate the required PR and the designated reporting point and automatically recognize this report as an exit message.

3.2 Passage plan reports

Ships will be required to provide a passage plan, including information such as vessel details, pilot information, route/waypoint information within one hour of entering the REEFREP area. The provision of accurate passage plans is critical to the dissemination of accurate ship traffic information and can be provided by one of the following means:

1 Nominating the route using the chartlets which will be provided by pilots
2 Nominating the waypoints, or
3 Using the existing Mandatory Reporting Points as listed on the charts.
3.3 Intermediate position reports

Automated Position Reporting via Inmarsat-C will be the primary mechanism for ships to provide position reports while transiting the REEFREP region. REEFCENTRE will generally carry out APR remotely without any intervention by ships’ crews. However, a small proportion of vessels are fitted with first generation Inmarsat-C terminals which do not support remote programming. Masters of ships fitted with these terminals, who choose to participate, will be required to program them onboard to send position reports automatically. Instructions relating to programming of these terminals can be obtained from REEFCENTRE.

Vessels can participate in Automated Position Reporting at any time by authorizing REEFCENTRE to download a Data Network Identifier (DNID) to the ship’s Inmarsat-C terminal. Once the DNID is downloaded, REEFCENTRE is able to program the ship’s Inmarsat-C terminal to transmit position reports automatically at regular intervals. Vessels can communicate authorization for DNID download either by Inmarsat-C or REEFREP VHF Voice Communication Channels as described in appendix 2.

Vessels providing Intermediate Position Reports via APR must still comply with the other VHF reporting requirements prescribed in section 2.4 (Entering and Leaving the REEFREP SRS), section 2.5 (Pilotage Reports) and section 2.6 (Special Reports) of the AUSREP and REEFREP booklet.

Where a ship is unable to provide Intermediate Position Reports via APR as required by REEFCENTRE they will be required to provide brief position reports as advised by the operator. The VHF position reports are limited to the identity of the vessel, position, any variation to the last reported speed and course and any further information the Master considers might be of value to the system.

3.4 Defect reports

The following information is to be provided when a ship within the REEFREP area suffers damage, failure or breakdown affecting the safety of the ship, makes a marked deviation from a route, course or speed previously advised or requires to report safety related information and reports of incidents involving Dangerous Goods (DG) Harmful Substances (HS) or Marine Pollutants (MP).

(a) Ship name and call sign.

(b) Position (latitude and longitude) and time.

(c) Name of next Mandatory Reporting Point or Course if not tracking between reporting points.

(d) Estimated time of arrival (ETA) at next Mandatory Reporting Point or Speed (ship’s anticipated average speed until next report.in knots & tenths of a knot).
(e) Description and details of any damage, failure or breakdown suffered:

(i) collision, grounding, fire, explosion, structural failure, flooding, cargo shifting.

(ii) failure or breakdown of steering gear, propulsion plant, electrical generating system, essential shipborne navigational aids.

(f) Details of any Safety Messages (navigational safety, abnormal weather, unserviceable aids to navigation) or DG HS MP incident reports using the recognized IMO reporting formats.

4 INFORMATION TO BE PROVIDED TO PARTICIPATING SHIPS AND PROCEDURES TO BE FOLLOWED

REEFCENTRE will provide information to shipping on potentially conflicting traffic movements from the analysis of incoming position reports, passage plans and other data sources.

The key information to be provided to shipping includes:

.1 Ship Traffic Information
.2 Navigational Assistance
.3 Maritime Safety Information

4.1 Ship Traffic Information: The REEFREP VTS centre will provide information to shipping on potentially conflicting traffic movements resulting from the analysis of incoming reports.

4.2 Certain sections of the route in the Torres Strait and the far northern sector of the inner route of the GBR present a particular navigational hazard in situations where large ships might be passing or overtaking, especially deeper draught ships. When the REEFREP VTS centre considers that ships are approaching such sections, any relevant traffic information held by the centre will be passed to them. Because of the extensive size of the REEFREP area it is not be intended to routinely broadcast traffic information across the whole area but to advise individual ships as necessary.

4.3 Traffic information, including other advice received from ships or local maritime authorities which impacts on navigational safety will be passed to ships in relevant areas. Examples include concentrations of fishing vessels, unusual weather conditions, etc.

4.4 Navigational Assistance: In circumstances where information available to REEFCENTRE may assist on-board decision making REEFREP may initiate interaction with an individual ship to provide this information. This may include circumstances where information available suggests a ship may be standing into shallow water (eg. in areas of restricted navigation where there is radar coverage) or deviating from a recommended route. The types of assistance that may be provided are described further in NAV 49/INF.4.
4.5 **Maritime safety information (MSI)** in the form of navigational warnings (AUSCOAST Warnings) will continue to be issued in the appropriate broadcasts from MRCC AUSTRALIA. The REEFREP VTS centre will maintain details of MSI for the REEFREP area for the information of participating ships.

5 **COMMUNICATION REQUIRED FOR THE SYSTEM, FREQUENCIES ON WHICH REPORTS SHOULD BE TRANSMITTED AND INFORMATION TO BE REPORTED**

5.1 The system will be based on both Inmarsat-C communications and VHF voice communications. While the use of Inmarsat-C is expected to become the main mechanism for ships to meet their position reporting requirements and to provide other mandatory reports such as entry reports and passage plans, VHF voice communications provides an interactive mechanism for the interchange of data between ships and the REEFREP VTS centre.

5.2 VHF channels 5, 18 and 19 in the international maritime mobile band have been allocated for the reporting points in the system.

5.3 Information of commercial confidentiality may be transmitted by non-verbal means.

5.4 The language used for reports in the system will be English, using the IMO *Standard Marine Communications Phrases* where necessary.

5.5 Communications associated with reporting in accordance with the requirements of this system will be free of charge

7 **SHORE-BASED FACILITIES TO SUPPORT OPERATION OF THE SYSTEM**

7.1 REEFCENTRE is located at Hay Point, on the central Queensland coast. The centre is manned 24 hours per day, 365 days per year, and is equipped with a sophisticated traffic information management tool that integrates and assists in analysing all VHF communications, radar, AIS and APR data that is relayed to REEFCENTRE. The radar coverage is provided at the key entry and exit points to Torres Strait and the Inner Route.

7.2 The VTS centre equipped to provide a high standard of service to meet the system requirements and will be operated by trained and experienced personnel. Operator standards will be in accordance with "*Guidelines on Recruitment, Qualification and Training of VTS Operators*" (resolution A.857(20), annex 2).

7.3 The system will be operated to quality standards with service levels being constantly monitored.

7.4 The entire area has full DGPS coverage redundancy, ensuring very high availability standards.

7.5 The REEFREP VTS centre is also interfaced with the AUSREP system operated by RCC AUSTRALIA.
9 MEASURES TO BE TAKEN IF A SHIP FAILS TO COMPLY WITH THE REQUIREMENTS OF THE SYSTEM

9.1 The primary objective of the system is to facilitate the exchange of information between the ship and the shore and so support safe navigation and the protection of the marine environment. All means will be used to encourage and promote the full participation of ships required to submit reports under SOLAS regulation V/11. If reports are not submitted and the ship can be positively identified, then information will be passed to the relevant flag State for investigation and possible prosecution in accordance with that State’s legislation. A failure to report may also be investigated for breach of Australian laws relating to compulsory ship reporting.

2 Insert the following new appendix 3 after the existing appendix 2:

APPENDIX 3

Participating in APR via Inmarsat-C

APR information will only be used by the REEFREP system whilst the ship is in the REEFREP area. The DNID will remain downloaded until the Master or company advises REEFCENTRE that the ship is no longer a regular visitor. It is important that this information is passed during the final visit to Australia, as the DNID has to be deleted whilst the Inmarsat-C terminal is logged into the particular satellite region.

A ship is deemed to be a regular visitor if it operating on the Australian coastal trade or revisiting Australia from overseas within eighteen months. Infrequent visitors will have the DNID deleted from their terminals after sending a Final Report.

Vessels can communicate authorization for DNID download either by Inmarsat-C or REEFREP VHF Voice Communication Channels as described below:

i. Inmarsat**

By forwarding an APR message via Inmarsat to REEFCENTRE the Master authorizes download of a DNID into the Inmarsat-C terminal, and provides the following details for each Inmarsat-C installation:

- Vessel Name, Callsign, Inmarsat-C Mobile Number (IMN), Manufacturer, and Model. (Example at Table 1).

<table>
<thead>
<tr>
<th>ID</th>
<th>Message type</th>
<th>REEFREP/APR//</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ship Name/Callsign</td>
<td>A/REEF CHAMPION/VJV1//</td>
</tr>
<tr>
<td>B</td>
<td>Primary Inmarsat-C terminal details (Inmarsat-C Mobile Number (IMN), Manufacturer, and Model)</td>
<td>B/450309919/ THRANE &amp; THRANE/3020B//</td>
</tr>
<tr>
<td>C</td>
<td>Secondary Inmarsat-C terminal details (Inmarsat-C Mobile Number (IMN), Manufacturer, and Model), where applicable.</td>
<td>C/450309920/ FURUNO/FELCOM12//</td>
</tr>
</tbody>
</table>

*Table 1 – Inmarsat -C Data Network identifier (DNID)*
** APR messages sent to REEFCENTRE using Special Access Code (SAC) 861 via Perth LES using Inmarsat-C access code ‘222’ will be reverse charged to the SRS.

While reporting to REEFREP, masters must ensure that their INMARSAT equipment remains active in the “LOGIN” mode (Pacific Ocean Region (POR)) at all times.

ii. REEFREP VHF Voice Communication Channels

For example, at the first Reporting Point, the Master (or his representative) verbally authorizes the DNID download and provides the following details for each Inmarsat-C installation:

- Inmarsat-C Mobile Number (IMN), Manufacturer, and Model. e.g.: 450306909, JRC, JUE75C

***
ANNEX 24

RESOLUTION MSC.162(78)
(adopted on 17 May 2004)

AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEM
“OFF CAPE FINISTERRE”

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO regulation V/11 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning the adoption by the Organization of ship reporting systems,

RECALLING FURTHER resolution A.858(20) which authorizes the Committee to perform the function of adopting ship reporting systems on behalf of the Organization,

TAKING INTO ACCOUNT of the amendments to the existing Guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64), as amended by resolution MSC.111(73),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS, in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting system “Off Cape Finisterre”, as described in the Annex to the present resolution;

2. DECIDES that the said amendments to the existing mandatory ship reporting system will enter into force at 0000 hours UTC on 1 December 2004;

3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Member Governments and Contracting Governments to the SOLAS Convention.
ANNEX

AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEM
“OFF CAPE FINISTERRE”

AMENDMENTS TO ANNEX 3 OF RESOLUTION MSC.63(67)

1 In Annex 3

Replace paragraphs 2.1 and 2.2 with the following new text:

GEOGRAPHICAL COVERAGE OF THE SYSTEM AND THE NUMBER AND
EDITION OF THE REFERENCE CHART USED FOR THE DELINEATION OF
THE SYSTEM

2.1 The reporting system will cover the area (Appendix 1) between the coast and the
following lines:

.1 a bearing of 130º(T) to Cape Villano lighthouse;
.2 a bearing of 075º(T) to Cape Finisterre lighthouse; and
.3 the meridian of longitude 010º15’ W.

This area includes the traffic separation scheme “Off Finisterre” and the associated
inshore traffic zones adopted by resolution A.767(18), as amended by
resolution A.957(23).

2.2 The reference chart which includes all the area of coverage for the system is
number 41 of the Catalogue of Nautical Charts of the Spanish Hydrographic
Office, European Edition (Potsdam) published in April 1978, 6th impression
June 2002 and corrected by Notices to Mariners of November 2002, including
Cape Estaca de Bares to Rio Lima.

2 Replace existing Appendix 1 chartlet with the following new chartlet:

(New chartlet as attached)
ANNEX 25

DRAFT AMENDMENTS TO SOLAS REGULATION V/20 AND TO THE RECORD OF EQUIPMENT FOR THE CARGO SHIP SAFETY EQUIPMENT CERTIFICATE

CHAPTER V

SAFETY OF NAVIGATION

Regulation 20 – Voyage data recorders

1 The following new paragraph 2 is added after existing regulation 1:

“2 To assist in casualty investigations, the existing cargo ships, when engaged on international voyages, subject to the provisions of regulation 1.4, shall be fitted with a VDR which may be a simplified voyage data recorder (S-VDR)* as follows:

.1 in the case of cargo ships of 20,000 gross tonnage and upwards constructed before 1 July 2002, at the first scheduled dry-docking after [1 July 2006] but not later than [1 July 2009];

.2 in the case of cargo ships of 3,000 gross tonnage and upwards but less than 20,000 gross tonnage constructed before 1 July 2002, at the first scheduled dry-docking after [1 July 2007] but not later than [1 July 2010]; and

.3 Administrations may exempt cargo ships from the application of the requirements of subparagraphs .1 and .2 when such ships will be taken permanently out of service within two years after the implementation dates specified in subparagraphs .1 and .2 above.”

