Attached are annexes 1 to 27 to the report of the Maritime Safety Committee on its ninety-seventh session (MSC 97/22).
### LIST OF ANNEXES

<table>
<thead>
<tr>
<th>ANNEX</th>
<th>RESOLUTION MSC.409(97) – AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANNEX 2</td>
<td>RESOLUTION MSC.410(97) – AMENDMENTS TO THE INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS (FSS CODE)</td>
</tr>
<tr>
<td>ANNEX 3</td>
<td>RESOLUTION MSC.411(97) – AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (IGC CODE)</td>
</tr>
<tr>
<td>ANNEX 4</td>
<td>RESOLUTION MSC.412(97) – AMENDMENTS TO THE INTERNATIONAL CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS, 2011 (2011 ESP CODE)</td>
</tr>
<tr>
<td>ANNEX 7</td>
<td>RESOLUTION MSC.415(97) – AMENDMENTS TO PART B OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)</td>
</tr>
<tr>
<td>ANNEX 8</td>
<td>RESOLUTION MSC.416(97) – AMENDMENTS TO THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS (STCW), 1978, AS AMENDED</td>
</tr>
<tr>
<td>ANNEX 9</td>
<td>RESOLUTION MSC.417(97) – AMENDMENTS TO PART A OF THE SEAFARERS’ TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE</td>
</tr>
<tr>
<td>ANNEX 10</td>
<td>DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUELS (IGF CODE)</td>
</tr>
<tr>
<td>ANNEX 11</td>
<td>RESOLUTION MSC.418(97) – INTERIM RECOMMENDATIONS ON THE SAFE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD VESSELS ENGAGED ON INTERNATIONAL VOYAGES</td>
</tr>
<tr>
<td>ANNEX 12</td>
<td>RESOLUTION MSC.419(97) – AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS’ ROUTEING (RESOLUTION A.572(14), AS AMENDED)</td>
</tr>
<tr>
<td>ANNEX 13</td>
<td>DRAFT AMENDMENTS TO SOLAS REGULATION II-2/9.4.1.3</td>
</tr>
<tr>
<td>ANNEX 14</td>
<td>DRAFT AMENDMENTS TO SOLAS REGULATION II-2/3.56</td>
</tr>
<tr>
<td>ANNEX 15</td>
<td>DRAFT AMENDMENTS TO THE 1994 HSC CODE</td>
</tr>
<tr>
<td>ANNEX 16</td>
<td>DRAFT AMENDMENTS TO THE 2000 HSC CODE</td>
</tr>
</tbody>
</table>
ANNEX 17  DRAFT AMENDMENTS TO PARAGRAPHS 6.1.1.5 AND 6.1.1.6 OF THE LSA CODE

ANNEX 18  RESOLUTION MSC.420(97) – INTERIM RECOMMENDATIONS FOR CARRIAGE OF LIQUEFIED HYDROGEN IN BULK

ANNEX 19  DRAFT AMENDMENTS TO PARAGRAPHS 4.5.1 AND 4.5.2 TO THE IMSBC CODE

ANNEX 20  DRAFT AMENDMENTS TO SOLAS REGULATION II-2/20.2

ANNEX 21  DRAFT AMENDMENTS TO THE IMSBC CODE RELATED TO SUBSTANCES THAT ARE HARMFUL TO THE MARINE ENVIRONMENT

ANNEX 22  BIENNIAL STATUS REPORT OF THE SUB-COMMITTEES

ANNEX 23  PROVISIONAL AGENDAS FOR THE SUB-COMMITTEES

ANNEX 24  BIENNIAL STATUS REPORT OF THE MARITIME SAFETY COMMITTEE

ANNEX 25  POST-BIENNIAL AGENDA OF THE MARITIME SAFETY COMMITTEE

ANNEX 26  DRAFT AMENDMENTS TO SOLAS FORMS E, C AND P

ANNEX 27  STATEMENTS BY DELEGATIONS AND OBSERVERS

***
ANNEX 1

RESOLUTION MSC.409(97)
(adopted on 25 November 2016)

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

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 ninety-seventh 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 2019, 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 2020 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 REQUESTS ALSO 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

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

PART A
GENERAL

Regulation 3-12 – Protection against noise

1 The existing paragraph 2.1 is amended to read as follows:

"1 contracted for construction before 1 July 2014 and the keels of which are laid or which are at a similar stage of construction on or after 1 January 2009; or"
CHAPTER II-2
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION
AND FIRE EXTINCTION

PART A
GENERAL

Regulation 1 – Application

2 The following new paragraph is added after existing paragraph 2.8:

"2.9 Regulation 10.5.1.2.2, as amended by resolution MSC.409(97), applies to ships constructed before 1 January 2020, including those constructed before 1 July 2012."

PART C
SUPPRESSION OF FIRE

Regulation 10 – Firefighting

3 In paragraph 5.1.2.2, the last sentence is replaced with the following:

"In the case of domestic boilers of less than 175 kW, or boilers protected by fixed water-based local application fire-extinguishing systems as required by paragraph 5.6, an approved foam-type extinguisher of at least 135 l capacity is not required."
4 The following new regulation 2-1 is inserted after existing regulation 2:

"Regulation 2-1 – Harmonization of survey periods of cargo ships not subject to the ESP Code

For cargo ships not subject to enhanced surveys under regulation XI-1/2, notwithstanding any other provisions, the intermediate and renewal surveys included in regulation I/10 may be carried out and completed over the corresponding periods as specified in the 2011 ESP Code, as may be amended, and the guidelines developed by the Organization*, as appropriate.

* Refer to Survey Guidelines under the harmonized system of survey and certification (HSSC), 2015, as adopted by the Assembly of the Organization by resolution A.1104(29), as may be amended."
ANNEX 2

RESOLUTION MSC.410(97)
(adopted on 25 November 2016)

AMENDMENTS TO THE INTERNATIONAL CODE
FOR FIRE SAFETY SYSTEMS (FSS CODE)

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution MSC.98(73), by which it adopted the International Code for Fire Safety Systems ("the FSS Code"), which has become mandatory under chapter II-2 of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"),

NOTING ALSO Article VIII(b) and regulation II-2/3.22 of the Convention concerning the procedure for amending the FSS Code,

HAVING CONSIDERED, at its ninety-seventh session, amendments to the FSS Code 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 FSS Code 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 2019 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 2020 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 REQUESTS ALSO 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 CODE FOR FIRE SAFETY SYSTEMS
(FSS CODE)

CHAPTER 13
ARRANGEMENT OF MEANS OF ESCAPE

In paragraph 2.1.2.2.1, the text of case 2 is replaced with the following:

"Case 2: Passengers in public spaces occupied to 3/4 of maximum capacity, 1/3 of the crew distributed in public spaces; service spaces occupied by 1/3 of the crew; and crew accommodation occupied by 1/3 of the crew."

***
ANNEX 3

RESOLUTION MSC.411(97)
(adopted on 25 November 2016)

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

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution MSC.5(48), by which it adopted the International Code for the Construction
and Equipment of Ships Carrying Liquefied Gases in Bulk ("the IGC Code"), which has become
mandatory under chapter VII of the International Convention for the Safety of Life at Sea, 1974
("the Convention"),

NOTING ALSO Article VIII(b) and regulation VII/11.1 of the Convention concerning the
procedure for amending the IGC Code,

HAVING CONSIDERED, at its ninety-seventh session, amendments to the IGC Code
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
IGC Code, 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
amendments shall be deemed to have been accepted on 1 July 2019 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 their objections to the amendments;

3 INVITES Contracting Governments to note that, in accordance with
Article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force
on 1 January 2020 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purpose 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 REQUESTS ALSO 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 CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (IGC CODE)

CHAPTER 3
SHIP ARRANGEMENTS

3.2 Accommodation, service and machinery spaces and control stations

Existing paragraph 3.2.5 is replaced with the following:

"3.2.5 Windows and sidescuttles facing the cargo area and on the sides of the superstructures and deckhouses within the limits specified in 3.2.4, except wheelhouse windows, shall be constructed to "A-60" class. Sidescuttles in the shell below the uppermost continuous deck and in the first tier of the superstructure or deckhouse shall be of fixed (non-opening) type."

***
ANNEX 4

RESOLUTION MSC.412(97)
(adopted on 25 November 2016)

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

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution A.1049(27), by which the Assembly adopted the International Code on the
Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, 2011
("the 2011 ESP Code"), which has become mandatory under chapter XI-1 of the International
Convention for the Safety of Life at Sea, 1974 ("the Convention"),

NOTING ALSO Article VIII(b) and regulation XI-1/2 of the Convention concerning the
procedure for amending the 2011 ESP Code,

HAVING CONSIDERED, at its ninety-seventh session, amendments to the 2011 ESP Code
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 2011 ESP Code 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 2018 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 2018 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 REQUESTS ALSO 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

ANNEX A

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

Part A

CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING SINGLE-SIDE SKIN CONSTRUCTION

1 Paragraph 1.5 is replaced with the following:

"1.5 Thickness measurements and close-up surveys

In any kind of survey, i.e. renewal, intermediate, annual or other surveys having the scope of the foregoing ones, for structures in areas where close-up surveys are required, thickness measurements, when required by annex 2, should be carried out simultaneously with close-up surveys."

2 Paragraph 2.4.4 is replaced with the following:

"2.4.4 Close up survey and thickness measurement of the hatch cover and coaming plating and stiffeners should be carried out as given in annexes 1 and 2.

Subject to cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers' structures."

ANNEX 1

REQUIREMENTS FOR CLOSE-UP SURVEY AT RENEWAL SURVEYS

3 Note (D) is replaced with the following:

"(D) Cargo hold hatch covers and coamings. For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers' structures."
Part B

CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING DOUBLE-SIDE SKIN CONSTRUCTION

4 Paragraph 1.5 is replaced with the following:

"1.5 Thickness measurements and close-up surveys

In any kind of survey, i.e. renewal, intermediate, annual or other surveys having the scope of the foregoing ones, for structures in areas where close-up surveys are required, thickness measurements, when required by annex 2, should be carried out simultaneously with close-up surveys."

5 Paragraph 2.4.4 is replaced with the following:

"2.4.4 Close up survey and thickness measurement\(^3\) of the hatch cover and coaming plating and stiffeners should be carried out as given in annexes 1 and 2.

\(^3\) For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers’ structures.

ANNEX 1

REQUIREMENTS FOR CLOSE-UP SURVEY AT RENEWAL SURVEYS

Appendix 1 – Minimum requirements for close-up survey at renewal survey of double-side skin bulk carriers excluding ore carriers

5 < Age ≤ 10 years – Renewal Survey No.2

6 The third paragraph in the column is replaced with the following:

"25% of ordinary transverse frames for transverse framing systems or 25% of longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in the foremost double-side tanks. (B)"

10 < Age ≤ 15 years – Renewal Survey No.3

7 The third paragraph in the column is replaced with the following:

"25% of ordinary transverse frames for transverse framing systems or 25% of longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in all double-side tanks. (B)"
Age > 15 years – Renewal Survey No.4 and Subsequent

8 The third paragraph in the column is replaced with the following:

"All ordinary transverse frames for transverse framing systems or all longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in all double-side tanks. (B)"

9 Note (D) is replaced with the following:

"(D) Cargo hold hatch covers and coamings. For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers' structures."

Appendix 2 – Minimum requirements for close-up survey at renewal survey for ore carriers

10 Note (D) is replaced with the following:

"(D) Cargo hold hatch covers and coamings. For cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers' structures."

ANNEX 2

REQUIREMENTS FOR THICKNESS MEASUREMENTS AT RENEWAL SURVEYS

5 < Age ≤ 10 years – Renewal Survey No.2

11 Paragraph 3 is replaced with the following:

"3 Measurement, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to annex 1/appendix 1 or annex 1/appendix 2 as applicable."

