

標題

MSC 105 の審議結果の紹介

# ClassNK

## テクニカル インフォメーション

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各位

2022 年 4 月 20 日から 29 日に第 105 回海上安全委員会(MSC 105)が開催されました。今般、IMO より MSC 105 の議事録及び決議並びにサーキュラーが発行されたことから、次の通り同会合の情報及び審議結果をお知らせ致します。

### 1. 採択された条約及び関連コードの主要な改正

今回の会合で採択された主要な義務要件は以下の通りです。

#### (1) Global Maritime Distress and Safety System(GMDSS)の近代化に伴う SOLAS 等の改正 (添付 1 参照)

GMDSS の近代化に伴い、SOLAS II-1, III, IV, V 章及び付録(証書)等の改正が採択されました。また関連の諸々の性能基準、ガイドラインや指針が併せて承認されました。本改正の要点は以下の通りです。

- 「A3 海域」の定義が「インマルサット静止衛星の通信圏」から「認定された移動衛星業務による通信圏」に改正。
- SOLAS III 章 6 規則に規定されていた双方向 VHF 無線電話装置及び捜索救助用レーダトランスポンダ(SART)の規定が SOLAS IV 章に移設。
- 海上安全情報に関する調整された放送の受信機(ナブテックス)、船用 VHF 無線設備、船用 MF/HF 無線設備、インマルサット C 型船舶地球局等の性能基準が改正された。

適用: 2024 年 1 月 1 日

#### (2) IMSBC コードの改正

新規貨物の追加を含む、IMSBC コードの第 6 回改正が採択されました。

適用: 2023 年 12 月 1 日

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#### NOTES:

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(3) IMDG コードの改正

国連による2年周期での「危険物輸送に関する勧告」の改正に伴う、第41回IMDGコードの改正が採択されました。

適用: 2024年1月1日

2. 承認された条約及び関連コードの主要な改正

今回の会合で承認された主要な義務要件は以下の通りです。これらは、2022年11月に開催されるMSC 106にて採択される見込みです。

(1) IGC コードの改正(添付4参照)

設計温度が-55°Cより低く-165°Cまでの貨物タンク又はプロセス用圧力容器及び二次防壁用の板、形材及び鍛造品に関するIGCコード表6.3に高マンガンオーステナイト鋼を対象に含める改正が承認されました。

(2) IGF コードの改正(添付5参照)

設計温度が-55°Cより低く-165°Cまでの燃料タンク又はプロセス用圧力容器及び二次防壁用の板、形材及び鍛造品に関するIGFコード表7.3に高マンガンオーステナイト鋼を対象に含める改正が承認されました。

(3) 洋上作業員運送の安全に関する国際コード(IPコード)(添付6、7参照)

IPコードの新規制定及び同コードを強制化するためのSOLAS XV章の制定が承認されました。IPコードは12人を超える作業員を運送する500GT以上の貨物船及び高速艇が適用対象とされており、2024年7月1日に発効する見込みです。

(4) 2011 ESP コードの改正(添付8参照)

主に以下の点における、2011 ESPコードの改正が承認されました。

- i) ばら積み貨物船において毎年の検査実施が要求される条件となるバラストタンク(二重底タンクを除く)の塗装状態を、「不良(POOR)」から「優良未満(less than GOOD)」に変更。
- ii) 船齢20年を超える150m以上の二重船側ばら積み貨物船の貨物艙に隣接する二重船側空所において、塗装状態が「不良(POOR)」の場合は、毎年の検査実施が要求される旨を規定。
- iii) 独立タンクにより油を運送する油タンカーは同コードの適用対象とならないことを明確化。
- iv) 油タンカーの更新検査時に要求される圧力試験の実施時期の明確化。

(5) 燃料油の使用における安全性強化(添付2参照)

2020年1月1日から適用が開始となった燃料油の硫黄分0.50%規制をきっかけとして、燃料油の使用における安全上の問題が検討された結果、給油の際に燃料油供給業者が船舶に提供するbunker delivery noteに引火点の情報を記載することを強制化するためのSOLAS条約II-2章の改正が承認されました。

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### 3. 統一解釈等の承認

今回の会合において承認された統一解釈、ガイドライン及び指針等のうち、主要なものは以下のとおりです。以下で参照されている IACS 統一解釈(UI)については、IACS ホームページ (<http://www.iacs.org.uk/>) にて公開されております。

#### 3.1 統一解釈

##### (1) IGC コードの統一解釈(添付 10 参照)

IGC コード 5.4.4 及び 5.13.2.4 において、ガス燃料装置のダクトの定義に、ガスバルブユニットの囲壁及び船体構造等の構造の一部を利用したダクトが含まれる旨を明確にするための統一解釈(MSC.1/Circ.1625)の改正。尚、ガスバルブユニット室にあつては本規則の適用対象外とされたが、ガス燃料管の破裂により生じる最大の圧力に耐えることを計算により文書化することが要求される。

##### (2) 損傷時復原性に関連する甲板上木材貨物の統一解釈(MSC/Circ.998 付録)の更新(添付 11 参照)

2011 TDCコードと整合するため、損傷時復原性計算において予備浮力に算入する甲板上木材貨物の解釈(MSC/Circ.998 付録)の更新。(関連 IACS UI SC161)

##### (3) 騒音コードに関する統一解釈(添付 12 参照)

騒音コード付録の paragraph 4.2.1 に規定される「機関区域外の作業室」について明確にするための解釈。

##### (4) 1988 年の LL 議定書の統一解釈(MSC.1/Circ.1535/Rev.1)の改正(添付 13 参照)

1988 年の LL 議定書 37 規則に規定される「船楼及びトランクによる乾舷の控除」について、控除が認められていない船首楼の有効長さが 0.07L 未満の B 型乾舷船舶に対しては、船首楼以外の船楼による控除も認められない旨を明確にする解釈を追加するための、MSC.1/Circ.1535/Rev.1 の改正。

##### (5) SOLAS 条約 II-1 章の統一解釈(MSC.1/Circ.1362)の改正(添付 14 参照)

軽荷重量の変更に関する SOLAS 条約 II-1 章 5.4 及び 5.5 規則について、変更に伴い要求される傾斜試験の再実施や復原性資料の更新の条件を明確にするための解釈を追加する MSC.1/Circ.1362 の改正。

#### 3.2 ガイドライン

##### (1) 第二世代非損傷時復原性基準の暫定ガイドライン(MSC.1/Circ.1627)の注釈

「デッドシップ状態」「過大加速度」「復原力喪失」「パラメトリック横揺れ」及び「ブローチング」の 5 つの現象について波浪中を航行する状態を想定して評価するための、第二世代非損傷時復原性基準を規定した暫定ガイドライン(MSC.1/Circ.1627)が発行されています。今般、基準を構成する要素の更なる明確化や説明により、本ガイドラインを適用する一助となることを目的とした注釈が承認されました。

##### (2) 燃料電池搭載船の安全に関する暫定ガイドライン(添付 9 参照)

長年検討されてきた IGF コード見直し作業の一環として、燃料電池搭載船の安全に関する暫定ガイドラインが承認されました。

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#### 4. 自動運航船関連要件の検討(添付3参照)

船舶の自動化に関する研究が進んでいる中で、自動運航船に適用すべき条約要件についてMSCで検討を行っています。

今回の審議では、2024年以内に自動運航船に関する非強制の目標指向型のガイドラインを作成した上で、新規強制要件(MASS Code)を2028年1月1日から発効することを目標とした作業計画が合意されました。具体的な要件は、レスポンスグループ(作業グループ)を設置して検討作業が進められていく予定です。

#### 5. アンモニア燃料船の安全性に関する新規検討項目

GHGの排出を削減するために、代替燃料を使用する動きが加速しています。今回の会合では、アンモニアを燃料として使用する船舶に対する関連のガイドラインを検討することが提案されました。

審議の結果、2023年の作業完了を目標にアンモニア燃料船の安全性に関するガイドラインを検討していくことが合意されました。今年9月のCCC小委員会より審議が開始されます。

本件に関連し、弊会はアンモニア燃料船に関わる船舶、船員及び環境に与えるリスクを最小化するための設備、制御及び安全装置等に関する要件を規定した「代替燃料船ガイドライン(第2.0版)」を2022年7月に発行しております。本ガイドラインは、弊社ウェブサイト(URL: [www.classnk.or.jp](http://www.classnk.or.jp))にてユーザー登録をすることにより、マイページの「ガイドライン」のページでご覧いただけます。

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なお、本件に関してご不明な点は、以下の部署にお問い合わせください。

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添付:

1. RESOLUTION MSC.496(105)
2. DRAFT AMENDMENTS TO SOLAS CHAPTER II-2 IN RELATION TO FLASHPOINT
3. ROAD MAP FOR DEVELOPING A GOAL-BASED INSTRUMENT FOR MARITIME AUTONOMOUS SURFACE SHIPS (MASS)
4. DRAFT AMENDMENTS TO THE IGC CODE
5. DRAFT AMENDMENTS TO THE IGF CODE
6. DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974 (NEW SOLAS CHAPTER XV TO MAKE THE IP CODE MANDATORY)
7. DRAFT INTERNATIONAL CODE OF SAFETY FOR SHIPS CARRYING INDUSTRIAL PERSONNEL (IP CODE)
8. DRAFT AMENDMENTS TO THE 2011 ESP CODE
9. MSC.1/Circ.1647
10. MSC.1/Circ.1651
11. MSC.1/Circ.1653
12. MSC.1/Circ.1654
13. MSC.1/Circ.1535/Rev.2
14. MSC.1/Circ.1362/Rev.1

**ANNEX 3**

**RESOLUTION MSC.496(105)  
(adopted on 28 April 2022)**

**AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE  
SAFETY OF LIFE AT SEA, 1974**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO article VIII(b) of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), concerning the amendment procedure applicable to the annex to the Convention, other than to the provisions of chapter I,

HAVING CONSIDERED, at its 105th session, amendments to the Convention proposed and circulated in accordance with article VIII(b)(i) of the Convention,

1 ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the Convention, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the said amendments shall be deemed to have been accepted on 1 July 2023, unless, prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet have notified the Secretary-General of their objections to the amendments;

3 INVITES Contracting Governments to the Convention to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on 1 January 2024 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention;

5 ALSO REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

**AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE  
SAFETY OF LIFE AT SEA, 1974**

**CHAPTER II-1  
CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY,  
MACHINERY AND ELECTRICAL INSTALLATIONS**

**Part D  
Electrical installations**

**Regulation 42 – Emergency source of electrical power in passenger ships**

1 Paragraph 2.2.2.3 is replaced by the following:

"3 the MF/HF radio installation required by regulations IV/11.1.1 and IV/11.1.2."

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

2 Paragraph 2.3.2.3 is replaced by the following:

"3 the MF/HF radio installation required by regulations IV/11.1.1 and IV/11.1.2."

**CHAPTER III  
LIFE-SAVING APPLIANCES AND ARRANGEMENTS**

**Part B  
Requirements for ships and life-saving appliances**

**Regulation 6 – Communications**

3 Paragraphs 1, 2, 2.1, 2.1.1, 2.1.2 and 2.2 are replaced by the following:

"1 [Reserved\*]

2 [Reserved\*]

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\* The provisions related to two-way VHF radiotelephone apparatus and search and rescue locating devices have been relocated under chapter IV (refer to resolution MSC.496(105)). Paragraphs 1 and 2 were intentionally left blank to avoid renumbering of existing regulations."

## CHAPTER IV RADIOCOMMUNICATIONS

4 The text of chapter IV is replaced by the following:

### "Part A General

#### Regulation 1 – Application

1 Unless expressly provided otherwise, this chapter applies to all ships to which the present regulations apply and to cargo ships of 300 gross tonnage and upwards.

2 This chapter does not apply to ships to which the present regulations would otherwise apply while such ships are being navigated within the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St Lambert Lock at Montreal in the Province of Quebec, Canada.<sup>1</sup>

3 No provision in this chapter shall prevent the use by any ship, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.

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<sup>1</sup> Such ships are subject to special requirements relative to radio for safety purposes, as contained in the relevant agreement between Canada and the United States of America.

#### Regulation 2 – Terms and definitions

1 For the purpose of this chapter, the following terms shall have the meanings defined below:

- .1 *AIS-SART* means an automatic identification system search and rescue transmitter capable of operating on frequencies dedicated for AIS (161.975 MHz (AIS1) and 162.025 MHz (AIS2)).
- .2 *Bridge-to-bridge communications* means safety radiocommunications between ships from the position from which the ships are normally navigated.
- .3 *Continuous radio watch* means that the radio and listening watch concerned shall not be interrupted other than for brief intervals when the ship's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.
- .4 *Digital selective calling (DSC)* means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International Telecommunication Union Radiocommunication Sector (ITU-R).
- .5 *Emergency position-indicating radio beacon (EPIRB)* means a transmitter operating in the frequency band 406.0-406.1 MHz capable of transmitting a distress alert via satellite to a rescue coordination centre and transmitting signals for on-scene locating.



- .6 *General radiocommunications* means communications other than distress, urgency and safety communications.
- .7 *Global Maritime Distress and Safety System (GMDSS)* means a system that performs the functions set out in regulation 4.1.1.
- .8 *GMDSS identities* means information which may be transmitted to uniquely identify the ship or its associated rescue boats and survival craft. These identities are the ship's call sign, Maritime Mobile Service Identity (MMSI), EPIRB hexadecimal identity, recognized mobile satellite service identities and equipment serial numbers.
- .9 *Locating* means the finding of ships, aircraft, survival craft or persons in distress.
- .10 *Maritime safety information (MSI)*<sup>2</sup> means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships.
- .11 *Radar SART* means a search and rescue transponder operating on radar frequencies in the frequency band 9.2-9.5 GHz.
- .12 *Radio Regulations* means the Radio Regulations complementing the Constitution and Convention of the International Telecommunication Union which is in force at any given time.
- .13 *Recognized mobile satellite service* means any service which operates through a satellite system and is recognized by the Organization, for use in GMDSS.
- .14 *Satellite service on 406 MHz* means a service operating through a satellite system having global availability designed to detect EPIRBs transmitting in the frequency band 406.0-406.1 MHz.
- .15 *Sea area A1* means an area within the radiotelephone coverage of at least one very high frequency (VHF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.<sup>3</sup>
- .16 *Sea area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one medium frequency (MF) coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.<sup>3</sup>
- .17 *Sea area A3* means an area, excluding sea areas A1 and A2, within the coverage of a recognized mobile satellite service supported by the ship earth station carried on board, in which continuous alerting is available.
- .18 *Sea area A4* means an area outside of sea areas A1, A2 and A3.

2 All other terms and abbreviations which are used in this chapter and which are defined in the Radio Regulations and in the International Convention on Maritime Search and Rescue, 1979, as may be amended, shall have the meanings as defined in those Regulations and the SAR Convention.

- <sup>2</sup> Refer to *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI)* (MSC.1/Circ.1310, as revised).
- <sup>3</sup> Refer to *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)* (resolution MSC.509(105)).

### Regulation 3 – Exemptions

1 The Contracting Governments consider it highly desirable not to deviate from the requirements of this chapter; nevertheless, the Administration may grant partial or conditional exemptions to individual ships from the requirements of regulations 7 to 11 provided:

- .1 such ships comply with the functional requirements of regulation 4; and
- .2 the Administration has taken into account the effect such exemptions may have upon the general efficiency of the service for the safety of all ships.

2 An exemption may be granted under paragraph 1 only:

- .1 if the conditions affecting safety are such as to render the full application of regulations 7 to 11 unreasonable or unnecessary; or
- .2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the ship is equipped.

3 Each Administration shall report to the Organization on all exemptions granted under paragraphs 1 and 2 giving the reasons for granting such exemptions.<sup>4</sup>

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<sup>4</sup> Exemptions should be reported through the Organization's Global Integrated Shipping Information System (GISIS) with reference to *Issue of Exemption Certificates under the 1974 SOLAS Convention and Amendments thereto* (SLS.14/Circ.115, as amended).

### Regulation 4 – Functional requirements<sup>5</sup>

1 Every ship, while at sea, shall be capable of:

- .1 performing the GMDSS functions, which are as follows:
  - .1 transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;
  - .2 receiving shore-to-ship distress alert relays;
  - .3 transmitting and receiving ship-to-ship distress alerts;
  - .4 transmitting and receiving search and rescue coordinating communications;
  - .5 transmitting and receiving on-scene communications;
  - .6 transmitting and receiving signals for locating;<sup>6</sup>

- .7 receiving MSI;<sup>7</sup>
- .8 transmitting and receiving urgency and safety communications; and
- .9 transmitting and receiving bridge-to-bridge communications; and
- .2 transmitting and receiving general radiocommunications.

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<sup>5</sup> It should be noted that ships performing GMDSS functions should use *Guidelines for the avoidance of false distress alerts* (resolution MSC.514(105)).

<sup>6</sup> Refer also to regulations V/19.2.3.2 and V/19.2.4, as appropriate.

<sup>7</sup> It should be noted that ships may have a need for reception of certain maritime safety information while in port.

#### **Regulation 4-1 – GMDSS satellite providers**

The Maritime Safety Committee shall determine the criteria, procedures and arrangements for the evaluation, recognition, review and oversight of the provision of recognized mobile satellite services in the GMDSS pursuant to the provisions of this chapter.<sup>8</sup>

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<sup>8</sup> Refer to *Criteria for the provision of mobile satellite communication systems in the Global Maritime Distress and Safety System (GMDSS)* (resolution A.1001(25)) and *Guidance to prospective GMDSS satellite service providers* (MSC.1/Circ.1414).

### **Part B Undertakings by Contracting Governments<sup>9</sup>**

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<sup>9</sup> 1 Each Contracting Government is not required to provide all radiocommunication services.  
2 Provision No. 48.1 of the Radio Regulations applies to the operation of coast stations and coast earth stations.

#### **Regulation 5 – Provision of radiocommunication services**

1 Each Contracting Government undertakes to make available, as it deems practical and necessary, either individually or in cooperation with other Contracting Governments, appropriate shore-based facilities for the mobile satellite service and maritime mobile service having due regard to the recommendations of the Organization.<sup>10</sup> These services are:

- .1 recognized mobile satellite services;
- .2 a satellite service on 406 MHz;
- .3 the maritime mobile service in the bands between 156 MHz and 174 MHz;
- .4 the maritime mobile service in the bands between 4 000 kHz and 27 500 kHz; and
- .5 the maritime mobile service in the bands between 415 kHz and 535 kHz<sup>11</sup> and between 1 605 kHz and 4 000 kHz.

2 Each Contracting Government undertakes to provide the Organization with pertinent information concerning the shore-based facilities in the mobile satellite service and maritime mobile service, established for sea areas which it has designated off its coasts.<sup>12</sup> Each Contracting Government also undertakes to provide the Organization with timely and adequate notice prior to the planned withdrawal of any of these services or any particular shore-based facilities.

<sup>10</sup> Refer to *Provision of radio services for the Global Maritime Distress and Safety System (GMDSS)* (resolution MSC.509(105)).

<sup>11</sup> Refer to *Implementation of the NAVTEX system as a component of the World-Wide Navigational Warning Service* (resolution A.617(15)).

<sup>12</sup> Information communicated by Contracting Governments is made available through GISIS.

### **Regulation 5-1 – GMDSS identities**

1 This regulation applies to all ships on all voyages.

2 Each Contracting Government undertakes to ensure that suitable arrangements are made for registering GMDSS identities and for making information on these identities available to rescue coordination centres on a 24-hour basis. Where appropriate, international organizations maintaining a registry of these identities, such as the ITU Maritime Mobile Access and Retrieval System (MARS), shall be notified by the Contracting Government of these identity assignments.

## **Part C Ship requirements**

### **Regulation 6 – Radio installations**

1 Every ship shall be provided with radio installations capable of complying with the functional requirements prescribed by regulation 4 throughout its intended voyage and, unless exempted under regulation 3, complying with the requirements of regulation 7 and, as appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either regulation 8, 9, 10 or 11.

2 Every radio installation shall be:

- .1 located in such a way that no harmful interference of mechanical, electrical or other origin affects its proper use, and that electromagnetic compatibility is ensured and harmful interaction avoided with other equipment and systems;
- .2 so located as to ensure the greatest possible degree of safety and operational availability;
- .3 protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;

- .4 provided with reliable, permanently arranged electrical lighting, independent of the main and emergency sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and
  - .5 clearly marked with the GMDSS identities, as applicable, for use by the radio installation operator.
- 3 Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available on the navigation bridge convenient to the conning position and, where necessary, facilities should be available to permit radiocommunications from the wings of the navigation bridge. Portable VHF equipment may be used to meet the latter provision.
- 4 In passenger ships, a distress panel shall be installed at the conning position, which shall:
- .1 contain either one single button which, when pressed, initiates a distress alert using all radio installations required on board for that purpose or one button for each individual installation;
  - .2 clearly and visually indicate whenever any button or buttons have been pressed; and
  - .3 be provided with means to prevent inadvertent activation of the button or buttons referred to in paragraphs 4.1 and 4.2.
- 5 In passenger ships, if an EPIRB is used as the secondary means of distress alerting and is not remotely activated from the distress panel, it shall be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.
- 6 In passenger ships, a distress alarm panel shall be installed at the conning position, which:
- .1 shall provide visual and aural indication of any distress alert or alerts received on board;
  - .2 shall indicate through which radiocommunication service the distress alerts have been received; and
  - .3 may be combined with the distress panel referred to in paragraph 4.

#### **Regulation 7 – Radio equipment: General**

- 1 Every ship shall be provided with:
- .1 a VHF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes:
    - .1 DSC on the frequency 156.525 MHz (channel 70). It shall be possible to initiate the transmission of distress alerts on channel 70 from the position from which the ship is normally navigated; and
    - .2 radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16);

- .2 a radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by paragraph 1.1;
- .3 a radar SART or an AIS-SART, which:
  - .1 shall be so stowed that it can be easily utilized; and
  - .2 may be one of those required by paragraphs 2.1 or 3.1;
- .4 a receiver or receivers capable of receiving MSI and search and rescue related information throughout the entire voyage in which the ship is engaged;<sup>13</sup>
- .5 an EPIRB<sup>14</sup> which shall be:
  - .1 installed in an easily accessible position;
  - .2 ready to be manually released and capable of being carried by one person into a survival craft;
  - .3 capable of floating free if the ship sinks and of being automatically activated when afloat; and
  - .4 capable of being activated manually; and
- .6 a radio installation capable of transmitting and receiving general radiocommunications operating on working frequencies in the band between 156 MHz and 174 MHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1.

2 Every cargo ship of 300 gross tonnage and upwards but less than 500 gross tonnage shall be provided with at least:

- .1 one radar SART or AIS-SART; and
- .2 two two-way VHF radiotelephone apparatuses.

3 Every passenger ship and every cargo ship of 500 gross tonnage and upwards shall be provided with at least:

- .1 one radar SART or AIS-SART on each side of the ship; and
- .2 three two-way VHF radiotelephone apparatuses.

4 The two-way VHF radiotelephone apparatuses required by paragraphs 2.2 and 3.2 may be portable or fitted in survival craft. The portable apparatus may be stored on the bridge.

5 The radar SARTs or AIS-SARTs required by paragraphs 2.1 or 3.1 shall be stowed in such locations that they can be rapidly placed in any survival craft other than a liferaft required by regulation III/31.1.4. Alternatively, one radar SART or AIS-SART shall be stowed in each survival craft other than a liferaft required by regulation III/31.1.4. On ships carrying at least two radar SARTs or AIS-SARTs and equipped with free-fall lifeboats, one of the radar SARTs or AIS-SARTs shall be stowed in a free-fall lifeboat and the other shall be located in the immediate vicinity of the navigating bridge so that it can be utilized on board and ready for transfer to any of the other survival craft, other than a liferaft required by regulation III/31.1.4.

6 Every passenger ship shall be provided with means for two-way on-scene radiocommunications for search and rescue purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated. These means may be portable.

<sup>13</sup> Refer to *Guidance for the reception of maritime safety information and search and rescue related information as required in the Global Maritime Distress and Safety System (GMDSS)* (MSC.1/Circ.1645).

<sup>14</sup> Refer to *Search and rescue homing capability* (resolution A.616(15)).

### **Regulation 8 – Radio equipment: Sea area A1**

1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages in sea area A1 shall be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts from the position from which the ship is normally navigated, operating either:

- .1 through the satellite service on 406 MHz; or
- .2 if the ship is engaged on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or
- .3 on high frequency (HF) using DSC; or
- .4 through a recognized mobile satellite service ship earth station.