2 Renumber the existing paragraph 2 as paragraph 3.

* Refer to resolution MSC.163(78) – Performance standards for shipborne simplified voyage data recorders (S-VDRs).
## APPENDIX

Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E)

3 Existing section 3 is amended as follows:

### “3 Details of navigational systems and equipment

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<tr>
<th>Item</th>
<th>Actual provision</th>
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<tbody>
<tr>
<td>1.1 Standard magnetic compass*</td>
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<td>1.2 Spare magnetic compass*</td>
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<tr>
<td>1.3 Gyro compass*</td>
<td>...............</td>
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<td>1.4 Gyro compass heading repeater*</td>
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<tr>
<td>1.5 Gyro compass bearing repeater*</td>
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<td>1.6 Heading or track control system*</td>
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<td>1.7 Pelorus or compass bearing device*</td>
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<tr>
<td>1.8 Means of correcting heading and bearings</td>
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<tr>
<td>1.9 Transmitting heading device (THD)*</td>
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<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Nautical charts/Electronic chart display and information system (ECDIS)**</td>
<td>...............</td>
</tr>
<tr>
<td>2.2 Back up arrangements for ECDIS</td>
<td>...............</td>
</tr>
<tr>
<td>2.3 Nautical publications</td>
<td>...............</td>
</tr>
<tr>
<td>2.4 Back up arrangements for electronic nautical publications</td>
<td>...............</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Receiver for a global navigation satellite system/ terrestrial radionavigation system*</td>
<td>...............</td>
</tr>
<tr>
<td>3.2 9 GHz radar*</td>
<td>...............</td>
</tr>
<tr>
<td>3.3 Second radar (3 GHz/ 9 GHZ**)*</td>
<td>...............</td>
</tr>
<tr>
<td>3.4 Automatic radar plotting aid (ARPA)*</td>
<td>...............</td>
</tr>
<tr>
<td>3.5 Automatic tracking aid*</td>
<td>...............</td>
</tr>
<tr>
<td>3.6 Second automatic tracking aid*</td>
<td>...............</td>
</tr>
<tr>
<td>3.7 Electronic plotting aid*</td>
<td>...............</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Automatic identification system (AIS)</td>
<td>...............</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Voyage data recorder (VDR)**</td>
<td>...............</td>
</tr>
<tr>
<td>5.2 Simplified voyage data recorder (S-VDR)**</td>
<td>...............</td>
</tr>
<tr>
<td>Item</td>
<td>Actual provision</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>6.1 Speed and distance measuring device (through the water)*</td>
<td>.............</td>
</tr>
<tr>
<td>6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*</td>
<td>.............</td>
</tr>
<tr>
<td>6.3 Echo sounding device*</td>
<td>.............</td>
</tr>
<tr>
<td>7.1 Rudder, propeller, thrust, pitch and operational mode indicator*</td>
<td>.............</td>
</tr>
<tr>
<td>7.2 Rate of turn indicator*</td>
<td>.............</td>
</tr>
<tr>
<td>8 Sound reception system*</td>
<td>.............</td>
</tr>
<tr>
<td>9 Telephone to emergency steering position*</td>
<td>.............</td>
</tr>
<tr>
<td>10 Daylight signalling lamp*</td>
<td>.............</td>
</tr>
<tr>
<td>11 Radar reflector*</td>
<td>.............</td>
</tr>
<tr>
<td>12 International Code of Signals</td>
<td>.............</td>
</tr>
</tbody>
</table>

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate.”

***
ANNEX 26

RESOLUTION MSC.163(78)
(adopted on 17 May 2004)

PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRs)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), 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,

NOTING that the provisions of regulation V/20 of the International Convention for the Safety of Life at Sea, 1974, as amended, do not apply to the existing cargo ships with respect to the carriage requirements of voyage data recorders (VDRs),

RECALLING FURTHER resolution MSC.109(73), by which the Committee decided that a study should be carried out, as a matter of urgency, to assess the feasibility for existing cargo ships to carry VDRs and instructed the Sub-Committee on Safety of Navigation accordingly,

NOTING ALSO that the report on the feasibility study clearly demonstrates the compelling need for mandatory carriage of a simplified version of VDRs on existing cargo ships,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS the Recommendation on Performance Standards for Shipborne Simplified Voyage Data Recorders (S-VDRs);

2. INVITES Governments to encourage shipowners and operators of the existing cargo ships entitled to fly their flag to install S-VDRs on such ships, as soon as possible, especially considering that the carriage of S-VDRs may soon be mandatory under the SOLAS Convention;

3. RECOMMENDS Governments to ensure that S-VDRs installed on board the existing cargo ships flying their flag conform to performance standards not inferior to those specified in the Annex to this resolution.
ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRs)

1 PURPOSE

1.1 The purpose of a simplified voyage data recorder (S-VDR) is to maintain a store, in a secure and retrievable form, of information concerning the position, movement, physical status, command and control of a vessel over the period leading up to and following an incident having an impact thereon. Information contained in a S-VDR should be made available to both the Administration and the shipowner. This information is for use during any subsequent investigation to identify the cause(s) of the incident.

2 APPLICATION

2.1 A S-VDR with capabilities not inferior to those defined in these performance standards is required to be fitted to ships of classes defined in SOLAS chapter V, as amended.

3 REFERENCES

3.1 SOLAS:
- 1995 SOLAS Conference, resolution 12.

3.2 IMO resolutions:
- A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the GMDSS and for Electronic Navigational Aids
- A.812(19) Performance standards for float-free satellite emergency position indicating radio beacons operating through the geostationary Inmarsat satellite system on 1.6 GHz
- A.824(19) Performance Standards for Devices to Indicate Speed and Distance
- A.830(19) Code on Alarms and Indicators, 1995
- A.861(20) Performance Standards for Shipborne Voyage Data Recorders (VDRs)
4 DEFINITIONS

4.1 *Simplified Voyage data recorder (S-VDR)* means a complete system, including any items required to interface with the sources of input data, for processing and encoding the data, the final recording medium, the power supply and dedicated reserve power source.

4.2 *Sensor* means any unit external to the S-VDR, to which the S-VDR is connected and from which it obtains data to be recorded.

4.3 *Final recording medium* means the item of hardware on which the data is recorded such that access to it would enable the data to be recovered and played back by use of suitable equipment.

4.4 *Playback equipment* means the equipment, compatible with the recording medium and the format used during recording, employed for recovering the data. It includes also the display or presentation hardware and software that is appropriate to the original data source equipment.\(^1\)

4.5 *Dedicated reserve power source* means a secondary battery, with suitable automatic charging arrangements, dedicated solely to the S-VDR, of sufficient capacity to operate it as required by 5.3.2.

5 OPERATIONAL REQUIREMENTS

5.1 General

5.1.1 The S-VDR should continuously maintain sequential records of preselected data items relating to the status and output of the ship's equipment, and command and control of the ship, referred to in 5.4.

5.1.2 To permit subsequent analysis of factors surrounding an incident, the method of recording should ensure that the various data items can be co-related in date and time during playback on suitable equipment.

5.1.3 Final recording medium

5.1.3.1 The final recording medium should be installed in a protective capsule of either a fixed or float-free type, which should meet all of the following requirements:

- be capable of being accessed following an incident but secure against tampering;

\(^{1}\) Playback equipment is not normally installed on a ship and is not regarded as part of a S-VDR for the purposes of these performance standards.
.2 maintain the recorded data for a period of at least 2 years following termination of recording;

.3 be of a highly visible colour and marked with retro-reflective materials; and

.4 be fitted with an appropriate device to aid location.

5.1.3.2 The fixed type protective capsule should comply with the requirements set out in resolution A.861(20) with the exception of the resulting requirements for withstanding penetration.

5.1.3.3 The float-free type protective capsule should:

.1 be fitted with means to facilitate grappling and recovery;

.2 be so constructed as to comply with the requirements specified in resolutions A.810(19) or A.812(19) and to minimize risk of damage during recovery operations; and

.3 the device should be capable of transmitting an initial locating signal and further locating homing signal for at least 48 hours over a period of not less than 7 days/168 hours.

5.1.4 The design and construction, which should be in accordance with the requirements of resolution A.694(17) and international standards acceptable to the Organization\(^2\), should take special account of the requirements for data security and continuity of operation as detailed in 5.2 and 5.3.

5.2 Data selection and security

5.2.1 The minimum selections of data items to be recorded by the S-VDR are specified in 5.4. Optionally, additional items may be recorded provided that the requirements for the recording and storage of the specified selections are not compromised.

5.2.2 The equipment should be so designed that, as far as is practical, it is not possible to tamper with the selection of data being input to the equipment, the data itself nor that which has already been recorded. Any attempt to interfere with the integrity of the data or the recording should be recorded.

5.2.3 The recording method should be such that each item of the recorded data is checked for integrity and an alarm given if a non-correctable error is detected.

5.3 Continuity of operation

5.3.1 To ensure that the S-VDR continues to record events during an incident, it should be capable of operating from the ship's emergency source of electrical power.

\(^2\) Refer to publication IEC 60945 - Maritime navigation and radiocommunication equipment and systems - General requirements, methods of testing and required test results.
5.3.2 If the ship's emergency source of electrical power supply fails, the S-VDR should continue to record Bridge Audio (see 5.4.5) from a dedicated reserve source of power for a period of 2 h. At the end of this 2 h period all recording should cease automatically.

5.3.3 Recording should be continuous unless interrupted briefly in accordance with 6 or terminated in accordance with 5.3.2. The time for which all stored data items are retained should be at least 12 h. Data items which are older than this may be overwritten with new data.

5.4 Data items to be recorded

Date and time

5.4.1 Date and time, referenced to UTC, should be obtained from a source external to the ship or from an internal clock. The recording should indicate which source is in use. The recording method should be such that the timing of all other recorded data items can be derived on playback with a resolution sufficient to reconstruct the history of the incident in detail.

Ship's position

5.4.2 Latitude and longitude, and the datum used, should be derived from an electronic position-fixing system (EPFS). The recording should ensure that the identity and status of the EPFS can always be determined on playback.

Speed

5.4.3 Speed through the water or speed over the ground, including an indication of which it is, derived from the ship's speed and distance measuring equipment.

Heading

5.4.4 As indicated by the ship's compass.

Bridge Audio

5.4.5 One or more microphones positioned on the bridge should be placed so that conversation at or near the conning stations, radar displays, chart tables, etc., are adequately recorded. As far as practicable, the positioning of microphones should also capture intercom, public address systems and audible alarms on the bridge.

Communications Audio

5.4.6 VHF communications relating to ship operations should be recorded.

Radar data, post-display selection

5.4.7 This should include electronic signal information from within one of the ship's radar installations which records all the information which was actually being presented on the master display of that radar at the time of recording. This should include any range rings or markers, bearing markers, electronic plotting symbols, radar maps, whatever parts of the SENC or other electronic chart or map that were selected, the voyage plan, navigational data, navigational
alarms and the radar status data that were visible on the display. The recording method should be such that, on playback, it is possible to present a faithful replica of the entire radar display that was on view at the time of recording, albeit within the limitations of any bandwidth compression techniques that are essential to the working of the S-VDR.

AIS Data

5.4.8 If it is impossible to obtain radar data\(^3\) then AIS target data should be recorded as a source of information regarding other ships. If radar data is recorded, AIS information may be recorded additionally as a beneficial secondary source of information on both other and own ship.

Other items

5.4.9 Any additional data items listed by IMO with the requirements set out in resolution A.861(20) should be recorded when the data is available in accordance with the international digital interface standards\(^4\) using approved sentence formatters.

6  OPERATION

6.1 The unit should be entirely automatic in normal operation. Means should be provided whereby recorded data may be saved by an appropriate method following an incident, with minimal interruption to the recording process.

7  INTERFACING

7.1 Interfacing to the various sensors required should be in accordance with the relevant international interface standards, where possible. Any connection to any item of the ship's equipment should be such that the operation of that equipment suffers no deterioration, even if the S-VDR system develops faults.

***

\(^3\) Where commercial off the shelf (COTS) interfaces are not available.

\(^4\) Refer to publication IEC 61162
ANNEX 27

DRAFT AMENDMENTS TO THE RECORD OF EQUIPMENT FOR THE CARGO SHIP SAFETY EQUIPMENT CERTIFICATE OF THE 1988 SOLAS PROTOCOL

APPENDIX

MODIFICATIONS AND ADDITIONS TO THE APPENDIX TO THE ANNEX TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974

Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E)

1 Existing section 3 is replaced by the following:

“3 Details of navigational systems and equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Standard magnetic compass*</td>
</tr>
<tr>
<td>1.2</td>
<td>Spare magnetic compass*</td>
</tr>
<tr>
<td>1.3</td>
<td>Gyro compass*</td>
</tr>
<tr>
<td>1.4</td>
<td>Gyro compass heading repeater*</td>
</tr>
<tr>
<td>1.5</td>
<td>Gyro compass bearing repeater*</td>
</tr>
<tr>
<td>1.6</td>
<td>Heading or track control system*</td>
</tr>
<tr>
<td>1.7</td>
<td>Pelorus or compass bearing device*</td>
</tr>
<tr>
<td>1.8</td>
<td>Means of correcting heading and bearings</td>
</tr>
<tr>
<td>1.9</td>
<td>Transmitting heading device (THD)*</td>
</tr>
<tr>
<td>2.1</td>
<td>Nautical charts/Electronic chart display and information system (ECDIS)**</td>
</tr>
<tr>
<td>2.2</td>
<td>Back up arrangements for ECDIS</td>
</tr>
<tr>
<td>2.3</td>
<td>Nautical publications</td>
</tr>
<tr>
<td>2.4</td>
<td>Back up arrangements for electronic nautical publications</td>
</tr>
<tr>
<td>3.1</td>
<td>Receiver for a global navigation satellite system/ terrestrial radionavigation system* **</td>
</tr>
<tr>
<td>3.2</td>
<td>9 GHz radar*</td>
</tr>
<tr>
<td>3.3</td>
<td>Second radar (3 GHz/ 9 GHZ**)*</td>
</tr>
<tr>
<td>3.4</td>
<td>Automatic radar plotting aid (ARPA)*</td>
</tr>
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</tr>
<tr>
<td>Item</td>
<td>Actual provision</td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>4</td>
<td>Automatic identification system (AIS)</td>
</tr>
<tr>
<td>5.1</td>
<td>Voyage data recorder (VDR)**</td>
</tr>
<tr>
<td>5.2</td>
<td>Simplified voyage data recorder (S-VDR)**</td>
</tr>
<tr>
<td>6.1</td>
<td>Speed and distance measuring device (through the water)*</td>
</tr>
<tr>
<td>6.2</td>
<td>Speed and distance measuring device (over the ground in the forward and athwartship direction)*</td>
</tr>
<tr>
<td>6.3</td>
<td>Echo sounding device*</td>
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<td>Rudder, propeller, thrust, pitch and operational mode indicator*</td>
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<td>Radar reflector*</td>
</tr>
<tr>
<td>12</td>
<td>International Code of Signals</td>
</tr>
</tbody>
</table>

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate.”
ANNEX 28

RESOLUTION MSC.164(78)
(adopted on 17 May 2004)

REVISED PERFORMANCE STANDARDS
FOR RADAR REFLECTORS

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), 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,

RECALLING FURTHER that the provisions of chapter V of the International Convention for the Safety of Life at Sea, 1974 (SOLAS), as amended, and chapter 13 of the International Code of Safety for High-Speed Craft (HSC Code), in force, require, if practicable, fitting of a radar reflector to all ships and craft under 150 gross tonnage to enable detection by radar,

RECOGNIZING that, for safety reasons, radar reflectors should produce reliable detection in practical conditions and perform in both 3 GHz (S-band) and 9 GHz (X-band),

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS the Recommendation on Performance Standards for Radar Reflectors, set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that radar reflectors:
   (a) if fitted on or after 1 July 2005, conform to performance standards not inferior to those specified in the Annex to the present resolutions; and
   (b) if fitted before 1 July 2005, conform to performance standards not inferior to those specified in the Annex to resolution A.384(X).
ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS
FOR RADAR REFLECTORS

1 INTRODUCTION

1.1 Radar reflectors carried under SOLAS chapters V and X should comply with the minimum performance requirements as specified in this Recommendation.