10 < Age ≤ 15 years – Renewal Survey No.3

12 Paragraph 3 is replaced with the following:

"3 Measurement, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to annex 1/appendix 1 or annex 1/appendix 2 as applicable."
ANNEX B

CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF OIL TANKERS

Part A

CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF DOUBLE-HULL OIL TANKERS

13 Paragraph 1.5 is replaced with the following:

"1.5 Thickness measurements and close-up surveys

In any kind of survey, i.e. renewal, intermediate, annual or other surveys having the scope of the foregoing ones, for structures in areas where close-up surveys are required, thickness measurements, when required by annex 2, should be carried out simultaneously with close-up surveys."

14 Paragraph 2.5.6 is replaced with the following:

"2.5.6 In cases where two or three sections are to be measured, at least one should include a ballast tank within 0.5L amidships. In case of oil tankers of 130 m in length and upwards (as defined in the International Convention on Load Lines in force) and more than 10 years of age, for the evaluation of the ship's longitudinal strength as required in 8.1.2, the sampling method of thickness measurements is given in annex 12."

15 Paragraph 2.6.1.1 is replaced with the following:

".1 tank testing procedure, specifying fill heights, tanks being filled and bulkheads being tested, has been submitted by the owner and reviewed by the Administration or recognized organization prior to the testing being carried out;"

ANNEX 1

MINIMUM REQUIREMENTS FOR CLOSE-UP SURVEY AT RENEWAL SURVEY OF DOUBLE-HULL OIL TANKERS

16 Note (7) is replaced with the following:

"(7) Web frame in a cargo oil tank means deck transverse, longitudinal bulkhead structural elements and cross ties, where fitted, including adjacent structural members."
Part B

CODE ON THE ENHANCED PROGRAMME OF INSPECTIONS
DURING SURVEYS OF OIL TANKERS OTHER THAN DOUBLE-HULL OIL TANKERS

17 Paragraph 1.5 is replaced with the following:

"1.5 Thickness measurements and close-up surveys

In any kind of survey, i.e. renewal, intermediate, annual or other surveys having the scope of the foregoing ones, for structures in areas where close-up surveys are required, thickness measurements, when required by annex 2, should be carried out simultaneously with close-up surveys."

18 Paragraph 2.6.1.1 is replaced with the following:

".1 tank testing procedure, specifying fill heights, tanks being filled and bulkheads being tested, has been submitted by the owner and reviewed by the Administration or recognized organization prior to the testing being carried out;"

***
ANNEX 5

RESOLUTION MSC.413(97)
(adopted on 25 November 2016)

AMENDMENTS TO THE INTRODUCTION AND PART A OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.267(85) by which it adopted the International Code on Intact Stability, 2008 (“2008 IS Code”),

NOTING the provisions regarding the procedure for amendments to the introduction and part A of the 2008 IS Code, stipulated in regulation II-1/2.27.1 of the International Convention for the Safety of Life at Sea, 1974 (“the Convention”), as amended by resolution MSC.269(85),

RECOGNIZING the need to include provisions regarding ships engaged in anchor handling, lifting and towing operations, including escort towing, in the 2008 IS Code,

HAVING CONSIDERED, at its ninety-seventh session, the amendments to the introduction and part A of the 2008 IS Code, 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 introduction and part A of the 2008 IS Code, 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 2019, 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 the Organization 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 2020 upon their acceptance in accordance with paragraph 2 above;

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

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
ANNEX

AMENDMENTS TO THE INTRODUCTION AND PART A OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)

INTRODUCTION

1 Purpose

1 The chapeau of paragraph 1.2 is replaced with the following:

"1.2 Unless otherwise stated, this Code contains intact stability criteria applicable to ships and other marine vehicles of 24 m in length and above, as listed below. The Code also provides intact stability criteria applicable to the same ships and marine vehicles when engaged in certain operations:"

2 In paragraph 1.2, the following new subparagraphs .7 to .9 are inserted after the existing subparagraph .6:

".7 ships engaged in anchor handling operations;

.8 ships engaged in harbour, coastal or ocean-going towing operations and escort operations;

.9 ships engaged in lifting operations;"

and the remaining subparagraphs are renumbered accordingly.

2 Definitions

3 The following new paragraphs 2.27 to 2.31 are inserted after the existing paragraph 2.26:

"2.27 Ship engaged in anchor handling operations means a ship engaged in operations with deployment, recovering and repositioning of anchors and the associated mooring lines of rigs or other vessels. Forces associated with anchor handling are generally associated with the winch line pull and may include vertical, transverse, and longitudinal forces applied at the towing point and over the stern roller.

2.28 Ship engaged in harbour towing means a ship engaged in an operation intended for assisting ships or other floating structures within sheltered waters, normally while entering or leaving port and during berthing or unberthing operations.

2.29 Ship engaged in coastal or ocean-going towing means a ship engaged in an operation intended for assisting ships or other floating structures outside sheltered waters in which the forces associated with towing are often a function of the ship's bollard pull.

2.30 Ship engaged in lifting operation means a ship engaged in an operation involving the raising or lowering of objects using vertical force by means of winches, cranes, a-frames or other lifting devices."
2.31 *Ship engaged in escort operation* means a ship specifically engaged in steering, braking and otherwise controlling of the assisted ship during ordinary or emergency manoeuvring, whereby the steering and braking forces are generated by the hydrodynamic forces acting on the hull and appendages and the thrust forces exerted by the propulsion units (see also figure 1).

*\* Refer to the *Guidelines for safe ocean towing* (MSC/Circ.884).\*

\** Fishing vessels should not be included in the definition of lifting operations. Reference is made to paragraphs 2.1.2.2 and 2.1.2.8 of chapter 2 of part B. For anchor handling operations reference is made to section 2.7 of chapter 2 of part B.\*

** PART A
MANDATORY CRITERIA

4 The following footnote is added to the existing title of chapter 2:

\" Paragraphs 3.4.1.8, 3.4.1.9, 3.6.4 and 3.6.5 in part B should only be considered as recommendations.\"
ANNEX 6

RESOLUTION MSC.414(97)
(adopted on 25 November 2016)

AMENDMENTS TO THE INTRODUCTION AND PART A OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.267(85) by which it adopted the International Code on Intact Stability, 2008 (“2008 IS Code”),


RECOGNIZING the need to include provisions regarding ships engaged in anchor handling, lifting and towing operations, including escort towing, in the 2008 IS Code,

HAVING CONSIDERED, at its ninety-seventh session, amendments to the introduction and part A of the 2008 IS Code, proposed and circulated in accordance with paragraph 2(a) of Article VI of the 1988 Load Lines Protocol,

ADOPTS, in accordance with paragraph 2(d) of Article VI of the 1988 Load Lines Protocol, amendments to the introduction and part A of the 2008 IS Code, the text of which is set out in the annex to the present resolution;

DETERMINES, in accordance with paragraph 2(f)(ii)(bb) of Article VI of the 1988 Load Lines Protocol, that the said amendments shall be deemed to have been accepted on 1 July 2019, unless, prior to that date, more than one third of the Parties to the 1988 Load Lines Protocol, or Parties the combined merchant fleets of which constitute not less than 50% of all the merchant fleets of all Parties, have notified the Secretary-General of the Organization of their objections to the amendments;

INVITES Parties to the 1988 Load Lines Protocol to note that, in accordance with paragraph 2(g)(ii) of Article VI of the 1988 Load Lines Protocol, the amendments shall enter into force on 1 January 2020 upon their acceptance in accordance with paragraph 2 above;

REQUESTS the Secretary-General of the Organization, for the purposes of paragraph 2(e) of Article VI of the 1988 Load Lines Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the 1988 Load Lines Protocol;

REQUESTS ALSO the Secretary-General of the Organization to transmit copies of this resolution and its annex to Members of the Organization, which are not Parties to the 1988 Load Lines Protocol.
ANNEX

AMENDMENTS TO THE INTRODUCTION AND PART A OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)

INTRODUCTION

1 Purpose

1 The chapeau of paragraph 1.2 is replaced with the following:

"1.2 Unless otherwise stated, this Code contains intact stability criteria applicable to ships and other marine vehicles of 24 m in length and above, as listed below. The Code also provides intact stability criteria applicable to the same ships and marine vehicles when engaged in certain operations:"

2 In paragraph 1.2, the following new subparagraphs .7 to .9 are inserted after the existing subparagraph .6:

".7 ships engaged in anchor handling operations;
.8 ships engaged in harbour, coastal or ocean-going towing operations and escort operations;
.9 ships engaged in lifting operations;"

and the remaining subparagraphs are renumbered accordingly.

2 Definitions

3 The following new paragraphs 2.27 to 2.31 are inserted after the existing paragraph 2.26:

"2.27 Ship engaged in anchor handling operations means a ship engaged in operations with deployment, recovering and repositioning of anchors and the associated mooring lines of rigs or other vessels. Forces associated with anchor handling are generally associated with the winch line pull and may include vertical, transverse, and longitudinal forces applied at the towing point and over the stern roller.

2.28 Ship engaged in harbour towing means a ship engaged in an operation intended for assisting ships or other floating structures within sheltered waters, normally while entering or leaving port and during berthing or unberthing operations.

2.29 Ship engaged in coastal or ocean-going towing means a ship engaged in an operation intended for assisting ships or other floating structures outside sheltered waters in which the forces associated with towing are often a function of the ship's bollard pull.'

2.30 Ship engaged in lifting operation means a ship engaged in an operation involving the raising or lowering of objects using vertical force by means of winches, cranes, a-frames or other lifting devices."

---

* Refer to the Guidelines for safe ocean towing (MSC/Circ.884).
** Fishing vessels should not be included in the definition of lifting operations. Reference is made to paragraphs 2.1.2.2 and 2.1.2.8 of chapter 2 of part B. For anchor handling operations reference is made to section 2.7 of chapter 2 of part B.
2.31  *Ship engaged in escort operation* means a ship specifically engaged in steering, braking and otherwise controlling of the assisted ship during ordinary or emergency manoeuvring, whereby the steering and braking forces are generated by the hydrodynamic forces acting on the hull and appendages and the thrust forces exerted by the propulsion units (see also figure 1)."

**PART A**

**MANDATORY CRITERIA**

4

The following footnote is added to the existing title of chapter 2:

"Paragraphs 3.4.1.8, 3.4.1.9, 3.6.4 and 3.6.5 in part B should only be considered as recommendations."

***
ANNEX 7

RESOLUTION MSC.415(97)
(adopted on 25 November 2016)

AMENDMENTS TO PART B OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.267(85) by which it adopted the International Code on Intact Stability, 2008 ("2008 IS Code"),

NOTING the provisions regarding the procedure for amendments to part B of the 2008 IS Code, stipulated in regulation II-1/2.27.2 of the International Convention for the Safety of Life at Sea, 1974 ("the SOLAS Convention"), as amended by resolution MSC.269(85), and in paragraph (16).2 of regulation I/3 of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 ("1988 Load Lines Protocol"), as amended by resolution MSC.270(85),

RECOGNIZING the need to include provisions regarding ships engaged in anchor handling, lifting and towing operations, including escort towing, in the 2008 IS Code,

HAVING CONSIDERED, at its ninety-seventh session, the proposed amendments to part B of the 2008 IS Code, prepared by the Sub-Committee on Ship Design and Construction, at its second session,

1 ADOPTS amendments to part B of the 2008 IS Code, the text of which is set out in the annex to the present resolution;

2 RECOMMENDS Governments concerned to use the amendments to part B of the 2008 IS Code as a basis for relevant safety standards, unless their national stability requirements provide at least an equivalent degree of safety;

3 INVITES Contracting Governments to the SOLAS Convention and Parties to the 1988 Load Lines Protocol to note that the above amendments to the 2008 IS Code will take effect on 1 January 2020.
ANNEX

AMENDMENTS TO PART B OF THE 2008 IS CODE

1 The title of part B is replaced with the following text:

"Part B
Recommendations for ships engaged in certain types of operations, certain types of ships and additional guidelines"

Chapter 1 – General

1.2 Application

2 A new paragraph 1.2.2 is inserted after the existing paragraph 1.2.1 as follows:

"1.2.2 The recommendations contained herein may also apply to other ships subject to similar external forces, when determining the adequacy of stability."

and the existing paragraphs 1.2.2 and 1.2.3 are renumbered accordingly.