2 The requirement in paragraph 1.1 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

### **Regulation 9 – Radio equipment: Sea area A2**

1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages within sea area A2 shall be provided with:

- .1 an MF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on the frequencies:
  - .1 2 187.5 kHz using DSC; and
  - .2 2 182 kHz using radiotelephony;
- .2 a radio installation capable of maintaining a continuous DSC watch on the frequency 2 187.5 kHz which may be separate from, or combined with, that required by paragraph 1.1; and

- .3 a secondary means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF operating either:
  - .1 through the satellite service on 406 MHz; or
  - .2 on HF using DSC; or
  - .3 through a recognized mobile satellite service ship earth station.

2 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1 and 1.3 from the position from which the ship is normally navigated.

3 The requirement in paragraph 1.3.1 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

4 The ship shall, in addition, be capable of transmitting and receiving general radiocommunications by either:

- .1 a radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz or between 4 000 kHz and 27 500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1; or
- .2 a recognized mobile satellite service ship earth station.

### **Regulation 10 – Radio equipment: Sea area A3**

1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages within sea area A3 shall be provided with:

- .1 a recognized mobile satellite service ship earth station capable of:
  - .1 transmitting and receiving distress, urgency and safety communications;
  - .2 initiating and receiving distress priority calls; and
  - .3 maintaining watch for shore-to-ship distress alert relays, including those directed to specifically defined geographical areas;
- .2 an MF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on the frequencies:
  - .1 2 187.5 kHz using DSC; and
  - .2 2 182 kHz using radiotelephony;



- .3 a radio installation capable of maintaining a continuous DSC watch on the frequency 2 187.5 kHz which may be separate from, or combined with, that required by paragraph 1.2; and
- .4 a secondary means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either:
  - .1 through the satellite service on 406 MHz; or
  - .2 on HF using DSC; or
  - .3 through any recognized mobile satellite service on an additional ship earth station.

2 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1, 1.2 and 1.4 from the position from which the ship is normally navigated.

3 The requirement in paragraph 1.4.1 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

4 The ship shall, in addition, be capable of transmitting and receiving general radiocommunications by either:

- .1 a recognized mobile satellite service ship earth station; or
- .2 a radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz or between 4 000 kHz and 27 500 kHz.

5 The requirements in paragraphs 4.1 and 4.2 may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1 or 1.2, respectively.

#### **Regulation 11 – Radio equipment: Sea area A4**

1 In addition to meeting the requirements of regulation 7, every ship engaged on voyages within sea area A4 shall be provided with:

- .1 an MF/HF radio installation capable of transmitting and receiving, for distress, urgency and safety communications purposes, on all distress, urgency and safety frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz:
  - .1 using DSC; and
  - .2 using radiotelephony;

- .2 equipment capable of maintaining DSC watch on 2 187.5 kHz, 8 414.5 kHz and on at least one of the DSC frequencies 4 207.5 kHz, 6 312 kHz, 12 577 kHz or 16 804.5 kHz; it shall be possible at any time to select any of these DSC frequencies for distress, urgency and safety communications purposes. This equipment may be separate from, or combined with, the equipment required by paragraph 1.1; and
- .3 a secondary means of initiating the transmission of ship-to-shore distress alerts through the satellite service on 406 MHz.

2 The ship shall, in addition, be capable of transmitting and receiving general radiocommunications by a radio installation operating on working frequencies in the bands between 1 605 kHz and 4 000 kHz and between 4 000 kHz and 27 500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by paragraph 1.1.

3 It shall be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs 1.1 and 1.3 from the position from which the ship is normally navigated.

4 The requirement in paragraph 1.3 may be fulfilled by installing:

- .1 the EPIRB required by regulation 7.1.5 close to the position from which the ship is normally navigated, but in a location whereby it can still float free of the ship in an emergency; or
- .2 the EPIRB required by regulation 7.1.5 elsewhere on the ship, provided that this EPIRB has a means of remote activation which is installed near the position from which the ship is normally navigated; or
- .3 a second EPIRB near the position from which the ship is normally navigated.

## **Regulation 12 – Watches**

1 Every ship, while at sea, shall maintain a continuous radio watch for distress, urgency and safety communications purposes:

- .1 on VHF DSC channel 70;
- .2 on DSC frequency 2 187.5 kHz, if the ship, in accordance with the requirements of regulation 9.1.1 or 10.1.2, is fitted with an MF radio installation;
- .3 on DSC frequencies 2 187.5 kHz and 8 414.5 kHz and also on at least one of the DSC frequencies 4 207.5 kHz, 6 312 kHz, 12 577 kHz or 16 804.5 kHz, appropriate to the time of day and the geographical position of the ship, if the ship, in accordance with the requirements of regulation 11.1.2, is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver; and
- .4 for satellite shore-to-ship distress alert relays, if the ship, in accordance with the requirements of regulation 10.1.1, is fitted with a recognized mobile satellite service ship earth station.

2 Every ship, while at sea, shall maintain a radio watch for broadcasts of MSI and search and rescue related information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating.

3 Every ship, while at sea, shall maintain, when practicable, a continuous listening watch, which shall be kept at the position from which the ship is normally navigated, on:

- .1 VHF channel 16; and
- .2 other appropriate frequencies for urgency and safety communications for the area in which the ship is navigating.

### **Regulation 13 – Sources of energy**

1 While the ship is at sea, a supply of electrical energy shall be available at all times sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.

2 A reserve source or sources of energy shall be provided on every ship, to supply radio installations, for the purpose of conducting distress, urgency and safety communications, in the event of failure of the ship's main and emergency sources of electrical power. The reserve source or sources of energy shall be capable of simultaneously operating the VHF radio installation required by regulation 7.1.1 and, as appropriate for the sea area or sea areas for which the ship is equipped, either the MF radio installation required by regulation 9.1.1 or 10.1.2, the MF/HF radio installation required by regulation 11.1.1, or the ship earth station required by regulation 10.1.1 and any of the additional loads mentioned in paragraphs 4, 5 and 8 for a period of at least:

- .1 one hour on ships provided with an emergency source of electrical power, if such source of power complies fully with all relevant provisions of regulation II-1/42 or 43, including the supply of such power to the radio installations; and
- .2 six hours on ships not provided with an emergency source of electrical power complying fully with all relevant provisions of regulation II-1/42 or 43, including the supply of such power to the radio installations.<sup>15</sup>

The reserve source or sources of energy need not supply independent HF and MF radio installations at the same time.

3 The reserve source or sources of energy shall be independent of the propelling power of the ship and the ship's electrical system.

4 Where, in addition to the VHF radio installation, two or more of the other radio installations referred to in paragraph 2 can be connected to the reserve source or sources of energy, they shall be capable of simultaneously supplying, for the period specified, as appropriate, in paragraph 2.1 or 2.2, the VHF radio installation and:

- .1 all other radio installations which can be connected to the reserve source or sources of energy at the same time; or
- .2 whichever of the other radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve source or sources of energy at the same time as the VHF radio installation.

5 The reserve source or sources of energy may be used to supply the electrical lighting required by regulation 6.2.4.

6 Where a reserve source of energy consists of a rechargeable accumulator battery or batteries:

- .1 a means of automatically charging such batteries shall be provided which shall be capable of recharging them to minimum capacity requirements within 10 hours; and
- .2 the capacity of the battery or batteries shall be checked, using an appropriate method,<sup>16</sup> at intervals not exceeding 12 months, when the ship is not at sea.

7 The siting and installation of accumulator batteries which provide a reserve source of energy shall be such as to ensure:

- .1 the highest degree of service;
- .2 a reasonable lifetime;
- .3 reasonable safety;
- .4 that battery temperatures remain within the manufacturer's specifications whether under charge or idle; and
- .5 that when fully charged, the batteries will provide at least the minimum required hours of operation under all weather conditions.

8 If an uninterrupted input of information from the ship's navigational or other equipment to a radio installation required by this chapter, including the navigation receiver referred to in regulation 18, is needed to ensure its proper performance, means shall be provided to ensure the continuous supply of such information in the event of failure of the ship's main or emergency source of electrical power.

<sup>15</sup> For guidance, the following formula is recommended for determining the electrical load to be supplied by the reserve source of energy for each radio installation required for distress conditions: 1/2 of the current consumption necessary for transmission + the current consumption necessary for reception + the current consumption of any additional loads.

<sup>16</sup> One method of checking the capacity of an accumulator battery is to fully discharge and recharge the battery, using normal operating current and period. Assessment of the charge condition can be made at any time, but it should be done without significant discharge of the battery when the ship is at sea.

#### **Regulation 14 – Performance standards**

All equipment to which this chapter applies shall be of a type approved by the Administration. Such equipment shall conform to appropriate performance standards not inferior to those adopted by the Organization.<sup>17</sup>

<sup>17</sup> Refer to the following resolutions adopted by the Organization:

##### **General requirements**

- .1 *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids (resolution A.694(17));*
- .2 *Performance standards for the presentation of navigation-related information on shipborne navigational displays (resolution MSC.191(79), as amended);*

- .3 *Performance standards for bridge alert management (resolution MSC.302(87));*
- VHF equipment**
- .4 *Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling (resolution MSC.511(105));*
- .5 *Performance standards for survival craft portable two-way VHF radiotelephone apparatus (resolution MSC.515(105));*
- .6 *Recommendation on Performance standards for on-scene (aeronautical) portable two-way VHF radiotelephone apparatus (annex 1 to resolution MSC.80(70), as amended);*
- MF and HF equipment**
- .7 *System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing (resolution MSC.507(105));*
- .8 *Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, digital selective calling and reception of maritime safety information and search and rescue related information (resolution MSC.512(105));*
- .9 *Performance standards for the reception of maritime safety information and search and rescue related information by MF (NAVTEX) and HF (resolution MSC.508(105));*
- Ship earth stations and enhanced group call (EGC) equipment**
- .10 *Performance standards for Inmarsat-C ship earth stations capable of transmitting and receiving direct-printing communications (resolution MSC.513(105));*
- .11 *Revised performance standards for enhanced group call (EGC) equipment (resolution MSC.306(87), as amended);*
- .12 *Performance standards for a ship earth station for use in the GMDSS (resolution MSC.434(98));*
- Integrated radiocommunication systems**
- .13 *Performance standards for a shipborne integrated communication system (ICS) when used in the Global Maritime Distress and Safety System (GMDSS) (resolution MSC.517(105));*
- Emergency position-indicating radio beacons**
- .14 *Performance standards for float-free release and activation arrangements for emergency radio equipment (resolution A.662(16));*
- .15 *Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz (resolution MSC.471(101));*
- Search and rescue transmitters and transponders**
- .16 *Performance standards for search and rescue radar transponders (resolution MSC.510(105)); and*
- .17 *Performance standards for survival craft AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations (resolution MSC.246(83)).*

## **Regulation 15 – Maintenance requirements**

- 1 Equipment shall be so designed that the main units can be replaced readily, without elaborate recalibration or readjustment.
- 2 Where applicable, equipment shall be so constructed and installed that it is readily accessible for inspection and onboard maintenance purposes.
- 3 Adequate information shall be provided to enable the equipment to be properly operated and maintained, taking into account the recommendations of the Organization.<sup>18</sup>

4 Adequate tools and spares shall be provided to enable the equipment to be maintained.

5 The Administration shall ensure that radio equipment required by this chapter is maintained to provide the availability of the functional requirements specified in regulation 4 and to meet the recommended performance standards of such equipment.

6 On ships engaged on voyages in sea areas A1 or A2, the availability shall be ensured by using such methods as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, or a combination of these, as may be approved by the Administration.

7 On ships engaged on voyages in sea areas A3 or A4, the availability shall be ensured by using a combination of at least two methods such as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, as may be approved by the Administration.

8 While all reasonable steps shall be taken to maintain the equipment in efficient working order to ensure compliance with all the functional requirements specified in regulation 4, malfunction of the equipment for providing the general radiocommunications required by regulation 4.1.2 shall not be considered as making a ship unseaworthy or as a reason for delaying the ship in ports where repair facilities are not readily available, provided the ship is capable of performing all distress, urgency and safety functions.

9 EPIRBs shall be:

- .1 annually tested, either on board the ship<sup>19</sup> or at an approved testing station, for all aspects of operational efficiency, with special emphasis on checking the emission on operational frequencies, coding and registration, at intervals as specified below:
  - .1 on passenger ships, within three months before the expiry date of the Passenger Ship Safety Certificate; and
  - .2 on cargo ships, within three months before the expiry date, or within three months before or after the anniversary date, of the Cargo Ship Safety Radio Certificate; and
- .2 subject to maintenance at intervals not exceeding five years, to be performed at an approved shore-based maintenance facility.<sup>20</sup>

<sup>18</sup> Refer to *General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids* (resolution A.694(17)), *General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment* (resolution A.813(19)), and *Clarifications of certain requirements in IMO performance standards for GMDSS equipment* (MSC/Circ.862).

<sup>19</sup> Refer to *Guidelines on annual testing of emergency position-indicating radio beacons (EPIRBs)* (MSC.1/Circ.1040/Rev.2) and *Guidelines for the avoidance of false distress alerts* (resolution MSC.514(105)).

<sup>20</sup> Refer to *Guidelines for shore-based maintenance of emergency position-indicating radio beacons (EPIRBs)* (MSC.1/Circ.1039/Rev.1).

## **Regulation 16 – Radio personnel**

1 Every ship shall carry personnel qualified for distress, urgency and safety communications purposes to the satisfaction of the Administration.<sup>21</sup> The personnel shall be holders of the appropriate certificates specified in the Radio Regulations; one of the personnel shall be designated as having primary responsibility for communications during distress incidents.

2 In passenger ships, at least one person qualified in accordance with paragraph 1 shall be assigned to perform only communications duties during distress incidents.

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<sup>21</sup> Refer to the STCW Code, chapter IV, section B-IV/2.

## **Regulation 17 – Radio records**

A record shall be kept on board, to the satisfaction of the Administration and as required by the Radio Regulations, of all incidents connected with the radiocommunication services which appear to be of importance to safety of life at sea.

## **Regulation 18 – Position-updating**

1 All two-way communication equipment carried on board a ship to which this chapter applies which is capable of automatically including the ship's position in the distress alert shall be automatically provided with this information from an internal or external navigation receiver.<sup>22</sup>

2 In case of malfunction of the internal or external navigation receiver, the ship's position and the time at which the position was determined shall be manually updated at intervals not exceeding four hours, while the ship is under way, so that it is always ready for transmission by the equipment.

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<sup>22</sup> Requirements for automatic update of the ship's position are given in resolutions MSC.511(105), MSC.512(105) and MSC.513(105).

## **CHAPTER V SAFETY OF NAVIGATION**

### **Regulation 5 – Meteorological services and warnings**

5 The footnote under paragraph 2.2, after the word "services", is replaced by the following:

"  
\*  
Refer to regulation IV/7.1.4."

### **Regulation 19-1 – Long-range identification and tracking of ships**

6 Paragraphs 4.1 and 4.2 are replaced by the following:

"4.1 Ships<sup>1</sup> shall be fitted with a system to automatically transmit the information specified in paragraph 5 as follows:

- .1 ships constructed on or after 31 December 2008;

- .2 ships constructed before 31 December 2008 and certified for operations:
- .1 in sea areas A1 and A2, as defined in regulations IV/2.1.15 and IV/2.1.16; or
  - .2 in sea areas A1, A2 and A3, as defined in regulations IV/2.1.15, IV/2.1.16 and IV/2.1.17,
- not later than the first survey<sup>2</sup> of the radio installation after 31 December 2008;
- .3 ships constructed before 31 December 2008 and certified for operations in sea areas A1, A2, A3 and A4, as defined in regulations IV/2.1.15, IV/2.1.16, IV/2.1.17 and IV/2.1.18, not later than the first survey<sup>2</sup> of the radio installation after 1 July 2009. However, these ships shall comply with the provisions of sub-paragraph .2 above while they operate within sea areas A1, A2 and A3.

4.2 Ships, irrespective of the date of construction, fitted with an automatic identification system (AIS), as defined in regulation 19.2.4, and operated exclusively within sea area A1, as defined in regulation IV/2.1.15, shall not be required to comply with the provisions of this regulation.

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<sup>1</sup> Refer to *Guidance on the survey and certification of compliance of ships with the requirement to transmit LRIT information* (MSC.1/Circ.1307).

<sup>2</sup> Refer to *Unified interpretation of the term "first survey" referred to in SOLAS regulation* (MSC.1/Circ.1290)."

## APPENDIX

### CERTIFICATES

7 The existing forms of the Passenger Ship Safety Certificate, the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate, the Nuclear Passenger Ship Safety Certificate and the Nuclear Cargo Ship Safety Certificate, including the associated records of equipment for passenger ship safety (Form P), cargo ship safety (Form E), cargo ship safety radio (Form R) and cargo ship safety (Form C), contained in the appendix to the annex are replaced by the following:



**"FORM OF SAFETY CERTIFICATE FOR PASSENGER SHIPS**

**PASSENGER SHIP SAFETY CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment for Passenger Ship Safety (Form P)

(Official seal)

(State)

for *an/a short*<sup>1</sup> international voyage

Issued under the provisions of the  
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE  
AT SEA, 1974, as amended

under the authority of the Government of

\_\_\_\_\_ *(name of the State)*

by

\_\_\_\_\_ *(person or organization authorized)*

**Particulars of ship**<sup>2</sup>

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Gross tonnage .....

Sea areas in which ship is certified to operate (regulation IV/2)<sup>3</sup> .....

IMO number<sup>4</sup> .....

Date of build:

    Date of building contract .....

    Date on which keel was laid or ship was at similar stage of construction .....

    Date of delivery .....

    Date on which work for a conversion or an alteration or modification of a major character  
    was commenced (where applicable) .....

All applicable dates shall be completed.

**THIS IS TO CERTIFY:**

1 That the ship has been surveyed in accordance with the requirements of regulation I/7 of the Convention.

2 That the survey showed 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:

---

<sup>1</sup> Delete as appropriate.

<sup>2</sup> Alternatively, the particulars of the ship may be placed horizontally in boxes.

<sup>3</sup> For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets.

<sup>4</sup> In accordance with *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1117(30).

Subdivision load lines assigned and marked on the ship's side amidships (regulation II-1/18) <sup>5</sup>	Freeboard	To apply when the spaces in which passengers are carried include the following alternative spaces
P1	.....	.....
P2	.....	.....
P3	.....	.....

- 2.2 the ship complied with part G of chapter II-1 of the Convention using ..... as fuel/N.A;
  - 2.3 the ship complied with the requirements of the Convention as regards structural fire protection, fire safety systems and appliances and fire-control plans;
  - 2.4 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;
  - 2.5 the ship was provided with a line-throwing appliance in accordance with the requirements of the Convention;
  - 2.6 the ship complied with the requirements of the Convention as regards radio installations;
  - 2.7 the provision and functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;
  - 2.8 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
  - 2.9 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;
  - 2.10 in all other respects the ship complied with the relevant requirements of the Convention;
  - 2.11 the ship was/was not<sup>1</sup> subjected to an alternative design and arrangements in pursuance of regulation(s) II-1/55 / II-2/17 / III/38<sup>1</sup> of the Convention;
  - 2.12 a Document of approval of alternative design and arrangements for machinery and electrical installations/fire protection/life-saving appliances and arrangements<sup>1</sup> is/is not<sup>1</sup> appended to this Certificate.
- 3 that an Exemption Certificate has/has not<sup>1</sup> been issued.

***This certificate is valid until*** .....

Completion date of the survey on which this certificate is based: ..... (dd/mm/yyyy)

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

.....  
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

<sup>1</sup> Delete as appropriate.

<sup>5</sup> For ships constructed before 1 January 2009, the applicable subdivision notation "C.1, C.2 and C.3" should be used.

**RECORD OF EQUIPMENT FOR PASSENGER SHIP SAFETY (FORM P)**

RECORD OF EQUIPMENT FOR COMPLIANCE WITH  
THE INTERNATIONAL CONVENTION FOR THE SAFETY  
OF LIFE AT SEA, 1974, AS AMENDED

**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**

1	Total number of persons for which life-saving appliances are provided .....		
		<b>Port side</b>	<b>Starboard side</b>
2	Total number of lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of partially enclosed lifeboats (regulation III/21 and LSA Code, section 4.5)	.....	.....
2.3	Number of self-righting partially enclosed lifeboats (regulation III/43 <sup>6</sup> )	.....	.....
2.4	Number of totally enclosed lifeboats (regulation III/21 and LSA Code, section 4.6)	.....	.....
2.5	Other lifeboats		
2.5.1	Number	.....	.....
2.5.2	Type	.....	.....
3	Number of motor lifeboats (included in the total lifeboats shown above)	.....	.....
3.1	Number of lifeboats fitted with searchlights	.....	.....
4	Number of rescue boats	.....	.....
4.1	Number of boats which are included in the total lifeboats shown above	.....	.....
4.2	Number of boats which are fast rescue boats	.....	.....
5	Liferafts		
5.1	Those for which approved launching appliances are required		
5.1.1	Number of liferafts	.....	.....
5.1.2	Number of persons accommodated by them	.....	.....
5.2	Those for which approved launching appliances are not required		
5.2.1	Number of liferafts	.....	.....
5.2.2	Number of persons accommodated by them	.....	.....

<sup>6</sup> Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998.

2 **Details of life-saving appliances (continued)**

6	Number of marine evacuation systems (MES)	.....
6.1	Number of liferafts served by them	.....
6.2	Number of persons accommodated by them	.....
7	Buoyant apparatus	
7.1	Number of apparatus	.....
7.2	Number of persons capable of being supported	.....
8	Number of lifebuoys	.....
9	Number of lifejackets (total)	.....
9.1	Number of adult lifejackets	.....
9.2	Number of child lifejackets	.....
9.3	Number of infant lifejackets	.....
10	Immersion suits	
10.1	Total number	.....
10.2	Number of suits complying with the requirements for lifejackets	.....
11	Number of anti-exposure suits	.....
12	Number of thermal protective aids <sup>7</sup>	.....

3 **Details of radio facilities**

Item		Actual provision
1	Primary systems	
1.1	VHF radio installation	
1.1.1	DSC encoder	.....
1.1.2	DSC watch receiver	.....
1.1.3	Radiotelephony	.....
1.2	MF radio installation	
1.2.1	DSC encoder	.....
1.2.2	DSC watch receiver	.....
1.2.3	Radiotelephony	.....
1.3	MF/HF radio installation	
1.3.1	DSC encoder	.....
1.3.2	DSC watch receiver	.....
1.3.3	Radiotelephony	.....
1.4	Recognized mobile satellite service ship earth station	.....
2	Secondary means of initiating the transmission of ship-to-shore distress alerts	.....
3	Facilities for reception of MSI and search and rescue related information	.....

<sup>7</sup> Excluding those required by the LSA Code, paragraphs 4.1.5.1.24, 4.4.8.31 and 5.1.2.2.13.

3 **Details of radio facilities** (continued)

4	EPIRB	.....
5	Two-way VHF radiotelephone apparatus	
5.1	Portable two-way VHF radiotelephone apparatus	.....
5.2	Two-way VHF radiotelephone apparatus fitted in survival craft	.....
6	Search and rescue locating devices	
6.1	Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft	.....
6.2	Radar search and rescue transponders (radar SART) stowed in survival craft	.....
6.3	AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft	.....
6.4	AIS search and rescue transmitters (AIS-SART) stowed in survival craft	.....

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 navigational systems and equipment**

	Item	Actual provision
1.1	Standard magnetic compass <sup>8</sup>	.....
1.2	Spare magnetic compass <sup>8</sup>	.....
1.3	Gyro-compass <sup>8</sup>	.....
1.4	Gyro-compass heading repeater <sup>8</sup>	.....
1.5	Gyro-compass bearing repeater <sup>8</sup>	.....
1.6	Heading or track control system <sup>8</sup>	.....
1.7	Pelorus or compass bearing device <sup>8</sup>	.....
1.8	Means of correcting heading and bearings	.....
1.9	Transmitting heading device (THD) <sup>8</sup>	.....
2.1	Nautical charts/Electronic chart display and information system (ECDIS) <sup>1</sup>	.....
2.2	Backup arrangements for ECDIS	.....
2.3	Nautical publications	.....
2.4	Backup arrangements for electronic nautical publications	.....
3.1	Receiver for a global navigation satellite system/terrestrial radionavigation system/multisystem shipborne radionavigation receiver <sup>1 8</sup>	.....