1.2 In the following paragraphs, radar cross sections\(^1\) are specified for the frequencies of 3 GHz (S-band) and 9 GHz (X-band) whose wavelengths are 10 cm and 3 cm respectively.

1.3 The performance requirements stated should apply to either active or passive radar reflectors in both 9 GHz and 3 GHz bands. (Active radar reflectors are also known as radar target enhancers).

2 APPLICATION

2.1 All ships required to be fitted with a radar reflector, if practicable, to enable detection by ships navigating by radar at both 9 GHz and 3 GHz bands.

3 PERFORMANCE

3.1 The radar reflector should have a “Stated Performance Level” measured in square metres radar cross section (m\(^2\) RCS) of at least 7.5 m\(^2\) in X-band and 0.5 m\(^2\) in S-band mounted at a minimum height of 4 m above water level.

3.2 Required minimum level for reflector performance - the Stated Performance Level should:

.1 be maintained over a total of at least 280° azimuth;

.2 not remain below this level over any single angle of more than 10° - a null; and

.3 not have distances between nulls of less than 20°.

3.3 For power driven vessels and sailing vessels designed to operate with little heel (catamaran/trimaran), this performance should be maintained through angles of (athwartships) heel 10° either side of vertical. For other sailing vessels, the reflector should maintain this performance over 20° either side of vertical.

3.4 Active reflectors should conform to Recommendation ITU-R M.1176.

\(^1\) The Radar Cross Section is a measure of the ability of an object to return microwave energy to the interrogating radar when compared to the actual reflectivity of a metal sphere.
4 CONSTRUCTION

4.1 The reflector should be capable of maintaining its reflection performance under the conditions of sea states, vibration, humidity and change of temperature likely to be experienced in the marine environment as defined by resolution A.694(17)\textsuperscript{2}.

5 INSTALLATION

5.1 Fixing arrangements should be provided so that the reflector can be fitted either on a rigid mount or suspended in the rigging.

5.2 The recommended mounting height of 4 m and any preferred orientation should be permanently and clearly marked on the reflector.

5.3 The reflector should be clearly and permanently marked if it will meet the performance requirement to $\pm 20^\circ$ inclination (heel).

5.4 For small-craft, the maximum weight for mounting at 4 m should be 5 kg. Reflectors designed for mounting at a greater height should be of weight calculated as equivalent to, or less than 4 m/5 kg. Physical sizes should be minimised and should not exceed 0.05 m\textsuperscript{3}.

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\textsuperscript{2} IEC Publication 60945.
ANNEX 29

RESOLUTION MSC.165(78)
(adopted on 17 May 2004)

ADOPTION OF AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING
(RESOLUTION A.572(14), AS AMENDED)

THE MARITIME SAFETY COMMITTEE,

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

RECOGNIZING the need to provide general provisions for adoption, designation and substitution of archipelagic sea lanes,

TAKING INTO ACCOUNT the decision of the Sub-Committee on Safety of Navigation at its forty-third session that an archipelagic sea lane should be considered to be a routeing system,

HAVING CONSIDERED, at its seventy-eighth session, the text of the proposed amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended), to incorporate amendments to the provisions relating to adoption, designation and substitution of archipelagic sea lanes:

1. ADOPTS the Amendments to the General Provisions on Ships' Routeing (resolution A.527(14), as amended), concerning the adoption, designation and substitution of archipelagic sea lanes, the text of which is set out in the Annex to the present resolution;

2. DETERMINES that amendments to the General Provisions on Ships' Routeing including amendments to the General Provisions for the adoption, designation and substitution of archipelagic sea lanes shall be adopted, brought into force and shall take effect in accordance with the provisions of resolution A.572(14), as amended;

3. INVITES Governments intending to submit proposals for the adoption, designation and substitution of archipelagic sea lanes to take account of the annexed General Provisions;

4. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of all Contracting Governments to the SOLAS Convention and to Members of the Organization which are not Contracting Governments to the Convention.
ANNEX

AMENDMENTS TO PART ‘H’ OF THE GENERAL PROVISIONS ON SHIPS’ ROUTEING (RESOLUTION A.572(14), AS AMENDED)

ANNEX 2

GENERAL PROVISIONS FOR THE ADOPTION, DESIGNATION AND SUBSTITUTION OF ARCHIPELAGIC SEA LANES

1 The existing text of paragraph 3.13 is replaced by the following:

“3.13 After the adoption of the Archipelagic sea lanes by IMO, the Government of the Archipelagic State shall promulgate the designation of the sea lanes. The designation of the sea lanes shall be formally communicated to IMO.”

2 The following new paragraph 3.14 is added after the existing paragraph 3.13:

“3.14 Archipelagic sea lanes shall not come into effect until at least six months after the later of:

.1 designation of sea lanes as described in paragraph 3.13; and

.2 publication of either notices to mariners to amend charts or revised charts to depict the sea lanes.”

***
ANNEX 30

RESOLUTION MSC.166(78)
(adopted on 20 May 2004)

APPLICATION OF PERFORMANCE STANDARDS FOR TRANSMITTING HEADING DEVICES (THDs) TO MARINE TRANSMITTING MAGNETIC HEADING DEVICES (TMHDs)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with chapter V of the International Convention for the Safety of Life at Sea (SOLAS) 1974, as amended, ships of 300 gross tonnage and upwards and less than 500 gross tonnage, which do not carry a gyro compass, are required to carry a Transmitting Heading Device (THD), or other means to transmit heading information,

RECALLING FURTHER ALSO that, at its seventieth and seventy-third sessions, it adopted resolution MSC.86(70) on Adoption of new and amended performance standards for navigational equipment (which includes, in annex 2, Performance Standards for Marine Transmitting Magnetic Heading Devices (TMHDs)) and resolution MSC.116(73)on Performance Standards for Marine Transmitting Heading Devices (THDs),

RECOGNIZING that the magnetic principle of THDs is covered by both the aforementioned resolutions, which has created an inconsistency and misinterpretation in application of the relevant performance standards to TMHDs,

1. RECOMMENDS Member Governments to ensure that TMHDs installed on or after 1 July 2002 conform to performance standards not inferior to those specified in resolution MSC.116(73);

2. FURTHER RECOMMENDS Member Governments continue to accept installations fitted before 1 July 2002 in accordance with annex 2 to resolution MSC.86(70);

3. DECIDES that annex 2 to resolution MSC.86(70) is superseded by resolution MSC.116(73) for future applications.

***
ANNEX 31

DRAFT AMENDMENT TO REGULATION V/19.2.5.1 OF THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, AS AMENDED

CHAPTER V

SAFETY OF NAVIGATION

Regulation 19 – Carriage requirements for shipborne navigational systems and equipment

In paragraph 2.5, the existing text of subparagraph 1 is replaced by the following:

“.1 a gyro compass, or other means, to determine and display their heading by shipborne non-magnetic means, being clearly readable by the helmsman at the main steering position. These means shall also transmit heading information for input to the equipment referred in paragraphs 2.3.2, 2.4 and 2.5.5;”

***
ANNEX 32

DRAFT AMENDMENT TO THE FTP CODE

ANNEX 1 – FIRE TEST PROCEDURES

Part 2 – Smoke and toxicity test

2.6 Classification criteria

2.6.2 Toxicity

In the table of limits, the following text is added after the entry “SO₂  120 ppm”:

“(200 ppm for floor coverings)”

***
ANNEX 33

DRAFT AMENDMENTS TO THE STCW CODE

SEAFARERS’ TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE

Table A-VI/2-1 – Specifications of minimum standards of competence in survival crafts and
rescue boats other than fast rescue boats.

1 In column 2, the following text is added at the end of the column:
   “Dangers associated with the use of on-load release devices
   Knowledge of maintenance procedures.”

2 In column 3, the following text is added at the end of subparagraph .4:
   “operate off-load and on-load release devices.”

3 In column 3, the following text is added at the end of the present text of subparagraph .5:
   “including the proper resetting of both off-load and on-load release devices.”

4 In column 4, the following text is added at the end of the present text:
   “Equipment is operated in accordance with manufacturers’ instructions for release
   and resetting.”

***
ANNEX 34

RESOLUTION MSC.167(78)
(adopted on 20 May 2004)

GUIDELINES ON THE TREATMENT OF PERSONS RESCUED AT SEA

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution A.920(22) entitled “Review of safety measures and procedures for the treatment of persons rescued at sea”,

RECALLING ALSO the provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended relating to the obligation of:

- shipmasters to proceed with all speed to the assistance of persons in distress at sea; and

- Governments to ensure arrangements for coast watching and for the rescue of persons in distress at sea round their coasts,

RECALLING FURTHER the provisions of the International Convention on Maritime Search and Rescue (SAR), 1979, as amended relating to the provision of assistance to any person in distress at sea regardless of the nationality or status of such person or the circumstances in which that person is found,

NOTING ALSO article 98 of the United Nations Convention on the Law of the Sea, 1982, regarding the duty to render assistance,

NOTING FURTHER the initiative taken by the Secretary-General to involve competent United Nations specialized agencies and programmes in the consideration of the issues addressed in this resolution, for the purpose of agreeing on a common approach which will resolve them in an efficient and consistent manner,

REALIZING the need for clarification of existing procedures to guarantee that persons rescued at sea will be provided a place of safety regardless of their nationality, status or the circumstances in which they are found,

HAVING ADOPTED, as its [seventy-eighth session], by resolution MSC.153(78) amendments to the SOLAS Convention, proposed and circulated in accordance with article VIII(b)(i) thereof, and by resolution MSC.155(78) amendments to the SAR Convention proposed and circulated in accordance with article III(2)(a) thereof,
REALIZING FURTHER that the intent of the new paragraph 1-1 of SOLAS regulation V/33, as adopted by resolution MSC.153(78) and paragraph 3.1.9 of the Annex to the SAR Convention as adopted by resolution MSC.155(78), is to ensure that in every case a place of safety is provided within a reasonable time. It is further intended that the responsibility to provide a place of safety, or to ensure that a place of safety is provided, falls on the Contracting Government/Party responsible for the SAR region in which the survivors were recovered,

1. ADOPTS Guidelines on the treatment of persons rescued at sea the text of which is set out in the Annex to the present resolution;

2. INVITES Governments, rescue co-ordination centres and masters to establish procedures consistent with the annexed Guidelines as soon as possible;

3. INVITES Governments to bring the annexed Guidelines to the attention of authorities concerned and to ship owners, operators and masters;

4. REQUESTS the Secretary-General to take appropriate action in further pursuing his inter-agency initiative, informing the Maritime Safety Committee of developments, in particular with respect to procedures to assist in the provision of places of safety for persons in distress at sea, for action as the Committee may deem appropriate;

5. DECIDES to keep this resolution under review.
1 PURPOSE

1.1 The purpose of these Guidelines are to provide guidance to Governments and to shipmasters with regard to humanitarian obligations and obligations under the relevant international law relating to treatment of persons rescued at sea.

1.2 The obligation of the master to render assistance should complement the corresponding obligation of IMO Member Governments to co-ordinate and co-operate in relieving the master of the responsibility to provide follow up care of survivors and to deliver the persons retrieved at sea to a place of safety. These Guidelines are intended to help Governments and masters better understand their obligations under international law and provide helpful guidance with regard to carrying out these obligations.

2 BACKGROUND

IMO Assembly resolution A.920(22)

2.1 The IMO Assembly, at its twenty-second session, adopted resolution A.920(22) on the review of safety measures and procedures for the treatment of persons rescued at sea. That resolution requested various IMO bodies to review selected IMO Conventions to identify any gaps, inconsistencies, ambiguities, vagueness or other inadequacies associated with the treatment of persons rescued at sea. The objectives were to help ensure that:

.1 survivors of distress incidents are provided assistance regardless of nationality or status or the circumstances in which they are found;

.2 ships, which have retrieved persons in distress at sea, are able to deliver the survivors to a place of safety; and

.3 survivors, regardless of nationality or status, including undocumented migrants, asylum seekers and refugees, and stowaways, are treated, while on board, in the manner prescribed in the relevant IMO instruments and in accordance with relevant international agreements and long-standing humanitarian maritime traditions.

2.2 Pursuant to resolution A.920(22), the Secretary-General brought the issue of persons rescued at sea to the attention of a number of competent United Nations specialized agencies and programmes highlighting the need for a co-ordinated approach among United Nations agencies, and soliciting the input of relevant agencies within the scope of their respective mandates. Such an inter-agency effort focusing on State responsibilities for non-rescue issues, such as

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1 Where the term Government is used in these Guidelines, it should be read to mean Contracting Government to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, or Party to the International Convention on Maritime Search and Rescue, 1979, as amended, respectively.
immigration and asylum that are beyond the competence of IMO, is an essential complement to IMO efforts.

**SOLAS and SAR Convention amendments**

2.3 At its seventy-eighth session, the Maritime Safety Committee (MSC) adopted pertinent amendments to chapter V of the International Convention for the Safety of Life at Sea (SOLAS) and to chapters 2, 3 and 4 of the Annex to the International Convention on Maritime Search and Rescue Convention (SAR Convention). These amendments are expected to enter into force on 1 July 2006. At the same session the MSC adopted the current guidelines; these amendments provide for the development of such guidelines. The purpose of these amendments and the current guidelines is to help ensure that persons in distress are assisted, while minimizing the inconvenience to assisting ships and ensuring the continued integrity of SAR services.

2.4 Specifically, paragraph 1-1 of SOLAS regulation V/33 and paragraph 3.1.9 of the Annex to the SAR Convention, as amended, impose upon Governments an obligation to co-ordinate and co-operate to ensure that masters of ships providing assistance by embarking persons in distress at sea are released from their obligations with minimum further deviation from the ship’s intended voyage.