Chapter 2 – Recommended design criteria for certain types of ships

3 The title of chapter 2 is replaced with the following:

"Recommended design criteria for ships engaged in certain types of operations and certain types of ships"

4 Paragraph 2.4.3.4 is replaced with the following:

"2.4.3.4 A vessel engaged in towing operations should be provided with means for quick release of the towline."

Vessels provided with towing winch systems should also be provided with means of quick release.

5 The following new sections 2.7 to 2.9 are added after existing section 2.6:

"2.7 Ships engaged in anchor handling operations

2.7.1 Application

2.7.1.1 The provisions given hereunder apply to ships engaged in anchor handling operations.

2.7.1.2 A wire means a dedicated line (wire rope, synthetic rope or chain cable) used for the handling of anchors by means of an anchor handling winch."
2.7.2 Heeling levers

2.7.2.1 A heeling lever, $HL_{\phi}$, generated by the action of a heeling moment caused by the vertical and horizontal components of the tension applied to the wire should be calculated as:

$$HL_{\phi} = (M_{AH} / \Delta_2) \cos \phi$$

where:

- $M_{AH} = F_p \times (h \sin \alpha \times \cos \beta + y \times \sin \beta)$;
- $\Delta_2$ = displacement of a loading condition, including action of the vertical loads added ($F_v$), at the centreline in the stern of ship;
- $F_v = F_p \times \sin \beta$;
- $\alpha$ = the horizontal angle between the centreline and the vector at which the wire tension is applied to the ship in the upright position, positive outboard;
- $\beta$ = the vertical angle between the waterplane and the vector at which the wire tension is applied to the ship, positive downwards, should be taken at the maximum heeling moment angle as $\tan^{-1}(y / (h \times \sin \alpha))$, but not less than $\cos^{-1}(1.5B_P/(F_P \cos \alpha))$, using consistent units;

![Diagram showing intended meaning of parameters α, β, x, y, and h. F shows the vector of the applied wire tension.](https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx)

Figure 2.7-1 – Diagrams showing the intended meaning of parameters $\alpha$, $\beta$, $x$, $y$ and $h$. $F_1$ shows the vector of the applied wire tension.

$B_P =$ the Bollard pull that is the documented maximum continuous pull obtained from a static pull test on sea trial, carried out in accordance with annex A of MSC/Circ.884 or an equivalent standard acceptable to the Administration;
\[ F_p = (\text{Permissible tension}) \text{ the wire tension which can be applied to the ship as loaded while working through a specified tow pin set, at each } \alpha, \text{ for which all stability criteria can be met. } F_p \text{ should in no circumstance be taken as greater than } F_d; \]

\[ F_d = (\text{Design maximum wire tension}) \text{ the maximum winch wire pull or maximum static winch brake holding force, whichever is greater}; \]

\[ h = \text{the vertical distance (m) from the centre the propulsive force acts on the ship to either:} \]

- the uppermost part at the towing pin, or
- a point on a line defined between the highest point of the winch pay-out and the top of the stern or any physical restriction of the transverse wire movement;

\[ y = \text{the transverse distance (m) from the centreline to the outboard point at which the wire tension is applied to the ship given by:} \]

\[ y_0 + x \tan \alpha; \text{ but not greater than } B/2; \]

\[ B = \text{the moulded breadth (m)}; \]

\[ y_0 = \text{the transverse distance (m) between the ship centreline to the inner part of the towing pin or any physical restriction of the transverse wire movement}; \]

\[ x = \text{the longitudinal distance (m) between the stern and the towing pin or any physical restriction of the transverse wire movement}. \]

### 2.7.3 Permissible tension

2.7.3.1 The permissible tension as function of \( \alpha \), defined in paragraph 2.7.2, should not be greater than the tension given by paragraph 2.7.3.2.

2.7.3.2 Permissible tension as function of \( \alpha \) can be calculated by direct stability calculations, provided that the following are met:

1. the heeling lever should be taken as defined in paragraph 2.7.2 for each \( \alpha \);
2. the stability criteria in paragraph 2.7.4, should be met;
3. \( \alpha \) should not be taken less than 5 degrees, except as permitted by paragraph 2.7.3.3; and
4. Intervals of \( \alpha \) should not be more than 5 degrees, except that larger intervals may be accepted, provided that the permissible tension is limited to the higher \( \alpha \) by forming working sectors.
2.7.3.3 For the case of a planned operation to retrieve a stuck anchor in which the ship is on station above the anchor and the ship has low or no speed, \( \alpha \) may be taken as less than 5 degrees.

2.7.4 **Stability criteria**

2.7.4.1 For the loading conditions intended for anchor handling, but before commencing the operation, the stability criteria given in paragraph 2.2 of part A, or where a ship's characteristics render compliance with paragraph 2.2 of part A impracticable, the equivalent stability criteria given in paragraph 2.4 of part B, should apply. During operation, under the action of the heeling moment, the criteria under paragraphs 2.7.4.2 to 2.7.4.4 should apply.

2.7.4.2 The residual area between the righting lever curve and the heeling lever curve calculated in accordance with paragraph 2.7.2 should not be less than 0.070 metre-radians. The area is determined from the first intersection of the two curves, \( \phi_e \), to the angle of the second intersection, \( \phi_c \), or the angle of down-flooding, \( \phi_f \), whichever is less.

2.7.4.3 The maximum residual righting lever GZ between the righting lever curve and the heeling lever curve calculated in accordance with paragraph 2.7.2 should be at least 0.2 m.

2.7.4.4 The static angle at the first intersection, \( \phi_e \), between the righting lever curve and the heeling lever curve calculated in accordance with paragraph 2.7.2 should not be greater than:

\[ \begin{align*}
0.1 & \quad \text{the angle at which the righting lever equals 50\% of the maximum righting lever;} \\
0.2 & \quad \text{the deck edge immersion angle; or} \\
0.3 & \quad 15^\circ, \\
\end{align*} \]

whichever is less.

2.7.4.5 A minimum freeboard at stern, on centreline, of at least 0.005\( \Delta \) should be maintained in all operating conditions, with a displacement given by \( \Delta_2 \), as defined in paragraph 2.7.2. In the case of the anchor retrieval operation covered by paragraph 2.7.3.3, a lower minimum freeboard may be accepted provided that due consideration has been given to this in the operation plan.

2.7.5 **Constructional precautions against capsizing**

2.7.5.1 A stability instrument may be used for determining the permissible tension and checking compliance with relevant stability criteria.

Two types of stability instrument may be used on board:

- either a software checking the intended or actual tension on the basis of the permissible tension curves; or
• a software performing direct stability calculations to check compliance with the relevant criteria, for a given loading condition (before application of the tension force), a given tension and a given wire position (defined by angles $\alpha$ and $\beta$).

2.7.5.2 Access to the machinery space, excluding emergency access and removal hatches, should, if possible, be arranged within the forecastle. Any access to the machinery space from the exposed cargo deck should be provided with two weathertight closures. Access to spaces below the exposed cargo deck should preferably be from a position within or above the superstructure deck.

2.7.5.3 The area of freeing ports in the side bulwarks of the cargo deck should at least meet the requirements of regulation 24 of the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable. The disposition of the freeing ports should be carefully considered to ensure the most effective drainage of water trapped in working deck and in recesses at the after end of the forecastle. In ships operating in areas where icing is likely to occur, no shutters should be fitted in the freeing ports.

2.7.5.4 The winch systems should be provided with means of emergency release.

2.7.5.5 For ships engaged in anchor handling operations the following recommendations for the anchor handling arrangements should be considered:

1. stop pins or other design features meant to impede the movement of the wire further outboard should be installed; and

2. the working deck should be marked with contrasting colours or other identifiers such as guide pins, stop pins or similar easily identifiable points that identify operational zones for the line to aid operator observation.

2.7.6 Operational procedures against capsizing

2.7.6.1 A comprehensive operational plan should be defined for each anchor handling operation, according to the guidelines given in paragraph 3.8, where at least, but not only, the following procedures and emergency measures should be identified:

1. environmental conditions for the operation;

2. winch operations and movements of weights;

3. compliance with the stability criteria, for the different expected loading conditions;

4. permissible tensions on the winches as function of $\alpha$; in accordance with paragraph 3.8;

5. stop work and corrective procedures; and

6. confirmation of the master’s duty to take corrective action when necessary.

2.7.6.2 The arrangement of cargo stowed on deck should be such as to avoid any obstruction of the freeing ports or sudden shift of cargo on deck.

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
2.7.6.3 Counter-ballasting to correct the list of the ship during anchor handling operations should be avoided.

2.8 Ships engaged in towing and escort operations

2.8.1 Application

The provisions given hereunder apply to ships the keel of which is laid or which is at a similar stage of construction* on or after 1 January 2020 engaged in harbour towing, coastal or ocean-going towing and escort operations and to ships converted to carry out towing operations after this date.

* A similar stage of construction means the stage at which:
.1 construction identifiable with a specific ship begins; and
.2 assembly of that ship has commenced, comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

2.8.2 Heeling lever for towing operations

2.8.2.1 The self-tripping heeling lever is calculated as provided below:

.1 A transverse heeling moment is generated by the maximum transverse thrust exerted by the ship's propulsion and steering systems and the corresponding opposing towline pull.

.2 The heeling lever $HL_\varphi$, in (m), as a function of the heeling angle $\varphi$, should be calculated according to the following formula:

$$HL_\varphi = \frac{BP \times C_T \times (h \times \cos \varphi - r \times \sin \varphi)}{g \times \Delta}$$

where:

$BP$ = bollard pull, in (kN), which is the documented maximum continuous pull obtained from a static bollard pull test performed in accordance with relevant IMO guidelines* or a standard acceptable to the Administration;

$C_T$ =
- 0.5, for ships with conventional, non-azimuth propulsion units;
- $0.90/(1 + l/LL)$, for ships with azimuth propulsion units installed at a single point along the length. However, $C_T$ should not be less than 0.7 for ships with azimuth stern drive towing over the stern or tractor tugs towing over the bow, and not less than 0.5 for ships with azimuth stern drive towing over the bow or tractor tugs towing over the stern;

* Refer to annex A to the Guidelines for safe ocean towing (MSC/Circ.884).
For tugs with other propulsion and/or towing arrangements, the value of $C_T$ is to be established on a case by case basis to the satisfaction of the Administration.

\[
\begin{align*}
\Delta & = \text{displacement, in (t)}; \\
I & = \text{longitudinal distance, in (m), between the towing point and the vertical centreline of the propulsion unit(s) relevant to the towing situation considered}; \\
h & = \text{vertical distance, in (m), between the towing point and the horizontal centreline of the propulsion unit(s) as relevant for the towing situation considered}; \\
g & = \text{gravitational acceleration, in (m/s}^2\text{), to be taken as 9.81}; \\
r & = \text{the transverse distance, in (m), between the centre line and the towing point, to be taken as zero when the towing point is at the centre line.} \\
L_{LL} & = \text{length (L) as defined in the International Convention on Load Lines in force.}
\end{align*}
\]

The towing point is the location where the towline force is applied to the ship. The towing point may be a towing hook, staple, fairlead or equivalent fitting serving that purpose.

2.8.2.2 The tow-tripping heeling lever $HL\phi$, in (m), is calculated according to the following formula:

\[
HL\phi = C_1 \times C_2 \times \gamma \times V^2 \times A_p \times (h \times \cos \phi - r \times \sin \phi + C_3 \times d) / (2 \times g \times \Delta)
\]

where:

\[
2.8\left(\frac{L_s}{L_{pp}} - 0.1\right)
\]

$C_1 = \text{lateral traction coefficient} = 0.10 \leq C_1 \leq 1.00$

$C_2 = \text{correction of } C_1 \text{ for angle of heel} = \left(\frac{\phi}{3 \cdot \phi_D} + 0.5\right)$

$C_2 \geq 1.00$

$\phi_D = \arctan\left(\frac{2f}{B}\right)$

$\phi = \text{angle to deck edge}$

$C_3 = \text{distance from the centre of } A_p \text{ to the waterline as fraction of the draught related to the heeling angle}$

$C_3 = \left(\frac{\phi}{\phi_D}\right) \times 0.26 + 0.30$

$0.50 \leq C_3 \leq 0.83$

$\gamma = \text{specific gravity of water, in (t/m}^3\text{)}$;

$V = \text{lateral velocity, in (m/s), to be taken as 2.57 (5 knots)}$;
A_p = lateral projected area, in (m^2), of the underwater hull;
r = the transverse distance, in (m), between the centre line and the towing point, to be taken as zero when the towing point is at the centre line;
L_S = the longitudinal distance, in (m), from the aft perpendicular to the towing point;
L_{pp} = length between perpendiculars, in (m);
\varphi = angle of heel;
f = freeboard amidship, in (m);
B = moulded breadth, in (m);
h = vertical distance, in (m), from the waterline to the towing point;
d = actual mean draught, in (m).