<sup>1</sup> Delete as appropriate.

<sup>8</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.

5 **Details of navigational systems and equipment** (continued)

3.2	9 GHz radar <sup>8</sup>	.....
3.3	Second radar (3 GHz/9 GHz <sup>1</sup> ) <sup>8</sup>	.....
3.4	Automatic radar plotting aid (ARPA) <sup>8</sup>	.....
3.5	Automatic tracking aid <sup>8</sup>	.....
3.6	Second automatic tracking aid <sup>8</sup>	.....
3.7	Electronic plotting aid <sup>8</sup>	.....
4.1	Automatic identification system (AIS)	.....
4.2	Long-range identification and tracking system	.....
5	Voyage data recorder (VDR)	.....
6.1	Speed and distance measuring device (through the water) <sup>8</sup>	.....
6.2	Speed and distance measuring device (over the ground in the forward and athwartships direction) <sup>8</sup>	.....
7	Echo-sounding device <sup>8</sup>	.....
8.1	Rudder, propeller, thrust, pitch and operational mode indicator <sup>1 8</sup>	.....
8.2	Rate-of-turn indicator <sup>8</sup>	.....
9	Sound reception system <sup>8</sup>	.....
10	Telephone to emergency steering position <sup>8</sup>	.....
11	Daylight signalling lamp <sup>8</sup>	.....
12	Radar reflector <sup>8</sup>	.....
13	International Code of Signals	.....
14	IAMSAR Manual, Volume III	.....
15	Bridge navigational watch alarm system (BNWAS)	.....

**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)

<sup>1</sup> Delete as appropriate.

<sup>8</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.

**FORM OF SAFETY EQUIPMENT CERTIFICATE FOR CARGO SHIPS**

**CARGO SHIP SAFETY EQUIPMENT CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment for Cargo Ship Safety (Form E)

(Official seal)

(State)

Issued under the provisions of the  
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, as amended

under the authority of the Government of

\_\_\_\_\_ *(name of the State)*

by

\_\_\_\_\_ *(person or organization authorized)*

**Particulars of ship<sup>1</sup>**

Name of ship .....  
Distinctive number or letters .....  
Port of registry .....  
Gross tonnage .....  
Deadweight of ship (metric tons)<sup>2</sup> .....  
Length of ship (regulation III/3.12) .....  
IMO number<sup>3</sup> .....

Type of ship<sup>4</sup>

- Bulk carrier
- Oil tanker
- Chemical tanker
- Gas carrier
- Cargo ship other than any of the above

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 I/8 of the Convention.
- 2 That the survey showed that:
  - 2.1 the ship complied with the requirements of the Convention as regards fire safety systems and appliances and fire-control plans;

---

<sup>1</sup> Alternatively, the particulars of the ship may be placed horizontally in boxes.

<sup>2</sup> For oil tankers, chemical tankers and gas carriers only.

<sup>3</sup> In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1117(30).

<sup>4</sup> Delete as appropriate.

- 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 in accordance with the requirements of the Convention;
- 2.4 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
- 2.5 the ship was provided with lights, shapes and 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;
- 2.6 in all other respects the ship complied with the relevant requirements of the Convention;
- 2.7 the ship was/was not<sup>4</sup> subjected to an alternative design and arrangements in pursuance of regulation(s) II-2/17 / III/38<sup>4</sup> of the Convention;
- 2.8 a Document of approval of alternative design and arrangements for fire protection/life-saving appliances and arrangements<sup>4</sup> is/is not<sup>4</sup> appended to this Certificate.
- 3 That the ship operates in accordance with regulation III/26.1.1.15 within the limits of the trade area .....
- 4 That an Exemption Certificate has/has not<sup>4</sup> been issued.

***This certificate is valid until*** .....

Completion date of the survey on which this certificate is based: .....(dd/mm/yyyy)

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

.....  
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

---

<sup>4</sup> Delete as appropriate.

<sup>5</sup> Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998 in the case of self-righting partially enclosed lifeboat(s) on board.



**RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM E)**

RECORD OF EQUIPMENT FOR COMPLIANCE WITH  
THE INTERNATIONAL CONVENTION FOR THE SAFETY  
OF LIFE AT SEA, 1974, AS AMENDED

**1 Particulars of ship**

Name of ship .....  
Distinctive number or letters .....

**2 Details of life-saving appliances**

1	Total number of persons for which life-saving appliances are provided: .....		
		<b>Port side</b>	<b>Starboard side</b>
2	Total number of davit-launched lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of self-righting partially enclosed lifeboats (regulation III/43 <sup>5</sup> )	.....	.....
2.3	Number of totally enclosed lifeboats (regulation III/31 and LSA Code, section 4.6)	.....	.....
2.4	Number of lifeboats with a self-contained air support system (regulation III/31 and LSA Code, section 4.8)	.....	.....
2.5	Number of fire-protected lifeboats (regulation III/31 and LSA Code, section 4.9)	.....	.....
2.6	Other lifeboats		
2.6.1	Number	.....	.....
2.6.2	Type	.....	.....
3	Total number of free-fall lifeboats	.....	.....
3.1	Total number of persons accommodated by them	.....	.....
3.2	Number of totally enclosed lifeboats (regulation III/31 and LSA Code, section 4.7)	.....	.....
3.3	Number of lifeboats with a self-contained air support system (regulation III/31 and LSA Code, section 4.8)	.....	.....
3.4	Number of fire-protected lifeboats (regulation III/31 and LSA Code, section 4.9)	.....	.....
4	Number of motor lifeboats (included in the total lifeboats shown in 2 and 3 above)	.....	.....
4.1	Number of lifeboats fitted with searchlights	.....	.....
5	Number of rescue boats	.....	.....
5.1	Number of boats which are included in the total lifeboats shown in 2 and 3 above	.....	.....

<sup>5</sup> Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998 in the case of self-righting partially enclosed lifeboat(s) on board.

2 **Details of life-saving appliances (continued)**

6	Liferafts	
6.1	Those for which approved launching appliances are required	
6.1.1	Number of liferafts	.....
6.1.2	Number of persons accommodated by them	.....
6.2	Those for which approved launching appliances are not required	
6.2.1	Number of liferafts	.....
6.2.2	Number of persons accommodated by them	.....
6.3	Number of liferafts required by regulation III/31.1.4	.....
7	Number of lifebuoys	.....
8	Number of lifejackets	.....
9	Immersion suits	
9.1	Total number	.....
9.2	Number of suits complying with the requirements for lifejackets	.....
10	Number of anti-exposure suits	.....

3 **Details of navigational systems and equipment**

	Item	Actual provision
1.1	Standard magnetic compass <sup>6</sup>	.....
1.2	Spare magnetic compass <sup>6</sup>	.....
1.3	Gyro-compass <sup>6</sup>	.....
1.4	Gyro-compass heading repeater <sup>6</sup>	.....
1.5	Gyro-compass bearing repeater <sup>6</sup>	.....
1.6	Heading or track control system <sup>6</sup>	.....
1.7	Pelorus or compass bearing device <sup>6</sup>	.....
1.8	Means of correcting heading and bearings	.....
1.9	Transmitting heading device (THD) <sup>6</sup>	.....
2.1	Nautical charts/Electronic chart display and information system (ECDIS) <sup>4</sup>	.....
2.2	Backup arrangements for ECDIS	.....
2.3	Nautical publications	.....
2.4	Backup arrangements for electronic nautical publications	.....
3.1	Receiver for a global navigation satellite system/terrestrial radionavigation system/multisystem shipborne radionavigation receiver <sup>4 6</sup>	.....

<sup>4</sup> Delete as appropriate.

<sup>6</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.

3 **Details of navigational systems and equipment** (continued)

3.2	9 GHz radar	.....
3.3	Second radar (3 GHz/9 GHz) <sup>4</sup> <sup>6</sup>	.....
3.4	Automatic radar plotting aid (ARPA) <sup>6</sup>	.....
3.5	Automatic tracking aid <sup>6</sup>	.....
3.6	Second automatic tracking aid <sup>6</sup>	.....
3.7	Electronic plotting aid <sup>6</sup>	.....
4.1	Automatic identification system (AIS)	.....
4.2	Long-range identification and tracking system	.....
5.1	Voyage data recorder (VDR) <sup>4</sup>	.....
5.2	Simplified voyage data recorder (S-VDR) <sup>4</sup>	.....
6.1	Speed and distance measuring device (through the water) <sup>6</sup>	.....
6.2	Speed and distance measuring device (over the ground in the forward and athwartships direction) <sup>6</sup>	.....
7	Echo-sounding device <sup>6</sup>	.....
8.1	Rudder, propeller, thrust, pitch and operational mode indicator <sup>4</sup> <sup>6</sup>	.....
8.2	Rate-of-turn indicator <sup>6</sup>	.....
9	Sound reception system <sup>6</sup>	.....
10	Telephone to emergency steering position <sup>6</sup>	.....
11	Daylight signalling lamp <sup>6</sup>	.....
12	Radar reflector	.....
13	International Code of Signals	.....
14	IAMSAR Manual, Volume III	.....
15	Bridge navigational watch alarm system (BNWAS)	.....

**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)

<sup>4</sup> Delete as appropriate.

<sup>6</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.

**FORM OF SAFETY RADIO CERTIFICATE FOR CARGO SHIPS**

**CARGO SHIP SAFETY RADIO CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment  
for Cargo Ship Safety Radio (Form R)

(Official seal)

(State)

Issued under the provisions of the  
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE  
AT SEA, 1974, as amended

under the authority of the Government of

\_\_\_\_\_ *(name of the State)*

by

\_\_\_\_\_ *(person or organization authorized)*

**Particulars of ship<sup>1</sup>**

Name of ship.....  
Distinctive number or letters.....  
Port of registry .....  
Gross tonnage .....  
Sea areas in which ship is certified to operate (regulation IV/2)<sup>2</sup> .....  
IMO number<sup>3</sup>.....  
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 I/9 of the Convention.
- 2 That the survey showed that:
  - 2.1 the ship complied with the requirements of the Convention as regards radio installations;
  - 2.2 the provision and functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention.
- 3 That an Exemption Certificate has/has not<sup>4</sup> been issued.

1 Alternatively, the particulars of the ship may be placed horizontally in boxes.

2 For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets.

3 In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1117(30).

4 Delete as appropriate.

***This certificate is valid until*** .....

Completion date of the survey on which this certificate is based: ..... (dd/mm/yyyy)

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

.....  
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

**RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY RADIO (FORM R)**

RECORD OF EQUIPMENT FOR COMPLIANCE  
WITH THE INTERNATIONAL CONVENTION FOR THE SAFETY  
OF LIFE AT SEA, 1974, AS AMENDED

**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 radio facilities**

Item	Actual provision
1 Primary systems	
1.1 VHF radio installation	
1.1.1 DSC encoder	.....
1.1.2 DSC watch receiver	.....
1.1.3 Radiotelephony	.....
1.2 MF radio installation	
1.2.1 DSC encoder	.....
1.2.2 DSC watch receiver	.....
1.2.3 Radiotelephony	.....
1.3 MF/HF radio installation	
1.3.1 DSC encoder	.....
1.3.2 DSC watch receiver	.....
1.3.3 Radiotelephony	.....
1.4 Recognized mobile satellite service ship earth station	.....
2 Secondary means of initiating the transmission of ship-to-shore distress alerts	.....
3 Facilities for reception of MSI and search and rescue related information	.....
4 EPIRB	.....
5 Two-way VHF radiotelephone apparatus	
5.1 Portable two-way VHF radiotelephone apparatus	.....
5.2 Two-way VHF radiotelephone apparatus fitted in survival craft	.....
6 Search and rescue locating devices	
6.1 Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft	.....
6.2 Radar search and rescue transponders (radar SART) stowed in survival craft	.....
6.3 AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft	.....
6.4 AIS search and rescue transmitters (AIS-SART) stowed in survival craft	.....

- 3 **Methods used to ensure availability of radio facilities** (regulations IV/15.6 and 15.7)
- 3.1 Duplication of equipment .....
- 3.2 Shore-based maintenance .....
- 3.3 At-sea maintenance capability .....

**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 PASSENGER SHIP SAFETY CERTIFICATE**

**NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment for Passenger Ship Safety (Form P)

(Official seal)

(State)

for *an/ a short*<sup>1</sup> international voyage

Issued under the provisions of the  
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE  
AT SEA, 1974, as amended

under the authority of the Government of

\_\_\_\_\_ *(name of the State)*

by

\_\_\_\_\_ *(person or organization authorized)*

**Particulars of ship<sup>2</sup>**

Name of ship .....  
Distinctive number or letters.....  
Port of registry .....  
Gross tonnage .....  
Sea areas in which ship is certified to operate (regulation IV/2)<sup>3</sup> .....  
IMO number<sup>4</sup> .....

Date of build:

Date of building contract .....  
Date on which keel was laid or ship was at similar stage of construction.....  
Date of delivery .....  
Date on which work for a conversion or an alteration or modification of a major character  
was commenced (where applicable) .....

All applicable dates shall be completed.

**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:

\_\_\_\_\_

<sup>1</sup> Delete as appropriate.

<sup>2</sup> Alternatively, the particulars of the ship may be placed horizontally in boxes.

<sup>3</sup> For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets.

<sup>4</sup> In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1117(30).



- .1 the structure, main and auxiliary machinery, boilers and other pressure vessels, including the nuclear propulsion plant and the collision protective structure;
- .2 the watertight subdivision arrangements and details;
- .3 the following subdivision load lines:

Subdivision load lines assigned and marked on the ship's side amidships (regulation II-1/18) <sup>5</sup>	Freeboard	To apply when the spaces in which passengers are carried include the following alternative spaces
P1	.....	.....
P2	.....	.....
P3	.....	.....

- 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 ship complied with the requirements of the Convention as regards radiation protection systems and equipment;
- 2.4 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;
- 2.5 the ship was provided with a line-throwing appliance in accordance with the requirements of the Convention;
- 2.6 the ship complied with the requirements of the Convention as regards radio installations;
- 2.7 the provision and functioning of the radio installations used in life-saving appliances complied with the requirements of the Convention;
- 2.8 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
- 2.9 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;
- 2.10 in all other respects the ship complied with the relevant requirements of the Convention;
- 2.11 the ship was/was not<sup>1</sup> subjected to an alternative design and arrangements in pursuance of regulation(s) II-1/55 / II-2 /17 / III/38<sup>1</sup> of the Convention;
- 2.12 a Document of approval of alternative design and arrangements for machinery and electrical installations/fire protection/life-saving appliances and arrangements<sup>1</sup> is/is not<sup>1</sup> appended to this Certificate.

<sup>1</sup> Delete as appropriate.

<sup>5</sup> For ships constructed before 1 January 2009, the applicable subdivision notation "C.1, C.2 and C.3" should be used.

***This certificate is valid until*** .....

Completion date of the survey on which this certificate is based: .....( dd/mm/yyyy)

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

.....  
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

**FORM OF NUCLEAR CARGO SHIP SAFETY CERTIFICATE**

**NUCLEAR CARGO SHIP SAFETY CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment for Cargo Ship Safety (Form C)

(Official seal)

(State)

Issued under the provisions of the

INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE  
AT SEA, 1974, as amended

under the authority of the Government of

\_\_\_\_\_  
(name of the State)

by

\_\_\_\_\_  
(person or organization authorized)

**Particulars of ship<sup>1</sup>**

Name of ship .....  
Distinctive number or letters.....  
Port of registry .....  
Gross tonnage .....  
Deadweight of ship (metric tons)<sup>2</sup> .....  
Length of ship (regulation III/3.12) .....  
Sea areas in which ship is certified to operate (regulation IV/2)<sup>3</sup> .....  
IMO number<sup>4</sup> .....

Type of ship<sup>5</sup>

- Bulk carrier
- Oil tanker
- Chemical tanker
- Gas carrier
- Cargo ship other than any of the above

Date of build:

Date of building contract .....  
Date on which keel was laid or ship was at similar stage of construction .....  
Date of delivery .....  
Date on which work for a conversion or an alteration or modification of a major character  
was commenced (where applicable) .....

All applicable dates shall be completed.

---

<sup>1</sup> Alternatively, the particulars of the ship may be placed horizontally in boxes.

<sup>2</sup> For oil tankers, chemical tankers and gas carriers only.

<sup>3</sup> For a ship certified to operate in sea area A3, indicate the recognized mobile satellite service in brackets.

<sup>4</sup> In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1117(30).

<sup>5</sup> Delete as appropriate.

**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 condition of the structure, machinery and equipment as defined in regulation I/10 (as applicable to comply with regulation VIII/9), including the nuclear propulsion plant and the collision protective structure, was satisfactory and the ship complied with the relevant requirements of chapter II-1 and chapter II-2 of the Convention (other than those relating to fire safety systems and appliances and fire-control plans);
  - 2.2 the ship complied with the requirements of the Convention as regards 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;
  - 2.4 the ship was provided with a line-throwing appliance 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 provision and 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;
  - 2.10 the ship was/was not<sup>5</sup> subjected to an alternative design and arrangements in pursuance of regulation(s) II-1/55 / II-2/17 / III/38<sup>5</sup> of the Convention;
  - 2.11 a Document of approval of alternative design and arrangements for machinery and electrical installations/fire protection/life-saving appliance and arrangements<sup>5</sup> is/is not<sup>5</sup> appended to this Certificate.

***This certificate is valid until*** .....

Completion date of the survey on which this certificate is based: ..... (dd/mm/yyyy)

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

.....  
(Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

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<sup>5</sup> Delete as appropriate.

**RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM C)**

RECORD OF EQUIPMENT FOR COMPLIANCE WITH  
THE INTERNATIONAL CONVENTION FOR THE SAFETY OF  
LIFE AT SEA, 1974, AS AMENDED

**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**

1 Total number of persons for which life-saving appliances are provided: .....		Port side	Starboard side
2	Total number of davit-launched lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of self-righting partially enclosed lifeboats (regulation III/43 <sup>6</sup> )	.....	.....
2.3	Number of totally enclosed lifeboats (regulation III/31 and LSA Code, section 4.6)	.....	.....
2.4	Number of lifeboats with a self-contained air support system (regulation III/31 and LSA Code, section 4.8)	.....	.....
2.5	Number of fire-protected lifeboats (regulation III/31 and LSA Code, section 4.9)	.....	.....
2.6	Other lifeboats		
2.6.1	Number	.....	.....
2.6.2	Type	.....	.....
3	Total number of free-fall lifeboats	.....	.....
3.1	Total number of persons accommodated by them	.....	.....
3.2	Number of totally enclosed lifeboats (regulation III/31 and LSA Code, section 4.7)	.....	.....
3.3	Number of lifeboats with a self-contained air support system (regulation III/31 and LSA Code, section 4.8)	.....	.....
3.4	Number of fire-protected lifeboats (regulation III/31 and LSA Code, section 4.9)	.....	.....
4	Number of motor lifeboats (included in the total lifeboats shown in 2 and 3 above)	.....	.....
4.1	Number of lifeboats fitted with searchlights	.....	.....

<sup>6</sup> Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998.

2 **Details of life-saving appliances** (continued)

5	Number of rescue boats	.....
5.1	Number of boats which are included in the total lifeboats shown in 2 and 3 above	.....
6	Liferafts	
6.1	Those for which approved launching appliances are required	
6.1.1	Number of liferafts	.....
6.1.2	Number of persons accommodated by them	.....
6.2	Those for which approved launching appliances are not required	
6.2.1	Number of liferafts	.....
6.2.2	Number of persons accommodated by them	.....
6.3	Number of liferafts required by regulation III/31.1.4	.....
7	Number of lifebuoys	.....
8	Number of lifejackets	.....
9	Immersion suits	
9.1	Total number	.....
9.2	Number of suits complying with the requirements for lifejackets	.....
10	Number of anti-exposure suits	.....

3 **Details of radio facilities**

Item		Actual provision
1	Primary systems	
1.1	VHF radio installation	
1.1.1	DSC encoder	.....
1.1.2	DSC watch receiver	.....
1.1.3	Radiotelephony	.....
1.2	MF radio installation	
1.2.1	DSC encoder	.....
1.2.2	DSC watch receiver	.....
1.2.3	Radiotelephony	.....
1.3	MF/HF radio installation	
1.3.1	DSC encoder	.....
1.3.2	DSC watch receiver	.....
1.3.3	Radiotelephony	.....
1.4	Recognized mobile satellite service ship earth station	.....
2	Secondary means of initiating the transmission of ship-to-shore distress alerts	.....

3 **Details of radio facilities** (continued)

3	Facilities for reception of MSI and search and rescue related information	.....
4	EPIRB	.....
5	Two-way VHF radiotelephone apparatus	
5.1	Portable two-way VHF radiotelephone apparatus	.....
5.2	Two-way VHF radiotelephone apparatus fitted in survival craft	.....
6	Search and rescue locating devices	
6.1	Radar search and rescue transponders (radar SART) stowed for rapid placement in survival craft	.....
6.2	Radar search and rescue transponders (radar SART) stowed in survival craft	.....
6.3	AIS search and rescue transmitters (AIS-SART) stowed for rapid placement in survival craft	.....
6.4	AIS search and rescue transmitters (AIS-SART) stowed in survival craft	.....

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 navigational systems and equipment**

Item	Actual provision
1.1 Standard magnetic compass <sup>7</sup>	.....
1.2 Spare magnetic compass <sup>7</sup>	.....
1.3 Gyro-compass <sup>7</sup>	.....
1.4 Gyro-compass heading repeater <sup>7</sup>	.....
1.5 Gyro-compass bearing repeater <sup>7</sup>	.....
1.6 Heading or track control system <sup>7</sup>	.....
1.7 Pelorus or compass bearing device <sup>7</sup>	.....
1.8 Means of correcting heading and bearings	.....
1.9 Transmitting heading device (THD) <sup>7</sup>	.....
2.1 Nautical charts/Electronic chart display and information system (ECDIS) <sup>5</sup>	.....
2.2 Backup arrangements for ECDIS	.....
2.3 Nautical publications	.....
2.4 Backup arrangements for electronic nautical publications	.....

<sup>5</sup> Delete as appropriate.

<sup>7</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.

5 **Details of navigational systems and equipment** (continued)

3.1	Receiver for a global navigation satellite system/terrestrial radionavigation system/multisystem shipborne radionavigation receiver <sup>5 7</sup>	.....
3.2	9 GHz radar <sup>7</sup>	.....
3.3	Second radar (3 GHz/9 GHz <sup>5</sup> ) <sup>7</sup>	.....
3.4	Automatic radar plotting aid (ARPA) <sup>7</sup>	.....
3.5	Automatic tracking aid <sup>7</sup>	.....
3.6	Second automatic tracking aid <sup>7</sup>	.....
3.7	Electronic plotting aid <sup>7</sup>	.....
4.1	Automatic identification system (AIS)	.....
4.2	Long-range identification and tracking system	.....
5.1	Voyage data recorder (VDR) <sup>5</sup>	.....
5.2	Simplified voyage data recorder (S-VDR) <sup>5</sup>	.....
6.1	Speed and distance measuring device (through the water) <sup>7</sup>	.....
6.2	Speed and distance measuring device (over the ground in the forward and athwartships direction) <sup>7</sup>	.....
7	Echo-sounding device <sup>7</sup>	.....
8.1	Rudder, propeller, thrust, pitch and operational mode indicator <sup>5 7</sup>	.....
8.2	Rate-of-turn indicator <sup>7</sup>	.....
9	Sound reception system <sup>7</sup>	.....
10	Telephone to emergency steering position <sup>7</sup>	.....
11	Daylight signalling lamp <sup>7</sup>	.....
12	Radar reflector <sup>7</sup>	.....
13	International Code of Signals	.....
14	IAMSAR Manual, Volume III	.....
15	Bridge navigational watch alarm system (BNWAS)	.....

**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)"  
\*\*\*

<sup>5</sup> Delete as appropriate.

<sup>7</sup> Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means, they shall be specified.



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## ANNEX 27

### DRAFT AMENDMENTS TO SOLAS CHAPTER II-2 IN RELATION TO FLASHPOINT

#### CHAPTER II-2

#### Construction – Fire protection, fire detection and fire extinction

##### Part A General

#### Regulation 3 Definitions

1 The following new paragraphs are added after existing paragraph 58, together with the associated footnotes:

"59 *Confirmed case (flashpoint)*: A confirmed case is when a representative sample analysed in accordance with standards acceptable to the Organization\* by an accredited laboratory\*\* reports the flash point as measured to be below 60°C.