2.5 As realized by the MSC in adopting the amendments, the intent of new paragraph 1-1 of SOLAS regulation V/33 and paragraph 3.1.9 of the Annex to the International Convention on Maritime Search and Rescue, 1979, as amended, is to ensure that in every case a place of safety is provided within a reasonable time. The responsibility to provide a place of safety, or to ensure that a place of safety is provided, falls on the Government responsible for the SAR region in which the survivors were recovered.

2.6 Each case, however, can involve different circumstances. These amendments give the responsible Government the flexibility to address each situation on a case-by-case basis, while assuring that the masters of ships providing assistance are relieved of their responsibility within a reasonable time and with as little impact on the ship as possible.

2.7 Some comments on relevant international law are set out at the appendix.

3 **PRIORITIES**

3.1 When ships assist persons in distress at sea, co-ordination will be needed among all concerned to ensure that all of the following priorities are met in a manner that takes due account of border control, sovereignty and security concerns consistent with international law:

*Lifesaving*

All persons in distress at sea should be assisted without delay.

*Preservation of the integrity and effectiveness of SAR services*

Prompt assistance provided by ships at sea is an essential element of global SAR services; therefore it must remain a top priority for shipmasters, shipping companies and flag States.
Relieving masters of obligations after assisting persons

Flag and coastal States should have effective arrangements in place for timely assistance to shipmasters in relieving them of persons recovered by ships at sea.

4 INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH AND RESCUE MANUAL

4.1 The three-volume *International Aeronautical and Maritime Search and Rescue Manual* (IAMSAR Manual) has been developed and is maintained to assist Governments in meeting their SAR needs, and the obligations they have accepted under the SOLAS Convention, the SAR Convention and the Convention on International Civil Aviation. Governments are encouraged to develop and improve their SAR services, cooperate with neighbouring States and to consider SAR services to be part of a global system.

4.2 Each volume of the IAMSAR Manual is written with specific SAR system duties in mind and can be used as a stand-alone document, or, in conjunction with the other guidance documents, as a means to attain a full view of the SAR system.

4.3 Volume I – *Organization and Management* discusses the global SAR system concept, establishment of national and regional SAR systems and co-operation with neighbouring States to provide effective and economical SAR services.

4.4 Volume II – *Mission Co-ordination* assists personnel who plan and co-ordinate SAR operations and exercises.

4.5 Volume III – *Mobile Facilities* – is intended to be carried aboard ships, aircraft and rescue units to help with performance of search, rescue or on-scene co-ordinator functions and with aspects of SAR that pertain to their own emergencies.

5 SHIPMASTERS

General guidance

5.1 SAR services throughout the world depend on ships at sea to assist persons in distress. It is impossible to arrange SAR services that depend totally upon dedicated shore-based rescue units to provide timely assistance to all persons in distress at sea. Shipmasters have certain duties that must be carried out in order to provide for safety of life at sea, preserve the integrity of global SAR services of which they are part, and to comply with humanitarian and legal obligations. In this regard, shipmasters should:

.1 understand and heed obligations under international law to assist persons in distress at sea (such assistance should always be carried out without regard to the nationality or status of the persons in distress, or to the circumstances in which they are found);

.2 do everything possible, within the capabilities and limitations of the ship, to treat the survivors humanely and to meet their immediate needs;
.3 carry out SAR duties in accordance with the provisions of Volume III of the IAMSAR Manual;

.4 in a case where the RCC responsible for the area where the survivors are recovered cannot be contacted, attempt to contact another RCC, or if that is impractical, any other Government authority that may be able to assist, while recognizing that responsibility still rests with the RCC of the area in which the survivors are recovered;

.5 keep the RCC informed about conditions, assistance needed, and actions taken or planned for the survivors (see paragraph 6.10 regarding other information the RCC may wish to obtain);

.6 seek to ensure that survivors are not disembarked to a place where their safety would be further jeopardized; and

.7 comply with any relevant requirements of the Government responsible for the SAR region where the survivors were recovered, or of another responding coastal State, and seek additional guidance from those authorities where difficulties arise in complying with such requirements.

5.2 In order to more effectively contribute to safety of life at sea, ships are urged to participate in ship reporting systems established for the purpose of facilitating SAR operations.

6 GOVERNMENTS AND RESCUE CO-ORDINATION CENTRES

Responsibilities and preparedness

6.1 Governments should ensure that their respective rescue co-ordination centres (RCCs) and other national authorities concerned have sufficient guidance and authority to fulfil their duties consistent with their treaty obligations and the current guidelines contained in this resolution.

6.2 Governments should ensure that their RCCs and rescue units are operating in accordance with the standards and procedures in the IAMSAR Manual and that all ships operating under their flag have on board Volume III of the IAMSAR Manual.

6.3 A ship should not be subject to undue delay, financial burden or other related difficulties after assisting persons at sea; therefore coastal States should relieve the ship as soon as practicable.

6.4 Normally, any SAR co-ordination that takes place between an assisting ship and any coastal State(s) should be handled via the responsible RCC. States may delegate to their respective RCCs the authority to handle such co-ordination on a 24-hour basis, or may task other national authorities to promptly assist the RCC with these duties. RCCs should be prepared to act quickly on their own, or have processes in place, as necessary, to involve other authorities, so that timely decisions can be reached with regard to handling survivors.

6.5 Each RCC should have effective plans of operation and arrangements (interagency or international plans and agreements if appropriate) in place for responding to all types of SAR situations. Such plans and arrangements should cover incidents that occur within its
associated SAR region, and should also cover incidents outside its own SAR region if necessary until the RCC responsible for the region in which assistance is being rendered (see paragraph 6.7) or another RCC better situated to handle the case accept responsibility. These plans and arrangements should cover how the RCC could co-ordinate:

.1 a recovery operation;
.2 disembarkation of survivors from a ship;
.3 delivery of survivors to a place of safety; and
.4 its efforts with other entities (such as customs and immigration authorities, or the ship owner or flag State), should non-SAR issues arise while survivors are still aboard the assisting ship with regard to nationalities, status or circumstances of the survivors; and quickly address initial border control or immigration issues to minimize delays that might negatively impact the assisting ship, including temporary provisions for hosting survivors while such issues are being resolved.

6.6 Plans of operation, liaison activities and communications arrangements should provide for proper co-ordination in advance of and during a rescue operation with shipping companies and with national or international authorities that may need to be involved in response or disembarkation efforts.

6.7 When appropriate, the first RCC contacted should immediately begin efforts to transfer the case to the RCC responsible for the region in which the assistance is being rendered. When the RCC responsible for the SAR region in which assistance is needed is informed about the situation, that RCC should immediately accept responsibility for co-ordinating the rescue efforts, since related responsibilities, including arrangements for a place of safety for survivors, fall primarily on the Government responsible for that region. The first RCC, however, is responsible for co-ordinating the case until the responsible RCC or other competent authority assumes responsibility.

6.8 Governments and the responsible RCC should make every effort to minimize the time survivors remain aboard the assisting ship.

6.9 Responsible State authorities should make every effort to expedite arrangements to disembark survivors from the ship; however, the master should understand that in some cases necessary co-ordination may result in unavoidable delays.

6.10 The RCC should seek to obtain the following information from the master of the assisting ship:

.1 information about the survivors, including name, age, gender, apparent health and medical condition and any special medical needs;
.2 the master’s judgment about the continuing safety of the assisting ship;
.3 actions completed or intended to be taken by the master;
.4 assisting ship’s current endurance with the additional persons on board;
.5 assisting ship’s next intended port of call;
.6 the master’s preferred arrangements for disembarking the survivors;
.7 any help that the assisting ship may need during or after the recovery operation; and
.8 any special factors (e.g., prevailing weather, time sensitive cargo).

6.11 Potential health and safety concerns aboard a ship that has recovered persons in distress include insufficient lifesaving equipment, water, provisions, medical care, and accommodations for the number of persons on board, and the safety of the crew and passengers if persons on board might become aggressive or violent. In some cases it may be advisable for the RCC to arrange for SAR or other personnel to visit the assisting ship to better assess the situation onboard, to help meet needs on board, or to facilitate safe and secure disembarkation of the survivors.

**Place of safety**

6.12 A place of safety (as referred to in the Annex to the 1979 SAR Convention, paragraph 1.3.2) is a location where rescue operations are considered to terminate. It is also a place where the survivors’ safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met. Further, it is a place from which transportation arrangements can be made for the survivors’ next or final destination.

6.13 An assisting ship should not be considered a place of safety based solely on the fact that the survivors are no longer in immediate danger once aboard the ship. An assisting ship may not have appropriate facilities and equipment to sustain additional persons on board without endangering its own safety or to properly care for the survivors. Even if the ship is capable of safely accommodating the survivors and may serve as a temporary place of safety, it should be relieved of this responsibility as soon as alternative arrangements can be made.

6.14 A place of safety may be on land, or it may be aboard a rescue unit or other suitable vessel or facility at sea that can serve as a place of safety until the survivors are disembarked to their next destination.

6.15 The Conventions, as amended, indicate that delivery to a place of safety should take into account the particular circumstances of the case. These circumstances may include factors such as the situation on board the assisting ship, on scene conditions, medical needs, and availability of transportation or other rescue units. Each case is unique, and selection of a place of safety may need to account for a variety of important factors.

6.16 Governments should co-operate with each other with regard to providing suitable places of safety for survivors after considering relevant factors and risks.

6.17 The need to avoid disembarkation in territories where the lives and freedoms of those alleging a well-founded fear of persecution would be threatened is a consideration in the case of asylum-seekers and refugees recovered at sea.
6.18 Often the assisting ship or another ship may be able to transport the survivors to a place of safety. However, if performing this function would be a hardship for the ship, RCCs should attempt to arrange use of other reasonable alternatives for this purpose.

Non-SAR considerations

6.19 If survivor status or other non-SAR matters need to be resolved, the appropriate authorities can often handle these matters once the survivors have been delivered to a place of safety. Until then, RCCs are responsible for co-operation with any national or international authorities or others involved in the situation. Examples of non-SAR considerations that may require attention include oil spills, onscene investigations, salvage, survivors who are migrants or asylum seekers, needs of survivors once they have been delivered to a place of safety, or security or law enforcement concerns. National authorities other than the RCC typically have primary responsibility for such efforts.

6.20 Any operations and procedures such as screening and status assessment of rescued persons that go beyond rendering assistance to persons in distress should not be allowed to hinder the provision of such assistance or unduly delay disembarkation of survivors from the assisting ship(s).

6.21 Although issues other than rescue relating to asylum seekers, refugees and migratory status are beyond the remit of IMO, and beyond the scope of the SOLAS and SAR Conventions, Governments should be aware of assistance that international organizations or authorities of other countries might be able to provide in such cases, be able to contact them rapidly, and provide any instructions that their RCCs may need in this regard, including how to alert and involve appropriate national authorities. States should ensure that their response mechanisms are sufficiently broad to account for the full range of State responsibilities.

6.22 Authorities responsible for such matters may request that RCCs obtain from the assisting ship certain information about a ship or other vessel in distress, or certain information about the persons assisted. Relevant national authorities should also be made aware of what they need to do to co-operate with the RCC (especially with regard to contacting ships), and to respond as a matter of urgency to situations involving assisted persons aboard ships.
APPENDIX

SOME COMMENTS ON RELEVANT INTERNATIONAL LAW

1 A shipmaster’s obligation to render assistance at sea is a longstanding maritime tradition. It is an obligation that is recognized by international law. Article 98 of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS) codifies this obligation in that every “State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew, or the passengers … to render assistance to any person found at sea in danger of being lost …”. In addition to imposing an obligation on States to “promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea …”.

2 The SAR Convention defines rescue as “an operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety.” SAR services are defined as “the performance of distress monitoring, communication, co-ordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources including co-operating aircraft, vessels and other craft and installations.” SAR services include making arrangements for disembarkation of survivors from assisting ships. The SAR Convention establishes the principle that States delegate to their rescue co-ordination centres (RCCs) the responsibility and authority to be the main point of contact for ships, rescue units, other RCCs, and other authorities for co-ordination of SAR operations. The SAR Convention also discusses, with regard to obligations of States, the need for making arrangements for SAR services, establishment of RCCs, international co-operation, RCC operating procedures, and use of ship reporting systems for SAR.

3 The SAR Convention does not define “place of safety”. However, it would be inconsistent with the intent of the SAR Convention to define a place of safety solely by reference to geographical location. For example, a place of safety may not necessarily be on land. Rather, a place of safety should be determined by reference to its characteristics and by what it can provide for the survivors. It is a location where the rescue operation is considered to terminate. It is also a place where the survivors’ safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met. Further, it is a place from which transportation arrangements can be made for the survivors’ next or final destination.

4 The SOLAS Convention regulation V/33.1 provides that the “master of a ship at sea which is in a position to be able to provide assistance, on receiving information from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service that the ship is doing so.” Comparable obligations are contained in other international instruments. Nothing in these guidelines is intended in any way to affect those obligations. Compliance with this obligation is essential in order to preserve the integrity of search and rescue services. The SOLAS Convention, Article IV (cases of force majeure) protects the shipmaster insofar as the existence of persons on board the ship by reason of force majeure or due to the obligation for the master to carry shipwrecked or other persons, will not be a basis for determining application of the Convention’s provisions to the ship. The SOLAS Convention also addresses in chapter V, regulation 7, the responsibility of Governments to arrange rescue services.
5 As a general principle of international law, a State’s sovereignty allows that State to control its borders, to exclude aliens from its territory and to prescribe laws governing the entry of aliens into its territory. A State’s sovereignty extends beyond its land territory and internal waters to the territorial sea, subject to the provisions of UNCLOS and other rules of international law. Further, as provided in Article 21 of UNCLOS, a coastal State may adopt laws and regulations relating to innocent passage in the territorial sea to prevent, among other things, the infringement of that coastal State’s immigration laws.