The towing point is the location where the towline force is applied to the ship. The towing point may be a towing hook, staple, fairlead or equivalent fitting serving that purpose.

2.8.3 Heeling lever for escort operations

2.8.3.1 For the evaluation of the stability particulars during escort operations the ship is considered to be in an equilibrium position determined by the combined action of the hydrodynamic forces acting on hull and appendages, the thrust force and the towline force as shown in figure 2.8-1.

2.8.3.2 For each equilibrium position the corresponding steering force, braking force, heel angle and heeling lever are to be obtained from the results of full scale trials, model tests, or numerical simulations in accordance with a methodology acceptable to the Administration.

2.8.3.3 For each relevant loading condition the evaluation of the equilibrium positions is to be performed over the applicable escort speed range, whereby the speed of the assisted ship through the water is to be considered. *

* The typical escort speed range is 6 to 10 knots.

2.8.3.4 For each relevant combination of loading condition and escort speed, the maximum heeling lever is to be used for the evaluation of the stability particulars.

2.8.3.5 For the purpose of stability calculations the heeling lever is to be taken as constant.
2.8.4 Stability criteria

2.8.4.1 In addition to the stability criteria given in part A, section 2.2, or the equivalent stability criteria given in chapter 4 of the explanatory notes to the 2008 IS Code where the ship’s characteristics render compliance with part A, section 2.2 impracticable, the following stability criteria should be complied with.

2.8.4.2 For ships engaged in harbour, coastal or ocean-going towing operations the area A contained between the righting lever curve and the heeling lever curve calculated in accordance with paragraph 2.8.2.1 (self-tripping), measured from the heel angle, \( \phi_c \), to the angle of the second intersection, \( \phi_a \), or the angle of down-flooding, \( \phi_f \), whichever is less, should be greater than the area B contained between the heeling lever curve and the righting lever curve, measured from the heel angle \( \phi = 0 \) to the heel angle, \( \phi_e \).

where:

\[ \phi_e = \text{Angle of first intersection between the heeling lever and righting lever curves}; \]
\( \phi_f \) = Angle of down-flooding as defined in part A, paragraph 2.3.1.4 of this Code. Openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as down-flooding points in stability calculation;

\( \phi_c \) = Angle of second intersection between the heeling lever and righting lever curves.

2.8.4.3 For ships engaged in harbour, coastal or ocean-going towing operations the first intersection between the righting lever curve and the heeling lever curve calculated in accordance with paragraph 2.8.2.2 (tow-tripping) should occur at an angle of heel less than the angle of down-flooding, \( \phi_f \).

2.8.4.4 For ships engaged in escort operations the maximum heeling lever determined in accordance with paragraph 2.8.3 should comply with the following criteria:

1. \( \text{Area A} \geq 1.25 \times \text{Area B} \);
2. \( \text{Area C} \geq 1.40 \times \text{Area D} \); and
3. \( \phi_e \leq 15 \) degrees.

where:

\[
\begin{align*}
\text{Area A} & = \text{Righting lever curve area measured from the heel angle } \phi_e \text{ to a heel angle of } 20 \text{ degrees (see figure 2.8-2)}; \\
\text{Area B} & = \text{Heeling lever curve area measured from the heeling angle } \phi_e \text{ to a heel angle of } 20 \text{ degrees (see figure 2.8-2)}; \\
\text{Area C} & = \text{Righting lever curve area measured from the zero heel (} \phi = 0 \text{) to } \phi_d \text{ (see figure 2.8-3)}; \\
\text{Area D} & = \text{Heeling lever curve area measured from zero heel (} \phi = 0 \text{) to the heeling angle } \phi_d \text{ (see figure 2.8-3)}; \\
\phi_e & = \text{Equilibrium heel angle corresponding to the first intersection between heeling lever curve and the righting lever curve; } \\
\phi_d & = \text{the heel angle corresponding to the second intersection between heeling lever curve and the righting lever curve or the angle of down-flooding or } 40 \text{ degrees, whichever is less.}
\end{align*}
\]
2.8.5 Constructional precautions against capsizing

2.8.5.1 Access to the machinery space, excluding emergency access and removal hatches, should, if possible, be arranged within the forecastle. Any access to the machinery space from the exposed cargo deck should be provided with two weathertight closures, if practicable. Access to spaces below the exposed cargo deck should preferably be from a position within or above the superstructure deck.

2.8.5.2 The area of freeing ports in the side bulwarks of the cargo deck should at least meet the requirements of regulation 24 of the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable. The disposition of the freeing ports should be carefully considered to ensure the most effective drainage of water trapped on the working deck and in recesses at the after end of the forecastle. In ships operating in areas where icing is likely to occur, no shutters should be fitted in the freeing ports.

2.8.5.3 A ship engaged in towing operations should be provided with means for quick release of the towline.*

* Ships provided with towing winch systems should also be provided with means of quick release.

2.8.6 Operational procedures against capsizing

2.8.6.1 The arrangement of cargo stowed on deck should be such as to avoid any obstruction of the freeing ports or sudden shift of cargo on deck. Cargo on deck, if any, should not interfere with the movement of the towline.
2.8.6.2 A minimum freeboard at stern of at least $0.005 \times L_{ll}$ should be maintained in all operating conditions.

2.9 Ships engaged in lifting operations

2.9.1 Application

2.9.1.1 The provisions given hereunder apply to ships the keel of which is laid or which is at a similar stage of construction on or after 1 January 2020 engaged in lifting operations and to ships converted to carry out lifting operations after this date.

* A similar stage of construction means the stage at which:
  .1 construction identifiable with a specific ship begins; and
  .2 assembly of that ship has commenced, comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less.

2.9.1.2 The provisions of this section should be applied to operations involving the lifting of the ship's own structures or for lifts in which the maximum heeling moment due to the lift is greater than that given in the following:

$$M_L = 0.67 \cdot \Delta \cdot GM \cdot \left(\frac{f}{B}\right)$$

where:

$M_L$ = Threshold value for the heeling moment, in (t.m), induced by the (lifting equipment and) load in the lifting equipment;

$GM$ = The initial metacentric height, in (m), with free surface correction, including the effect of the (lifting equipment and) load in the lifting equipment;

$f$ = the minimum freeboard, in (m), measured from the upper side of the weather deck to the waterline;

$B$ = the moulded breadth of the ship, in (m); and

$\Delta$ = the displacement of the ship, including the lift load, in (t).

The provisions of this section also apply to ships which are engaged in lifting operations where no transverse heeling moment is induced and the increase of the ship's vertical centre of gravity (VCG) due to the lifted weight is greater than 1%.

The calculations should be completed at the most unfavourable loading conditions for which the lifting equipment shall be used.

2.9.1.3 For the purpose of this section, waters that are not exposed are those where the environmental impact on the lifting operation is negligible. Otherwise, waters are to be considered exposed. In general, waters that are not exposed are calm stretches of water, i.e. estuaries, roadsteads, bays, lagoons; where the wind fetch is six nautical miles or less.

* Wind fetch is an unobstructed horizontal distance over which the wind can travel over water in a straight direction.
2.9.2 Load and vertical centre of gravity for different types of lifting operations

2.9.2.1 In lifting operations involving a lifting appliance consisting of a crane, derrick, sheerlegs, a-frame or similar:

.1 the magnitude of the vertical load ($P_L$) should be the maximum allowed static load at a given outreach of the lifting appliance;

.2 the transverse distance ($y$) is the transverse distance between the point at which the vertical load is applied to the lifting appliance and the ship centreline in the upright position;

.3 the vertical height of the load ($K_{G_{load}}$) is taken as the vertical distance from the point at which the vertical load is applied to the lifting appliance to the baseline in the upright position; and

.4 the change of centre of gravity of the lifting appliance(s) need to be taken into account.

2.9.2.2 In lifting operations not involving a lifting appliance consisting of a crane, derrick, sheerlegs, a-frame or similar, which involve lifting of fully or partially submerged objects over rollers or strong points at or near a deck-level:

.1 the magnitude of the vertical load ($P_L$) should be the winch brake holding load;

.2 the transverse distance ($y$) is the transverse distance between the point at which the vertical load is applied to the ship and the ship centreline in the upright position; and

.3 the vertical height of the load ($K_{G_{load}}$) is taken as the vertical distance from the point at which the vertical load is applied to the ship to the baseline in the upright position.

2.9.3 Stability criteria

2.9.3.1 The stability criteria included herein, or the criteria contained in paragraphs 2.9.4, 2.9.5 or 2.9.7, as applicable shall be satisfied for all loading conditions intended for lifting with the lifting appliance and its load at the most unfavourable positions. For the purpose of this section, the lifting appliance and its load(s) and their centre of gravity (COG) should be included in the displacement and centre of gravity of the ship, in which case no external heeling moment/heeling lever is applied.

2.9.3.2 All loading conditions utilized during the lifting operations are to comply with the stability criteria given in sections 2.2 and 2.3 of part A. Where the ship’s characteristics render compliance with section 2.2 of part A impracticable, the equivalent stability criteria given in chapter 4 of the explanatory notes to the 2008 IS Code should apply. During the lifting operation, as determined by paragraphs 2.9.1, the following stability criteria should also apply:

.1 the equilibrium heel angle, $\varphi_1$, shall not be greater than the maximum static heeling angle for which the lifting device is designed and which has been considered in the approval of the loading gear;
during lifting operations in non-exposed waters, the minimum distance between the water level and the highest continuous deck enclosing the watertight hull, taking into account trim and heel at any position along the length of the ship, shall not be less than 0.50 m; and

during lifting operations in exposed waters, the residual freeboard shall not be less than 1.00 m or 75% of the highest significant wave height $H_s$, in (m), encountered during the operation, whichever is greater.

2.9.4 Lifting operations conducted under environmental and operational limitations

2.9.4.1 For lifting conditions carried out within clearly defined limitations set forth in paragraph 2.9.4.1.1, the intact criteria set forth in paragraph 2.9.4.1.2 may be applied instead of the criteria included in paragraph 2.9.3.

.1 The limits of the environmental conditions should specify at least the following:

- the maximum significant wave height, $H_s$; and
- the maximum wind speed (1 minute sustained at 10 m above sea level).

The limits of the operational conditions should specify at least the following:

- the maximum duration of the lift;
- limitations in ship speed; and
- limitations in traffic/traffic control.

.2 The following stability criteria should apply with the lifted load is at the most unfavourable position:

.1 the corner of the highest continuous deck enclosing the watertight hull shall not be submerged;

.2 $A_{RL} \geq 1.4 \times A_{HL}$

where:

$A_{RL} = \text{The area under the net righting lever curve, corrected for crane heeling moment and for the righting moment provided by the counter ballast if applicable, extending from the equilibrium heeling angle, } \varphi_1, \text{ to the angle of down flooding, } \varphi_F, \text{ the angle of vanishing stability, } \varphi_R, \text{ or the second intersection of the righting lever curve with the wind heeling lever curve, whichever is less, see figure 2.9-1; }$

$A_{HL} = \text{The area below the wind heeling lever curve due to the wind force applied to the ship and the lift at the maximum wind speed specified in paragraph 2.9.4.1.1, see figure 2.9-1.}$
2.9.5.1 A ship engaged in a lifting operation and using counter ballasting should be able to withstand the sudden loss of the hook load, considering the most unfavourable point at which the hook load may be applied to the ship (i.e. largest heeling moment). For this purpose, the area on the side of the ship opposite to the lift (Area 2) should be greater than the residual area on the side of the lift (Area 1), as shown in figure 2.9-2, by an amount given by the following:

\[
\text{Area 2} > 1.4 \times \text{Area 1}, \text{ for lifting operations in waters that are exposed.}
\]

\[
\text{Area 2} > 1.0 \times \text{Area 1}, \text{ for lifting operations in waters that are not exposed.}
\]
where:

\[ GZ_1 = \text{net righting lever (GZ) curve for the condition before loss of crane load, corrected for crane heeling moment and for the righting moment provided by the counter ballast if applicable;} \]

\[ GZ_2 = \text{net righting lever (GZ) curve for the condition after loss of crane load, corrected for the transverse moment provided by the counter ballast if applicable;} \]

\[ \varphi_{e2} = \text{the angle of static equilibrium after loss of crane load;} \]

\[ \varphi_f = \text{the angle of down-flooding or the heel angle corresponding to the second intersection between heeling and righting arm curves, whichever is less; and} \]

The term "net righting lever" means that the calculation of the GZ curve includes the ship's true transverse centre of gravity as function of the angle of heel.