\* ISO 2719:2016, Determination of flash point - Pensky-Martens closed cup method, Procedure A (for Distillate Fuels) or Procedure B (for Residual Fuels).

\*\* The laboratory is to be accredited to ISO/IEC 17025:2017 or an equivalent standard for the performance of the given flash point test ISO 2719:2016.

60 *Representative sample* is a product specimen having its physical and chemical characteristics identical to the average characteristics of the total volume being sampled.

61 *Oil fuel* is defined in regulation 1 of Annex 1 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto."

##### Part B Prevention of fire and explosion

#### Regulation 4 Probability of ignition

2 At the end of paragraph 2.1.4, delete the word "and" and at the end of paragraph 2.1.5, replacing "." with ";

3 The following new paragraphs are added after existing paragraph 2.1.5, together with the associated footnotes:

".6 ships carrying oil fuel shall prior to bunkering be provided with a declaration signed and certified by the fuel oil supplier's representative that the oil fuel supplied is in conformity with regulation SOLAS II.2/4.2.1 and the test method used for determining the flashpoint. A bunker delivery note for the fuel delivered to the ship shall contain the flashpoint specified in accordance with standards acceptable to the Organization,\* or a statement that the flashpoint has been measured at or above 70°C,"

\* ISO 2719:2016, Determination of flash point – Pensky-Martens closed cup method, Procedure A (for Distillate Fuels) or Procedure B (for Residual Fuels).

\*\* This information may be included in the bunker delivery note according MARPOL Annex VI/18.

.7 the Contracting Governments undertake to ensure that appropriate authorities designated by them inform the Organization for transmission to Contracting Governments and Member States of the Organization of all confirmed cases where oil fuel suppliers have failed to meet the requirements specified in SOLAS regulation II-2/4.2.1; and

.8 the Contracting Governments undertake to ensure that appropriate authorities designated by them take action as appropriate against oil fuel suppliers that have been found to deliver fuel that does not comply with regulation SOLAS regulation II-2/4.2.1."

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**ANNEX 28**

**ROAD MAP FOR DEVELOPING A GOAL-BASED CODE  
 FOR MARITIME AUTONOMOUS SURFACE SHIPS (MASS)**

Sessions of MSC	Work plan
<p>MSC 106                      (2 to 11 November 2022)</p>	<ul style="list-style-type: none"> <li>- Consideration of key principles and common understanding of the purpose and objectives for the new instrument</li>   <li>- Commence consideration of the common potential gaps and/or themes identified during the Regulatory Scoping Exercise (RSE) (MSC.1/Circ.1638, section 5) starting with the high-priority items (MSC.1/Circ.1638, paragraphs 6.11.1 to 6.11.3), including:                             <ul style="list-style-type: none"> <li>o identification of which potential gaps should be addressed prior to drafting instruments</li> <li>o identification of potential gaps which should be addressed while an instrument is being drafted</li> </ul> </li>   <li>High-priority items (MSC.1/Circ.1638, paragraphs 6.11.1 to 6.11.3) include but are not limited to:                             <ul style="list-style-type: none"> <li>o consideration, together with relevant documents, whether to amend the definition for MASS and degrees of autonomy (including the respective definition)</li> <li>o meaning of the terms master, crew or responsible person</li> <li>o remote control station/centre</li> <li>o determination of the remote operator as a seafarer</li> </ul> </li>   <li>- Commence development of glossary/terminology, to be further developed throughout the process of drafting                             <ul style="list-style-type: none"> <li>o development should take into account previous submissions made to the Committee</li> </ul> </li>   <li>- Commence consideration of the scope and framework of the mandatory and/or non-mandatory instrument to be developed (including structure of instrument, areas it should encompass, parts/chapters, etc.) for a goal-based instrument (MASS Code) and other associated non-mandatory instruments</li>   <li>- Commence development of provisions for a non-mandatory goal-based code</li>   <li>- Considerations of gaps not covered by the RSE but important for the development of a MASS Code                             <ul style="list-style-type: none"> <li>o identifying issues for possible consideration by a Joint MSC/LEG/FAL Working Group (JWG)</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- Consider the need and timing to:             <ul style="list-style-type: none"> <li>o involve sub-committees<sup>1</sup></li> <li>o initiate overall coordination with other committees</li> <li>o liaise with other international organizations such as ILO, ISO, IHO, IALA and IMSO</li> </ul> </li> <li>- Update this road map</li> </ul>
<p>MSC 107 (1st half 2023)</p>	<ul style="list-style-type: none"> <li>- If necessary, continue:             <ul style="list-style-type: none"> <li>o consideration of common potential gaps and/or themes</li> <li>o consideration of glossary/terminology</li> <li>o identifying issues for possible consideration by a Joint MSC/LEG/FAL Working Group (JWG)</li> </ul> </li> <li>- Continue the development of the non-mandatory MASS Code             <ul style="list-style-type: none"> <li>o continue to review the scope and framework</li> <li>o develop provisions for a goal-based instrument, taking into account the input from sub-committees, as appropriate</li> </ul> </li> <li>- In the process of developing provisions, consider the impact and identify changes to existing IMO instruments and make recommendation on how to address the changes to those instruments, as appropriate, also taking into account any recommendations from the Joint MSC/LEG/FAL Working Group (JWG). In doing so, the necessary amendments should focus on those classified as "High-priority"<sup>2</sup> during the RSE:             <ul style="list-style-type: none"> <li>o SOLAS chapters II-1, II-2, III, IV, V, VI, VII, IX, XI-1 and XI-2;</li> <li>o COLREG;</li> <li>o STCW Convention and Code;</li> <li>o STCW-F Convention;</li> <li>o 1966 LL Convention and 1988 Protocol thereto;</li> <li>o 1979 SAR Convention;</li> <li>o FSS Code;</li> <li>o IMSBC Code;</li> <li>o IMDG Code;</li> <li>o TONNAGE 1969;</li> <li>o IBC Code; and</li> <li>o IGC Code</li> </ul> </li> <li>- Consider the involvement of sub-committees<sup>3</sup></li> <li>- Update this road map</li> </ul>

<sup>1</sup> Tasks for the sub-committees will be included in this road map when agreed by the Committee.

<sup>2</sup> Medium and low priority instruments in accordance with the outcome of the RSE will be dealt with at a later date (MSC.1/Circ.1638, paragraphs 6.8.1 to 6.9.3).

<sup>3</sup> Tasks for the sub-committees will be included in this road map when agreed by the Committee.

<p>MSC 108 (1st half 2024)</p>	<ul style="list-style-type: none"> <li>- If necessary, continue: <ul style="list-style-type: none"> <li>o consideration of common potential gaps and/or themes</li> <li>o consideration of glossary/terminology</li> <li>o identifying issues for possible consideration by a Joint MSC/LEG/FAL Working Group (JWG)</li> </ul> </li> <li>- Continue the development of the non-mandatory MASS Code <ul style="list-style-type: none"> <li>o continue to review the scope and framework</li> <li>o develop provisions for a goal-based instrument, taking into account the input from sub-committees, as appropriate</li> </ul> </li> <li>- Decision on the means to adopt the mandatory instrument (Code): implementation through one Convention or through several conventions. If needed, develop amendments to existing instruments necessary for the entry into force of the new instrument and need to be approved and/or adopted at the same time as the new Code</li> <li>- continue consideration of any subsequent amendments to other existing IMO instruments, impacted by the entry into force of the new Code, including the <i>Interim Guidelines on MASS Trials</i> (MSC.1/Circ.1604)</li> <li>- finalize the non-mandatory MASS Code as annex to a draft MSC resolution</li> <li>- Consider the procedures for amending existing IMO instruments <ul style="list-style-type: none"> <li>o consider whether amendments to those instruments could be done under the existing output, or whether there is a need for the MASS Working Group to develop new outputs for this work</li> </ul> </li> <li>- Update this road map</li> </ul>
<p>MSC 109 (2nd half 2024)</p>	<ul style="list-style-type: none"> <li>- Finalization and adoption of the new non-mandatory MASS Code</li> <li>- Finalization of the draft mandatory MASS Code, based on the approved non-mandatory MASS Code</li> <li>- Finalization and approval of amendments to existing instruments necessary for the entry into force of the new instrument</li> <li>- Continue the review of existing IMO instruments, under the purview of MSC, with a focus on those classified as "High-priority" during the RSE</li> <li>- Identification of future work</li> </ul>

	<ul style="list-style-type: none"><li>○ consider whether a new output would be needed, or the existing output should be amended</li><li>- Update this road map</li></ul>
MSC 110 (1st half 2025)	<ul style="list-style-type: none"><li>- Adoption of a mandatory MASS Code<sup>4 5</sup> and associated Convention(s) giving effect to the new MASS Code</li><li>- Adoption and/or final approval of amendments to existing instruments necessary for the entry into force of the new instrument</li><li>- Finalize the review of existing IMO instruments with a focus on those classified as "High-priority" during the RSE; and agree on remaining future work and the way forward.</li></ul>

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<sup>4</sup> Adoption should take into account the progress made by other Committees and the JWG, if established.

<sup>5</sup> Entry into force date of 1 January 2028 means adoption on 1 July 2026 at the latest (first half of 2026).

**ANNEX 30**

**DRAFT AMENDMENTS TO THE IGC CODE**

**Chapter 6 Materials of construction and quality control**

**6.4 Requirements for metallic materials**

6.4.1 General requirements for metallic materials

**Table 6.3**

1 Table 6.3 is amended as follows:

**"Table 6.3**

<b>PLATES, SECTIONS AND FORGINGS <sup>See note 1</sup> FOR CARGO TANKS, SECONDARY BARRIERS AND PROCESS PRESSURE VESSELS FOR DESIGN TEMPERATURES BELOW -55°C AND DOWN TO -165°C <sup>See note 2</sup> Maximum thickness 25 mm <sup>See notes 3 and 4</sup></b>		
Minimum design temperature (°C)	Chemical composition See note 5 and heat treatment	Impact test temperature (°C)
-60	1.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>See note 6</sup>	-65
-65	2.25% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>See notes 6 and 7</sup>	-70
-90	3.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>See notes 6 and 7</sup>	-95
-105	5% nickel steel – normalized or normalized and tempered or quenched and tempered <sup>See notes 6, 7 and 8</sup>	-110
-165	9% nickel steel – double normalized and tempered or quenched and tempered <sup>See note 6</sup>	-196
-165	Austenitic steels, such as types 304, 304L, 316, 316L, 321 and 347 solution treated <sup>See note 9</sup>	-196
-165	High manganese austenitic steel – hot rolling and controlled cooling <sup>See notes 10 and 11</sup>	-196
-165	Aluminium alloys; such as type 5083 annealed	Not required
-165	Austenitic Fe-Ni alloy (36% nickel). Heat treatment as agreed	Not required
<b>TENSILE AND TOUGHNESS (IMPACT) TEST REQUIREMENTS</b>		
<b>Sampling frequency</b>		
◆ Plates	Each "piece" to be tested	
◆ Sections and forgings	Each "batch" to be tested	
<b>Toughness (Charpy V-notch test)</b>		
◆ Plates	Transverse test pieces. Minimum average energy value (KV) 27J	
◆ Sections and forgings	Longitudinal test pieces. Minimum average energy (KV) 41J	

**Notes**

- 1 The impact test required for forgings used in critical applications shall be subject to special consideration by the Administration.
- 2 The requirements for design temperatures below -165°C shall be specially agreed with the Administration.
- 3 For materials 1.5% Ni, 2.25% Ni, 3.5% Ni and 5% Ni, with thicknesses greater than 25 mm, the impact tests shall be conducted as follows:

Material thickness (mm)	Test temperature (°C)
25 < t ≤ 30	10°C below design temperature
30 < t ≤ 35	15°C below design temperature
35 < t ≤ 40	20°C below design temperature

The energy value shall be in accordance with the table for the applicable type of test specimen. For material thickness of more than 40 mm, the Charpy V-notch values shall be specially considered.

- 4 For 9% Ni steels, austenitic stainless steels, high manganese austenitic steels and aluminium alloys, thickness greater than 25 mm may be used.
- 5 The chemical composition limits shall be in accordance with recognized standards.
- 6 TMCP nickel steels will be subject to acceptance by the Administration.
- 7 A lower minimum design temperature for quenched and tempered steels may be specially agreed with the Administration.
- 8 A specially heat-treated 5% nickel steel, for example triple heat-treated 5% nickel steel, may be used down to -165°C, provided that the impact tests are carried out at -196°C.
- 9 The impact test may be omitted, subject to agreement with the Administration.
- 10 The use of the material shall be subject to the required conditions specified in the Guidelines developed by the Organization.\*
- 11 The impact test may not be omitted for high manganese austenitic steel.

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\* Refer to the *Guidelines on the application of high manganese austenitic steel for cryogenic service* (MSC.1/Circ.1599/Rev.1).



**ANNEX 31**

**DRAFT AMENDMENTS TO THE IGF CODE**

**PART A-1**

**SPECIFIC REQUIREMENTS FOR SHIPS USING NATURAL GAS AS FUEL**

**7 Material and general pipe design**

**Table 7.3**

1 Table 7.3 is amended as follows:

**"Table 7.3**

<b>PLATES, SECTIONS AND FORGINGS<sup>1</sup> FOR FUEL TANKS, SECONDARY BARRIERS AND PROCESS PRESSURE VESSELS FOR DESIGN TEMPERATURES BELOW MINUS 55°C AND DOWN TO MINUS 165°C<sup>2</sup></b> <b>Maximum thickness 25 mm<sup>3,4</sup></b>		
<b>Minimum design temp. (°C)</b>	<b>Chemical composition<sup>see note 5</sup> and heat treatment</b>	<b>Impact test temp. (°C)</b>
-60	1.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>6</sup>	-65
-65	2.25% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>6,7</sup>	-70
-90	3.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP <sup>6,7</sup>	-95
-105	5% nickel steel – normalized or normalized and tempered or quenched and tempered <sup>6,7 and 8</sup>	-110
-165	9% nickel steel – double normalized and tempered or quenched and tempered <sup>6</sup>	-196
-165	Austenitic steels, such as types 304, 304L, 316, 316L, 321 and 347 solution treated <sup>9</sup>	-196
-165	High manganese austenitic steel – hot rolling and controlled cooling <sup>10 and 11</sup>	-196
-165	Aluminium alloys; such as type 5083 annealed	Not required
-165	Austenitic Fe-Ni alloy (36% nickel). Heat treatment as agreed	Not required
<b>TENSILE AND TOUGHNESS (IMPACT) TEST REGULATIONS</b>		
<b>Sampling frequency</b>		
◆ Plates	Each "piece" to be tested	
◆ Sections and forgings	Each "batch" to be tested	
<b>Toughness (Charpy V-notch test)</b>		
◆ Plates	Transverse test pieces. Minimum average energy value (KV) 27J	
◆ Sections and forgings	Longitudinal test pieces. Minimum average energy (KV) 41J	
<b>Notes</b>		
1. The impact test required for forgings used in critical applications shall be subject to special consideration by the Administration.		

2. The regulations for design temperatures below  $-165^{\circ}\text{C}$  shall be specially agreed with the Administration.
3. For materials 1.5% Ni, 2.25% Ni, 3.5% Ni and 5% Ni, with thicknesses greater than 25 mm, the impact tests shall be conducted as follows:

Material thickness (mm)	Test temperature ( $^{\circ}\text{C}$ )
$25 < t \leq 30$	$10^{\circ}\text{C}$ below design temperature
$30 < t \leq 35$	$15^{\circ}\text{C}$ below design temperature
$35 < t \leq 40$	$20^{\circ}\text{C}$ below design temperature

The energy value shall be in accordance with the table for the applicable type of test specimen. For material thickness of more than 40 mm, the Charpy V-notch values shall be specially considered.

4. For 9% Ni steels, austenitic stainless steels, high manganese austenitic steels and aluminium alloys, thickness greater than 25 mm may be used.
5. The chemical composition limits shall be in accordance with recognized standards.
6. Thermo-mechanical controlled processing (TMCP) nickel steels will be subject to acceptance by the Administration.
7. A lower minimum design temperature for quenched and tempered steels may be specially agreed with the Administration.
8. A specially heat-treated 5% nickel steel, for example triple heat-treated 5% nickel steel, may be used down to  $-165^{\circ}\text{C}$ , provided that the impact tests are carried out at  $-196^{\circ}\text{C}$ .
9. The impact test may be omitted subject to agreement with the Administration.
10. The use of the material shall be subject to the required conditions specified in the Guidelines developed by the Organization. \*
11. The impact test may not be omitted for high manganese austenitic steel.

\*\*\*

\* Refer to the *Guidelines on the application of high manganese austenitic steel for cryogenic service* (MSC.1/Circ.1599/Rev.1).

**ANNEX 32**

**DRAFT AMENDMENTS TO SOLAS 1974**  
(NEW SOLAS CHAPTER XV TO MAKE THE IP CODE MANDATORY)

**DRAFT MSC RESOLUTION**

**ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION  
FOR THE SAFETY OF LIFE AT SEA, 1974**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO article VIII(b) of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), concerning the amendment procedure applicable to the annex to the Convention, other than to the provisions of chapter I,

HAVING CONSIDERED, at its [106th] session, amendments to the Convention proposed and circulated in accordance with article VIII(b)(i) of the Convention,

1 ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the Convention, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the said amendments shall be deemed to have been accepted on [1 January 2024], unless, prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet have notified the Secretary-General of their objections to the amendments;

3 INVITES Contracting Governments to the Convention to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on [1 July 2024] upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention;

5 ALSO REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

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

The following new draft chapter XV is added after existing chapter XIV:

**"CHAPTER XV  
SAFETY MEASURES FOR SHIPS CARRYING INDUSTRIAL PERSONNEL**

**Regulation 1**

**Definitions**

For the purpose of this chapter:

1 *Industrial personnel (IP)* means all persons who are transported or accommodated on board for the purpose of offshore industrial activities performed on board other ships and/or offshore facilities.

2 *IP Code* means the International Code of Safety for Ships Carrying Industrial Personnel, as adopted by resolution MSC.[...](...), as may be amended, provided that amendments to the IP Code are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I.

3 *Offshore industrial activities* mean the construction, maintenance, decommissioning, operation or servicing of offshore facilities related, but not limited, to exploration and exploitation of resources by the renewable or hydrocarbon energy sectors, aquaculture, ocean mining or similar activities.

4 *HSC Code* means the International Code of Safety for High-Speed Craft, 2000, adopted by the Maritime Safety Committee of the Organization by resolution MSC.97(73), 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 VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I.

**Regulation 2**

**General**

1 Wherever in the IP Code a reference is made to the passenger ship requirements, the corresponding cargo ship requirements are deemed to be complied with.

2 For the purpose of this chapter, industrial personnel shall not be treated or considered as passengers.

3 Wherever in this chapter, or in the IP Code, the number of industrial personnel appears as a parameter, it shall be the aggregate number of industrial personnel, special personnel<sup>6</sup> and passengers carried on board, where the number of passengers shall not exceed 12.

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<sup>6</sup> Refer to Code of Safety for Special Purpose Ships, 2008.

4 Notwithstanding the provisions of regulation 2.1 above, for high-speed craft to which chapter X applies and notwithstanding the provisions of chapters 2 to 12 and 18 of the HSC Code, a ship certified in accordance with the requirements of this chapter and the IP Code shall be deemed to have complied with the requirements of chapters 2 to 12 and 18 of the HSC Code.

### **Regulation 3 Application**

1 Unless expressly provided otherwise, this chapter applies to cargo ships and high-speed cargo craft, of 500 gross tonnage and upwards, constructed on or after [date of entry into force] which carry more than 12 industrial personnel.

2 Cargo ships constructed before [date of entry into force], authorized by the Administration to carry more than 12 industrial personnel in accordance with the recommendations developed by the Organization,<sup>2</sup> shall comply with requirements III/1, III/2 (except for paragraph 2.1.7), IV/7 and IV/8 of the IP Code by the first intermediate or renewal survey, whichever occurs first, after [date of entry into force].

3 High-speed cargo craft constructed before [date of entry into force], authorized by the Administration to carry more than 12 industrial personnel in accordance with the recommendations developed by the Organization,<sup>7</sup> shall comply with the requirements III/1, III/2 (except for paragraph 2.1.7), V/7 and V/8 of the IP Code by the third periodical or first renewal survey, whichever occurs first, after [date of entry into force].

4 Cargo ships and high-speed cargo craft, irrespective of date of construction, which prior to the [date of entry into force] have not been authorized by the Administration to carry more than 12 industrial personnel based on the recommendations developed by the Organization,<sup>2</sup> shall comply and be certified in accordance with this chapter and the IP Code prior to the carriage of more than 12 industrial personnel on board.

### **Regulation 4 Application of other chapters**

1 The regulations for cargo ships contained in the other chapters of the present Convention apply to ships described in regulation 3.1, except as modified by this chapter.

2 Notwithstanding the provisions of regulation 4.1 above, for high-speed craft to which the HSC Code applies, the regulations for cargo craft in that Code apply, except as modified by this chapter.

### **Regulation 5 Requirements**

- 1 Ships and high-speed craft shall:
- .1 be certified as a cargo ship or high-speed cargo craft in accordance with either chapter I or chapter VIII or chapter X, as applicable;
  - .2 meet the requirements of the IP Code; and

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<sup>7</sup> Refer to *Interim recommendations on the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages* (resolution MSC.418(97)).

- .3 in addition to the requirements of regulations I/8, I/9 and I/10 or of sections 1.5 to 1.9 of the HSC Code, as applicable, be surveyed and certified, as provided for in the IP Code.

2 Ships and high-speed craft to which this chapter applies, holding a certificate issued pursuant to the provisions of paragraph 1 above, shall be subject to the control established in regulations I/19 or XI-1/4 and section 1.10 of the HSC Code, as applicable. For this purpose, such certificates shall be treated as a certificate issued under regulations I/12 or I/13.

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**ANNEX 33**

**DRAFT INTERNATIONAL CODE OF SAFETY FOR SHIPS  
CARRYING INDUSTRIAL PERSONNEL (IP CODE)**

**DRAFT MSC RESOLUTION**

**ADOPTION OF THE INTERNATIONAL CODE OF SAFETY FOR SHIPS  
CARRYING INDUSTRIAL PERSONNEL (IP CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING article 28(b) of the Convention on the International Maritime Organization concerning the function of the Committee,

RECOGNIZING the need for a mandatory code for the safe carriage of industrial personnel on ships and their safety during personnel transfer operations to and from other ships and/or offshore facilities,

NOTING resolution MSC.[...(106)], by which it adopted, inter alia, new SOLAS chapter XV of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), to make the provisions of the International Code of Safety for Ships Carrying Industrial Personnel (IP Code) mandatory under the Convention,

HAVING CONSIDERED, at its [106th] session, the IP Code,

- 1 ADOPTS the IP Code, the text of which is set out in the annex to the present resolution;
- 2 INVITES Contracting Governments to the Convention to note that the IP Code will take effect on [1 July 2024] upon entry into force of SOLAS chapter XV of the Convention;
- 3 ALSO INVITES Contracting Governments to consider the voluntary application of the IP Code, as far as practicable, to ships of less than 500 gross tonnage and to ships not operating on international voyages;
- 4 REQUESTS the Secretary-General of the Organization to transmit certified copies of the present resolution and the text of the IP Code, contained in the annex, to all Contracting Governments to the Convention;
- 5 ALSO REQUESTS the Secretary-General of the Organization to transmit copies of the present resolution and the text of the IP Code contained in the annex to all Members of the Organization which are not Contracting Governments to the SOLAS Convention.

ANNEX

**INTERNATIONAL CODE OF SAFETY FOR SHIPS  
CARRYING INDUSTRIAL PERSONNEL (IP CODE)**

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## Preamble

1 As the maritime offshore and energy sectors are expanding, new offshore industrial activities have emerged and have in turn created a growing demand on the shipping sectors' supporting industry offshore to provide for the safe carriage of industrial personnel to and from other ships and/or offshore facilities.

2 It is recognized that the safety standards in the existing IMO instruments do not fully cover specific risks of maritime operations within the offshore sectors, such as personnel transfer operations.

3 Furthermore, it is recognized that, at the time of developing this Code, industrial personnel are a special category of persons yet to be defined in regulation 1/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974.

4 However, the difficulties caused by the lack of a clear definition for industrial personnel and the lack of an international safety standards for the carriage of industrial personnel on board in the existing IMO instruments are also recognized.