6 Pursuant to Article 18 of UNCLOS, a ship exercising innocent passage may stop or anchor in the coastal State’s territorial sea “only in so far as the same are incidental to ordinary navigation or are rendered by force majeure or distress or for the purpose of rendering assistance to persons, ships or aircraft in danger or distress.” UNCLOS does not specifically address the question of whether there exists a right to enter a port in cases of distress, although under customary international law, there may be a universal, albeit not absolute, right for a ship in distress to enter a port or harbour when there exists a clear threat to safety of persons aboard the ship. Such threats often worsen with time and immediate port entry is needed to ensure the safety of the vessel and those onboard. Nevertheless, the right of the ship in distress to enter a port involves a balancing of the nature and immediacy of the threat to the ship’s safety against the risks to the port that such entry may pose. Thus, a coastal State might refuse access to its ports where the ship poses a serious and unacceptable safety, environmental, health or security threat to that coastal State after the safety of persons onboard is assured.

7 The Refugee Convention’s prohibition of expulsion or return “refoulement” contained in Article 33.1 prohibits Contracting States from expelling or returning a refugee to the frontiers of territories where his or her life or freedom would be threatened on account of the person’s race, religion, nationality, membership of a particular social group or political opinion. Other relevant international law also contains prohibition on return to a place where there are substantial grounds for believing that the person would be in danger of being subjected to torture.

8 Other relevant provisions, not all of which are under the competence of IMO, inter alia, include the following:

- International Convention on Maritime Search and Rescue, 1979, as amended, in entirety
- International Convention for the Safety of Life at Sea, 1974, as amended, chapter V, regulation 33
- Convention on Facilitation of International Maritime Traffic, 1965, in particular Section 6.C, Standards 6.8-6.10
- International Convention on Salvage, 1983, Article 11
- Resolution A.773(18) on Enhancement of safety of life at sea by the prevention and suppression of unsafe practices associated with alien smuggling by ships
- Resolution A.871(20) on Guidelines on the allocation of responsibilities to seek the successful resolution of stowaway cases
- Resolution A.867(20) on Combating unsafe practices associated with the trafficking or transport of migrants by sea
- IMO Global SAR Plan – SAR.8/Circ.1 and addenda addresses (the Admiralty List of Radio Signals, Volume 5, is a practical alternative)


MSC/Circ.896/Rev.1 on Interim measures for combating unsafe practices associated with the trafficking or transport of immigrants by sea

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ANNEX 35

DRAFT AMENDMENTS TO THE 1974 SOLAS CONVENTION REGARDING THE FORMS OF NUCLEAR SHIP SAFETY CERTIFICATES

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

APPENDIX

CERTIFICATES

Form of Nuclear Passenger Ship Safety Certificate

1 The form of the certificate is replaced by the following:

“FORM OF NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE

NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE

This Certificate shall be supplemented by a Record of Equipment (Form PNUC)

(Official seal)   (State)

for __an 1 international voyage
a short

Issued under the provisions of the INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

__________________________
(name of the State)

by

__________________________
(person or organization authorized)

Particulars of ship

Name of ship ...........................................................................................................................................

Distinctive number or letters ..................................................................................................................

__________________________________________

1 Delete as appropriate.
2 Alternatively, the particulars of the ship may be placed horizontally in boxes.
Port of registry ..............................................................................................................................

Gross tonnage ................................................................................................................................

Sea areas in which ship is certified to operate (regulation IV/2) .....................................................

IMO Number\(^3\) ................................................................................................................................

Particulars of voyages, if any, sanctioned under regulation 21.1.2 of Chapter III .........................

Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced .................................................................

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with the requirements of regulation VIII/9 of the Convention.

2 That the ship, being a nuclear ship, complied with all the requirements of chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship; and that:

2.1 the ship complied with the requirements of the Convention as regards:

.1 the structure, main and auxiliary machinery, boilers and other pressure vessels;

.2 the watertight subdivision arrangements and details;

.3 the following subdivision load lines:

<table>
<thead>
<tr>
<th>Subdivision load lines assigned and marked on the ship's side amidships (regulation II-1/13)</th>
<th>Freeboard</th>
<th>To apply when the spaces in which passengers are carried include the following alternative spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.1</td>
<td>............</td>
<td>...................................................................................................................................</td>
</tr>
<tr>
<td>C.2</td>
<td>............</td>
<td>...................................................................................................................................</td>
</tr>
<tr>
<td>C.3</td>
<td>............</td>
<td>...................................................................................................................................</td>
</tr>
</tbody>
</table>

2.2 the ship complied with the requirements of the Convention as regards structural fire protection, fire safety systems and appliances and fire control plans;

2.3 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;

\(^3\) In accordance with resolution A.600(15) - IMO Ship Identification Number Scheme, this information may be included voluntarily.
2.4 the ship was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Convention;

2.5 the ship complied with the requirements of the Convention as regards radio installations;

2.6 the functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;

2.7 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;

2.8 the ship was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Convention and the International Regulations for Preventing Collisions at Sea in force;

2.9 in all other respects the ship complied with the relevant requirements of the regulations, so far as these requirements apply thereto.

This certificate is valid until .................................................................

Completion date of the survey on which this certificate is based: .................................

(dd/mm/yyyy)

Issued at ........................................ the ........ day of .................. 20 ........

(Place of issue of certificate)

.......................................................... (Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

.......................................................... (Signature)

Endorsement where the renewal survey has been completed and regulation I/14(d) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with regulation I/14(d) of the Convention, be accepted as valid until

..........................................................
Signed: ..........................................................
(Signature of authorized official)

Place: ............................................................

Date: ............................................................
(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/14(e) or I/14(f) applies

This certificate shall, in accordance with regulation I/14(e)/I/14(f)\(^1\) of the Convention, be accepted as valid until ........................................................................................................

Signed: ..........................................................
(Signature of authorized official)

Place: ............................................................

Date: ............................................................
(Seal or stamp of the authority, as appropriate)’’

2 The following Record of Equipment for the Nuclear Passenger Ship Safety Certificate is added after the form of the Nuclear Cargo Ship Safety Certificate:

“RECORD OF EQUIPMENT FOR THE NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE (FORM PNUC)

This Record shall be permanently attached to the
Nuclear Passenger Ship Safety Certificate

RECORD OF EQUIPMENT FOR COMPLIANCE WITH
THE INTERNATIONAL CONVENTION FOR THE SAFETY
OF LIFE AT SEA, 1974, AS MODIFIED BY THE PROTOCOL
OF 1988 RELATING THERETO

\(^1\) Delete as appropriate.
1 **Particulars of ship**

Name of ship ..........................................................................................................

Distinctive number or letters..............................................................................

Number of passengers for which certified ..........................................................

Minimum number of persons with required qualifications to operate the radio installations ..........................................................

2 **Details of life-saving appliances**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Port side</th>
<th>Starboard side</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total number of persons for which life-saving appliances are provided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Total number of lifeboats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Total number of persons accommodated by them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Number of partially enclosed lifeboats (regulation III/42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Number of self-righting partially enclosed lifeboats (regulation III/43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>Number of totally enclosed lifeboats (regulation III/44)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Other lifeboats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5.1</td>
<td>Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5.2</td>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Number of motor lifeboats (included in the total lifeboats shown above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Number of lifeboats fitted with searchlights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Number of rescue boats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Number of boats which are included in the total lifeboats shown above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Liferafts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Those for which approved launching appliances are required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.1</td>
<td>Number of liferafts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.2</td>
<td>Number of persons accommodated by them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Those for which approved launching appliances are not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1</td>
<td>Number of liferafts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.2</td>
<td>Number of persons accommodated by them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Buoyant apparatus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Number of apparatus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2</td>
<td>Number of persons capable of being supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Actual provision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Number of lifebuoys</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Number of lifejackets</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Immersion suits</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.1 Total number</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2 Number of suits complying with the requirements for lifejackets</td>
<td>..................................................</td>
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<td></td>
</tr>
<tr>
<td>10 Number of thermal protective aids (^1)</td>
<td>..................................................</td>
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<td></td>
</tr>
<tr>
<td>11 Radio installations used in life-saving appliances</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1 Number of radar transponders</td>
<td>..................................................</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.2 Number of two-way VHF radiotelephone apparatus</td>
<td>..................................................</td>
<td></td>
<td></td>
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</tbody>
</table>

### 3 Details of radio facilities

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Primary systems</td>
<td></td>
</tr>
<tr>
<td>1.1 VHF radio installation</td>
<td></td>
</tr>
<tr>
<td>1.1.1 DSC encoder</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.1.2 DSC watch receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.1.3 Radiotelephony</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.2 MF radio installation</td>
<td></td>
</tr>
<tr>
<td>1.2.1 DSC encoder</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.2.2 DSC watch receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.2.3 Radiotelephony</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.3 MF/HF radio installation</td>
<td></td>
</tr>
<tr>
<td>1.3.1 DSC encoder</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.3.2 DSC watch receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.3.3 Radiotelephony</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.3.4 Direct-printing radiotelegraphy</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.4 Inmarsat ship earth station</td>
<td>..................................................</td>
</tr>
<tr>
<td>2 Secondary means of alerting</td>
<td>..................................................</td>
</tr>
<tr>
<td>3 Facilities for reception of marine safety information</td>
<td></td>
</tr>
<tr>
<td>3.1 NAVTEX receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>3.2 EGC receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>3.3 HF direct-printing radiotelegraph receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>4 Satellite EPIRB</td>
<td></td>
</tr>
<tr>
<td>4.1 COSPAS-SARSAT</td>
<td>..................................................</td>
</tr>
<tr>
<td>4.2 Inmarsat</td>
<td>..................................................</td>
</tr>
<tr>
<td>5 VHF EPIRB</td>
<td>..................................................</td>
</tr>
<tr>
<td>6 Ship's radar transponder</td>
<td>..................................................</td>
</tr>
</tbody>
</table>

\(^1\) Excluding those required by regulations III/38.5.1.24, III/41.8.31 and III/47.2.2.13
4 Methods used to ensure availability of radio facilities (regulations IV/15.6 and 15.7)

4.1 Duplication of equipment

4.2 Shore-based maintenance

4.3 At-sea maintenance capability

5 Details of navigation systems and equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Standard magnetic compass*</td>
<td>..................</td>
</tr>
<tr>
<td>1.2 Spare magnetic compass*</td>
<td>..................</td>
</tr>
<tr>
<td>1.3 Gyro compass*</td>
<td>..................</td>
</tr>
<tr>
<td>1.4 Gyro compass heading repeater*</td>
<td>..................</td>
</tr>
<tr>
<td>1.5 Gyro compass bearing repeater*</td>
<td>..................</td>
</tr>
<tr>
<td>1.6 Heading or track control system*</td>
<td>..................</td>
</tr>
<tr>
<td>1.7 Pelorus or compass bearing device*</td>
<td>..................</td>
</tr>
<tr>
<td>1.8 Means of correcting heading and bearings</td>
<td>..................</td>
</tr>
<tr>
<td>1.9 Transmitting heading device (THD)*</td>
<td>..................</td>
</tr>
<tr>
<td>2.1 Nautical charts/Electronic chart display and information system (ECDIS)**</td>
<td>..................</td>
</tr>
<tr>
<td>2.2 Back up arrangements for ECDIS</td>
<td>..................</td>
</tr>
<tr>
<td>2.3 Nautical publications</td>
<td>..................</td>
</tr>
<tr>
<td>2.4 Back up arrangements for electronic nautical publications</td>
<td>..................</td>
</tr>
<tr>
<td>3.1 Receiver for a global navigation satellite system/terrestrial radio navigation system*</td>
<td>..................</td>
</tr>
<tr>
<td>3.2 9 GHz radar*</td>
<td>..................</td>
</tr>
<tr>
<td>3.3 Second radar (3 GHz/9 GHz**)*</td>
<td>..................</td>
</tr>
<tr>
<td>3.4 Automatic radar plotting aid (ARPA)*</td>
<td>..................</td>
</tr>
<tr>
<td>3.5 Automatic tracking aid*</td>
<td>..................</td>
</tr>
<tr>
<td>3.6 Second automatic tracking aid*</td>
<td>..................</td>
</tr>
<tr>
<td>3.7 Electronic plotting aid*</td>
<td>..................</td>
</tr>
<tr>
<td>4 Automatic identification system (AIS)</td>
<td>..................</td>
</tr>
<tr>
<td>5 Voyage data recorder (VDR)</td>
<td>..................</td>
</tr>
<tr>
<td>6.1 Speed and distance measuring device (through the water)*</td>
<td>..................</td>
</tr>
<tr>
<td>6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*</td>
<td>..................</td>
</tr>
<tr>
<td>6.3 Echo sounding device*</td>
<td>..................</td>
</tr>
<tr>
<td>7.1 Rudder, propeller, thrust, pitch and operational mode indicator*</td>
<td>..................</td>
</tr>
<tr>
<td>7.2 Rate of turn indicator*</td>
<td>..................</td>
</tr>
<tr>
<td>8 Sound reception system*</td>
<td>..................</td>
</tr>
<tr>
<td>9 Telephone to emergency steering position*</td>
<td>..................</td>
</tr>
<tr>
<td>10 Daylight signalling lamp*</td>
<td>..................</td>
</tr>
<tr>
<td>11 Radar reflector*</td>
<td>..................</td>
</tr>
<tr>
<td>12 International Code of Signals</td>
<td>..................</td>
</tr>
</tbody>
</table>

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate
THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at ................................................................................................................................

(Place of issue of the Record)

.................................. ........................................................................

(Date of issue) ...........................................................................

(Signature of duly authorized official
issuing the Record)

(Seal or stamp of the issuing authority, as appropriate)

Form of Nuclear Cargo Ship Safety Certificate

3 The form of the certificate is replaced with the following:

“FORM OF SAFETY CERTIFICATE FOR NUCLEAR CARGO SHIPS

NUCLEAR CARGO SHIP SAFETY CERTIFICATE

This Certificate shall be supplemented by a Record of Equipment (Form CNUC)

(State)

Issued under the provisions of the
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE
AT SEA, 1974 as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

(name of the State)

by ......................................................

(person or organization authorized)

Particulars of ship

Name of ship ...................................................................................

Distinctive number or letters ............................................................

Port of registry ...................................................................................

4 Alternatively, the particulars of the ship may be placed horizontally in boxes.
Gross tonnage ........................................................................................................................................

Sea areas in which ship is certified to operate (regulation IV/2) ....................................................

Length of ship (regulation III/3/12) ....................................................................................................

IMO Number\(^5\) ................................................................................................................................

Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced ..................................................