### 2.9.6 Alternative method

2.9.6.1 The criteria in paragraph 2.9.6 may be applied to a ship engaged in a lifting operation, as determined by paragraph 2.9.1, as an alternative to the criteria in paragraph 2.9.3 through paragraph 2.9.5, as applicable. For the purpose of this section and the stability criteria set out in paragraph 2.9.7, the lifted load which causes the ship to heel is translated for the purpose of stability calculation to a heeling moment/heeling lever which is applied on the righting lever curve of the ship.

2.9.6.2 The heeling moment applied to the ship due to a lift and the associated heeling lever should be calculated using the following formulae:

\[ HM_\phi = P_L \cdot y \cdot \cos \varphi \]

\[ HL_\phi = HM_\phi \div \Delta \]

where:

\[ HM_\phi = \text{the heeling moment, in (t m), due to the lift at } \varphi; \]

\[ P_L = \text{the vertical load, in (t), of the lift, as defined in 2.9.2.1.1;} \]

\[ y = \text{the transverse distance, in (m), of the lift, metres, as defined in 2.9.2.1.2;} \]

\[ \varphi = \text{the angle of heel;} \]

\[ HL_\phi = \text{the heeling lever, in (m) due to the lift at } \varphi; \text{ and} \]

\[ \Delta = \text{the displacement, in (t) of the ship with the load of the lift.} \]

2.9.6.3 For application of the criteria contained in paragraph 2.9.7 involving the sudden loss of load of the lift in which counter-ballast is used, the heeling levers that include the counter-ballast should be calculated using the following formulae:

\[ CHL_2 = \left( P_L \cdot y - CBM \right) \cdot \cos \varphi \div \Delta \]

\[ CBHL_2 = \frac{CBM \cdot \cos \varphi}{\left( \Delta - P_L \right)} \]
where:

\[ CBM = \text{the heeling moment, in (t.m), due to the counter-ballast;} \]

\[ CHL_1 = \text{combined heeling lever, in (m), due to the load of the lift} \]
\[ \text{and the counter-ballast heeling moment at the displacement corresponding to the ship with the load of the lift; and} \]

\[ CBHL_2 = \text{heeling lever, in (m), due to the counter-ballast heeling moment at the displacement corresponding to the ship without the load of the lift.} \]

2.9.6.4 The equilibrium heel angle \( \varphi_e \) referred to in 2.9.7 means the angle of first intersection between the righting lever curve and the heeling lever curve.

2.9.7 Alternative stability criteria

2.9.7.1 For the loading conditions intended for lifting, but before commencing the operation, the stability criteria given in sections 2.2 and 2.3 of part A should be complied with. Where a ship's characteristics render compliance with section 2.2 of part A impracticable, the equivalent stability criteria given in chapter 4 of the explanatory notes to the 2008 IS Code should apply. During the lifting operation, as determined by paragraph 2.9.1, the following stability criteria should apply:

.1 the residual righting area below the righting lever and above the heeling lever curve between \( \varphi_e \) and the lesser of 40° or the angle of the maximum residual righting lever should not be less than:

\[ 0.080 \text{ m rad, if lifting operations are performed in waters that are exposed;} \]
\[ 0.053 \text{ m rad, if lifting operations are performed in waters that are not exposed;} \]

.2 in addition, the equilibrium angle is to be limited to the lesser of the following:

.1 10 degrees;
.2 the angle of immersion of the highest continuous deck enclosing the watertight hull; or
.3 the lifting appliance allowable value of trim/heel (data to be derived from sidelead and offlead allowable values obtained from manufacturer).

2.9.7.2 A ship engaged in a lifting operation and using counter ballasting should be able to withstand the sudden loss of the hook load, considering the most unfavourable point at which the hook load may be applied to the ship (i.e. largest heeling moment). For this purpose, the area on the side of the ship opposite from the lift (Area 2) in figure 2.9.3 should be greater than the residual area on the side of the lift (Area 1) in figure 2.9.3 by an amount given by the following:

\[ \text{Area 2} - \text{Area 1} > K, \]
where:

\[ K = 0.037 \text{ m rad}, \text{ for a lifting operation in waters that are exposed; and} \]
\[ K = 0.0 \text{ m rad}, \text{ for a lifting operation in waters that are not exposed.} \]

**Figure 2.9-3**

- \( GZ(1) \) = The righting arm curve at the displacement corresponding to the ship without hook load;
- \( GZ(2) \) = The righting arm curve at the displacement corresponding to the ship with hook load;
- \( \text{Area2} \) = residual area between \( GZ(1) \) and \( \text{CBHL}_2 \) up to the lesser of the down-flooding angle or the second intersection of \( GZ(2) \) and \( \text{CBHL}_2 \);
- \( \text{Area1} \) = residual area below \( GZ(1) \) and above \( \text{CBHL}_2 \) up to \( \varphi_e \).

### 2.9.8 Model tests or direct calculations

2.9.8.1 Model tests or direct calculations, performed in accordance with a methodology acceptable to the Administration, that demonstrate the survivability of the ship after sudden loss of hook load, may be allowed as an alternative to complying with the requirements of paragraph 2.9.5 or 2.9.7.2, provided that:

.1 the effects of wind and waves are taken into account; and

.2 the maximum dynamic roll amplitude of the ship after loss of load will not cause immersion of unprotected openings.

### 2.9.9 Operational procedures against capsizing

2.9.9.1 Ships should avoid resonant roll conditions when engaged in lifting operations.
Chapter 3 – Guidance in preparing stability information

3.4 Standard conditions of loading to be examined

3.4.1 Loading conditions

6 The following new paragraphs 3.4.1.7 to 3.4.1.10 are added after existing paragraph 3.4.1.6:

"3.4.1.7 For a ship engaged in an anchor handling operation, the standard loading conditions should be as follows, in addition to the standard loading conditions for a cargo ship in paragraph 3.4.1.2:

.1 service loading condition at the maximum draught at which anchor handling operations may occur with the heeling levers as defined in paragraph 2.7.2 for the line tension the ship is capable of with a minimum of 67% stores and fuel, in which all the relevant stability criteria as defined in paragraph 2.7.4 are met;

.2 service loading condition at the minimum draught at which anchor handling operations may occur with the heeling levers as defined in paragraph 2.7.2 for the line tension the ship is capable of with 10% stores and fuel, in which all the relevant stability criteria as defined in paragraph 2.7.4 are met.

3.4.1.8 For a ship engaged in a harbour, coastal or ocean going towing operation and/or escort operation, the following loading conditions should be included in addition to the standard loading conditions for a cargo ship in paragraph 3.4.1.2:

.1 maximum operational draught at which towing or escorting operations are carried out, considering full stores and fuel;

.2 minimum operational draught at which towing or escorting operations are carried out, considering 10% stores and fuel; and

.3 intermediate condition with 50% stores and fuel.

3.4.1.9 For ships engaged in lifting, loading conditions reflecting the operational limitations of the ship, while engaged in lifting shall be included in the stability booklet. Use of counter ballast, if applicable, shall be clearly documented, and the adequacy of the ships stability in the event of the sudden loss of the hook load shall be demonstrated.

3.4.1.10 The criteria stated in paragraphs 2.9.3, 2.9.4, 2.9.5 or 2.9.7, as applicable, shall be satisfied for all loading conditions intended for lifting and with the hook load at the most unfavourable positions. For each loading condition, the weight and centre of gravity of the load being lifted, the lifting appliance, and counter ballast, if any, should be included. The most unfavourable position may be obtained from the load chart and is chosen at the position where the total of the transverse and vertical moment is the greatest. Additional loading conditions corresponding to various boom positions and counter ballast with different filling level (if applicable) may need to be checked."

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
3.4.2 Assumptions for calculating loading conditions

7 In paragraph 3.4.2.3, the following sentence is inserted at the end:

"If a ship operates in zones where ice accretion is likely to occur, allowance for icing should be made in accordance with the provisions of chapter 6 (Icing considerations)."

8 Subparagraph 3.4.2.7.5 is deleted.

9 Subparagraph 3.4.2.8.2 is deleted and the remaining subparagraphs are renumbered accordingly.

10 The following new paragraphs 3.4.2.9 to 3.4.2.11 are added as follows:

"3.4.2.9 For ships engaged in harbour, coastal or ocean going towing, escort towing, anchor handling or lifting operations, allowance should be made for the anticipated weight of cargo on and below deck, chain in lockers, anticipated type of wire or rope on storage reels and wire on the winches when calculating loading conditions.

3.4.2.10 For ships engaged in anchor handling operations, the compliance with the relevant stability criteria should be made for each set of towing pins and its associated permissible line tensions, including any physical element or arrangement that can restrict the line movement.

3.4.2.11 For ships engaged in anchor handling operations, the reference loading conditions in paragraph 3.4.1.8 should meet the stability criteria in paragraph 2.7.4 when applying the design tension $F_d$, for the tow pin set nearest to centreline, as a minimum for the lowest $\alpha$ equal to 5 degrees."

3.5 Calculation of stability curves

11 The following new section 3.5.4 is added after existing section 3.5.3:

"3.5.4 Calculation of stability curves for ships engaged in anchor handling operations to which section 2.7 applies

3.5.4.1 Curves (or tables) of the permissible tension as a function of permissible KG (or GM) are to be provided for the draught (or displacement) and trim values covering the intended anchor handling operations. The curves (or tables) should be developed under the following assumptions:

.1 the maximum allowable KG from the approved stability booklet;

.2 information of permissible tension curve or table for each set of towing pins, including any physical element or arrangement that can restrict the line movement as function of the stability limiting curve should be included;

.3 where desirable, a permissible tension curve or table should be provided for any specific loading condition;

.4 the draught (or displacement), trim and KG (or GM) to be taken into consideration are those before application of the tension; and
.5 where tables are provided that divide the operational, cautionary, and stop work zones, referred to in paragraph 3.8.2 ("Green", "Yellow" or "Amber", "Red" colour codes, respectively) the limiting angles associated with physical features of the stern, including the roller, may be used to define the boundaries between the operational and cautionary zones (green/yellow boundary) and the cautionary and stop work zones (yellow/red boundary)."

3.6 Stability booklet

12 The following new paragraphs 3.6.3 to 3.6.5 are inserted after existing paragraph 3.6.2:

“3.6.3 The stability manual for ships engaged in anchor handling operations should contain additional information on:

.1 maximum bollard pull, winch pull capacity and brake holding force;

.2 details on the anchor handling arrangement such as location of the fastening point of the wire, type and arrangement of towing pins, stern roller, all points or elements where the tension is applied to the ship;

.3 identification of critical downflooding openings;

.4 guidance on the permissible tensions for each mode of operation and for each set of towing pins, including any physical element or arrangement that can restrict the wire movement, as function of all relevant stability criteria; and

.5 recommendations on the use of roll reduction systems.