5 The International Code of Safety for Ships Carrying Industrial Personnel (IP Code) has been developed to supplement existing IMO instruments in order to meet the demand from the offshore and energy sectors and overcome these difficulties. The Code, in addition to the cargo ship requirements in SOLAS regulations, provides an international standard of safety for ships carrying industrial personnel which will facilitate safe carriage and safe personnel transfer by addressing additional risks connected to such operations.

6 The Code has been developed for ships operating on international voyages as defined in SOLAS regulation 1/2(d). However, it is recognized that the transport of a large number of industrial personnel will take place either within the confines of a particular coastal State or between a base port and an offshore installation outside territorial waters. To facilitate international movement and safe operations of ships carrying industrial personnel, Administrations are encouraged to apply this Code also to ships operating only on such voyages.

7 The Code applies to ships of 500 gross tonnage and upwards. However, it is recognized that ships below 500 gross tonnage may also carry an aggregated number of passengers, special personnel and industrial personnel in excess of 12. In such cases the Administration may apply the goals and functional requirements of the Code as far as practicable. If such ships are in compliance with the IP Code, Administrations may consider issuing an Industrial Personnel Safety Certificate for a ship carrying more than 12 industrial personnel, as long as all relaxations are indicated in this certificate.

## **PART I GENERAL**

### **1 Goal**

The goal of this Code is to provide for the safe carriage of industrial personnel on ships and their safety during personnel transfer operations by addressing any risks present not adequately mitigated by the applicable safety standards in the International Convention for the Safety of Life at Sea, 1974.

### **2 Definitions**

2.1 *Carriage* means transportation, accommodation or both.

2.2 *Essential systems* mean systems referred to in SOLAS regulation II-2/21.4.

2.3 *High-Speed Craft Code, 2000 (2000 HSC Code)* means the International Code of Safety for High-Speed Craft, 2000, as adopted by the Maritime Safety Committee of the Organization by resolution MSC.97(73), as amended.

2.4 *Industrial personnel (IP)* means all persons who are transported or accommodated on board for the purpose of offshore industrial activities performed on board other ships and/or offshore facilities.

2.5 *IP Area* is every area or space where IP are normally intended to stay during voyage or are allowed to access.

2.6 *Offshore industrial activities* mean the construction, maintenance, decommissioning, operation or servicing of offshore facilities related, but not limited, to exploration and exploitation of resources by the renewable or hydrocarbon energy sectors, aquaculture, ocean mining or similar activities.

2.7 *Personnel transfer* means the full sequence of the operation of transferring personnel and their equipment at sea to or from a ship to which this Code applies and from or to another ship or an offshore facility.

2.8 *SOLAS* means the International Convention for the Safety of Life at Sea, 1974, as amended.

### **3 Certificate and survey**

3.1 Every ship to which this Code applies shall have on board a valid Industrial Personnel Safety Certificate.

3.2 The Industrial Personnel Safety Certificate shall be issued after an initial or renewal survey to a ship which complies with the requirements of this Code.

3.3 The certificate referred to in this regulation shall be issued either by the Administration or by an organization recognized by it in accordance with SOLAS regulation XI-1/1. In any case, the Administration assumes full responsibility for the certificate.

3.4 The Industrial Personnel Safety Certificate shall be drawn up in a form corresponding to the model given in the appendix to this Code. If the language is not English, French or Spanish, the text shall include translation into one of these languages.

3.5 The Industrial Personnel Safety Certificate validity, survey dates and endorsements shall be harmonized with the relevant SOLAS certificates in accordance with the provisions of SOLAS regulation I/14 or SOLAS regulation X/3.2. The certificate shall include a supplement recording equipment required by the present Code.

3.6 The Industrial Personnel Safety Certificate and Record of Equipment are to be issued in addition to the relevant certificates required in SOLAS regulation XV/5.1.1.

## **PART II GOALS AND FUNCTIONAL REQUIREMENTS**

### **1 Industrial Personnel**

#### **1.1 Goal**

The goal of this chapter is to provide for:

- .1 the safe operation during carriage of industrial personnel; and
- .2 that industrial personnel are medically fit and familiar with the hazards associated with the operational environment including the risks associated with personnel transfer operations.

#### **1.2 Functional requirements**

In order to achieve the goal set out in paragraph 1.1 above, the following functional requirements are embodied in the regulations in part III:

Means shall be provided to ensure that industrial personnel:

- .1 are medically fit;
- .2 are able to communicate with the ship's crew;
- .3 have received appropriate safety training;
- .4 have received onboard ship-specific safety familiarization; and
- .5 have received onboard familiarization with the ship's transfer arrangements and equipment.

### **2 Safe transfer of personnel**

#### **2.1 Goal**

The goal of this chapter is to provide for the safety of all persons involved in personnel transfer, including safe and suitable means of transfer and the capability of safely carrying out the operations connected to personnel transfer.

#### **2.2 Functional requirements**

In order to achieve the goal set out in paragraph 2.1 above, the following functional requirements are embodied in the regulations in part III:

2.2.1 Means shall be provided to avoid injuries during personnel transfer.

2.2.2 Arrangements for personnel transfer shall be:

- .1 designed, constructed and maintained to withstand the loads they are subjected to;
- .2 designed and engineered to fail to a safe condition in the event of a loss or reduction in their associated functionality; and
- .3 capable of safely returning person in transfer to the safe location after loss of power.

2.2.3 Means for position keeping shall be provided and arranged in a manner that prevents accidents during transfer of personnel and is suitable for the mode of operation and interactions with other ships or offshore facilities.

2.2.4 Means shall be provided to ensure that the information on the number of industrial personnel on board and their identity is kept updated to assist in ensuring that the actual number of persons on board is known at all times.

### **3 Subdivision and stability**

#### **3.1 Goal**

The goal of this chapter is to provide for adequate stability of the ship, in both its intact and its damaged condition, taking into consideration the total number of persons on board.

#### **3.2 Functional requirements**

In order to achieve the goal set out in paragraph 3.1 above, the following functional requirements are embodied in the regulations in parts IV and V:

The ship shall be designed with weathertight and watertight boundaries providing for an adequate stability standard, in both intact and damaged conditions, taking into account the total number of persons on board.

### **4 Machinery installations**

#### **4.1 Goal**

The goal of this chapter is to provide for machinery installations capable of delivering the required functionality to ensure safe navigation and the safe carriage of persons on board both during normal operation and in any emergency situation, taking into account the total number of persons on board.

#### **4.2 Functional requirements**

In order to achieve the goal set out in paragraph 4.1 above, the following functional requirements are embodied in the regulations in parts IV and V:

- .1 where the capacity needed to ensure the required functionality of any machinery system is dependent on the number of persons on board (e.g. bilge pumping systems), necessary additional capacity shall be provided;

- .2 steering gear systems shall be capable of maintaining steerage after any incident affecting machinery installations; and
- .3 essential systems shall have the necessary redundancy or isolation or a combination thereof in order to ensure the capability of safely accommodating persons on board after any incident affecting machinery installations, taking into account the number of persons on board.

## **5 Electrical installations**

### **5.1 Goal**

The goal of this chapter is to provide for:

- .1 emergency sources of power capable of delivering the required functionality of essential systems in emergency situations, taking into account the total number of persons on board; and
- .2 protection of all persons on board from electrical hazards.

### **5.2 Functional requirements**

In order to achieve the goal set out in paragraph 5.1 above, the following functional requirements are embodied in the regulations in parts IV and V:

- .1 emergency power supply to essential systems shall have the necessary redundancy or isolation or a combination thereof to ensure the capability to safely accommodate persons on board after damage, taking into account the number of persons on board and the time for orderly evacuation; and
- .2 precautions against shock, fire and other hazards of electrical origin shall be provided.

## **6 Periodically unattended machinery spaces**

### **6.1 Goal**

The goal of this chapter is to ensure that, if and when a machinery space is periodically unattended, this does not impair the safety of the ship or the persons on board.

### **6.2 Functional requirements**

In order to achieve the goal set out in paragraph 6.1 above, the following functional requirements are embodied in the regulations in parts IV and V:

- .1 periodically unattended machinery spaces shall provide safe operations, taking into account the number of persons on board; and
- .2 a periodically unattended machinery space shall be equipped with additional controls, monitoring and alarm systems to provide safe operation, taking into account the number of persons on board in order to achieve safety equivalent to that of a normally attended machinery space.

## **7 Fire safety**

### **7.1 Goal**

The goal of this chapter is to fulfil the fire safety objectives of SOLAS or the basic fire safety principles of the 2000 HSC Code, taking into account the number of persons on board.

### **7.2 Functional requirements**

In order to achieve the goal set out in paragraph 7.1 above, the means to fulfil the fire safety functional requirements of SOLAS or the basic fire safety principles of the 2000 HSC Code, taking into account the number of persons on board, are embodied in the regulations in parts IV and V.

## **8 Life-saving appliances and arrangements**

### **8.1 Goal**

The goal of this chapter is to provide for appropriate and sufficient means to ensure safe abandonment of the ship and recovery of persons.

### **8.2 Functional requirements**

In order to achieve the goal set out in paragraph 8.1 above, the following functional requirements are embodied in the regulations in parts IV and V:

To provide for safe abandonment and recovery of persons:

- .1 the capacity of the survival craft shall be sufficient to accommodate all persons on board;
- .2 appropriate and sufficient personal life-saving appliances shall be available for all persons on board;
- .3 sufficient space for assembling and mustering must be ensured;
- .4 onboard communication and alarm systems shall be provided to ensure emergency communication to all persons on board; and
- .5 means shall be provided to ensure the safe recovery of persons.

## **9 Dangerous goods**

### **9.1 Goal**

The goal of this chapter is to provide for safe carriage of industrial personnel while transporting and handling dangerous goods on ships certified in accordance with this Code, taking into consideration the total number of persons on board.

### **9.2 Functional requirements**

In order to achieve the goal set out in paragraph 9.1 above, the following functional requirements are embodied in the regulations in parts IV and V:



Any hazard caused by the transporting and handling of dangerous goods shall be taken into account and the risk to all persons on board shall be minimized, having regard to the nature of the dangerous goods.

### **PART III REGULATIONS**

#### **Regulation 1 *Industrial personnel***

1.1 In order to meet the functional requirements set out in paragraph II/1.2.1, all industrial personnel shall be at least 16 years of age and documentary evidence shall be made available to the master that they are physically and medically fit to fulfil all the requirements in this regulation, based on a standard acceptable to the Administration.

1.2 In order to meet the functional requirements set out in paragraph II/1.2.2, all industrial personnel shall demonstrate adequate knowledge of the working language on board in order to be able to communicate effectively and understand any instructions given by the ship's crew.

1.3 In order to meet the functional requirements set out in paragraph II/1.2.3, all industrial personnel shall, prior to boarding the ship, receive training or instruction in:<sup>\*</sup>

- .1 personal survival that includes:
  - .1 knowledge of emergency situations that may occur on board a ship;
  - .2 the use of personal life-saving equipment;
  - .3 safely entering the water from a height, and survival in the water; and
  - .4 boarding a survival craft from the ship and water while wearing a lifejacket;
- .2 fire safety that includes knowledge of the types of fire hazards on board ships and precautionary measures to be taken to prevent a fire; and
- .3 personal safety and social responsibilities that include:
  - .1 understanding the authority of the master or their representative on board;
  - .2 complying with instructions provided by the shipboard personnel; and
  - .3 understanding safety information symbols, signs and alarm signals found on board ships.

1.4 No industrial personnel shall be carried on board the ship unless the master has been provided with documentation confirming that such personnel have received the training or instructions required by this regulation.

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\* Personnel meeting the training requirements in paragraph 5.5 of the *Recommendations for the training and certification of personnel on mobile offshore units* (resolution A.1079(28)) or industrial training standards, such as those of the Global Wind Organization (GWO), Offshore Petroleum Industry Training Organization (OPITO) or Basic Offshore Safety Induction and Emergency Training (OPITO accredited), may be considered as meeting the requirements of this section.

1.5 In order to meet the functional requirement set out in paragraph II/1.2.4, all industrial personnel shall, prior to leaving port or immediately after boarding, receive onboard ship-specific safety familiarization that includes:

- .1 the layout of the ship;
- .2 the location of personal life-saving appliances, muster and embarkation stations, emergency escape routes and first aid stations;
- .3 the safety information, symbols, signs and alarms on board; and
- .4 action to be taken in the event of an alarm sounding or the declaration of an emergency.

1.6 In order to meet the functional requirement set out in paragraph II/1.2.5, all industrial personnel shall, prior to being transferred, receive familiarization in the ship's procedures, arrangements and any additional safety measures or equipment for the transfer of personnel to other ships and/or offshore facilities.

## **Regulation 2**

### ***Safe transfer***

2.1 In order to meet the functional requirement in paragraph II/2.2.1, the following applies:

- .1 Personnel transfer appliances and arrangement shall be kept clean, properly maintained and shall be regularly inspected to ensure that they are safe to use.
- .2 The rigging and use of the personnel transfer arrangement(s) shall be supervised by a responsible officer and operated by properly trained personnel. Safety procedures shall be established and followed by personnel engaged in rigging and operating any mechanical equipment.
- .3 Means of communication shall be provided between the supervising responsible officer and the navigation bridge.
- .4 All personnel transfer arrangements are to be permanently marked to enable identification of each appliance for the purposes of survey, inspection and record-keeping. A record of use and maintenance shall be kept on board the ship.
- .5 Prior to commencing personnel transfer operations, the personnel transfer arrangement(s) shall be checked to ensure it is functioning properly.
- .6 Means shall be provided to ensure safe and unobstructed passage for industrial personnel between the personnel transfer arrangement(s) and where they are being transported or accommodated on board.
- .7 Lighting capable of being supplied by the emergency source of power shall be provided to illuminate the personnel transfer arrangement(s), the water below the transfer arrangement(s) and the passage specified in sub-paragraph .6 above.
- .8 The deck area for personnel transfer shall be designated and free from obstructions.

- .9 A job safety analysis shall be carried out when planning, and before executing, personnel transfer at sea. The analysis shall take into account environmental conditions, as well as operational and equipment limitations.
- .10 When planning personnel transfer, the guidance developed by the Organization\* or other relevant guidance† acceptable to the Administration should be taken into account.

2.2 In order to meet the functional requirement in paragraph II/2.2.2, personnel transfer arrangements shall be designed, constructed, tested and installed in accordance with standards§ acceptable to the Administration or requirements of a classification society which is recognized by the Administration in accordance with the provisions of SOLAS regulation XI-1/1.

2.3 In addition, the following applies:

- .1 The design of the personnel transfer arrangement(s) shall be suitable for the arrangement on the ship.
- .2 An analysis shall be performed in order to evaluate failures in IP transfer arrangement(s) and all its associated systems, which might impair the availability of the transfer arrangement(s) and/or endanger the safety of all persons involved. The analysis\*\* shall:
  - .1 consider the effects of failure in all the equipment and systems due to single failure, fire in any space or flooding of any watertight compartment that could affect the availability of the transfer arrangement(s); and
  - .2 provide solutions to ensure the availability of the IP transfer arrangement(s) and the safety of all persons involved upon such failures identified in .1.
- .3 Where a single failure results in failure of more than one component in a system (common cause failure), all the resulting failures are to be considered together. Where the occurrence of a failure leads directly to further failures, all those failures are to be considered together.

2.4 In order to meet the functional requirement in paragraph II/2.2.3, the manoeuvrability of the ship together with the expected need for the ship to keep position over time shall be evaluated, to ensure the correct use of position-keeping equipment.

2.5 In order to meet the functional requirement in paragraph II/2.2.4, procedures shall be in place to ensure correct information on the number and identity of personnel on board at all times.

## PART IV

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\* Refer to *Guidance on safety when transferring persons at sea* (MSC-MEPC.7/Circ.10).

† Such as the latest revision of IMCA M202 *Guidance on the transfer of personnel to/from offshore vessels and structures*.

§ Refer to relevant sections of EN 13852-1:2013.

\*\* Appropriate analysis may be QFA or FMEA and their associated reports.

## ADDITIONAL REGULATIONS FOR SHIPS CERTIFIED IN ACCORDANCE WITH SOLAS CHAPTER I

### Regulation 1 *General*

1.1 Unless expressly provided otherwise in this part, ships carrying industrial personnel shall meet the SOLAS requirements for cargo ships and the applicable regulations in this part.

1.2 Ships complying with paragraph 1.1 in addition to the applicable regulations in this part are considered to meet the goals and functional requirements in paragraphs II/3 to II/9.

### Regulation 2 *Subdivision and stability*

2.1 In order to meet the functional requirement set out in paragraph II/3.2.1, the following applies:

- .1 Where the ship is certified to carry more than 240 persons on board, it shall meet the requirements of SOLAS regulation II-1/5 as though the ship is a passenger ship and the industrial personnel are counted as passengers. However, SOLAS regulation II-1/5.5 is not applicable.
- .2 Subdivision and damage stability shall be in accordance with SOLAS chapter II-1, where the ship is considered a passenger ship and industrial personnel are counted as passengers, with an  $R$ -value as follows:
  - .1 where the ship is certified to carry more than 240 persons, the  $R$ -value is assigned as  $R$ ;
  - .2 where the ship is certified to carry not more than 60 persons, the  $R$ -value is assigned as  $0.8R$ ; or
  - .3 for more than 60 persons, but not more than 240 persons, the  $R$ -value shall be determined by linear interpolation between the  $R$ -values given in sub-paragraphs .1 and .2 above.

$$R = 1 - \frac{5,000}{L_s + 2.5N + 15,225}$$

Where:

$$N = N_1 + 2N_2$$

$N_1$  = number of persons for whom lifeboats are provided

$N_2$  = number of persons (including officers and crew) the ship is permitted to carry in excess of  $N_1$

- .3 Where the conditions of service are such that compliance with paragraph 2.1.2 above on the basis of  $N=N_1+2N_2$  is impracticable and where the Administration considers that a suitably reduced degree of hazard exists, a lesser value of  $N$  may be taken but in no case less than  $N=N_1+N_2$ .
- .4 For ships to which 2.1.2.1 applies, the requirements of SOLAS regulations II-1/8 and II-1/8-1 and of SOLAS chapter II-1 parts B-2, B-3 and

B-4 shall be applied as though the ship is a passenger ship and the industrial personnel are passengers. However, SOLAS regulations II-1/14 and II-1/18 are not applicable.

- .5 For ships to which 2.1.2.2 and 2.1.2.3 apply, except as provided in 2.1.6, the provisions of SOLAS chapter II-1, parts B-2, B-3 and B-4 shall apply as though the ship is a cargo ship and the industrial personnel are crew. However, the requirements of SOLAS regulations II-1/8 and II-1/8-1 need not be applied and SOLAS regulations II-1/14 and II-1/18 are not applicable.
- .6 All ships certified in accordance with this Code shall comply with SOLAS regulations II-1/9, II-1/13, II-1/19, II-1/20 and II-1/21 as though the ship is a passenger ship.

### **Regulation 3** ***Machinery installations***

3.1 In order to meet the functional requirement set out in paragraph II/4.2.1, the ship shall comply with SOLAS regulation II-1/35-1 as though the ship is a passenger ship.

3.2 In order to meet the functional requirement set out in paragraph II/4.2.2, where the ship is certified to carry more than 240 persons on board, it shall comply with the requirements of SOLAS regulation II-1/29 as though the ship is a passenger ship.

### **Regulation 4** ***Electrical installations***

4.1 In order to meet the functional requirement set out in paragraph II/5.2.1, the following applies:

- .1 for installations in ships of more than 50 m in length carrying not more than 60 persons on board, the requirements in SOLAS regulation II-1/42.2.6.1 shall apply in addition to the requirements in SOLAS regulation II-1/43; and
- .2 for installations in ships carrying more than 60 persons on board, SOLAS regulation II-1/42 shall apply.

4.2 In order to meet the functional requirement set out in paragraph II/5.2.2 for installations on ships carrying more than 60 persons on board, SOLAS regulation II-1/45.12 shall apply.

### **Regulation 5** ***Periodically unattended machinery spaces***

In order to meet the functional requirements set out in paragraph II/6.2, ships carrying more than 240 persons on board shall be considered as passenger ships in relation to SOLAS chapter II-1, part E.

### **Regulation 6** ***Fire safety***

In order to meet the functional requirements set out in paragraph II/7.2 and 4.2.3, the following applies:

- .1 where the ship is certified to carry more than 240 persons on board, the requirements of SOLAS chapter II-2 for passenger ships carrying more than 36 passengers shall apply; and
- .2 where the ship is certified to carry more than 60, but not more than 240 persons on board, the requirements of SOLAS chapter II-2 for passenger ships carrying not more than 36 passengers apply, except that SOLAS regulations II-2/21 and 22 need not apply.

## **Regulation 7**

### ***Life-saving appliances***

7.1 In order to meet the functional requirements set out in paragraph II/8.2, the following shall apply:

- .1 For ships carrying more than 60 persons on board, the requirements of SOLAS chapter III for passenger ships engaged on international voyages which are not short international voyages apply.
- .2 Regardless of the number of the persons on board, SOLAS regulations III/2 and III/19.2.3 are not applicable.
- .3 Where the term "passenger" is used in SOLAS chapter III, it shall be read to mean industrial personnel as prescribed in SOLAS regulation XV/2.3.
- .4 Notwithstanding subparagraph .3 above, the required number of infant or child lifejackets shall be calculated solely based on the number of passengers on board.

## **Regulation 8**

### ***Dangerous goods***

#### **8.1 General**

Industrial personnel may only bring dangerous goods on board for the purpose of their role off the ship and with the prior consent of the master of the ship. These dangerous goods shall be considered as cargo and shall be transported in accordance with part A of SOLAS chapter VII.

#### **8.2 Carriage of dangerous goods in packaged form**

In order to meet the functional requirements in paragraph II/9.2, the following applies:

- .1 for ships certified to carry more than 240 persons on board, SOLAS regulation II-2/19.3.6.2 for passenger ships carrying more than 36 passengers shall apply; and
- .2 for the purpose of the requirements of the IMDG Code, ships certified to carry more than 240 persons on board shall be considered as passenger ships and those certified to carry 240 or fewer persons on board shall be considered as cargo ships.

### **8.3 Carriage of dangerous goods in solid form in bulk**

In order to meet the functional requirements in paragraph II/9.2, the following applies:

- .1 for ships certified to carry more than 240 persons on board, SOLAS regulation II-2/19.3.6.2 for passenger ships carrying more than 36 passengers shall apply; and
- .2 for the purpose of the requirements of the IMSBC Code, industrial personnel shall be considered as personnel in the context of personnel protection.

### **8.4 Carriage of dangerous liquid chemicals, liquefied gases and oil**

8.4.1 In order to meet the functional requirements in paragraph II/9.2, when simultaneously carrying dangerous liquid chemicals and/or liquefied gases as cargo in bulk and industrial personnel, the ship shall either be certified in accordance with the requirements of parts B or C of SOLAS chapter VII or meet and be certified in accordance with a standard not inferior to that developed by the Organization.\* In addition, the following applies:

- .1 carriage of toxic products, low-flashpoint products or acids are not allowed when the total number of persons on board exceeds 60;
- .2 for the purpose of carrying industrial personnel, the areas and spaces on the ships where industrial personnel are not permitted to enter shall be clearly marked;
- .3 the arrangement for personnel transfer shall be located outside the cargo area;
- .4 the access to the arrangements for personnel transfer shall, as far as practicable, be located outside the cargo area; and
- .5 embarkation or personnel transfer and loading or unloading of cargo shall not take place simultaneously.

8.4.2 In order to meet the functional requirements in paragraph II/9.2, when simultaneously carrying oil as cargo, as defined in Annex I of MARPOL, and industrial personnel, the additional requirements in paragraph 8.4.1 shall apply.

8.4.3 For the purpose of this requirement:

- .1 "low-flashpoint products" mean:
  - .1 noxious liquid substances with a flashpoint not exceeding 60°C;
  - .2 oil with a flashpoint not exceeding 60°C; and
  - .3 liquefied gases which require flammable vapour detection in accordance with chapter 19 of the IGC Code;
- .2 "toxic products" mean:

---

\* Refer to the *Code for the Transport and Handling of Hazardous and Noxious Liquid Substances in Bulk on Offshore Support Vessels (OSV Chemical Code)* (resolution A.1122(30)).

- .1 dangerous chemicals to which the special requirement 15.12 of the IBC Code applies; and
- .2 liquefied gases which require toxic vapour detection in accordance with chapter 19 of the IGC Code; and
- .3 "acids" mean dangerous chemicals to which the special requirement 15.11 of the IBC Code applies.