\textbf{THIS IS TO CERTIFY:}

1  That the ship has been surveyed in accordance with the requirements of regulation VIII/9 of the Convention.

2  That the ship, being a nuclear ship, complied with all the requirements of chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship; and that:

2.1 the ship complied with the requirements of the Convention as regards fire safety systems and appliances and fire control plans;

2.2 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;

2.3 the ship was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Convention;

2.4 the ship complied with the requirements of the Convention as regards radio installations;

2.5 the functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;

2.6 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;

2.7 the ship was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Convention and the International Regulations for Preventing Collisions at Sea in force;

2.8 in all other respects the ship complied with the relevant requirements of the regulations, so far as these requirements apply thereto.

\(^5\) In accordance with resolution A.600(15) - IMO Ship Identification Number Scheme, this information may be included voluntarily.
This certificate is valid until  ........................................................................................................

Completion date of the survey on which this certificate is based: ........................................ (dd/mm/yyyy)

Issued at ........................................... the ............. day of.................. 20 ...... (Place of issue of certificate)

.................................................................................................................................
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

(Signature)

Endorsement where the renewal survey has been completed and regulation I/14(d) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with regulation I/14(d) of the Convention, be accepted as valid until .................................................................

Signed: ...........................................................
(Signature of authorized official)

Place: ..............................................................

Date: ..............................................................

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/14(e) or I/14(f) applies

This certificate shall, in accordance with regulation I/14(e)/I/14(f) of the Convention, be accepted as valid until ..........................................................................................................

Signed: ...........................................................
(Signature of authorized official)

Place: ..............................................................

Date: ..............................................................

(Seal or stamp of the authority, as appropriate)”
4 The following Record of Equipment for the Nuclear Cargo Ship Safety Certificate is added after the form of the Nuclear Cargo Ship Safety Certificate:

**“RECORD OF EQUIPMENT FOR THE NUCLEAR CARGO SHIP SAFETY CERTIFICATE (FORM CNUC)”**

This Record shall be permanently attached to the Nuclear Cargo Ship Safety Certificate

**RECORD OF EQUIPMENT FOR COMPLIANCE WITH THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS MODIFIED BY THE PROTOCOL OF 1988 RELATING THERETO**

1 **Particulars of ship**

Name of ship ....................................................................................................................

Distinctive number or letters.........................................................................................

Minimum number of persons with required qualifications to operate the radio installations ..............................................

2 **Details of life-saving appliances**

<table>
<thead>
<tr>
<th></th>
<th>Total number of persons for which life-saving appliances are provided</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Port side</td>
</tr>
<tr>
<td>2.1</td>
<td>Total number of persons accommodated by them</td>
</tr>
<tr>
<td>2.2</td>
<td>Number of partially enclosed lifeboats (regulation III/42)</td>
</tr>
<tr>
<td>2.3</td>
<td>Number of self-righting partially enclosed lifeboats (regulation III/43)</td>
</tr>
<tr>
<td>2.4</td>
<td>Number of totally enclosed lifeboats (regulation III/44)</td>
</tr>
<tr>
<td>2.5</td>
<td>Other lifeboats</td>
</tr>
<tr>
<td>2.5.1</td>
<td>Number</td>
</tr>
<tr>
<td>2.5.2</td>
<td>Type</td>
</tr>
</tbody>
</table>
## 2 Details of life-saving appliances (continued)

<table>
<thead>
<tr>
<th></th>
<th>Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Number of motor lifeboats (included in the total lifeboats shown above)</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Number of lifeboats fitted with searchlights</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Number of rescue boats</td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Number of boats which are included in the total lifeboats shown above</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Liferafts</td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Those for which approved launching appliances are required</td>
<td></td>
</tr>
<tr>
<td>5.1.1</td>
<td>Number of liferafts</td>
<td></td>
</tr>
<tr>
<td>5.1.2</td>
<td>Number of persons accommodated by them</td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Those for which approved launching appliances are not required</td>
<td></td>
</tr>
<tr>
<td>5.2.1</td>
<td>Number of liferafts</td>
<td></td>
</tr>
<tr>
<td>5.2.2</td>
<td>Number of persons accommodated by them</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Buoyant apparatus</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Number of apparatus</td>
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<td>Number of lifebuoys</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Number of lifejackets</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Immersion suits</td>
<td></td>
</tr>
<tr>
<td>9.1</td>
<td>Total number</td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td>Number of suits complying with the requirements for lifejackets</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Number of thermal protective aids</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Radio installations used in life-saving appliances</td>
<td></td>
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<tr>
<td>11.1</td>
<td>Number of radar transponders</td>
<td></td>
</tr>
<tr>
<td>11.2</td>
<td>Number of two-way VHF radiotelephone apparatus</td>
<td></td>
</tr>
</tbody>
</table>

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7 Excluding those required by regulations III/38.5.1.24, III/41.8.31 and III/47.2.2.13
### Details of radio facilities

<table>
<thead>
<tr>
<th>Item</th>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Primary systems</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.1 VHF radio installation</td>
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</tr>
<tr>
<td>1.1.1 DSC encoder</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.1.2 DSC watch receiver</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.1.3 Radiotelephony</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.2 MF radio installation</td>
<td>..................................................</td>
</tr>
<tr>
<td>1.2.1 DSC encoder</td>
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</tr>
<tr>
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<td>6 Ship's radar transponder</td>
<td>..................................................</td>
</tr>
</tbody>
</table>

### Methods used to ensure availability of radio facilities
(regulations IV/15.6 and 15.7)

4.1 Duplication of equipment ..................................................

4.2 Shore-based maintenance ..................................................

4.3 At-sea maintenance capability ...........................................
### 5 Details of navigation systems and equipment

<table>
<thead>
<tr>
<th>Actual provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Standard magnetic compass*</td>
</tr>
<tr>
<td>1.2 Spare magnetic compass*</td>
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<td>1.9 Transmitting heading device (THD)*</td>
</tr>
<tr>
<td>2.1 Nautical charts/Electronic chart display and information system (ECDIS)**</td>
</tr>
<tr>
<td>2.2 Back up arrangements for ECDIS</td>
</tr>
<tr>
<td>2.3 Nautical publications</td>
</tr>
<tr>
<td>2.4 Back up arrangements for electronic nautical publications</td>
</tr>
<tr>
<td>3.1 Receiver for a global navigation satellite system/terrestrial radio navigation system* **</td>
</tr>
<tr>
<td>3.2 9 GHz radar*</td>
</tr>
<tr>
<td>3.3 Second radar (3 GHz/9 GHz)**</td>
</tr>
<tr>
<td>3.4 Automatic radar plotting aid (ARPA)*</td>
</tr>
<tr>
<td>3.5 Automatic tracking aid*</td>
</tr>
<tr>
<td>3.6 Second automatic tracking aid*</td>
</tr>
<tr>
<td>3.7 Electronic plotting aid*</td>
</tr>
<tr>
<td>4 Automatic identification system (AIS)</td>
</tr>
<tr>
<td>5 Voyage data recorder (VDR)/Simplified voyage data recorder (S-VDR)**</td>
</tr>
<tr>
<td>6.1 Speed and distance measuring device (through the water)*</td>
</tr>
<tr>
<td>6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*</td>
</tr>
<tr>
<td>6.3 Echo sounding device*</td>
</tr>
<tr>
<td>7.1 Rudder, propeller, thrust, pitch and operational mode indicator*</td>
</tr>
<tr>
<td>7.2 Rate of turn indicator*</td>
</tr>
<tr>
<td>8 Sound reception system*</td>
</tr>
<tr>
<td>9 Telephone to emergency steering position*</td>
</tr>
<tr>
<td>10 Daylight signalling lamp*</td>
</tr>
<tr>
<td>11 Radar reflector*</td>
</tr>
<tr>
<td>12 International Code of Signals</td>
</tr>
</tbody>
</table>

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate.
THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at ................................................................................................................................

(Place of issue of the Record)

.................................. ............................................................

(Date of issue) (Signature of duly authorized

official issuing the Record)

(Seal or stamp of the issuing authority, as appropriate)"

***
ANNEX 36

WORK PROGRAMMES OF THE SUB-COMMITTEES

SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>2. Casualty analysis (co-ordinated by FSI)</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>3. Consideration of IACS unified interpretations</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>H.1 Environmental and safety aspects of alternative tanker designs under MARPOL 73/78 regulation I/13F</strong></td>
<td></td>
</tr>
<tr>
<td><strong>.1 assessment of alternative tanker designs, if any (as necessary)</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>H.2 Requirements for protection of personnel involved in the transport of cargoes containing toxic substances in all types of tankers</strong></td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.3 Oil tagging systems</strong></td>
<td>2 sessions</td>
</tr>
</tbody>
</table>

**Notes:**

1. "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.

2. Items printed in bold letters have been selected for the provisional agenda for BLG 9, shown in annex 37.
Sub-Committee on Bulk Liquids and Gases (BLG) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H.4</strong> Revision of the fire protection requirements of the IBC, IGC, BCH and GC Codes (in co-operation with FP as necessary)**</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.5</strong> Amendments to resolution MEPC.2(VI)</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.6</strong> Development of standards regarding rate of discharge for sewage</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.7</strong> Development of provisions for gas-fuelled ships (co-ordinated by DE)</td>
<td>2007</td>
</tr>
</tbody>
</table>
### SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods</td>
<td>Continuous MSC 63/23, paragraph 10.6; DSC 18/15, section 3</td>
</tr>
<tr>
<td>2 Reports on incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</td>
<td>Continuous CDG 45/22, section 11 and paragraph 20.2; DSC 8/15, section 6</td>
</tr>
<tr>
<td>3 Amendments to the BC Code, including evaluation of properties of solid bulk cargoes</td>
<td>Continuous BC 34/17, section 3; DSC 8/15, section 4</td>
</tr>
<tr>
<td>4 <strong>Casualty analysis</strong> (co-ordinated by FSI)</td>
<td>Continuous MSC 70/23, paragraphs 9.17 and 20.4</td>
</tr>
<tr>
<td>H.1 Amendment (33-06) to the IMDG Code* and supplements</td>
<td>2005 DSC 3/15, paragraph 12.6; DSC 8/15, section 3</td>
</tr>
<tr>
<td>H.2 Review of Annex III of MARPOL 73/78</td>
<td>2005 DSC 3/15, paragraph 12.6; DSC 6/15, paragraph 12.2; MEPC 48/21, paragraph 18.3.1; DSC 8/15, section 3</td>
</tr>
</tbody>
</table>

**Notes:**

1. "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.

2. Items printed in bold letters have been selected for the provisional agenda for DSC 9, shown in annex 37.

* As adopted by resolution MSC.122(75).
Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) (continued)

| H.3 | Cargo securing manual | 2004 | DSC 5/13, paragraph 10.5; MSC 73/21, paragraph 18.8; DSC 8/15, section 5 |
| H.4 | Review of the BC Code | 2004 | DSC 3/15, paragraph 12.7; DSC 7/15, section 12; MSC 76/23, paragraph 20.12; DSC 8/15, section 4 |
| H.5 | Development of a manual on loading and unloading of solid bulk cargoes for terminal representatives | 2004 | MSC 72/23, paragraph 21.17; DSC 7/15, section 9; MSC 76/23, paragraph 20.10; DSC 8/15, section 7 |
| H.6 | Measures to enhance maritime security | 2004 | MSC 75/24, paragraph 22.9; DSC 8/15, section 9 |
| H.7 | Guidance on serious structural deficiencies in containers | 2004 | MSC 75/24, paragraph 22.15; DSC 8/15, section 8 |
| H.8 | Review of the SPS Code (co-ordinated by DE) | 2 sessions | MSC 78/26, paragraph 24.9 |
Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H.9</strong> Document of compliance required by SOLAS regulation II-2/19</td>
<td>2004</td>
</tr>
<tr>
<td><strong>H.10</strong> Amendments to the CSS Code</td>
<td>2005</td>
</tr>
</tbody>
</table>
### Sub-Committee on Fire Protection (FP)

<table>
<thead>
<tr>
<th></th>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analysis of fire casualty records</td>
<td>Continuous</td>
</tr>
<tr>
<td>2</td>
<td>Consideration of IACS unified interpretations</td>
<td>Continuous</td>
</tr>
<tr>
<td>H.1</td>
<td>Large passenger ship safety</td>
<td>2006</td>
</tr>
<tr>
<td>H.2</td>
<td>Performance testing and approval standards for fire safety systems</td>
<td>2005</td>
</tr>
<tr>
<td>H.3</td>
<td>Review of the fire protection provisions of the LHNS Guidelines</td>
<td>2006</td>
</tr>
<tr>
<td>H.4</td>
<td>Performance standards for evacuation guidance systems</td>
<td>2006</td>
</tr>
<tr>
<td>H.6</td>
<td>Amendments to resolution A.754(18) relating to performance criteria for fire doors</td>
<td>2005</td>
</tr>
</tbody>
</table>

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2. Items printed in bold letters have been selected for the provisional agenda for FP 49, shown in annex 37.
**Sub-Committee on Fire Protection (FP) (continued)**

<table>
<thead>
<tr>
<th>H.7</th>
<th>Amendments to resolution A.653(16) relating to the preparation of specimens for sealants and mastics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target completion date/number of sessions needed for completion: 2005</td>
</tr>
<tr>
<td></td>
<td>Reference: MSC 77/26, paragraph 23.13; FP 48/19, section 15</td>
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</table>

<table>
<thead>
<tr>
<th>H.8</th>
<th>Recommendation on evacuation analysis for new and existing passenger ships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target completion date/number of sessions needed for completion: 2005</td>
</tr>
<tr>
<td></td>
<td>Reference: MSC 73/21, paragraph 4.16; FP 48/19, section 12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H.9</th>
<th>Review of the SPS Code (co-ordinated by DE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target completion date/number of sessions needed for completion: 2 sessions</td>
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<tr>
<td></td>
<td>Reference: MSC 78/26, paragraph 24.9</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>H.10</th>
<th>Development of provisions for gas-fuelled ships (co-ordinated by DE)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Target completion date/number of sessions needed for completion: 2007</td>
</tr>
<tr>
<td></td>
<td>Reference: MSC 78/26, paragraph 24.19</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>L.1</th>
<th>Smoke control and ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target completion date/number of sessions needed for completion: 2 sessions</td>
</tr>
<tr>
<td></td>
<td>Reference: FP 39/19, section 9; FP 46/16, section 4</td>
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### SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI)