3.6.4 The stability booklet for ships engaged in harbour, coastal or ocean going towing operations and/or escort operations should contain additional information on:

.1 maximum bollard pull;

.2 details on the towing arrangement, including location and type of the towing point(s), such as towing hook, staple, fairlead or any other point serving that purpose;

.3 identification of critical down-flooding openings;

.4 recommendations on the use of roll reduction systems;

.5 if any wire, etc. is included as part of the lightship weight, clear guidance on the quantity and size should be given;

.6 maximum and minimum draught for towing and escort operations;

.7 instructions on the use of the quick-release device; and
for ships engaged in escort operations, the following additional operating information should be included:

1. a table with permissible limits of the heel angle in accordance with the criteria included in paragraph 2.7.3.4 as function of loading condition and escort speed; and

2. instructions on the available means to limit the heel angle within the permissible limits.

3.6.5 For ships engaged in lifting operations, for which section 2.9 applies, additional documentation should be included in the stability booklet:

1. maximum heeling moment for each direction of lift/inclination as a function of the counter-ballast heeling moment, if used, the draught, and vertical centre of gravity;

2. where fixed counter ballast is used, the following information should be included:

   1. weight of the fixed counter ballast; and

   2. centre of gravity (LCG, TCG, VCG) of the fixed counter ballast;

3. loading conditions over the range of draughts for which lifting operations may be conducted with the maximum vertical load of the lift. Where applicable, righting lever curves for both before and after load drop should be presented for each loading condition;

4. limitations on crane operation, including permissible heeling angles, if provided;

5. operational limitations, such as:

   1. Maximum Safe Working Load (SWL);

   2. maximum radius of operation of all derricks and lifting appliances;

   3. maximum load moment; and

   4. environmental condition affecting the stability of the ship;

6. instructions related to normal crane operation, including those for use of counter ballast;

7. instructions such as ballasting/de-ballasting procedures to righting the ship following an accidental load drop;

8. identification of critical down-flooding openings;

9. recommendations on the use of roll reduction systems;
.10 drawing of the crane showing the weight and centre of gravity, including heel/trim limitations established by the crane manufacturer;

.11 a crane load chart, with appropriate de-ratings for wave height;

.12 load chart for lifting operations covering the range of operational draughts related to lifting and including a summary of the stability results;

.13 a crane specification manual provided by the manufacturer shall be submitted separately for information;

.14 the lifting appliance load, radius, boom angle limit table, including identification of offlead and sidelead angle limits and slewing angle range limits and reference to the ship's centreline;

.15 a table that relates the ship trim and heel to the load, radius, slewing angle and limits, and the offlead and sidelead limits;

.16 procedures for calculating the offlead and sidelead angles and the ship VCG with the load applied;

.17 if installed, data associated with a Load Moment Indicator system and metrics included in the system;

.18 if lifting appliance (crane) offlead and sidelead determine the maximum ship equilibrium angle, the stability booklet should include a note identifying the lifting appliance as the stability limiting factor during lifting operations; and

.19 information regarding the deployment of (stability) pontoons to assist a lifting operation, if fitted.

The information in subparagraphs .2 to .19 above may be included in other ship specific documentation on board the ship. In that case, a reference to these documents shall be included in the stability booklet."

and the existing paragraphs 3.6.3, 3.6.4 and 3.6.5 are renumbered as paragraphs 3.6.6, 3.6.7 and 3.6.8 accordingly.

3.8 Operating booklets for certain ships

The following new sections 3.8 and 3.9 are inserted after existing section 3.7:

"3.8 Operational and planning manuals for ships engaged in anchor handling for which section 2.7 applies:

3.8.1 To assist the master an operational and planning manual containing guidelines for planning and performing specific operations should be provided on board. The guidelines should contain sufficient information to enable the master to plan and operate the ship in compliance with the applicable requirements contained in this Code. The following information should be included as appropriate:
anchor handling arrangements, including:

- detail arrangement of anchor handling deck equipment (winches, wire stoppers, towing pins, etc.);
- typical arrangement of cargo on deck (anchors, wires, chain cables, etc.);
- chain lockers used for mooring deployment;
- anchor handling/towing winch;
- tugger winches;
- stern roller, including lateral limits on both ends;
- lifting appliances, if any and if forming a physical restriction as per paragraph 3.4.2.10; and
- typical paths of wires between winches and stern roller, showing the limit sectors; and

.2 detailed data of the permissible tensions, stability limiting curves, and recommendations for calculating ship’s loading conditions including sample calculations.

3.8.2 An operation plan should be agreed to by the master of the ship and a copy archived on a remote location before the operation commences. Guidelines and procedures to define a step-wise operational plan for a specific operation should contain instructions for:

.1 identifying and calculating loading conditions for all relevant stages of operation, taken into account the expected fuel and stores consumption, alterations on deck load, effects of deployment or recovering of the wire on the winches and chain lockers;

.2 planning ballast operations;

.3 defining the most favourable consumption sequence and identifying the most onerous situations;

.4 identifying the possibility or prohibition of using the roll reduction systems in all operational stages;

.5 operation with open chain lockers, e.g. additional loading conditions for asymmetric filling or other measures to reduce the possibility of flooding;

.6 collect updated weather forecasts, and to define environmental conditions for anchor handling operations;

.7 the use of limiting stability curves and intended tensions;
.8 defining the stop work limits:
  .a permissible tensions and operational sectors for $\alpha$;
  .b heeling angles in compliance with the stability criteria; and
  .c environmental conditions;

.9 implement and define corrective and emergency procedures;

.10 define:
  .a an operational zone in which normal operations up to the permissible tension are to occur (i.e. a "Green" zone);
  .b a cautionary zone (i.e. a "Yellow" or "Amber" zone) where operations may be reduced or halted to assess the ship's options to return to the operational or Green Zone: the cautionary zone should be not less than an angle of 10 degrees unless table 3.8.3 provides otherwise; and
  .c a "Stop work" zone (i.e. a "Red" zone) in which the operation should be stopped, for which, in normal operations, the yellow/red boundary should not exceed 45 degrees or the point at which the wire rises above the deck. Notwithstanding this, due consideration may be given to different operations from typical anchor handling operations where the planned operation ensures the safety of the ship; and

.11 examples of presentation of permissible tensions are presented in annex 3 to part B.

3.8.3 To aid the definition of permissible tensions and zones based on the availability of tension monitoring and an onboard stability instrument the following table is provided.

<table>
<thead>
<tr>
<th>Availability of Tension Monitoring and an onboard Stability Instrument</th>
<th>Tension monitoring is not available</th>
<th>Tension monitoring is available but no stability instrument is available</th>
<th>Both tension monitoring and a stability instrument is available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible tension, $F_p$</td>
<td>Design Maximum Line Tension, $F_{p_{m}}$, in the operational zone.</td>
<td>$F_p$ as described in Stability Booklet, the operational planning guidelines, or the specific operational plan.</td>
<td>$F_p$ as calculated by the Stability Instrument for the actual loading condition.</td>
</tr>
<tr>
<td>Permissible table</td>
<td>First $\alpha$ should be 5°. The only permissible tension is the Design maximum wire.</td>
<td>Tables may be prepared for different values of draft, trim, KG or</td>
<td>Tables or curves provided in the stability booklet may be used where $F_p$.</td>
</tr>
<tr>
<td>Availability of Tension Monitoring and an onboard Stability Instrument</td>
<td>Tension monitoring is not available</td>
<td>Tension monitoring is available but no stability instrument is available</td>
<td>Both tension monitoring and a stability instrument is available</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tension, $F_d$. Figures in the table will be $F_d$ for $\alpha$ for which $F_p \geq F_d$. The cautionary zone would include positions where $F_d &gt; F_p \geq$ maximum winch wire pull. The stop work zone is every other position where $F_p &lt;$ the maximum winch wire pull. If criteria is not fulfilled at $\alpha = 5^\circ$ anchor handling should not be performed without winch modification.</td>
<td>GM, or specific predefined loading conditions. Values in the table should range from $\alpha = 0$ to $\alpha = 90^\circ$. A table should identify $F_p$ at critical points and the table should be provided for each set of towing pins.</td>
<td>throughout the nonspecific operational zone exceeds the maximum anticipated wire tension; otherwise, tables or curves calculated for the actual loading condition must be developed.</td>
<td></td>
</tr>
</tbody>
</table>
### Availability of Tension Monitoring and an onboard Stability Instrument

<table>
<thead>
<tr>
<th>Availability</th>
<th>Tension monitoring is not available</th>
<th>Tension monitoring is available but no stability instrument is available</th>
<th>Both tension monitoring and a stability instrument is available</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zones</strong></td>
<td>The operational zone should be defined as the sector between the two outboard α values for which ( F_p \geq F_d ). The cautionary zone should be defined as the sector between the α at which ( F_p = F_d ) and α at which ( F_p = ) maximum winch wire pull. The stop work zone should cover every other position. The sectors should be documented in the Stability Booklet, the operational planning guidelines, or the specific operational plan. The sector diagram may be prepared for multiple loading conditions. If the limiting α is less than 5° anchor handling operations should not be performed without winch modifications.</td>
<td>The zones may be developed based on normal operational practices contained in the operational planning guidelines, e.g. the operational zone on the stern roller, cautionary zone for not more than 15deg past the stern roller and the red zone otherwise or developed for a specific operation where the outboard α values at which ( F_p = ) maximum anticipated wire tension minus 10° defines the operational zone, if α is greater than 20°. If this α is less than 20°, the operational zone is defined as the sector between ½ the outboard α values at which ( F_p = ) maximum anticipated wire tension. In each case, the cautionary zone is defined between the limit of the operational zone and the α value at which ( F_p = ) maximum anticipated wire tension. In each case, the operational zone must be identified for the anticipated wire tension.</td>
<td>The zones may be developed based on normal operational practices contained in the operational planning guidelines, e.g. the operational zone on the stern roller, cautionary zone for not more than 15deg past the stern roller and the red zone otherwise or developed for a specific operation where the outboard α values at which ( F_p = ) maximum anticipated wire tension minus 10° defines the operational zone, if α is greater than 20°. If this α is less than 20°, the operational zone is defined as the sector between ½ the outboard α values at which ( F_p = ) maximum anticipated wire tension. In each case, the cautionary zone is defined between the limit of the operational zone and the α value at which ( F_p = ) maximum anticipated wire tension. In each case, the operational zone must be identified for the anticipated wire tension.</td>
</tr>
</tbody>
</table>

---

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
3.9 Operational and planning booklets for ships engaged in lifting for which section 2.9 applies

3.9.1 An operation plan should be agreed to by the Master of the ship and a copy archived on a remote location before the operation commences. To assist the master an operational and planning booklet containing guidelines for planning and performing specific operations should be provided on board.

3.9.2 The guidelines should contain sufficient information to enable the Master to plan and operate the ship in compliance with the applicable requirements contained in this Code. The following information should be included as appropriate:

.1 lifting arrangements, capabilities and procedures to operate the lifting systems; and
.2 detailed data concerning the ship's lifting capability, operational limitations, limitations of cargo capacities, stability limiting curves and recommendations for calculating ship's loading conditions including sample calculations.

3.9.3 Guidelines and procedures to define a step-wise operational plan for a specific operation should contain instructions for:

.1 identifying and calculating loading conditions for all relevant stages of operation, taking into account the alterations on deck load, effects of deployment or recovering of the line on the winches (in particular for deep water lifting);
.2 planning ballast or counter ballast operations;
.3 identifying the possibility to use the roll reduction systems in all operational stages;
.4 collecting latest weather forecasts in order to define the environmental conditions for the intended lifting operation;
.5 using limiting stability curves, if applicable;
.6 defining the stop work limits:
   .1 heeling angles in compliance with the stability criteria; and
   .2 environmental conditions; and
.7 defining and implementing corrective and emergency procedures."

and the existing section 3.8 is renumbered as section 3.10.
Chapter 4 – Stability calculations performed by stability instruments

4.1 Stability instruments

4.1.4 Functional requirements

The following new paragraph 4.1.4.2 is inserted after existing paragraph 4.1.4.1:

"4.1.4.2 For ships engaged in anchor handling operations planning tools should be provided in compliance with operational manual requirements. Information such as ballasting and consumables sequences, permissible tension, working sectors, heeling angles and use of roll-reduction devices should be stated."

and the existing paragraphs 4.1.4.2 to 4.1.4.7 are renumbered as 4.1.4.3 to 4.1.4.8 accordingly.
Part B – Annexes

15 A new annex 3 is added at the end of part B as follows:

“Annex 3

Recommended model for graphic or tabular presentation of permissible tensions for use in anchor handling operations.