8.4.4 In order to meet the functional requirements in paragraph II/9.2 when carrying liquefied gases in bulk, for the purpose of the requirements of the IGC Code, industrial personnel shall be considered as personnel in the context of training and personnel protection.

## **Part V**

### **Additional regulations for craft certified in accordance with SOLAS chapter X**

#### **1 General**

1.1 High-speed cargo craft certified in accordance with SOLAS chapter X shall not carry more than 60 persons on board.

1.2 Unless expressly provided otherwise in this part, high-speed craft carrying not more than 60 persons on board shall meet the requirements for cargo craft in the 2000 HSC Code and the applicable regulations in this part.

1.3 Craft complying with paragraph 1.2 in addition to the applicable regulations in this part are considered to meet the goals and functional requirements in paragraphs II/3 to II/9.

1.4 The carriage of IP on high-speed craft is not considered as transit voyage, as specified in 1.9.1.1 of the 2000 HSC Code, and a permit to operate is required.

1.5 Where the term "passenger" is used in applicable requirements in the 2000 HSC Code, it shall be read to mean "persons on board other than crew".

#### **2 Subdivision and stability**

In order to meet the functional requirements set out in II/3.2, the following applies:

- .1 In lieu of chapter 2, part C of the 2000 HSC Code, chapter 2, part B, except 2.13.2 and 2.14, shall apply.
- .2 When applying the provisions of chapter 2 of the 2000 HSC Code, the expression "passenger" shall be read as "persons on board other than crew". In addition, the mass of each such person shall be assumed to be 90 kg instead of 75 kg.

#### **3 Machinery installations**

In order to meet the functional requirements set out in II/4.2, the following applies:

In lieu of chapter 10, part C of the HSC Code, chapter 10, part B, shall apply as applicable to category A passenger craft.



#### **4 Electrical installations**

In order to meet the functional requirements set out in paragraph II/5.2, the following applies:

Regulation 12.7.10 of the 2000 HSC Code shall apply.

#### **5 Periodically unattended machinery spaces**

*[no provisions]*

#### **6 Fire safety**

*[no provisions]*

#### **7 Life-saving appliances**

In order to meet the functional requirements set out in paragraph II/8.2, the following applies:

- .1 regulation 4.2.3 of the 2000 HSC Code shall apply;
- .2 regulation 11.4.3 of the 2000 HSC Code shall apply – the expression "passenger spaces" shall be read as "IP Area"; and
- .3 the required number of infant or child lifejackets shall be calculated solely based on the number of passengers on board.

#### **8 Dangerous goods**

8.1 Industrial personnel may only bring dangerous goods on board for the purpose of their role off the ship and with the prior consent of the master of the ship. These dangerous goods shall be considered as cargo and shall be transported in accordance with part D of the 2000 HSC Code, chapter 7.

8.2 In order to meet the functional requirements set out in paragraph II/9.2, the following applies:

- .1 for the purpose of carrying IP, the areas and spaces on the ships where IP are not permitted to enter shall be clearly marked;
- .2 the arrangement for personnel transfer shall be located outside the cargo area;
- .3 the access to the arrangements for personnel transfer shall, as far as practicable, be located outside the cargo area; and
- .4 embarkation or personnel transfer and loading or unloading of cargo shall not take place simultaneously.

**APPENDIX**

**Form of Safety Certificate for Ships carrying Industrial Personnel**

**INDUSTRIAL PERSONNEL SAFETY CERTIFICATE**

This Certificate shall be supplemented by a Record of Equipment for the  
Industrial Personnel Safety Certificate

(Official seal)

(State)

Issued under the provisions of the

International Convention for the Safety of Life at Sea, 1974, as amended

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 .....

Gross tonnage .....

IMO number\*\* .....

Date [dd/mm/yyyy] on which keel was laid or ship was of 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 .....

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\* Alternatively, the particulars of the ship may be placed horizontally in boxes.

\*\* In accordance with IMO Ship Identification Number Scheme adopted by the Organization by resolution A.1117(30).

THIS IS TO CERTIFY:

1  *check box, if applicable*

That the ship has been surveyed in accordance with the provisions of regulation I/3 of the International Code of Safety for Ships Carrying Industrial Personnel as a ship to which regulations XV/3.1 or 3.4 of the Convention apply.

.1 That the survey showed that:

- .1 the structure, equipment, fittings and materials of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the relevant provisions of the Code; and
- .2 if fitted, the personnel transfer appliances and arrangement and the condition thereof are in all respects satisfactory and comply with the provisions of regulation III/2 of the Code.

2  *check box, if applicable*

That the ship has been surveyed in accordance with the provisions of regulation I/3 of the International Code of Safety for Ships Carrying Industrial Personnel as a ship to which regulations XV/3.2 or XV/3.3 of the Convention apply.

.1 That the survey showed that:

- .1 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with regulation IV/7 or regulation V/7 of the Code, as applicable;
- .2 the ship, if permitted to carry dangerous goods, complies with the relevant provisions of regulation IV/8 or regulation V/8 of the Code, as applicable; and
- .3 if fitted, the personnel transfer appliances and arrangement and the condition thereof are in all respects satisfactory and comply with the provisions of regulation III/2 (except for paragraph 2.1.7) of the Code.

3 This certificate is not valid for the carriage of toxic products, low-flashpoint products or acids when the total number of persons on board exceeds 60.

This certificate is valid until .....

Completion date of the survey on which this certificate is based (dd/mm/yyyy):  
.....

Issued at .....  
(Place of issue of certificate)

.....  
(Date of issue)

(Signature of authorized official  
issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate)

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**ENDORSEMENT FOR ANNUAL, PERIODICAL AND INTERMEDIATE SURVEYS**

THIS IS TO CERTIFY that, at a survey required by I/3 of the Code, the ship was found to comply with the relevant provisions of the Code:

Annual/Periodical\* survey:

Signed:

.....  
(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual/Periodical/Intermediate\* survey:

Signed:

.....  
(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual/Periodical/Intermediate\* survey:

Signed:

.....  
(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual/Periodical\* survey:

Signed:

.....  
(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

\*Delete as appropriate.

**ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN FIVE YEARS WHERE REGULATION I/14(C) OF THE CONVENTION OR REGULATION 1.8.8 OF THE HSC CODE APPLIES\***

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with regulation I/14(c) of the Convention or regulation 1.8.8 of the HSC Code, be accepted as valid until.....

Signed: .....  
(Signature of authorized official)

Place: .....

Date: .....  
(Seal or stamp of the authority, as appropriate)

**ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND REGULATION I/14(D) OF THE CONVENTION OR REGULATION 1.8.9 OF THE HSC CODE 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 or regulation 1.8.9 of the HSC Code, 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) OF THE CONVENTION OR REGULATION 1.8.10 OF THE HSC CODE APPLIES\***

This certificate shall, in accordance with regulation I/14(e)/I/14(f) of the Convention or regulation 1.8.10 of the HSC Code be accepted as valid until.....

Signed: .....  
(Signature of authorized official)

Place: .....

Date: .....  
(Seal or stamp of the authority, as appropriate)

\*Delete as appropriate.

**ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE REGULATION I/14(H) OF THE CONVENTION OR REGULATION 1.8.12 OF THE HSC CODE APPLIES\***

In accordance with regulation I/14(h) of the Convention or regulation 1.8.12 of the HSC Code, the new anniversary date is .....

Signed: .....  
(Signature of authorized official)

Place: .....

Date: .....  
(Seal or stamp of the authority, as appropriate)

In accordance with regulation I/14(h) of the Convention or regulation 1.8.12 of the HSC Code the new anniversary date is .....

Signed: .....  
(Signature of authorized official)

Place: .....

Date: .....  
(Seal or stamp of the authority, as appropriate)

**Record of Equipment for the Industrial Personnel Safety Certificate  
(Form IP)**

This Record should be permanently attached to the  
Industrial Personnel Safety Certificate.

**RECORD OF EQUIPMENT FOR COMPLIANCE WITH THE  
INTERNATIONAL CODE OF SAFETY FOR SHIPS CARRYING INDUSTRIAL  
PERSONNEL**

**1 Particulars of ship**

Name of ship .....

Distinctive number or letters .....

Total number of persons on board  
for which certified .....

**2 Details of life-saving appliances**

1	Total number of persons for which life-saving appliances are provided	.....	
		Port side	Starboard side
2	Total number of lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of partially enclosed lifeboats (SOLAS regulation III/21 or regulation III/31 or regulation 8.10 of the HSC Code, as applicable, and LSA Code, section 4.5)	.....	.....
2.3	Number of self-righting partially enclosed lifeboats (SOLAS regulations III/21 or regulation III/31 or regulation 8.10 of the HSC Code, as applicable, and LSA Code, section 4.5)	.....	.....
2.4	Number of totally enclosed lifeboats (SOLAS regulations III/21 or regulation III/31 or regulation 8.10 of the HSC Code, as applicable, and LSA Code, sections 4.6)	.....	.....
2.5	Other lifeboats	.....	.....
2.5.1	Number	.....	.....
2.5.2	Type	.....	.....

3	Number of motor lifeboats (included in the total lifeboats shown above)	.....
3.1	Number of lifeboats fitted with searchlights	.....
4	Number of rescue boats	.....
4.1	Number of boats which are included in the total lifeboats shown above	.....
5	Liferafts	.....
5.1	Those for which approved launching appliances are required	.....
5.1.1	Number of liferafts	.....
5.1.2	Number of persons accommodated by them	.....
5.2	Those for which approved launching appliances are not required	.....
5.2.1	Number of liferafts	.....
5.2.2	Number of persons accommodated by them	.....
6	Number of Marine Evacuation Systems (MES)	.....
6.1	Persons accommodated by them	.....
7	Buoyant apparatus	.....
7.1	Number of apparatus	.....
7.2	Number of persons capable of being supported	.....
8	Number of lifebuoys	.....
9	Number of lifejackets (total)	.....
9.1	Number of adult lifejackets	.....
9.2	Number of child lifejackets	.....
9.3	Number of infant lifejackets	.....
10	Immersion suits	.....
10.1	Total number	.....
11	Number of thermal protective aids*	.....
12	Radio installations used in life-saving appliances	.....
12.1	Number of search and rescue locating devices	.....
12.2	Number of two-way VHF radiotelephone apparatus	.....

\* Excluding those required by the LSA Code, paragraphs 4.1.5.1.24, 4.4.8.31 and 5.1.2.2.13.



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)

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**ANNEX 34**

**DRAFT AMENDMENTS TO THE 2011 ESP CODE**

**ANNEX TO THE INTERNATIONAL CODE ON THE ENHANCED PROGRAMME OF  
INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS, 2011  
(2011 ESP CODE)**

**ANNEX A**

**CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING THE SURVEYS  
OF BULK CARRIERS**

**Part A**

**Code on the Enhanced Programme of Inspections During Surveys of Bulk Carriers  
having Single-Side Skin Construction**

**2 Renewal survey**

**2.3 Space protection**

1 The existing text of paragraph 2.3.1 is replaced by the following:

"2.3.1 Where provided, the condition of the corrosion prevention system of ballast tanks should be examined. For ballast tanks excluding double-bottom tanks, where a hard protective coating is found to be in less than GOOD condition as defined in 1.2.11, and it is not renewed, or where a soft or semi-hard coating has been applied, or where a hard protective coating has not been applied from the time of construction, the tanks in question should be examined at annual intervals. Thickness measurements should be carried out as deemed necessary by the surveyor. When such breakdown of hard protective coating is found in water ballast double-bottom tanks and it is not renewed, where a soft or semi-hard coating has been applied or where a hard protective coating has not been applied from the time of construction, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurement should be carried out."

**4 Intermediate survey**

**4.2 Bulk carriers 5 to 10 years of age**

2 The existing text of paragraphs 4.2.1.2 and 4.2.1.3 are replaced by the following:

"4.2.1.2 Where a hard coating is found to be in less than GOOD condition, corrosion or other defects are found in water ballast tanks or where hard protective coating was not applied from the time of construction, the examination should be extended to other ballast tanks of the same type.

4.2.1.3 In ballast tanks other than double-bottom tanks, where a hard protective coating is found to be in less than GOOD condition and it is not renewed, or where soft or semi-hard coating has been applied, or where a hard protective coating was not

applied from the time of construction, the tanks in question should be examined and thickness measurements carried out as considered necessary at annual intervals. When such breakdown of hard protective coating is found in ballast double-bottom tanks, where a soft or semi-hard coating has been applied, or where a hard protective coating has not been applied, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out. "

## ANNEX 7

### CONDITION EVALUATION REPORT (EXECUTIVE HULL SUMMARY REPORT)

#### *Contents of condition evaluation report (executive hull summary report)*

3 The existing Part 8 (Memoranda) is replaced by the following:

"Part 8 – Memoranda

- Acceptable defects
- Any points of attention for future surveys, e.g. for suspect areas
- Examination of ballast tanks at annual surveys  
Extended due to coating breakdown

For ballast tanks, if coating condition less than GOOD is given, tanks shall be examined at annual surveys. This shall be noted in part 8 of the Contents of condition evaluation report (executive hull summary report)."

## ANNEX 9

### GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH THE PLANNING OF ENHANCED SURVEYS FOR SINGLE-SIDE SKIN BULK CARRIERS – RENEWAL SURVEY HULL

#### References

4 The existing reference no 3 (IACS) is replaced by the following:

"3 IACS Recommendation 76, Guidelines for Surveys, Assessment and Repair of Hull Structure - Bulk Carriers, 2007"

## Part B

### Code on the Enhanced Programme of Inspections During Surveys of Bulk Carriers having Double-Side Skin Construction

2 **Renewal survey**

2.3 Space protection

5 The existing text of paragraph 2.3.1 is replaced by the following:

"2.3.1 Where provided, the condition of the corrosion prevention system of ballast tanks should be examined. For ballast tanks, excluding double-bottom tanks, where a

hard protective coating is found to be in less than GOOD condition as defined in 1.2.11, and it is not renewed, or where a soft or semi-hard coating has been applied, or where a hard protective coating has not been applied from the time of construction, the tanks in question should be examined at annual intervals. Thickness measurements should be carried out as deemed necessary by the surveyor. When such breakdown of hard protective coating is found in water ballast double-bottom tanks and it is not renewed, where a soft or semi-hard coating has been applied or where a hard protective coating has not been applied from the time of construction, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurement should be carried out."

6 A new paragraph 2.3.4 is added after existing paragraph 2.3.3, as follows:

"2.3.4 For double-side skin void spaces bounding cargo holds for bulk carriers exceeding 20 years of age and of 150 m in length and upwards, where provided, the condition of the corrosion prevention system of void spaces shall be examined. Where a hard protective coating is found to be in POOR condition as defined in 1.2.11, and it is not renewed, or where a soft or semi-hard coating has been applied, or where a hard protective coating has not been applied from the time of construction, the void spaces in question shall be examined at annual intervals. Thickness measurements shall be carried out as deemed necessary by the surveyor."

### 3 Annual survey

7 A new paragraph 3.7 is added after existing paragraph 3.6.2, as follows:

#### ***3.7 Examination of double-side skin void spaces for bulk carriers exceeding 20 years of age and of 150 m in length and upwards***

Examination of double-side skin void spaces, for bulk carriers exceeding 20 years of age and of 150 m in length and upwards, should be carried out when required as a consequence of the results of the renewal survey and intermediate survey. When considered necessary by the Administration, or when extensive corrosion exists, thickness measurements should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10. These extended thickness measurements should be carried out before the survey is credited as completed. Suspect areas identified at previous surveys should be examined. Areas of substantial corrosion identified at previous surveys should have thickness measurements taken. For bulk carriers built under the IACS Common Structural Rules, the annual thickness gauging may be omitted where a protective coating has been applied in accordance with the coating manufacturer's requirements and is maintained in good condition."

**4 Intermediate survey**

**4.2 Double-side bulk carriers 5 to 10 years of age**

**4.2.1 Ballast tanks**

8 The existing text of paragraphs 4.2.1.2 and 4.2.1.3 are replaced by the following:  
"4.2.1.2 Where a hard coating is found to be in less than GOOD condition, corrosion or other defects are found in water ballast tanks or where hard protective coating was not applied from the time of construction, the examination should be extended to other ballast tanks of the same type.

4.2.1.3 In ballast tanks other than double-bottom tanks, where a hard protective coating is found to be in less than GOOD condition and it is not renewed, or where soft or semi-hard coating has been applied, or where a hard protective coating was not applied from the time of construction, the tanks in question should be examined and thickness measurements carried out as considered necessary at annual intervals. When such breakdown of hard protective coating is found in ballast double-bottom tanks, where a soft or semi-hard coating has been applied, or where a hard protective coating has not been applied, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out."

ANNEX 7

**CONDITION EVALUATION REPORT (EXECUTIVE HULL SUMMARY REPORT)**

***Contents of condition evaluation report (executive hull summary report)***

9 The existing parts 5 (Tank/hold corrosion prevention system) and 8 (Memoranda) are replaced by the following:

"Part 5 – Tank/ hold/ double-side skin void space corrosion prevention system - Separate form indicating:  
- location of coating  
- condition of coating (if applicable)

Part 8 – Memoranda - Acceptable defects  
- Any points of attention for future surveys, e.g. for suspect areas  
- Examination of ballast tanks and double-side skin void spaces at annual surveys due to coating breakdown"

***Tank/hold corrosion prevention system***

10 The existing chapeau of "Tank/hold corrosion prevention system", including the table and the text underneath, are replaced by the following:

**"Tank/hold/ double-side skin void space corrosion prevention system**

Tank/hold/void Nos. <sup>1</sup>	Tank/hold/void corrosion prevention system <sup>2</sup>	Coating condition <sup>3</sup>	Remarks

*Notes:*

- 1 All ballast tanks, cargo holds and double-skin void spaces shall be listed.
- 2 C = Coating  
NP = No protection
- 3 Coating condition according to the following standard:  
  
GOOD condition with only minor spot rusting.  
  
FAIR condition with local breakdown of coating at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.  
  
POOR condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.  
For ballast tanks, if coating condition less than GOOD is given, tanks shall be examined at annual surveys. This shall be noted in part 8 of the Contents of condition evaluation report (executive hull summary report).  
  
For double-side skin void spaces on bulk carriers exceeding 20 years of age and of 150 m in length and upwards, if coating condition POOR is given, those voids shall be examined at annual surveys. This shall be noted in part 8 of the Contents of condition evaluation report (executive hull summary report)."

ANNEX 9

**GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH PLANNING FOR ENHANCED SURVEYS OF DOUBLE-SIDE SKIN BULK CARRIERS – RENEWAL SURVEY HULL**

**References**

- 11 The existing references are replaced by the following:
  - "1 IACS, Recommendation 76: Guidelines for Surveys, Assessment and Repair of Hull Structure - Bulk Carriers, 2007
  - 2 TSCF, Guidelines for the Inspection and Maintenance of Double Hull Tanker Structures, 1995
  - 3 TSCF, Guidelines Manual for Tanker Structures, 1997."

ANNEX B

**CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF OIL CARRIERS**

**Part A**

**Code on the Enhanced Programme of Inspections During Surveys of Double-Hull Oil Tankers**

## **1.2 Definitions**

12 The existing text of paragraph 1.2.1 is replaced by the following:

"1.2.1 *Double-hull oil tanker* is a ship which is constructed primarily for the carriage of oil in bulk, which has cargo tanks forming an integral part of the ship's hull and protected by a double-hull which extends for the entire length of the cargo area, consisting of double sides and double-bottom spaces for the carriage of water ballast or void spaces."

## **2.6 Extent of tank pressure testing**

13 The existing text of paragraph 2.6.1 is replaced by the following:

"2.6.1 The minimum requirements for ballast tank pressure testing at the renewal survey are given in 2.6.3 and in annex 3.

The minimum requirements for cargo tank testing at the renewal survey are given in 2.6.4 and annex 3.

Cargo tank testing carried out by the ship's crew under the direction of the master may be accepted by the surveyor, provided the following conditions are complied with:

- .1 a tank testing procedure, specifying fill heights, tanks being filled and bulkheads being tested, has been submitted by the owner and reviewed by the Administration prior to the testing being carried out;
- .2 the tank testing is carried out prior to overall survey or close-up survey;
- .3 the tank testing is carried out within the special survey window and not more than three months prior to the date on which the overall or close-up survey is completed;
- .4 the tank testing has been satisfactorily carried out and there is no record of leakage, distortion or substantial corrosion that would affect the structural integrity of the tank;
- .5 the satisfactory results of the testing are recorded in the vessel's logbook; and
- .6 the internal and external condition of the tanks and associated structure are found satisfactory by the surveyor at the time of the overall and close-up survey."

## ANNEX 10

### CONDITION EVALUATION REPORT (EXECUTIVE HULL SUMMARY REPORT)

#### **Contents of condition evaluation report (executive hull summary report)**

14 The existing part 9 (Memoranda) is replaced by the following:

- "Part 9 – Memoranda
- Acceptable defects
  - Any points of attention for future surveys, e.g. for suspect areas
  - Examination of ballast tanks at annual surveys due to coating breakdown
- For ballast tanks, if coating condition less than GOOD is given, tanks shall be examined at annual surveys. This shall be noted in part 9 of the Contents of condition evaluation report (executive hull summary report)."

## ANNEX 12

### GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH THE PLANNING OF ENHANCED SURVEYS FOR OIL TANKERS

#### References

15 The existing references are replaced by the following:

- "1 IACS, Recommendation 96: Double Hull Oil Tankers – Guidelines for Surveys, Assessment and Repair of Hull Structures, 2019
- 2 TSCF, Guidelines for the Inspection and Maintenance of Double Hull Tanker Structures, 1995
- 3 TSCF, Guidelines Manual for Tanker Structures, 1997."

## Part B

### Code on the Enhanced Programme of Inspections During Surveys of Oil Tankers Other than Double-Hull Oil Tankers

#### 1.2 **Definitions**

16 The existing text of paragraph 1.2.1 is replaced by the following:

"1.2.1 *Oil tanker* is a ship which is constructed primarily to carry oil in bulk in cargo tanks forming an integral part of the ship's hull, which includes ship types such as combination carriers (ore/oil ships, etc.) but excludes ships carrying oil in independent tanks not part of ship's hull such as, for instance, asphalt carriers."

#### 2.6 **Extent of tank pressure testing**

17 The existing text of paragraph 2.6.1 is replaced by the following:



"2.6.1 The minimum requirements for ballast tank pressure testing at the renewal survey are given in 2.6.3 and in annex 3.

The minimum requirements for cargo tank testing at the renewal survey are given in 2.6.4 and annex 3.

Cargo tank testing carried out by the ship's crew under the direction of the master may be accepted by the surveyor, provided the following conditions are complied with:

- .1 a tank testing procedure, specifying fill heights, tanks being filled and bulkheads being tested, has been submitted by the owner and reviewed by the Administration prior to the testing being carried out;
- .2 the tank testing is carried out prior to overall survey or close-up survey;
- .3 the tank testing is carried out within the special survey window and not more than three months prior to the date on which the overall or close-up survey is completed;
- .4 the tank testing has been satisfactorily carried out and there is no record of leakage, distortion or substantial corrosion that would affect the structural integrity of the tank;
- .5 the satisfactory results of the testing are recorded in the vessel's logbook; and
- .6 the internal and external condition of the tanks and associated structure are found satisfactory by the surveyor at the time of the overall and close-up survey."

## ANNEX 9

### CONDITION EVALUATION REPORT (EXECUTIVE HULL SUMMARY REPORT)

#### *Contents of condition evaluation report (executive hull summary report)*

18 The existing part 9 (Memoranda) is replaced by the following:

- "Part 9 – Memoranda
- Acceptable defects
  - Any points of attention for future surveys, e.g. for suspect areas
  - Examination of ballast tanks at annual surveys due to coating breakdown

For ballast tanks, if coating condition less than GOOD is given, tanks shall be examined at annual surveys. This shall be noted in part 9 of the Contents of condition evaluation report (executive hull summary report)."

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## **INTERIM GUIDELINES FOR THE SAFETY OF SHIPS USING FUEL CELL POWER INSTALLATIONS**

1 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), having considered a proposal by the Sub-Committee on Carriage of Cargoes and Containers, at its seventh session, recognizing the importance of providing criteria for the arrangement and installation of fuel cell power installations on board ships so as to provide at least the same level of safety and reliability as new and comparable conventional oil-fuelled main and auxiliary machinery installations, approved the *Interim guidelines for the safety of ships using fuel cell power installations*, as set out in the annex.