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<thead>
<tr>
<th></th>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mandatory reports under MARPOL 73/78</td>
<td>MSC 70/23, paragraph 20.12.1; FSI 12/22, section 3</td>
</tr>
<tr>
<td>2</td>
<td>Casualty statistics and investigations</td>
<td>MSC 68/23, paragraphs 7.16 to 7.24; FSI 12/22, section 4</td>
</tr>
<tr>
<td>3</td>
<td>Regional co-operation on port State control</td>
<td>FSI 12/22, section 5</td>
</tr>
<tr>
<td>4</td>
<td>Reporting procedures on port State control detentions and analysis and evaluation of reports</td>
<td>MSC 71/23, paragraph 20.16; FSI 12/22, section 6</td>
</tr>
<tr>
<td>5</td>
<td>Responsibilities of Governments and measures to encourage flag State compliance</td>
<td>MSC 68/23, paragraphs 7.2 to 7.8; FSI 12/22, section 7</td>
</tr>
<tr>
<td>6</td>
<td>Comprehensive analysis of difficulties encountered in the implementation of IMO instruments</td>
<td>MSC 69/22, paragraph 20.28; FSI 8/19, section 4; FSI 12/22, section 8</td>
</tr>
<tr>
<td>7</td>
<td>Review of the Survey Guidelines under the HSSC (resolution A.948(23))</td>
<td>MSC 72/23, paragraph 21.27; FSI 12/22, section 9</td>
</tr>
<tr>
<td>8</td>
<td>Consideration of IACS unified interpretations</td>
<td>MSC 78/26, paragraph 22.12</td>
</tr>
</tbody>
</table>

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2. Items printed in bold letters have been selected for the provisional agenda for FSI 13, shown in annex 37.
### Sub-Committee on Flag State Implementation (FSI) (continued)

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<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H.1</strong> PSC on seafarers’ working hours</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.2</strong> Illegal, unregulated and unreported (IUU) fishing and implementation of resolution A.925(22)</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.3</strong> Development of provisions on transfer of class</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.4</strong> Measures to enhance maritime security</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.5</strong> Review of reporting requirements for reception facilities</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.6</strong> Development of survey guidelines required by regulation E-1 of the 2004 BWM Convention</td>
<td>2 sessions</td>
</tr>
</tbody>
</table>
### SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COMSAR 7/23, section 3; COMSAR 8/18, section 3</td>
</tr>
</tbody>
</table>

1. **Global Maritime Distress and Safety System (GMDSS)**

   1. **matters relating to the GMDSS Master Plan**

   - Continuous
   - COMSAR 7/23, paragraphs 3.1 to 3.4; COMSAR 8/18, paragraphs 3.1 to 3.3

   - **exemptions from radio requirements**

   - Continuous
   - COMSAR 4/14, paragraphs 3.38 to 3.41

2. **Promulgation of maritime safety information (MSI) (in co-operation with ITU, IHO, WMO and IMSO)**

   1. **operational and technical co-ordination provisions of maritime safety information (MSI) services, including review of the related documents**

   - Continuous
   - COMSAR 7/23, paragraphs 3.5 to 3.13; COMSAR 8/18, paragraphs 3.4 to 3.7

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### Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3</strong> ITU World Radiocommunication Conference matters</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>4</strong> Radiocommunication ITU-R Study Group 8 matters</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>5</strong> Satellite services (Inmarsat and COSPAS-SARSAT)</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>6</strong> Matters concerning search and rescue, including those related to the 1979 SAR Conference and the implementation of the GMDSS</td>
<td></td>
</tr>
<tr>
<td>.1 harmonization of aeronautical and maritime search and rescue procedures, including SAR training matters</td>
<td>2005</td>
</tr>
<tr>
<td>.2 plan for the provision of maritime SAR services, including procedures for routeing distress information in the GMDSS</td>
<td>Continuous</td>
</tr>
<tr>
<td>Target completion date/number of sessions needed for completion</td>
<td>Reference</td>
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<tr>
<td>---------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>.3 revision of the IAMSAR Manual</td>
<td>Continuous</td>
</tr>
<tr>
<td>.4 medical assistance in SAR services</td>
<td>2005</td>
</tr>
<tr>
<td>7 Casualty analysis (co-ordinated by FSI)</td>
<td>Continuous</td>
</tr>
<tr>
<td>H.1 Amendments to SOLAS chapter IV pursuant to the criteria set out in resolution A.888(21)</td>
<td>3 sessions</td>
</tr>
<tr>
<td>H.2 Developments in maritime radiocommunication systems and technology</td>
<td>2005</td>
</tr>
<tr>
<td>H.3 Emergency radiocommunications, including false alerts and interference</td>
<td>2006</td>
</tr>
<tr>
<td>H.4 Review of the OSV Guidelines (co-ordinated by SLF)</td>
<td>2007</td>
</tr>
<tr>
<td>Target completion date/number of sessions needed for completion</td>
<td>Reference</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>H.5</strong> Review of the 2000 HSC Code and amendments to the DSC Code and the 1994 HSC Code (co-ordinated by DE)</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.6</strong> Measures to enhance maritime security</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.7</strong> Review of the SPS Code (co-ordinated by DE)</td>
<td>2 sessions</td>
</tr>
<tr>
<td><strong>H.8</strong> Revision of the performance standards for SART</td>
<td>2 sessions</td>
</tr>
<tr>
<td><strong>H.9</strong> Large passenger ship safety</td>
<td>2006</td>
</tr>
<tr>
<td><strong>L.1</strong> Review of the FAL and SALVAGE Convention provisions to address the treatment of persons rescued at sea</td>
<td>2005</td>
</tr>
<tr>
<td><strong>L.2</strong> Recommendations on high-risk oceanic crossings by adventure craft (co-ordinated by NAV)</td>
<td>2005</td>
</tr>
</tbody>
</table>
### SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td><strong>1</strong> Routeing of ships, ship reporting and related matters</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>2</strong> Casualty analysis (co-ordinated by FSI)</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>3</strong> Consideration of IACS unified interpretation</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>H.1</strong> World-wide radionavigation system (WWRNS)</td>
<td>2005</td>
</tr>
<tr>
<td>.1 new developments in the field of GNSS, especially Galileo</td>
<td>2005</td>
</tr>
<tr>
<td>.2 review and amendment of IMO policy for GNSS (resolution A.915(22))</td>
<td>2005</td>
</tr>
<tr>
<td>.3 recognition of radionavigation systems as components of the WWRNS (resolution A.953(23))</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.2</strong> Large passenger ship safety: effective voyage planning for large passenger ships</td>
<td>2004</td>
</tr>
</tbody>
</table>

### Notes:
1. "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.
2. Items printed in bold letters have been selected for the provisional agenda for NAV 50, shown in annex 37.
### Sub-Committee on Safety of Navigation (NAV) (continued)

<table>
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<tr>
<th></th>
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<th>Reference</th>
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<tr>
<td>H.3</td>
<td>Anchoring, mooring and towing equipment (co-ordinated by DE)</td>
<td>2004</td>
</tr>
<tr>
<td>H.4</td>
<td>Review of performance standards for radar equipment</td>
<td>2004</td>
</tr>
<tr>
<td>H.5</td>
<td>Review of the OSV Guidelines (co-ordinated by SLF)</td>
<td>3 sessions</td>
</tr>
<tr>
<td>H.6</td>
<td>Requirements for the display and use of AIS information on shipborne navigational displays</td>
<td>2004</td>
</tr>
<tr>
<td>H.8</td>
<td>Measures to enhance maritime security</td>
<td>2004</td>
</tr>
<tr>
<td>H.9</td>
<td>ITU matters, including Radio-communication ITU-R Study Group 8 matters</td>
<td>2006</td>
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</table>
### Sub-Committee on Safety of Navigation (NAV) (continued)

<table>
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<tr>
<th>Reference</th>
<th>Target completion date/number of sessions needed for completion</th>
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<tbody>
<tr>
<td>H.10</td>
<td>Guidance on early abandonment of bulk carriers (in co-operation with DE) 2004 MSC 76/23, paragraph 20.31; NAV 49/19, section 15</td>
</tr>
<tr>
<td>H.11</td>
<td>Revision of the fishing vessel Safety Code and Voluntary Guidelines (co-ordinated by SLF) 2004 MSC 77/26, paragraph 23.27</td>
</tr>
<tr>
<td>H.12</td>
<td>Review of the SPS Code (co-ordinated by DE) 2 sessions MSC 78/26, paragraph 24.9</td>
</tr>
<tr>
<td>H.13</td>
<td>Revision of the performance standards for INS and IBS 2 sessions MSC 78/26, paragraph 24.30</td>
</tr>
<tr>
<td>H.14</td>
<td>Evaluation of the use of ECDIS and ENC development 2 sessions* MSC 78/26, paragraph 24.33</td>
</tr>
<tr>
<td>L.1</td>
<td>Revision of the forms of nuclear ship safety certificates (co-ordinated by DE) 2 sessions MSC 75/24, paragraph 22.6</td>
</tr>
<tr>
<td>L.2</td>
<td>Recommendations on high-risk oceanic crossings by adventure craft (in co-operation with COMSAR) 2004 MSC 76/23, paragraph 20.30</td>
</tr>
</tbody>
</table>

* To be included in the provisional agenda for NAV 51.
### SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)

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<thead>
<tr>
<th></th>
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<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Casualty analysis (co-ordinated by FSI)</td>
<td>Continuous</td>
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<tr>
<td>2</td>
<td><strong>Consideration of IACS unified interpretations</strong></td>
<td>Continuous</td>
</tr>
<tr>
<td>H.1</td>
<td>Amendments to resolution A.744(18)</td>
<td>2006</td>
</tr>
<tr>
<td>H.2</td>
<td><strong>Safety aspects of water ballast management</strong></td>
<td>2006</td>
</tr>
<tr>
<td>H.3</td>
<td><strong>Large passenger ship safety</strong></td>
<td>2006</td>
</tr>
<tr>
<td>H.4</td>
<td><strong>Measures to prevent accidents with lifeboats</strong> (in co-operation with FSI, NAV and STW)</td>
<td>2006</td>
</tr>
<tr>
<td>H.5</td>
<td><strong>Protection of fuel tanks</strong> (in co-operation with BLG and SLF as necessary)</td>
<td>2005</td>
</tr>
</tbody>
</table>

**Notes:**

1. “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.

2. Items printed in bold letters have been selected for the provisional agenda for DE 48, shown in annex 2.
## Sub-Committee on Ship Design and Equipment (DE) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H.6</strong> Anchoring, mooring and towing equipment</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.7</strong> Performance testing and approval standards for SOLAS personal life-saving appliances</td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.10</strong> Performance standards for protective coatings</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.11</strong> Inspection and survey requirements for accommodation ladders</td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.12</strong> Mandatory emergency towing systems in ships other than tankers greater than 20,000 dwt</td>
<td>2006</td>
</tr>
</tbody>
</table>

MSC 74/24, paragraph 21.42; DE 47/25, section 8
MSC 74/24, paragraph 21.46; DE 47/25, section 9
MSC 75/24, paragraph 22.4; DE 47/25, paragraph 22.6
MSC 75/24, paragraph 12.22; MSC 76/23, paragraphs 8.19 and 20.4; DE 47/25, section 10
MSC 76/23, paragraphs 20.41.2 and 20.48; DE 47/25, section 18
MSC 77/26, paragraph 23.32; DE 47/25, paragraph 2.6
MSC 77/26, paragraph 23.33; DE 47/25, paragraph 24.9
| H.13 | **Compatibility of life-saving appliances** | 2006 | DE 47/15, paragraph 5.3; MSC 78/26, paragraph 24.37.1 |
| H.14 | **Inconsistencies in IMO instruments regarding requirements for life-saving appliances** | 2006 | DE 42/15, paragraph 9.7; MSC 78/26, paragraph 24.37.2 |
| H.15 | **Guidelines under MARPOL Annex VI on prevention of air pollution from ships** | | |
| | .1 Guideline on equivalent methods to reduce on-board NOx emission | 2 sessions | |
| | .2 **Guidelines on on-board exhaust gas cleaning systems** | 2005 | DE 46/32, paragraphs 3.10 and 29.9.6.1; DE 47/25, section 20 |
| | .3 Guidelines on other technological methods verifiable or enforceable to limit SOx emission | 2 sessions | |
| H.16 | **Revision of the Guidelines for systems for handling oily wastes in machinery spaces of ships (MEPC/Circ.235)** | 2006 | MEPC 51/22, paragraph 20.5 |
| H.17 | **Review of the SPS Code** (in co-operation with DSC, FP, NAV, COMSAR and SLF) | 2 sessions | MSC 78/26, paragraph 24.9 |
| H.18 | **Amendments to resolution A.761(18)** | 2 sessions | MSC 78/26, paragraph 24.38 |
### Sub-Committee on Ship Design and Equipment (DE) (continued)

<table>
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<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
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<tr>
<td><strong>H.19</strong> Development of provisions for gas-fuelled ships (in co-operation with BLG and FP)</td>
<td>2007</td>
</tr>
<tr>
<td><strong>H.20</strong> Test standards for extended service intervals of inflatable liferafts</td>
<td>2006</td>
</tr>
<tr>
<td><strong>L.1</strong> Revision of resolution A.760(18)</td>
<td>2 sessions</td>
</tr>
<tr>
<td><strong>L.2</strong> Free-fall lifeboats with float-free capabilities</td>
<td>1 session</td>
</tr>
</tbody>
</table>
### Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>1 Analysis of intact stability casualty records</td>
<td>Continuous</td>
</tr>
<tr>
<td>2 Analysis of damage cards</td>
<td>Continuous</td>
</tr>
<tr>
<td>3 Consideration of IACS unified interpretations</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>H.1</strong> Development of revised SOLAS chapter II-1 parts A, B and B-1</td>
<td>2004</td>
</tr>
<tr>
<td><strong>H.2</strong> Development of explanatory notes for harmonized SOLAS chapter II-1</td>
<td>2004</td>
</tr>
<tr>
<td><strong>H.3</strong> Revision of the fishing vessel Safety Code and Voluntary Guidelines (in co-operation with FP, COMSAR, NAV, DE and STW)</td>
<td>2004</td>
</tr>
</tbody>
</table>