The insertion of a recommended model for the presentation of permissible tensions as function of $\alpha$ might be beneficial for a universal information standard. This uniform presentation will facilitate the circulation and the familiarization of the operators with the ship and its equipment.

A possible graphic presentation of the permissible tension is here included as an example, both table and diagram format.

---

**Figure A3-1: Permissible tension table for ship with 3 tow points**
Figure A3-2: Illustration of the operational, cautionary, and stop work zones (coded respectively "Green", "Yellow" and "Red" zones)
Figure A3-3: Permissible tension sector diagram based on standard alpha values
(5°, 10°, 15°, 90°)
ANNEX 8

RESOLUTION MSC.416(97)
(adopted on 25 November 2016)

AMENDMENTS TO THE INTERNATIONAL CONVENTION ON
STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING
FOR SEAFARERS (STCW), 1978, AS AMENDED

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 XII of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 ("the Convention"), concerning the procedures for amending the Convention,

RECALLING FURTHER that the Committee, by resolution MSC.386(94), adopted, inter alia, the new chapter XIV of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended,

ALSO RECALLING that the Committee, by resolution MSC.385(94), adopted the International Code for Ships Operating in Polar Waters (Polar Code), which will take effect on 1 January 2017 upon entry into force of the new chapter XIV of the SOLAS Convention,

NOTING that there will be a transitional period between the entry into force of the Polar Code and the amendments to the STCW Convention, and that section B-V/g of the STCW Code provides guidance regarding the training of masters and officers for ships operating in polar waters which should be applied by Administrations during the transitional period,

ALSO RECALLING that the Committee, at its ninety-sixth session, decided to provide the Member States with a single resolution of amendments to the Convention, including those related to the Polar Code and to passenger ship-specific training and certification,

HAVING CONSIDERED, at its ninety-seventh session, amendments to the Convention proposed and circulated in accordance with Article XII(1)(a)(i) thereof,

1. ADOPTS, in accordance with Article XII(1)(a)(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 XII(1)(a)(vii)(2) of the Convention, that the said amendments shall be deemed to have been accepted on 1 January 2018, unless, prior to that date, more than one third of Parties or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant shipping of ships of 100 gross register tons or more, have notified the Secretary-General of the Organization of their objections to the amendments;

3. INVITES Parties to note that, in accordance with Article XII(1)(a)(ix) of the Convention, that the amendments annexed hereto shall enter into force on 1 July 2018 upon their acceptance, in accordance with paragraph 2 above;
4 URGES Parties to implement the amendments to regulation I/1.1, regulation I/11 and regulation V/4 at an early stage;

5 INVITES Parties to recognize seafarers’ certificates issued by a Party at an early stage, in accordance with paragraph 4 above, and prior to the entry into force of amendments to regulation V/4;

6 REQUESTS the Secretary-General, for the purposes of Article XII(1)(a)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the Convention;

7 REQUESTS ALSO the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization, which are not Parties to the Convention.
ANNEX

AMENDMENTS TO THE INTERNATIONAL CONVENTION ON STANDARDS
OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR
SEAFARERS (STCW), 1978, AS AMENDED

CHAPTER I

General provisions

1 In regulation I/1.1, the following new definitions are added:

"42 Polar Code means the International Code for Ships Operating in Polar Waters, as defined in SOLAS regulation XIV/1.1.

.43 Polar waters means Arctic waters and/or the Antarctic area, as defined in SOLAS regulations XIV/1.2 to XIV/1.4."

2 In regulation I/11, after the existing paragraph 3, the following new paragraph is inserted and the subsequent paragraphs are renumbered accordingly:

"4 Every master or officer shall, for continuing seagoing service on board ships operating in polar waters, meet the requirements of paragraph 1 of this regulation and be required, at intervals not exceeding five years, to establish continued professional competence for ships operating in polar waters in accordance with section A-1/11, paragraph 4 of the STCW Code."

CHAPTER V

Special training requirements for personnel on certain types of ships

3 In chapter V, the existing regulation V/2 is replaced by the following:

"Regulation V/2

Mandatory minimum requirements for the training and qualifications of masters, officers, ratings and other personnel on passenger ships

1 This regulation applies to masters, officers, ratings and other personnel serving on board passenger ships engaged on international voyages. Administrations shall determine the applicability of these requirements to personnel serving on passenger ships engaged on domestic voyages.

2 Before being assigned shipboard duties, all persons serving on a passenger ship shall meet the requirements of section A-VI/1, paragraph 1 of the STCW Code.

3 Masters, officers, ratings and other personnel serving on board passenger ships shall complete the training and familiarization required by paragraphs 5 to 9 below, in accordance with their capacity, duties and responsibilities.

4 Masters, officers, ratings and other personnel, who are required to be trained in accordance with paragraphs 7 to 9 below shall, at intervals not exceeding five years, undertake appropriate refresher training or be required to provide evidence of having achieved the required standard of competence within the previous five years."
5 Personnel serving on board passenger ships shall complete passenger ship emergency familiarization appropriate to their capacity, duties and responsibilities as specified in section A-V/2, paragraph 1 of the STCW Code.

6 Personnel providing direct service to passengers in passenger spaces on board passenger ships shall complete the safety training specified in section A-V/2, paragraph 2 of the STCW Code.

7 Masters, officers, ratings qualified in accordance with chapters II, III and VII and other personnel designated on the muster list to assist passengers in emergency situations on board passenger ships, shall complete passenger ship crowd management training as specified in section A-V/2, paragraph 3 of the STCW Code.

8 Masters, chief engineer officers, chief mates, second engineer officers and any person designated on the muster list of having responsibility for the safety of passengers in emergency situations on board passenger ships shall complete approved training in crisis management and human behaviour as specified in section A-V/2, paragraph 4 of the STCW Code.

9 Masters, chief engineer officers, chief mates, second engineer officers and every person assigned immediate responsibility for embarking and disembarking passengers, for loading, discharging or securing cargo, or for closing hull openings on board ro-ro passenger ships, shall complete approved training in passenger safety, cargo safety and hull integrity as specified in section A-V/2, paragraph 5 of the STCW Code.

10 Administrations shall ensure that documentary evidence of the training which has been completed is issued to every person found qualified in accordance with paragraphs 6 to 9 of this regulation. "

4 In chapter V, the following new regulation is added:

"Regulation V/4

Mandatory minimum requirements for the training and qualifications of masters and deck officers on ships operating in polar waters

1 Masters, chief mates and officers in charge of a navigational watch on ships operating in polar waters shall hold a certificate in basic training for ships operating in polar waters, as required by the Polar Code.

2 Every candidate for a certificate in basic training for ships operating in polar waters shall have completed an approved basic training for ships operating in polar waters and meet the standard of competence specified in section A-V/4, paragraph 1, of the STCW Code.

3 Masters and chief mates on ships operating in polar waters, shall hold a certificate in advanced training for ships operating in polar waters, as required by the Polar Code.
4 Every candidate for a certificate in advanced training for ships operating in polar waters shall:

.1 meet the requirements for certification in basic training for ships in polar waters;

.2 have at least two (2) months of approved seagoing service in the deck department, at management level or while performing watchkeeping duties at the operational level, within polar waters or other equivalent approved seagoing service; and

.3 have completed approved advanced training for ships operating in polar waters and meet the standard of competence specified in section A-V/4, paragraph 2 of the STCW Code.

5 Administrations shall ensure that a Certificate of Proficiency is issued to seafarers who are qualified in accordance with paragraphs 2 or 4, as appropriate.

Transitional provisions

6 Until 1 July 2020, seafarers who commenced approved seagoing service in polar waters prior to 1 July 2018 shall be able to establish that they meet the requirements of paragraph 2 by:

.1 having completed approved seagoing service on board a ship operating in polar waters or equivalent approved seagoing service, performing duties in the deck department at the operational or management level, for a period of at least three months in total during the preceding five years; or

.2 having successfully completed a training course meeting the training guidance established by the Organization for ships operating in polar waters.

7 Until 1 July 2020, seafarers who commenced approved seagoing service in polar waters prior to 1 July 2018 shall be able to establish that they meet the requirements of paragraph 4 by:

.1 having completed approved seagoing service on board a ship operating in polar waters or equivalent approved seagoing service, performing duties in the deck department at management level, for a period of at least three months in total during the preceding five years; or

.2 having successfully completed a training course meeting the training guidance established by the Organization for ships operating in polar waters’ and having completed approved seagoing service on board a ship operating in polar waters or equivalent approved seagoing service, performing duties in the deck department at the management level, for a period of at least two months in total during the preceding five years.”

***

* Refer to section B-V/g of the STCW Code.
ANNEX 9

RESOLUTION MSC.417(97)
(adopted on 25 November 2016)

AMENDMENTS TO PART A OF THE SEAFARERS’ TRAINING,
CERTIFICATION AND WATCHKEEPING (STCW) CODE

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 XII and regulation I/1.2.3 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 ("the Convention"), concerning the procedures for amending part A of the Seafarers' Training, Certification and Watchkeeping (STCW) Code,

NOTING that there will be a transitional period between the entry into force of the Polar Code and the amendments to the STCW Convention, and that section B-V/g of the STCW Code provides guidance regarding the training of masters and officers for ships operating in polar waters which should be applied by Administrations during the transitional period,

HAVING CONSIDERED, at its ninety-seventh session, amendments to part A of the STCW Code, proposed and circulated in accordance with Article XII(1)(a)(i) of the Convention,

1. ADOPTS, in accordance with Article XII(1)(a)(iv) of the Convention, amendments to the STCW Code, the text of which is set out in the annex to the present resolution;

2. DETERMINES, in accordance with Article XII(1)(a)(vii)(2) of the Convention, that the said amendments to the STCW Code shall be deemed to have been accepted on 1 January 2018, unless, prior to that date, more than one third of Parties or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant shipping of ships of 100 gross register tons or more, have notified the Secretary-General of the Organization that they object to the amendments;

3. INVITES Parties to note that, in accordance with Article XII(1)(a)(ix) of the Convention, the annexed amendments to the STCW Code shall enter into force on 1 July 2018 upon their acceptance in accordance with paragraph 2 above;

4. URGES Parties to implement the amendments to section A-I/11 and section A-V/4 at an early stage;

5. REQUESTS the Secretary-General, for the purposes of Article XII(1)(a)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the Convention;

6. REQUESTS ALSO the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization, which are not Parties to the Convention.
ANNEX

AMENDMENTS TO PART A OF THE SEAFARERS’ TRAINING, CERTIFICATION AND WATCHKEEPING (STCW) CODE

CHAPTER I – General provisions

1 In section A-I/11, after the existing paragraph 3, a new paragraph 4 is added as follows:

"4 Continued professional competence for masters and officers on board ships operating in polar waters, as required under regulation I/11, shall be established by:

.1 approved seagoing service, performing functions appropriate to the certificate held, for a period of at least two months in total during the preceding five years; or

.2 having performed functions considered to be equivalent to the seagoing service required in paragraph 4.1; or

.3 passing an approved test; or

.4 successfully completing an approved training course or courses."

2 In section A-I/14, after existing paragraph 3, a new paragraph 4 is added as follows:

"4 Companies shall ensure that masters and officers on board their passenger ships shall have completed familiarization training to attain the abilities that are appropriate to the capacity to be filled and duties and responsibilities to be taken up, taking into account the guidance given in section B-I/14, paragraph 3 of this Code."

CHAPTER V – Standards regarding special training requirements for personnel on certain types of ships

3 In chapter V, the existing section A-V/2 is replaced by the following:

"Section A-V/2

Mandatory minimum requirements for the training and qualification of masters, officers, ratings and other personnel on passenger ships

Passenger ship emergency familiarization

1 Before being assigned to shipboard duties, all personnel serving on board passenger ships engaged on international voyages shall have attained the abilities that are appropriate to their duties and responsibilities as follows:

Contribute to the implementation of emergency plans, instructions and procedures

.1 Familiar with:

.1.1 general safety features aboard ship;
.1.2 location of essential safety and emergency equipment, including life-saving appliances;

.1.3 importance of personal conduct during an emergency; and

.1.4 restrictions on the use of elevators during emergencies.