2 Member States are invited to bring the Interim Guidelines to the attention of shipbuilders, manufacturers, shipowners, ship managers, masters and ship crews, bareboat charterers and all other parties concerned.

3 Member States are invited to recount their experience gained through the use of these Interim Guidelines to the Organization, for the Committee to keep them under review.

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## ANNEX

### INTERIM GUIDELINES FOR THE SAFETY OF SHIPS USING FUEL CELL POWER INSTALLATIONS

#### INTRODUCTION

These Interim Guidelines have been developed to provide international standard provisions for ships using fuel cell power installations. The goal of these Interim Guidelines is to provide criteria for the arrangement and installation of fuel cell power installations with at least the same level of safety and reliability as new and comparable conventional oil-fuelled main and auxiliary machinery installations, regardless of the specific fuel cell type and fuel. Depending on the fuel used, other regulations (e.g. IGF Code, part A) and provisions (e.g. *Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel*) are applicable in addition to these Interim Guidelines. Certain fuel cell power installations use a process of fuel reforming to develop a reformed fuel for use in the fuel cell. These Interim Guidelines are not intended to cover the storage of reformed fuels.

#### 1 GENERAL

##### 1.1 Application

Unless expressly provided otherwise these Interim Guidelines apply to ships to which part G of SOLAS chapter II-1 applies.

##### 1.2 Goal

The goal of these Interim Guidelines is to provide safe and reliable delivery of electrical and/or thermal energy through the use of fuel cell technology.

##### 1.3 Functional requirements

These Interim Guidelines are related to the goals and functional requirements of the IGF Code. In particular, the following applies:

- .1 The safety, reliability and dependability of the systems should be equivalent to that achieved with new and comparable conventional oil-fuelled main and auxiliary machinery installations, regardless of the specific fuel cell type and fuel.
- .2 The probability and consequences of fuel-related hazards should be limited to a minimum through arrangement and system design, such as ventilation, detection and safety actions. In the event of gas leakage or failure of the risk reducing measures, necessary safety actions should be initiated.
- .3 The design philosophy should ensure that risk reducing measures and safety actions for the fuel cell power installation do not lead to an unacceptable loss of power.
- .4 Hazardous areas should be restricted, as far as practicable, to minimize the potential risks that might affect the safety of the ship, persons on board and equipment.
- .5 Equipment installed in hazardous areas should be minimized to that required for operational purposes and should be suitably and appropriately certified.

- .6 Fuel cell spaces should be configured to prevent any unintended accumulation of explosive, flammable or toxic gas concentrations.
- .7 System components should be protected against external damages.
- .8 Sources of ignition in hazardous areas should be minimized to reduce the probability of explosions.
- .9 Piping systems and overpressure relief arrangements that are of suitable design, construction and installation for their intended application should be provided.
- .10 Machinery, systems and components should be designed, constructed, installed, operated, maintained and protected to ensure safe and reliable operation.
- .11 Fuel cell spaces should be arranged and located such that a fire or explosion in either will not lead to an unacceptable loss of power or render equipment in other compartments inoperable.
- .12 Suitable control, alarm, monitoring and shutdown systems should be provided to ensure safe and reliable operation.
- .13 Fixed leakage detection suitable for all spaces and areas concerned should be arranged.
- .14 Fire detection, protection and extinction measures appropriate to the hazards concerned should be provided.
- .15 Commissioning, trials and maintenance of fuel systems and gas utilization machinery should satisfy the goal in terms of safety, availability and reliability.
- .16 The technical documentation should permit an assessment of the compliance of the system and its components with the applicable rules, guidelines, design standards used and the principles related to safety, availability, maintainability and reliability.
- .17 A single failure in a technical system or component should not lead to an unsafe or unreliable situation.
- .18 Safe access should be provided for operation, inspection and maintenance.

#### 1.4 Definitions

For the purpose of these Interim Guidelines, the terms used have the meanings defined in the following paragraphs. Terms not defined have the same meaning as in SOLAS chapter II-2 and the IGF Code.

- .1 **Exhaust gas** is exhaust from the reformer or anode side of the fuel cell.
- .2 **Exhaust air** is exhaust from the cathode side of the fuel cell.

- .3 **Fuel cell** is a source of electrical power in which the chemical energy of a fuel cell fuel is converted directly into electrical and thermal energy by electrochemical oxidation.
- .4 **Fuel cell power system** is the group of components which may contain fuel or hazardous vapours, fuel cell(s), fuel reformers, if fitted, and associated piping systems.
- .5 **Fuel cell power installation** is the fuel cell power system and other components and systems required to supply electrical power to the ship. It may also include ancillary systems for the fuel cell operation.
- .6 **Fuel cell space** is a space or enclosure containing fuel cell power systems or parts of fuel cell power systems.
- .7 **Fuel cell stack** means the assembly of cells, separators, cooling plates, manifolds and a supporting structure that electrochemically converts, typically, hydrogen-rich gas and air-reactants to DC power, heat and other reaction products.
- .8 **Fuel reformer** is the arrangement of all related fuel-reforming equipment for processing gaseous or liquid primary fuels to reformed fuel for use in the fuel cells.
- .9 **LEL** means lower explosive limit, which, in the context of these Interim Guidelines, should be taken as identical to the Lower Flammable Limit (LFL) and which is 4.0% vol. fraction for hydrogen.<sup>1</sup>
- .10 **Reformed fuel** is hydrogen or hydrogen-rich gas generated in the fuel reformer.
- .11 **Primary fuel** is fuel supplied to the fuel cell power system.
- .12 **Process air** is air supplied to the reformer and/or the cathode side of the fuel cell.
- .13 **Ventilation air** is air used to ventilate the fuel cell space.

## 1.5 Alternative design

1.5.1 These Interim Guidelines contain functional requirements for all appliances and arrangements related to the usage of fuel cell technology.

1.5.2 Appliances and arrangements of fuel cell power systems may deviate from those set out in these Interim Guidelines, provided such appliances and arrangements meet the intent of the goal and functional requirements concerned and provide an equivalent level of safety of the relevant sections.

1.5.3 The equivalence of the alternative design should be demonstrated as specified in SOLAS regulation II-1/55 and approved by the Administration. However, the Administration should not allow operational methods or procedures to be applied as an alternative to a particular fitting, material, appliance, apparatus, item of equipment or type thereof which is prescribed by these Interim Guidelines.

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<sup>1</sup> For flammability limits for hydrogen refer to ISO /TR 15916:2015 on *Basic considerations for the safety of hydrogen systems*.

## **2 DESIGN PRINCIPLES FOR FUEL CELL POWER INSTALLATIONS**

### **2.1 Fuel cell spaces**

#### **2.1.1 Fuel cell space concept:**

- .1 In order to minimize the probability of a gas explosion in a fuel cell space, it should meet the requirements of this section, or an equivalent safety concept.
- .2 The fuel cell space concept is such that the space is designed to mitigate hazards to non-hazardous levels under normal conditions, but under certain abnormal conditions may have the potential to become hazardous.
- .3 Equipment protected fuel cell spaces - area classification according to 4.2.2: such fuel cell spaces are considered as hazardous zone 1 and all electrical equipment should be certified for zone 1. The fuel cell stack itself is not considered a source of ignition if the surface temperature of the stack is kept below 300°C<sup>2</sup> in all operating conditions and the fuel cell power system should be capable of immediately isolating and de-energizing the fuel cell stack under every load and operating condition (see also table 2).
- .4 In specific cases where the Administration considers the prescriptive area classification to be inappropriate, area classification according to IEC 60079-10-1:2020 should be applied according to 4.2.1, taking into account the following guidance: All electrical equipment needs to comply with the resulting area classification.
- .5 In specific cases where the Administration accepts inerting according to 2.3.3, the following guidance should be taken into account: As ignition hazards are mitigated by inerting, there is no need for an immediate (emergency) shutdown of the fuel supply in case of leakage detection. In case of leakage detection, automatic changeover to the other power supply systems should take place and a controlled shutdown of the fuel cell and the affected fuel supply system should be initiated in order thereby to avoid damage to the fuel cell power system.

2.1.2 The design of fuel cell power systems should comply with industry standards at least equivalent to those acceptable to the Organization.<sup>3</sup>

### **2.2 Arrangement and access**

2.2.1 Fuel cell power installations should be designed for automatic operation and equipped with all the monitoring and control facilities required for safe operation of the system.

2.2.2 It should be possible to shut down the fuel cell power system from an easily accessible location outside the fuel cell spaces.

2.2.3 Means to safely remove the primary and reformed fuel from the fuel cell power system should be provided.

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<sup>2</sup> The 300°C threshold is taken from ISO/IEC 80079-20-1:2017, where the maximum surface temperature is set to 450°C for Hydrogen and LNG and 300°C for methyl/ethyl alcohol and LPG. To ensure safe operation of fuel cell power systems regardless of the fuel cell and fuel type, these guidelines refer to the lowest threshold for the relevant fuels mentioned in the ISO/IEC 80079-20-1:2017, that is 300°C.

<sup>3</sup> Refer to IEC 62282 series: 62282-2-100:2020 and 62282-3-100:2019.

2.2.4 Means should be provided to set a fuel cell power installation into a safe state for maintenance and shutdown.

2.2.5 For the auxiliary systems of the fuel cell power system where primary fuel or reformed fuel may leak directly into a system medium (e.g. cooling water), such auxiliary systems should be equipped with appropriate extraction and detection means fitted as close as possible after the media outlet from the system in order to prevent gas dispersion. Gas extracted from the auxiliary system media should be vented to a safe location on the open deck.

2.2.6 The reforming equipment, if fitted, may be an integrated part of the fuel cell or arranged as an independent unit with reformed fuel piping connected to the fuel cell(s).

2.2.7 Fuel cell space boundaries should be gastight towards other enclosed spaces in the ship.

2.2.8 Fuel cell spaces should be arranged outside of accommodation spaces, service spaces, machinery spaces of category A and control stations.

2.2.9 Fuel cell spaces should be designed to safely contain fuel leakages and they should be provided with suitable leakage detection systems and should be arranged to avoid the accumulation of hydrogen-rich gas<sup>4</sup> by having simple geometrical shape and no obstructing structures in the upper part.

2.2.10 Fuel cell spaces containing fuel reformers should also comply with the requirements relevant for the primary fuel.

2.2.11 Where an independent and direct access to the fuel cell spaces from the open deck cannot be arranged, access to fuel cell spaces should be through an air lock.

2.2.12 An air lock is not required if appropriate technical provisions are made such that access to the space is not required and not made possible before the equipment inside is safely shut down, isolated from the fuel system, and drained of leakages and the inside atmosphere is confirmed gas-free.

2.2.13 These provisions include but are not limited to:

- .1 all controls required for safe operation and gas freeing of the equipment and space should be provided for remote operation from outside the space;
- .2 all parameters required for safe operation and gas freeing should be remotely monitored and alarms should be given;
- .3 the space openings should be equipped with an interlock preventing operation with the space open;
- .4 the spaces should be provided with suitable fuel leakage collection and draining arrangements for remote operation from outside the space; and
- .5 provisions should be made that the fuel equipment inside can be isolated from the fuel system, drained of fuel and purged safely for maintenance.

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<sup>4</sup> See also IEC 60079-10-1:2020.

## **2.3 Atmospheric control of fuel cell spaces**

### **2.3.1 General**

Protection of fuel cell spaces by an external boundary that encloses components where fuel is fed can be achieved by ventilation or inerting. These methods should be equally acceptable to ensure the safety of the space.

### **2.3.2 Ventilation of fuel cell spaces**

2.3.2.1 Fuel cell spaces should be equipped with an effective mechanical ventilation system to maintain underpressure of the complete space, taking into consideration the density of potentially leaking fuel gases.

2.3.2.2 For fuel cell spaces on open decks, overpressure ventilation may be considered.

2.3.2.3 The ventilation rate in fuel cell spaces should be sufficient to dilute the average gas/vapour concentration below 25% of the LEL in all maximum probable leakage scenarios owing to technical failures.

2.3.2.4 Any ducting used for the ventilation of fuel cell spaces should not serve any other space.

2.3.2.5 Ventilation ducts from spaces containing reformed fuel piping or release sources should be designed and arranged such that any possibility for gas to accumulate is avoided.

2.3.2.6 Two or more fans should be installed for the ventilation of the fuel cell space providing 100% redundancy upon loss of one fan. 100% ventilation capacity should also be supplied from the emergency source of power.

2.3.2.7 In case of failure of one fan, automatic changeover to another fan should be provided and indicated by an alarm.

2.3.2.8 In case of loss of ventilation or loss of underpressure in the fuel cell space the fuel cell power system should carry out an automatic, controlled shutdown of the fuel cell and isolation of the fuel supply.

2.3.2.9 Ventilation air inlets for fuel cell spaces should be taken from areas which, in the absence of the considered inlet, would be non-hazardous.

2.3.2.10 Ventilation air inlets for non-hazardous enclosed spaces should be taken from non-hazardous areas located at least 1.5m away from the boundaries of any hazardous area.

2.3.2.11 Ventilation air outlets from fuel cell spaces should be located in an open area which, in the absence of the considered outlet, would be of the same or lesser hazard than the ventilated space.

### **2.3.3 Inerting of fuel cell spaces for fire protection purposes**

2.3.3.1 Inerting should be accepted for atmospheric control of the fuel cell spaces provided that:

- .1 protection by inerting is only acceptable where a fuel cell space is not possible to enter during inerting or when inerted, and sealing arrangements should ensure that leakages of inert gas to adjacent spaces are prevented;



- .2 the inerting system complies with chapter 15 of the Fire Safety Systems Code (FSS Code) and paragraphs 6.13 and 6.14 of the IGF Code;
- .3 the pressure of inerting media should always be kept positive and monitored;
- .4 any change in the pressure, indicating a breach of the external outer boundary of fuel cell space, or a breach of the boundary with a space where fuel is flowing (e.g. fuel cell stack, reformer) should activate a controlled shut-off of the fuel supply;
- .5 fuel cell space should be equipped with a mechanical ventilation to evacuate the inerting agent, after an inerting release has been initiated;
- .6 access to the inerted fuel cell space should only be possible when the space is completely ventilated by fresh air and the fuel supply is interrupted and depressurized or purged; and
- .7 the inerting system should not be operable under ongoing maintenance or inspection.

## **2.4 Materials**

2.4.1 The materials within the fuel cell power installation should be suitable for the intended application and should comply with recognized standards.

2.4.2 The use of combustible materials within the fuel cell power system should be kept to a minimum.

## **2.5 Piping arrangement for fuel cell power system**

All pipes containing hydrogen or reformed fuel for fuel cell power systems, where fitted, should:

- .1 not be led through enclosed spaces outside of fuel cell spaces;
- .2 be fully welded as far as practicable;
- .3 be arranged to minimize the number of connections; and
- .4 use fixed hydrogen detectors being capable of detecting a hydrogen leak in places where leakage of hydrogen may occur, such as valves, flanges and seals.

## **2.6 Exhaust gas and exhaust air**

Exhaust gases and exhaust air from the fuel cell power systems should not be combined with any ventilation except ventilation serving fuel cell spaces and should be led to a safe location in the open air.

### **3 FIRE SAFETY**

#### **3.1 General provisions on fire and explosion safety**

Fuel cell spaces should be designed to provide a geometrical shape that will minimize the accumulation of gases or formation of gas pockets.

- .1 The fuel cell space should be regarded as a machinery space of category A according to SOLAS chapter II-2 for fire protection purposes.
- .2 A fuel cell space should be bounded by "A-60" class divisions. Where this is deemed to be impracticable, an Administration may approve alternative boundary designs that provide for an equivalent level of safety.
- .3 The fire-extinguishing system should be suitable for use with the specific fuel and fuel cell technology. Administrations may allow any alternative fire safety measures if the equivalence of the measure is demonstrated by a risk assessment considering the characteristics of fuels for use.
- .4 A fixed fire detection and fire alarm system complying with the FSS Code should be provided.
- .5 The type and arrangement of the fire detection system should be selected with due consideration of the fuels and combustible gases which may be present in fuel cell power installations.
- .6 Fuel cell spaces should be fitted with suitable<sup>5</sup> fire detectors. Smoke detectors alone are not considered sufficient for rapid detection of a fire when gaseous fuels are used.

#### **3.2 Fire and explosion protection**

3.2.1 Fuel cell spaces separated by a single bulkhead should have sufficient strength to withstand the effects of a local gas explosion in either space, without affecting the integrity of the adjacent space and equipment within that space.

3.2.2 Failures leading to dangerous overpressure, e.g. gas pipe ruptures or blow out of gaskets, should be mitigated by suitable explosion pressure relief devices and ESD arrangements.

3.2.3 The probability of a gas accumulation and explosion in fuel cell spaces should be minimized by a mitigating strategy which may include one or more of the below:

- .1 purging the fuel cell power system before initiating the reaction;
- .2 purging the system as necessary after shutdown;
- .3 providing failure monitoring in the fuel cell fuel containment systems;
- .4 monitoring potential contamination of air into fuel cells fuel lines, or fuel cells fuel into air pipes;
- .5 monitoring pressures and temperatures;

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<sup>5</sup> For the selection of suitable fire detectors, ISO/TR 15916:2015 can be taken into account.

- .6 implementing a pre-programmed sequence to contain or manage the propagation of the reaction to other sections of the fuel cell system or to the surrounding space; and
- .7 any other strategy to the satisfaction of the Administration.

### **3.3 Fire extinguishing**

3.3.1 A fixed fire-extinguishing system should be required for fuel cell spaces.

3.3.2 The fire-extinguishing system should be suitable for use with the specific primary and reformed fuel and fuel cell technology proposed.

3.3.3 Fixed fire-extinguishing systems should be selected having due regard to the fire growth potential of the protected spaces and are to be readily available.

### **3.4 Fire dampers**

3.4.1 Air inlet and outlet openings should be provided with fail-safe automatic closing fire dampers which should be operable from outside the fuel cell space.

3.4.2 Before actuation of the fire-extinguishing system, the fire dampers should be closed.

## **4 ELECTRICAL SYSTEMS**

### **4.1 General provisions on electrical systems**

4.1.1 Electrical equipment should not be installed in hazardous areas unless essential for operational purposes or safety enhancement.

4.1.2 Where electrical equipment including components of fuel cell systems is installed in hazardous areas it should be selected, installed and maintained in accordance with standards at least equivalent to those acceptable to the Organization.<sup>6</sup>

4.1.3 Means should be provided for protection of the fuel cell installation against short circuits and flow of reverse current.

### **4.2 Area classification**

4.2.1 In order to facilitate the selection of appropriate electrical apparatus and the design of suitable electrical installations, hazardous areas are divided into zones 0, 1 and 2, according to 4.2.2, 4.2.3 and 4.2.4. In cases where the prescriptive provisions in 4.2.2, 4.2.3 and 4.2.4 are deemed to be inappropriate, area classification according to IEC 60079-10-1:2020 should be applied with special consideration by the Administration.

#### **4.2.2 Hazardous areas zone 0**

The following areas should be treated as hazardous area zone 0: the interiors of buffer tanks, reformers, pipes and equipment containing low-flashpoint fuel or reformed fuel, any pipework of pressure relief or other venting.

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<sup>6</sup> Refer to standards IEC 60079-10-1:2020 *Explosive atmospheres Part 10-1: Classification of areas – Explosive gas atmospheres* and guidance and informative examples given in IEC 60092-502:1999, *Electrical Installations in Ships – Tankers – Special features for tankers*.

#### **4.2.3 Hazardous areas zone 1**

The following areas should be treated as hazardous area zone 1:

- .1 Areas on open deck, or semi-enclosed spaces on deck, within 3 m of any hydrogen or reformed fuel or purge gas outlets or fuel cell space ventilation outlets.
- .2 Areas on open deck, or semi-enclosed spaces on deck, within 3 m of fuel cell exhaust air and exhaust gas outlets.
- .3 Areas on open deck or semi-enclosed spaces on deck within 1.5 m of fuel cell space entrances, fuel cell space ventilation inlets and other openings into zone 1 spaces.
- .4 Areas on open deck or semi-enclosed spaces within 3 m in which other sources of release of hydrogen or reformed fuel are located.
- .5 Fuel cell spaces.

#### **4.2.4 Hazardous areas zone 2**

The following areas should be treated as hazardous area zone 2:

- .1 Areas within 1.5 m surrounding open or semi-enclosed spaces of zone 1 as specified above, if not otherwise specified.
- .2 Air locks.

4.2.5 **Ventilation ducts** should have the same area classification as the ventilated space.

#### **4.3 Risk analysis**

4.3.1 For any new or altered concept or configuration of a fuel cell power installation a risk analysis should be conducted in order to ensure that any risks arising from the use of fuel cells affecting the integrity of the ship are addressed. Consideration should be given to the hazards associated with installation, operation and maintenance, following any reasonably foreseeable failure.

4.3.2 The risks should be analysed using acceptable and recognized risk analysis techniques and mechanical damage to components, operational and weather-related influences, electrical faults, unwanted chemical reactions, toxicity, auto-ignition of fuels, fire, explosion and short-term power failure (blackout) should as a minimum be considered. The analysis should ensure that risks are eliminated wherever possible. Risks which cannot be eliminated should be mitigated as necessary.

## **5 CONTROL, MONITORING AND SAFETY SYSTEMS**

### **5.1 General provisions on control, monitoring and safety systems**

5.1.1 Safety-related parts of the fuel cell control systems should be designed independent from any other control and monitoring systems or should comply with the process as described in industry standards acceptable to the Organization<sup>7</sup> for the performance level or equivalent.

5.1.2 The fuel cell should be monitored according to the manufacturer's recommendations.

### **5.2 Gas or vapour detection**

5.2.1 A permanently installed gas/vapour detection system should be provided for:

- .1 fuel cell spaces;
- .2 air locks (if any);
- .3 expansion tanks/degassing vessels in the auxiliary systems of the fuel cell power system where primary fuel or reformed fuel may leak directly into a system medium (e.g. cooling water); and
- .4 other enclosed spaces where primary/reformed fuel may accumulate.

5.2.2 The detection systems should continuously monitor for gas/vapour. The number of detectors in the fuel cell space should be considered taking into account the size, layout and ventilation of the space. The detectors should be located where gas/vapour may accumulate and/or in the ventilation outlets. Gas dispersal analysis or a physical smoke test should be used to find the best arrangement.

5.2.3 Two independent gas detectors located close to each other are required for redundancy reasons. If the gas detector is of the self-monitoring type, the installation of a single gas detector can be permitted.

### **5.3 Ventilation performance**

In order to verify the performance of the ventilation system, a detection system of the ventilation flow and of the fuel cell space pressure should be installed. A running signal from the ventilation fan motor is not sufficient to verify performance.

### **5.4 Bilge wells**

Bilge wells in fuel cell spaces should be provided with level sensors.

### **5.5 Manual emergency shutdown**

5.5.1 Manual activation of emergency shutdown should be arranged in the following locations as applicable:

- .1 navigation bridge;
- .2 onboard safety centre;

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<sup>7</sup> Refer to ISO 13849-1:2015-06.

- .3 engine control room
- .4 fire control station; and
- .5 adjacent to the exit of the fuel cell space.

## **5.6 Actions of the alarm system and safety system**

### **5.6.1 Gas or vapour detection**

5.6.1.1 Gas/vapour detection in a fuel cell space above a gas or vapour concentration of 20% LEL should cause an alarm.

5.6.1.2 Gas/vapour detection in a fuel cell space above a gas or vapour concentration of 40% LEL should shut down the affected fuel cell power system and disconnect ignition sources and should result in automatic closing of all valves required to isolate the leakage. If not certified for operation in zone 1 hazardous areas, the fuel cell stack should be immediately electrically isolated and de-energized. Valves in the primary fuel system supplying liquid or gaseous fuel to the fuel cell space should close automatically.

5.6.1.3 Gas/vapour detection should be provided in the fuel cell's coolant "supply/header" tank, and this should cause an alarm.

### **5.6.2 Liquid detection**

Detection of unintended liquid leakages in the fuel cell space should trigger an alarm. A possible means of detection would be a bilge high-level alarm.

### **5.6.3 Loss of ventilation**

5.6.3.1 Loss of ventilation in a fuel cell space should result in an automatic shutdown of the fuel cell by the process control within a limited period of time. The period for the shut down by process control should be considered on a case-by-case basis based on the risk analysis.