**Notes:**

1. "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.
2. Items printed in bold letters have been selected for the provisional agenda for SLF 47, shown in annex 37.
### Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
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<tr>
<td><strong>H.4</strong> Safety aspects of ballast water management 1 session</td>
<td>MSC 71/23, paragraph 9.11</td>
</tr>
<tr>
<td><strong>H.5</strong> Large passenger ship safety 2004</td>
<td>MSC 74/24, paragraph 21.4; SLF 46/16, section 8</td>
</tr>
<tr>
<td><strong>H.6</strong> Revision of the Intact Stability Code 2007</td>
<td>SLF 41/18, paragraph 3.14; SLF 46/16, section 6</td>
</tr>
<tr>
<td><strong>H.7</strong> Review of the OSV Guidelines (in co-operation with BLG, COMSAR, NAV and DE) 2005</td>
<td>MSC 75/24, paragraph 22.4; SLF 46/16, section 7</td>
</tr>
<tr>
<td><strong>H.9</strong> Revision of technical regulations of the 1966 LL Convention 2005</td>
<td>MSC 76/23, paragraph 20.51; SLF 46/16, section 11</td>
</tr>
<tr>
<td><strong>H.10</strong> Improved loading/stability information for bulk carriers (in co-operation with DE) 2004</td>
<td>MSC 76/23, paragraph 20.52; SLF 46/16, section 12</td>
</tr>
<tr>
<td><strong>H.11</strong> Review of the SPS Code (co-ordinated by DE) 2 sessions</td>
<td>MSC 78/26, paragraph 24.9</td>
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</table>
### Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L.1</strong> Harmonization of damage stability provisions in other IMO instruments, including the 1993 Torremolinos Protocol (probabilistic method)</td>
<td>2005 <strong>MSC 62/25,</strong> paragraph 21.23; <strong>SLF 46/16,</strong> section 9</td>
</tr>
<tr>
<td><strong>L.2</strong> Revision of resolution A.266(VIII)</td>
<td>2 sessions <strong>SLF 45/14,</strong> paragraphs 3.19 and 11.1.4.1; <strong>MSC 76/23,</strong> paragraph 20.50</td>
</tr>
<tr>
<td><strong>L.3</strong> Tonnage measurement of open-top containerships</td>
<td>2 sessions <strong>MSC 78/26,</strong> paragraph 24.50</td>
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### SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
</tr>
</thead>
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<tr>
<td><strong>1 Validation of model training courses</strong></td>
<td>Continuous \ STW 31/17, paragraph 14.4; STW 35/19, section 3</td>
</tr>
<tr>
<td><strong>2 Casualty analysis (co-ordinated by FSI)</strong></td>
<td>Continuous \ MSC 70/23, paragraphs 9.17 and 20.4; MSC 77/26, paragraphs 18.10 and 23.40.2</td>
</tr>
<tr>
<td><strong>H.1 Unlawful practices associated with certificates of competency</strong></td>
<td>2005 \ MSC 71/23, paragraph 20.55.2; STW 35/19, section 5</td>
</tr>
<tr>
<td><strong>H.2 Large passenger ship safety</strong></td>
<td>2005 \ MSC 74/24, paragraph 21.4; STW 35/19, section 6</td>
</tr>
<tr>
<td><strong>H.3 Training of crew in launching/recovering operations of fast rescue boats and means of rescue in adverse weather conditions</strong></td>
<td>2006 \ MSC 74/24, paragraph 21.56; STW 35/19, section 7</td>
</tr>
<tr>
<td><strong>H.4 Measures to prevent accidents with lifeboats (co-ordinated by DE)</strong></td>
<td>2005 \ MSC 74/24, paragraph 21.34; STW 35/19, section 8</td>
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</tbody>
</table>

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1. "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.

2. Items printed in bold letters have been selected for the provisional agenda for STW 36, shown in annex 37.
Sub-Committee on Standards of Training and Watchkeeping (STW) (continued)

<table>
<thead>
<tr>
<th>Target completion date/number of sessions needed for completion</th>
<th>Reference</th>
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<tbody>
<tr>
<td><strong>H.5 Measures to enhance maritime security</strong></td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.6 Education and training requirements for fatigue prevention, mitigation and management</strong></td>
<td>2006</td>
</tr>
<tr>
<td><strong>H.7 Requirements for knowledge, skills and training for officers on WIG craft</strong></td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.8 Development of training requirements for the control and management of ship’s ballast water and sediments</strong></td>
<td>2007</td>
</tr>
<tr>
<td><strong>H.9 Development of competences for ratings</strong></td>
<td>2005</td>
</tr>
<tr>
<td><strong>H.10 Training and certification requirements for company and port facility security officers</strong></td>
<td>2005</td>
</tr>
</tbody>
</table>
**Sub-Committee on Standards of Training and Watchkeeping (STW) (continued)**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Target completion date/number of sessions needed for completion</th>
</tr>
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<tbody>
<tr>
<td>MSC 72/23, paragraph 21.56; STW 35/19, section 14</td>
<td>2 sessions</td>
</tr>
<tr>
<td>STW 34/14, paragraph 11.8</td>
<td>2 sessions</td>
</tr>
</tbody>
</table>

L.1 Review of the implementation of STCW chapter VII

L.2 Clarification of the STCW-F Convention provisions and follow-up action to the associated Conference resolutions

***
ANNEX 37

PROVISIONAL AGENDAS FOR THE FORTHCOMING SESSIONS
OF THE SUB-COMMITTEES

SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG) - 9TH SESSION*

Opening of the session and election of the Chairman and Vice-Chairman for 2005

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments
4 Requirements for protection of personnel involved in the transport of cargoes containing toxic substances in all types of tankers
5 Revision of the fire protection requirements of the IBC, IGC, BCH and GC Codes
6 Consideration of IACS unified interpretations
7 Amendments to resolution MEPC.2 (VI)
8 Development of standards regarding rate of discharge for sewage
9 Development of provisions for gas-fuelled ships
10 Review of the OSV Guidelines
11 Work programme and agenda for BLG 10
12 Election of Chairman and Vice-Chairman for 2006
13 Any other business
14 Report to the Committees

* Agenda item numbers do not necessarily indicate priority.
SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC) – 9TH SESSION∗

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Amendments to the IMDG Code and supplements, including harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods
   .1 harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods
   .2 amendment (33-06) to the IMDG Code∗∗ and supplements
   .3 review of Annex III of MARPOL 73/78

4 Review of the BC Code, including evaluation of properties of solid bulk cargoes

5 Cargo securing manual

6 Casualty and incident reports and analysis

7 Development of a manual on loading and unloading of solid bulk cargoes for terminal representatives

8 Guidance on serious structural deficiencies in containers

9 Measures to enhance maritime security

10 Document of compliance required by SOLAS regulation II-2/19

11 Amendments to the CSS Code

12 Work programme and agenda for DSC 10

13 Election of Chairman and Vice-Chairman for 2005

14 Any other business

15 Report to the Maritime Safety Committee

∗ Agenda item numbers do not necessarily indicate priority.

∗∗ As adopted by resolution MSC.122(75).
SUB-COMMITTEE ON FIRE PROTECTION (FP) – 49TH SESSION*

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Large passenger ship safety
4 Performance testing and approval standards for fire safety systems
6 Amendments to resolution A.653(16) relating to the preparation of specimens for sealants and mastics
7 Amendments to resolution A.754(18) relating to performance criteria for fire doors
8 Review of the fire protection provisions of the LHNS Guidelines
9 Performance standards for evacuation guidance systems
10 Recommendation on evacuation analysis for new and existing passenger ships
11 Analysis of fire casualty records**
12 Development of provisions for gas-fuelled ships
13 Consideration of IACS unified interpretations
14 Work programme and agenda for FP 50
15 Election of Chairman and Vice-Chairman for 2006
16 Any other business
17 Report to the Maritime Safety Committee

* Agenda item numbers do not necessarily indicate priority.
** Item under continuous review.
SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI) – 13th session

Opening of the session

1. Adoption of the agenda
2. Decisions of other IMO bodies
3. Mandatory reports under MARPOL 73/78
4. Casualty statistics and investigations
5. Regional co-operation on port State control
6. Reporting procedures on port State control detentions and analysis and evaluation of reports
7. Responsibilities of Governments and measures to encourage flag State compliance
8. Comprehensive analysis of difficulties encountered in the implementation of IMO instruments
9. Review of the Survey Guidelines under the HSSC (resolution A.948(23))
10. PSC on seafarers’ working hours
11. Illegal, unregulated and unreported (IUU) fishing and implementation of resolution A.925(22)
12. Development of provisions on transfer of class
13. Measures to enhance maritime security
14. Review of reporting requirements for reception facilities
15. Consideration of IACS unified interpretations
16. Work programme and agenda for FSI 14
17. Election of Chairman and Vice-Chairman for 2006
18. Any other business
19. Report to the Committees

* Agenda item numbers do not necessarily indicate priority.
SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR) - 9TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Global Maritime Distress and Safety System (GMDSS)
   .1 matters relating to the GMDSS Master Plan
   .2 operational and technical co-ordination provisions of maritime safety information (MSI) services, including review of the related documents

4 ITU maritime radiocommunication matters
   .1 Radiocommunication ITU-R Study Group 8 matters
   .2 ITU World Radiocommunication Conference matters

5 Satellite services (Inmarsat and COSPAS-SARSAT)

6 Emergency radiocommunications, including false alerts and interference

7 Matters concerning search and rescue, including those related to the 1979 SAR Conference and the implementation of the GMDSS
   .1 harmonization of aeronautical and maritime search and rescue procedures, including SAR training matters
   .2 plan for the provision of maritime SAR services, including procedures for routeing distress information in the GMDSS
   .3 medical assistance in SAR services

8 Developments in maritime radiocommunication systems and technology

9 Revision of the IAMSAR Manual

10 Review of the OSV Guidelines


* Agenda item numbers do not necessarily indicate priority.
12 Measures to enhance maritime security
13 Large passenger ship safety
14 Review of the FAL and SALVAGE Convention provisions regarding the treatment of persons rescued at sea
15 Recommendations on high-risk oceanic crossings by adventure craft
16 Work programme and agenda for COMSAR 10
17 Election of Chairman and Vice-Chairman for 2006
18 Any other business
19 Report to the Maritime Safety Committee
SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV) - 50TH SESSION

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Routeing of ships, ship reporting and related matters**
4 Requirements for the display and use of AIS information on shipborne navigational displays
6 Anchoring, mooring and towing equipment
7 Revision of the fishing vessel Safety Code and Voluntary Guidelines
8 Recommendations on high-risk oceanic crossing by adventure craft
9 Review of performance standards for radar equipment
10 ITU matters, including Radiocommunication ITU-R Study Group 8 matters
11 Large passenger ship safety: effective voyage planning for large passenger ships
12 Measures to enhance maritime security
13 World-wide radionavigation system (WWRNS)
14 Casualty analysis**
15 Guidance on early abandonment of bulk carriers
16 Work programme and agenda for NAV 51
17 Election of Chairman and Vice-Chairman for 2005
18 Any other business
19 Report to the Maritime Safety Committee

* Agenda item numbers do not necessarily indicate priority.
** Items under continuous review.
SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE) – 48TH SESSION *

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Amendments to resolution A.744(18)
4 Large passenger ship safety
5 Measures to prevent accidents with lifeboats
6 Anchoring, mooring and towing equipment
7 Protection of fuel tanks
8 Compatibility of life-saving appliances
9 Performance testing and approval standards for SOLAS personal life-saving appliances
10 Inconsistencies in IMO instruments regarding requirements for life-saving appliances
12 Performance standards for protective coatings
13 Guidelines on on-board exhaust gas cleaning systems
14 Mandatory emergency towing systems in ships other than tankers greater than 20,000 dwt
15 Review of the OSV Guidelines
16 Inspection and survey requirements for accommodation ladders
17 Safety aspects of water ballast management
18 Revision of the Guidelines for systems for handling oily wastes in machinery spaces of ships (MEPC/Circ.235)
19 Development of provisions for gas-fuelled ships

* Agenda item numbers do not necessarily indicate priority.
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<tr>
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<tbody>
<tr>
<td>20</td>
<td>Test standards for extended service intervals of inflatable liferafts</td>
</tr>
<tr>
<td>21</td>
<td>Consideration of IACS unified interpretations</td>
</tr>
<tr>
<td>22</td>
<td>Work programme and agenda for DE 49</td>
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<tr>
<td>23</td>
<td>Election of Chairman and Vice-Chairman for 2006</td>
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<tr>
<td>24</td>
<td>Any other business</td>
</tr>
<tr>
<td>25</td>
<td>Report to the Maritime Safety Committee</td>
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</table>
SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY (SLF) – 47TH SESSION*

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Development of revised SOLAS chapter II-1 parts A, B and B-1

4 Development of explanatory notes for harmonized SOLAS chapter II-1

5 Revision of the fishing vessel Safety Code and Voluntary Guidelines

6 Revision of the Intact Stability Code

7 Review of the OSV Guidelines

8 Large passenger ship safety

9 Harmonization of damage stability provisions in other IMO instruments

10 Consideration of IACS unified interpretations

11 Revision of technical regulations of the 1966 LL Convention

12 Improved loading/stability information for bulk carriers


14 Work programme and agenda for SLF 48

15 Election of Chairman and Vice-Chairman for 2005

16 Any other business

17 Report to the Maritime Safety Committee

* Agenda item numbers do not necessarily indicate priority.
SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW) - 36TH SESSION*

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Validation of model training courses
4 Unlawful practices associated with certificates of competency
5 Large passenger ship safety
6 Training of crew in launching/recovering operations of fast rescue boats and means of rescue in adverse weather conditions
7 Measures to prevent accidents with lifeboats
8 Measures to enhance maritime security: training and certification requirements for ship security officers
9 Education and training requirements for fatigue prevention, mitigation and management
10 Requirements for knowledge, skills and training for officers on WIG craft
11 Development of training requirements for the control and management of ship’s ballast water and sediments
12 Development of competences for ratings
13 Training and certification requirements for company and port facility security officers
14 Work programme and agenda for STW 37
15 Election of Chairman and Vice-Chairman for 2006
16 Any other business
17 Report to the Maritime Safety Committee

* Agenda item numbers do not necessarily indicate priority.