5.6.3.2 After the period has expired, a safety shutdown should be carried out.

### **5.6.4 Emergency shutdown push buttons**

Actuation of the emergency shutdown push button should interrupt the fuel supply to the fuel cell space and de-energize the ignition sources inside the fuel cell space.

### **5.6.5 Loss of fuel cell coolant**

Loss of fuel cell coolant should result in an automatic shutdown of the fuel cell by the process control within a limited period of time. To prevent a potential coolant release in the fuel cell space, a secondary containment of the coolant pipe should be provided or the equipment within the fuel cell space should be protected from a coolant release. Consideration should be given to the safe removal of the coolant.

### **5.6.6 Fire detection**

Fire detection within the fuel cell space should initiate automatic shutdown and isolation of the fuel supply.

### 5.6.7 Fuel cell high-temperature shutdown

For fuel cell spaces rated as hazardous zone 1 where the fuel cell stack is not certified for operation in hazardous zone 1 and the surface temperature of the fuel cell stack exceeds 300°C, the fuel cell power system should immediately shut down and isolate the affected fuel cell space.

## 5.7 Alarms

5.7.1 The alarm provisions in section 5.6, as well as table 1, specify fuel cell power installation alarms.

5.7.2 Alarms additional to the ones required by table 1 may be recommended for unconventional or complex fuel cell power installations.

**Table 1: Alarms**

	Alarm conditions
<b>Gas detection at 20% LEL</b>	
Fuel cell spaces	HA
Expansion tanks/degassing vessels in systems for heating/cooling	HA
Air locks	HA
Other enclosed spaces where primary/reformed fuel may accumulate	HA
<b>Liquid detection</b>	
Fuel cell space as per 5.6.2.1	HA
<b>Ventilation</b>	
Reduced ventilation in fuel cell spaces	LA
<b>Other alarm conditions</b>	
Air lock, more than one door moved from closed position	A
Air lock, door open at loss of ventilation	A
<i>A = Alarm activated for logical value</i> <i>LA = Alarm for low value</i> <i>HA = Alarm for high value</i>	

## 5.8 Safety actions

5.8.1 The safety action provisions in section 5.6 and table 2 specify fuel cell power installations safety actions to limit the consequences of system failures.

5.8.2 Safety actions additional to those required by table 2 may be recommended for unconventional or complex fuel cell power installations.

**Table 2: Safety actions**

	Alarm	Shutdown of fuel cell space valve	Shutdown of ignition source	Signal to other control/safety systems for additional action
Loss of fuel cell coolant as per 5.6.6.1	X	X		
40% LEL inside fuel cell space (includes detection of hydrogen leaks as per 2.5.1.4)	X	X	X	If not certified for operation in zone 1 hazardous areas, the fuel cell stack should be immediately electrically isolated and de-energized
Loss of ventilation or loss of negative pressure in a fuel cell space	X	X		The fuel cell should be automatically shut down by process control
Fire detection within the fuel cell space	X	X	X	Shutdown of ventilation, release of fire-extinguishing system
Emergency shutdown button	X	X	X	
Fuel cell stack surface temperature >300°C	X	X	X	If fuel cell stack is not certified for zone 1



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MSC.1/Circ.1651  
15 June 2022

**AMENDMENTS TO MSC.1/CIRC.1625 ON UNIFIED INTERPRETATIONS  
OF THE IGC CODE (AS AMENDED BY RESOLUTION MSC.370(93))**

1 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), with a view to providing more specific guidance for the application of the relevant requirements of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), as amended by resolution MSC.370(93), approved amendments to the *Unified interpretations of the IGC Code (as amended by resolution MSC.370(93))* (MSC.1/Circ.1625), containing unified interpretations of the term "duct" in paragraphs 5.4.4 and 5.13.2.4 of the IGC Code, prepared by the Sub-Committee on Carriage of Cargoes and Containers, at its seventh session, as set out in the annex.

2 Member States are invited to use the annexed amendments in conjunction with the unified interpretations set out in MSC.1/Circ.1625 when applying relevant provisions of the IGC Code and to bring them to the attention of all parties concerned.

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## ANNEX

### AMENDMENTS TO MSC.1/CIRC.1625 ON UNIFIED INTERPRETATIONS OF THE IGC CODE (AS AMENDED BY RESOLUTION MSC.370(93))

#### **3 Outer duct in gas fuel piping systems (paragraphs 5.4.4 and 5.13.2.4)**

1 In section 3, add a new paragraph 3.1 as follows:

"The expression "duct" in 5.4.4 and 5.13.2.4 should mean to include the equipment enclosure required in 16.4.3.1 and 16.4.3.2 (e.g. GVU enclosure) as well as the structural pipe duct intended to contain any release of gas from inner pipe or equipment. The term "structural pipe duct" should mean an outer duct forming part of a structure such as a hull structure or superstructure or deck house, where permitted, other than gas valve unit rooms.

The gas valve unit rooms should be:

- .1 gastight toward other enclosed spaces;
- .2 equipped with mechanical exhaust ventilation having a capacity of at least 30 air changes per hour and arranged to maintain a pressure less than the atmospheric pressure; and
- .3 able to withstand the maximum built-up pressure arising in the room in case of a gas pipe rupture, as documented by suitable calculations taking into account the ventilation arrangements.

2 Renumber the remaining paragraphs as new paragraphs 3.2 and 3.3 accordingly."

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MSC.1/Circ.1653  
9 May 2022

**UNIFIED INTERPRETATION REGARDING TIMBER DECK CARGO  
IN THE CONTEXT OF DAMAGE STABILITY REQUIREMENTS**

1 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), having noted that since the dissemination of *IACS Unified interpretation regarding timber deck cargo in the context of damage stability requirements* (MSC/Circ.998) by MSC 74 in July 2001, IACS had reviewed its Unified Interpretation UI SC161, taking into account the SOLAS amendments adopted since the issue of MSC/Circ.998, as well as the revocation of the 1991 Timber Code (resolution A.715(17)) by the *Code of safe practice for ships carrying timber deck cargoes, 2011* (2011 TDC Code) (resolution A.1048(27)), and agreed to the updated *Unified interpretation regarding timber deck cargo in the context of damage stability requirements*, set out in the annex, as prepared by the Sub-Committee on Ship Design and Construction, at its eighth session (17 to 21 January 2022).

2 Member States are recommended to apply the Unified Interpretation, as set out in the annex, when implementing SOLAS regulation II-1/5-1 and to bring said Unified Interpretation to the attention of all parties concerned.

3 This circular supersedes MSC/Circ.998.

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## ANNEX

### UNIFIED INTERPRETATION REGARDING TIMBER DECK CARGO IN THE CONTEXT OF DAMAGE STABILITY REQUIREMENTS

#### SOLAS regulation II-1/5-1 states:

"1 The master shall be supplied with such information to the satisfaction of the Administration as is necessary to enable him by rapid and simple processes to obtain accurate guidance as to the stability of the ship under varying conditions of service. A copy of the stability information shall be furnished to the Administration.

2 The information should include:

- .1 curves or tables of minimum operational metacentric height (GM) and maximum permissible trim versus draught which assures compliance with the intact and damage stability requirements where applicable, alternatively corresponding curves or tables of the maximum allowable vertical centre of gravity (KG) and maximum permissible trim versus draught, or with the equivalents of either of these curves or tables;
- .2 instructions concerning the operation of cross-flooding arrangements; and
- .3 all other data and aids which might be necessary to maintain the required intact stability and stability after damage.

3 The intact and damage stability information required by regulation 5-1.2 shall be presented as consolidated data and encompass the full operating range of draught and trim. Applied trim values shall coincide in all stability information intended for use on board. Information not required for determination of stability and trim limits should be excluded from this information.

4 If the damage stability is calculated in accordance with regulation 6 to regulation 7-3 and, if applicable, with regulations 8 and 9.8, a stability limit curve is to be determined using linear interpolation between the minimum required GM assumed for each of the three draughts  $d_s$ ,  $d_p$  and  $d_i$ . When additional subdivision indices are calculated for different trims, a single envelope curve based on the minimum values from these calculations shall be presented. When it is intended to develop curves of maximum permissible KG it shall be ensured that the resulting maximum KG curves correspond with a linear variation of GM.

5 As an alternative to a single envelope curve, the calculations for additional trims may be carried out with one common GM for all of the trims assumed at each subdivision draught. The lowest values of each partial index  $A_s$ ,  $A_p$  and  $A_i$  across these trims shall then be used in the summation of the attained subdivision index A according to regulation 7.1. This will result in one GM limit curve based on the GM used at each draught. A trim limit diagram showing the assumed trim range shall be developed.

6 When curves or tables of minimum operational metacentric height (GM) or maximum allowable KG versus draught are not provided, the master shall ensure that the operating condition does not deviate from approved loading conditions, or verify by calculation that the stability requirements are satisfied for this loading condition."

## Scope

The provisions given below apply to ships that are subject to SOLAS chapter II-1, subdivision and damage stability calculations and engaged in carrying timber deck cargoes where the buoyancy of the timber deck cargo is taken into account in the damage stability calculations.

## Definitions

The following definitions should apply for the purposes of this interpretation:

- .1 *Timber* is used as a collective expression for all types of wooden material covered by the *Code of safe practice for ships carrying timber deck cargoes, 2011* (resolution A.1048(27)), including both round and sawn wood but excluding wood pulp and similar cargo.
- .2 *Timber deck cargo* means a cargo of timber carried on an uncovered part of a freeboard or superstructure deck.
- .3 *Timber load line* means a special load line assigned to ships complying with certain conditions set out in the International Convention on Load Lines.
- .4 *Deepest timber subdivision draught* is the waterline which corresponds to the timber summer draught to be assigned to the ship.
- .5 *Partial timber subdivision draught* is the light service draught as defined in SOLAS regulation II-1/2.11 plus 60% of the difference between the light service draught and the deepest timber subdivision draught.

## Interpretation

1 The ship should be supplied with comprehensive stability information which takes into account timber deck cargo. Such information shall enable the master to rapidly and simply obtain accurate guidance as to the stability of the ship under varying conditions of service and, as required in SOLAS regulation II-1/5-1, it shall include, among other damage stability-related issues, a curve of minimum operating metacentric height (GM) versus draught or maximum allowable vertical centre of gravity (KG) versus draught which covers the requirements of SOLAS regulation II-1/5-1.2.1.

2 To ensure that the buoyancy of the timber deck cargo can be justifiably credited in damage stability calculations, the integrity of the lashed timber deck cargo should comply with the following:

- .1 the timber deck cargo should be stowed in accordance with the provisions of paragraph 2.9 of the *Code of safe practice for ships carrying timber deck cargoes, 2011* (resolution A.1048(27));
- .2 the timber deck cargo should be secured by lashings and/or uprights; and
- .3 lashings and uprights should comply with the provisions of paragraph 2.10 of the *Code of safe practice for ships carrying timber deck cargoes, 2011* (resolution A.1048(27)).

3 The height and extent of the timber deck cargo should be in accordance with paragraph 3.3.2 of chapter 3 of part A of the International Code on Intact Stability, 2008 and should be at least stowed to the standard height of one superstructure.

4 The permeability of the timber deck cargo should be not less than 25% of the volume occupied by the cargo up to one standard superstructure.

5 Unless instructed otherwise by the Administration, the stability information for ships with timber deck cargoes should be supplemented by additional curve(s) of limiting *GM* (or *KG*) covering the timber draught range.

6 The above-described curve(s) applicable for conditions with timber deck cargo should be developed as described in SOLAS regulation II-1/5-1.4, considering the timber deck cargo at the deepest timber subdivision draught and at the partial timber subdivision draught only.

7 The limiting *GM* should be varied linearly between the deepest timber subdivision draught, and between the partial timber subdivision draught and the light service draught, respectively. Where timber freeboards are not assigned, the deepest and partial draughts should relate to the summer load line.

8 When considering the vertical extent of damage, the upper deck may be regarded as a horizontal subdivision (in accordance with SOLAS regulation II-1/7-2.6.1). Thus, when calculating damage cases which are limited vertically to the upper deck with the corresponding *v*-factor, the timber deck cargo may be considered to remain buoyant with an assumed permeability of 0.25 at the deepest and partial draught. For damage extending above the upper deck the timber deck, cargo buoyancy in way of the damage zone should be ignored.

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MSC.1/Circ.1654  
9 May 2022

**UNIFIED INTERPRETATION ON THE  
NOISE LEVEL LIMIT IN WORKSHOPS ON BOARD SHIPS**

1 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), in order to provide for a uniform application of the *Code on noise levels on board ships* (resolution MSC.337(91)) with respect to the noise limit for "workshops other than those forming part of machinery spaces", approved a unified interpretation on the noise level limit in workshops on board ships, set out in the annex, as prepared by the Sub-Committee on Ship Design and Construction, at its eighth session (17 to 21 January 2022).

2 Member States are invited to apply the unified interpretation set out in the annex and bring it to the attention of all parties concerned.

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## ANNEX

### UNIFIED INTERPRETATION ON THE NOISE LEVEL LIMIT IN WORKSHOPS ON BOARD SHIPS

#### INTERPRETATION OF PARAGRAPH 4.2.1 OF THE ANNEX TO THE CODE ON NOISE LEVELS ON BOARD SHIPS (RESOLUTION MSC.337(91))

Part of paragraph 4.2.1 reads as follows:

#### 4.2 Noise level limits

Limits for noise levels (dB(A)) are specified for various spaces as follows:

Designation of rooms and spaces	Ship size	
	1,600 up to 10,000 GT	≥10,000 GT
<b>4.2.1 Workspaces (see 5.1)</b>		
Workshops other than those forming part of machinery spaces	85	85

#### Interpretation

For the purposes of applying provisions in the annex to resolution MSC.337(91) on the *Code on noise levels on board ships*, "workshops other than those forming part of machinery spaces" should be enclosed workshops which are separated from the engine-room with bulkheads, which may include access doors of the equivalent acoustic insulating properties as the bulkhead. Workbenches and workstations located inside the machinery space should not be considered as "workshops other than those forming part of machinery spaces".

The noise level limit for workshops, which are forming part of machinery space, should be as for the machinery space: 110 dB(A).



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MSC.1/Circ.1535/Rev.2  
9 May 2022

**UNIFIED INTERPRETATIONS RELATING TO THE PROTOCOL OF 1988  
RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966**

1 The Maritime Safety Committee, at its ninety-sixth session (11 to 20 May 2016), in order to facilitate global and consistent implementation of requirements concerning sill and coaming heights for openings on top of deckhouses and companionways of the 1988 Load Lines Protocol, approved *Unified interpretations relating to the Protocol of 1988 relating to the International Convention on Load Lines, 1966* (MSC.1/Circ.1535), prepared by the Sub-Committee on Ship Design and Construction, at its third session.

2 The Maritime Safety Committee, at its 101st session (5 to 14 June 2019), approved amendments to MSC.1/Circ.1535 to include text regarding the unified interpretations of regulation 27(13)(e) of the 1988 Load Lines Protocol, prepared by the Sub-Committee on Ship Design and Construction, at its sixth session (MSC.1/Circ.1535/Rev.1).

3 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), approved amendments to the unified interpretations set out in MSC.1/Circ.1535/Rev.1, to include text regarding the unified interpretation of regulation 37(3) of the 1988 Load Lines Protocol, prepared by the Sub-Committee on Ship Design and Construction, at its eighth session. The amended text of the Unified Interpretations is set out in the annex.

4 Member States are invited to apply the annexed unified interpretations and to bring them to the attention of all parties concerned.

5 This circular revokes MSC.1/Circ.1535/Rev.1.

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## ANNEX

### UNIFIED INTERPRETATIONS RELATING TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

#### Regulation 13 – Position of hatchways, doorways and ventilators

1 For the purpose of these regulations, two positions of hatchways, doorways and ventilators are defined as follows:

Position 1 – Upon freeboard decks and raised quarterdecks, or other exposed decks\* lower than one standard height of superstructure above the freeboard deck, and upon exposed decks\* situated forward of a point located a quarter of the ship's length from the forward perpendicular that are located lower than two standard heights of superstructure above the freeboard deck.

Position 2 – Upon exposed decks\* situated abaft a quarter of the ship's length from the forward perpendicular and located at least one standard height of superstructure above the freeboard deck and lower than two standard heights of superstructure above the freeboard deck.

Upon exposed decks\* situated forward of a point located a quarter of the ship's length from the forward perpendicular and located at least two standard heights of superstructure above the freeboard deck and lower than three standard heights of superstructure above the freeboard deck.

#### Regulation 20 – Air pipes

2 Where air pipes to ballast and other tanks extend above:

- .1 the freeboard deck; or
- .2 other exposed decks\* lower than two standard heights of superstructure above the freeboard deck,

the exposed parts of the pipes should be of substantial construction, and the height from the deck to the point where water may have access below should be at least:

- .1 760 mm on the freeboard deck or other exposed decks\* lower than one standard height of superstructure above the freeboard deck; and
- .2 450 mm on other exposed decks\* lower than two standard heights of superstructure above freeboard deck.

**Note:** Flush bolted access covers, which are of substantial construction and are secured by gaskets and closely spaced bolts to maintain water tightness, are not subject to the minimum sill height requirements.

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\* "Exposed decks" include top decks of superstructures, deckhouses, companionways and other similar deck structures.

## **Regulation 27 – Types of ships**

### **Regulation 27(13)(e)**

3 Openings include ventilators (complying with regulation 19(4) of the International Convention on Load Lines, 1966) that for operational reasons have to remain open to supply air to the engine-room, emergency generator room or closed ro-ro and vehicle spaces (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship. Where it is not technically feasible to treat some closed ro-ro and vehicle space ventilators as unprotected openings, Administrations may allow an alternative arrangement that provides an equivalent level of safety.

## **Regulation 37 – Deduction for superstructures and trunks**

### **Regulation 37(3)**

4 For ships assigned a type "B" freeboard, including reduced type "B", if the effective length of a forecastle is less than  $0.07 L$ , a superstructure deduction cannot be applied to the ship.

For example, if the ship has no forecastle, or the effective length of the forecastle is less than  $0.07 L$ , and has other superstructure, no superstructure deduction is to be applied.

In case the ship has a full superstructure (one that extends from AP to FP, per regulation 3(10)(h) of Annex B of the 1988 Load Lines Protocol), the deduction for a superstructure may be applied in accordance with regulation 37(1) of Annex B of the 1988 Load Lines Protocol.

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MSC.1/Circ.1362/Rev.1  
9 May 2022

### **UNIFIED INTERPRETATION OF SOLAS CHAPTER II-1**

1 The Maritime Safety Committee, at its eighty-seventh session (12 to 21 May 2010), with a view to providing more specific guidance for application of the relevant requirements of the 1974 SOLAS Convention, approved a unified interpretation of SOLAS regulation II-1/2.14, prepared by the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety, at its fifty-second session.

2 The Maritime Safety Committee, at its 105th session (20 to 29 April 2022), agreed to amend the above unified interpretation by incorporating interpretations for SOLAS regulations II-1/5.4 and II-1/5.5, prepared by the Sub-Committee on Ship Design and Construction, at its eighth session (17 to 21 January 2022).

3 Member Governments are invited to use the annexed unified interpretations as guidance when applying relevant provisions of SOLAS chapter II-1 and to bring them to the attention of all parties concerned.

4 This circular revokes MSC.1/Circ.1362.

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## ANNEX

### UNIFIED INTERPRETATION OF SOLAS REGULATIONS II-1/5.4 AND II-1/5.5, RELATING TO THE AMENDMENT TO THE STABILITY/LOADING INFORMATION IN CONJUNCTION WITH THE ALTERATIONS OF LIGHTWEIGHT

#### Regulation 2.14 – Definitions

For ships constructed on or after 21 May 2010: In determining the permeability of a space, the volume of a space should be taken as the moulded volume, i.e. the immersed volume of a space should be the underwater moulded volume of that space multiplied by the permeability.

#### Regulations 5.4 and 5.5

SOLAS regulations II-1/5.4 and II-1/5.5 read:

##### "Regulation 5 *Intact stability*

...

4 Where any alterations are made to a ship so as to materially affect the stability information supplied to the master, amended stability information shall be provided. If necessary, the ship shall be re-inclined. The ship shall be re-inclined if anticipated deviations exceed one of the values specified in paragraph 5.

5 At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found or anticipated."

#### Revised Explanatory Notes to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2) read:

##### "Regulation 5.4

1 When alterations are made to a ship in service that result in calculable differences in the lightship properties, a detailed weights and centres of gravity calculation to adjust the lightship properties should be carried out. If the adjusted lightship displacement or longitudinal centre of gravity, when compared to the approved values, exceeds one of the deviation limits specified in regulation 5.5, the ship should be re-inclined. In addition, if the adjusted lightship vertical centre of gravity, when compared to the approved value, exceeds 1%, the ship should be re-inclined. The lightship transverse centre of gravity is not subject to a deviation limit.

2 When a ship does not exceed the deviation limits specified in explanatory note 1 above, amended stability information should be provided to the master using the new calculated lightship properties if any of the following deviations from the approved values are exceeded:

- .1 1% of the lightship displacement; or
- .2 0.5% of L for the longitudinal centre of gravity; or
- .3 0.5% of the vertical centre of gravity.

However, in cases when these deviation limits are not exceeded, it is not necessary to amend the stability information supplied to the master.

3 When multiple alterations are made to a ship in service over a period of time and each alteration is within the deviation limits specified above, the cumulative total changes to the lightship properties from the most recent inclining also should not exceed the deviation limits specified above or the ship should be re-inclined."

## **Interpretation**

### ***Definition of lightweight calculation***

For the purposes of this interpretation, the term "lightweight calculation" means a detailed calculation of weights on and weights off a ship, resulting from all alterations to the ship since the date of the last approved inclining test, to determine the adjusted lightship properties. Lightship properties include weights and the centre of gravity. The documented weights and their centres of gravity should be verified on board/on-site by the attending class surveyor.

When weights are added, removed or relocated, the final cumulative change is to be compared to the last approved inclining test.

"*Lightweight survey*" is defined in the International Code on Intact Stability 2008, paragraph 2.24.

### ***Definition of stability information***

"*Stability information*" includes any document (whether on paper or electronic) or electronic means of calculation of stability which includes lightship properties. This could include, but is not limited to, the approved stability book, computer software for onboard calculation of stability, the approved strength book and the loading instrument.

### ***Amendment of stability information in conjunction with alterations of lightship properties***

1 If the lightweight calculation, regardless of keel laying date, shows a deviation in lightweight mass, or the longitudinal or vertical position of the centre of gravity:

- .1 beyond any of the tolerance limits specified in explanatory note 1 to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then the ship should be re-inclined and the stability information, as defined above, should be updated to reflect the lightship properties derived from the inclining test and should be approved;
- .2 within the tolerance limits specified in the explanatory note 1 and exceeding any of the deviations specified in explanatory note 2 to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then the stability information should be updated to reflect the lightship properties derived from the lightweight calculation and should be approved; or
- .3 within the tolerance limits specified in explanatory note 2 to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then a copy of the endorsed lightweight calculation report should be provided on board for future reference with no further amendments required to the stability information. However, even if addition, removal or relocation of any weight results in lightship particulars being within tolerable limits, that weight should still be noted and the "constant" adjusted for lightweight calculation in the stability information for all future references and calculations.

2 A summary of paragraph 1 of this interpretation is provided in the following table. Where stability information is to be updated, it should be approved and provided to the master with the instruction that it should now be used for all stability calculations.

<b>Scenario, as calculated by lightweight calculation</b>	<b>Requirement for Inclining Test</b>	<b>Update of Stability Information</b>
Lightweight change > 2%	Yes	Yes, using new incline result
LCG change > 1% of L (either forward or aft)	Yes	Yes, using new incline result
VCG change > 1%	Yes	Yes, using new incline result
1% < Lightweight change ≤ 2%	No	Yes, using lightweight calculation
0.5% of L < LCG change ≤ 1% of L (either forward or aft)	No	Yes, using lightweight calculation
0.5% < VCG change ≤ 1%	No	Yes, using lightweight calculation
Lightweight change ≤ 1%	No	No
LCG change ≤ 0.5% of L (either forward or aft)	No	No
VCG change ≤ 0.5%	No	No

3 Lightship properties should be consistent in all documents which use them, e.g. loading manual, stability manual and computer data.

4 A change in lightweight will result in a change in deadweight unless there is an associated change in freeboard. The consequences of the change could have an impact on compliance with other regulations, e.g. MARPOL Annex VI.