Contribute to the effective communication with passengers during an emergency

.2 Ability to:

.2.1 communicate in the working language of the ship;

.2.2 non-verbally communicate safety information; and

.2.3 understand one of the languages in which emergency announcements may be broadcast on the ship during an emergency or drill.

Safety training for personnel providing direct service to passengers in passenger spaces

2 Before being assigned to shipboard duties, personnel providing direct service to passengers in passenger spaces shall receive the additional safety training required by regulation V/2, paragraph 6, that ensures at least the attainment of the abilities as follows:

Communication

.1 Ability to communicate with passengers during an emergency, taking into account:

.1.1 the language or languages appropriate to the principal nationalities of passengers carried on the particular route;

.1.2 the likelihood that an ability to use an elementary English vocabulary for basic instructions can provide a means of communicating with a passenger in need of assistance whether or not the passenger and crew member share a common language;

.1.3 the possible need to communicate during an emergency by some other means, such as by demonstration, or hand signals, or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes, when oral communication is impractical;

.1.4 the extent to which complete safety instructions have been provided to passengers in their native language or languages; and

.1.5 the languages in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers.
Life-saving appliances

.2 Ability to demonstrate to passengers the use of personal life-saving appliances.

Embarkation procedures

.3 Embarking and disembarking passengers, with special attention to disabled persons and persons needing assistance.

Passenger ship crowd management training

3 Before being assigned to shipboard duties, masters, officers, ratings qualified in accordance with chapters II, III and VII and personnel designated on the muster list to assist passengers in emergency situations shall:

.1 have successfully completed the crowd management training required by regulation V/2, paragraph 7, as set out in table A-V/2-1; and

.2 be required to provide evidence that the training has been completed in accordance with table A-V/2-1.

Crisis management and human behaviour training

4 Before being assigned to shipboard duties, masters, chief engineer officers, chief mates, second engineer officers and any person designated on the muster list as having responsibility for the safety of passengers in emergency situations shall:

.1 have successfully completed the approved crisis management and human behaviour training required by regulation V/2, paragraph 8, as set out in table A-V/2-2; and

.2 be required to provide evidence that the required standard of competence has been achieved in accordance with the methods and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/2-2.

Passenger safety, cargo safety and hull integrity training

5 Before being assigned to shipboard duties, masters, chief engineer officers, chief mates, second engineer officers and every person assigned immediate responsibility for embarking and disembarking passengers, for loading, discharging or securing cargo, or for closing hull openings on board ro-ro passenger ships shall receive the passenger safety, cargo safety and hull integrity training required by regulation V/2, paragraph 9, that ensures at least attainment of the abilities that are appropriate to their duties and responsibilities as follows:
Loading and embarkation procedures

.1 Ability to apply properly the procedures established for the ship regarding:

.1.1 loading and discharging vehicles, rail cars and other cargo transport units, including related communications;

.1.2 lowering and hoisting ramps;

.1.3 setting up and stowing retractable vehicle decks; and

.1.4 embarking and disembarking passengers, with special attention to disabled persons and persons needing assistance.

Carriage of dangerous goods

.2 Ability to apply any special safeguards, procedures and requirements regarding the carriage of dangerous goods on board ro-ro passenger ships.

Securing cargoes

.3 Ability to:

.3.1 apply correctly the provisions of the Code of Safe Practice for Cargo Stowage and Securing to the vehicles, rail cars and other cargo transport units carried; and

.3.2 use properly the cargo-securing equipment and materials provided, taking into account their limitations.

Stability, trim and stress calculations

.4 Ability to:

.4.1 make proper use of the stability and stress information provided;

.4.2 calculate stability and trim for different conditions of loading, using the stability calculators or computer programs provided;

.4.3 calculate load factors for decks; and

.4.4 calculate the impact of ballast and fuel transfers on stability, trim and stress.
Opening, closing and securing hull openings

.5 Ability to:

.5.1 apply properly the procedures established for the ship regarding the opening, closing and securing of bow, stern and side doors and ramps and to correctly operate the associated systems; and

.5.2 conduct surveys on proper sealing.

Ro-ro deck atmosphere

.6 Ability to:

.6.1 use equipment, where carried, to monitor atmosphere in ro-ro spaces; and

.6.2 apply properly the procedures established for the ship for ventilation of ro-ro spaces during loading and discharging of vehicles, while on voyage and in emergencies.
<table>
<thead>
<tr>
<th>Competence</th>
<th>Knowledge, understanding and proficiency</th>
<th>Methods for demonstrating competence</th>
<th>Criteria for evaluating competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribute to the implementation of shipboard emergency plans and procedures to muster and evacuate passengers</td>
<td>Knowledge of the shipboard emergency plans, instructions and procedures related to the management and evacuation of passengers &lt;br&gt;Knowledge of applicable crowd management techniques and relevant equipment to be used to assist passengers in an emergency situation &lt;br&gt;Knowledge of muster lists and emergency instructions</td>
<td>Assessment of evidence obtained from training and/or instruction</td>
<td>Actions taken in case of an emergency are appropriate and comply with established procedures</td>
</tr>
<tr>
<td>Assist passengers <em>en route</em> to muster and embarkation stations</td>
<td>Ability to give clear reassuring orders &lt;br&gt;Ability to manage passengers in corridors, staircases and passageways &lt;br&gt;Understanding the importance of and having the ability to maintain escape routes clear of obstructions &lt;br&gt;Knowledge of methods available for evacuation of disabled persons and persons needing special assistance &lt;br&gt;Knowledge of methods of searching passenger accommodation and public spaces &lt;br&gt;Ability to disembark passengers, with special attention to disabled persons and persons needing assistance &lt;br&gt;Importance of effective mustering procedures, including: .1 the importance of keeping order;</td>
<td>Assessment of evidence obtained from practical training and/or instruction</td>
<td>Actions taken conform with emergency plans, instructions and procedures &lt;br&gt;Information given to individuals, emergency response teams and passengers is accurate, relevant and timely</td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>.2 the ability to use procedures for reducing and avoiding panic;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.3 the ability to use, where appropriate, passenger lists for evacuation counts;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.4 the importance of passengers being suitably clothed as far as possible when mustering; and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.5 the ability to check that the passengers have donned their life jackets correctly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>Organize shipboard emergency procedures</td>
<td>Knowledge of:</td>
<td>Assessment of evidence obtained from approved training, exercises with one or more prepared emergency plans and practical demonstration</td>
<td>The shipboard emergency procedures ensure a state of readiness to respond to emergency situations</td>
</tr>
<tr>
<td></td>
<td>.1 the general design and layout of the ship</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 safety regulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3 emergency plans and procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The importance of the principles for the development of ship-specific emergency procedures, including:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.1 the need for pre-planning and drills of shipboard emergency procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 the need for all personnel to be aware of and adhere to pre-planned emergency procedures as carefully as possible in the event of an emergency situation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimize the use of resources</td>
<td>Ability to optimize the use of resources, taking into account:</td>
<td>Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures</td>
<td>Contingency plans optimize the use of available resources</td>
</tr>
<tr>
<td></td>
<td>.1 the possibility that resources available in an emergency may be limited</td>
<td></td>
<td>Allocation of tasks and responsibilities reflects the known competence of individuals</td>
</tr>
<tr>
<td></td>
<td>.2 the need to make full use of personnel and equipment immediately available and, if necessary, to improvise</td>
<td></td>
<td>Roles and responsibilities of teams and individuals are clearly defined</td>
</tr>
<tr>
<td></td>
<td>Ability to organize realistic drills to maintain a state of readiness, taking into account lessons learnt from previous accidents involving passenger ships; debriefing after drills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>Control response to emergencies</td>
<td>Ability to make an initial assessment and provide an effective response to emergency situations in accordance with established emergency procedures</td>
<td>Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures</td>
<td>Procedures and actions are in accordance with established principles and plans for crisis management on board</td>
</tr>
<tr>
<td></td>
<td><em>Leadership skills</em></td>
<td></td>
<td>Actions of crew members contribute to maintaining order and control</td>
</tr>
<tr>
<td></td>
<td>Ability to lead and direct others in emergency situations, including the need:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.1 to set an example during emergency situations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 to focus decision making, given the need to act quickly in an emergency</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3 to motivate, encourage and reassure passengers and other personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Stress handling</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ability to identify the development of symptoms of excessive personal stress and those of other members of the ship's emergency team</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Understanding that stress generated by emergency situations can affect the performance of individuals and their ability to act on instructions and follow procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control passengers and other personnel during emergency situations</td>
<td><em>Human behaviour and responses</em></td>
<td>Assessment of evidence obtained from approved training, practical demonstration and shipboard training and drills of emergency procedures</td>
<td>Actions of crew members contribute to maintaining order and control</td>
</tr>
<tr>
<td></td>
<td>Ability to control passengers and other personnel in emergency situations, including:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.1 awareness of the general reaction patterns of passengers and other personnel in emergency situations, including the possibility that:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>.1.1 generally it takes some</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>time before people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accept the fact that</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>there is an emergency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>situation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.1.2 some people may panic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and not behave with a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>normal level of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rationality, that their</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ability to comprehend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>may be impaired and they</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>may not be as</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>responsive to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>instructions as in non-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>emergency situations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.2 awareness that passengers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and other personnel may,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>inter alia:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.2.1 start looking for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relatives, friends and/or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>their belongings as a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>first reaction when</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>something goes wrong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.2.2 seek safety in their</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cabins or in other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>places on board where</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>they think that they can</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>escape danger</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.2.3 tend to move to the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper side when the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ship is listing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.3 appreciation of the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>possible problem of panic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resulting from separating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>families</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish and</td>
<td>Ability to establish and maintain</td>
<td>Assessment of evidence obtained from</td>
<td>Information from all available sources is</td>
</tr>
<tr>
<td>maintain effective</td>
<td>effective communications, including:</td>
<td>approved training, exercises and practical</td>
<td>obtained, evaluated and confirmed as</td>
</tr>
<tr>
<td>communications</td>
<td>.1 the importance of clear and</td>
<td>demonstration</td>
<td>quickly as possible and reviewed</td>
</tr>
<tr>
<td></td>
<td>concise instructions and reports</td>
<td></td>
<td>throughout the emergency</td>
</tr>
<tr>
<td></td>
<td>.2 the need to encourage an</td>
<td></td>
<td>Information given to</td>
</tr>
<tr>
<td></td>
<td>exchange of information with, and</td>
<td></td>
<td>individuals, emergency</td>
</tr>
<tr>
<td></td>
<td>feedback from, passengers and other</td>
<td></td>
<td>response teams and</td>
</tr>
<tr>
<td></td>
<td>personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>Ability to provide relevant information to passengers and other personnel during an emergency situation, to keep them apprised of the overall situation and to communicate any action required of them, taking into account:</td>
<td></td>
<td></td>
<td>passengers is accurate, relevant and timely</td>
</tr>
<tr>
<td>.1 the language or languages appropriate to the principal nationalities of passengers and other personnel carried on the particular route</td>
<td></td>
<td></td>
<td>Information keeps passengers informed as to the nature of the emergency and the actions required of them</td>
</tr>
<tr>
<td>.2 the possible need to communicate during an emergency by some other means, such as by demonstration, or by hand signals or calling attention to the location of instructions, muster stations, life-saving devices or evacuation routes, when oral communication is impractical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.3 the language in which emergency announcements may be broadcast during an emergency or drill to convey critical guidance to passengers and to facilitate crew members in assisting passengers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 A new section A-V/4 is added as follows:

"Section A-V/4

Mandatory minimum requirements for the training and qualifications of masters and deck officers on ships operating in polar waters

Standard of competence

1 Every candidate for certification in basic training for ships operating in polar waters shall be required to:

.1 demonstrate the competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-V/4-1; and
provide evidence of having achieved:

.1 the minimum knowledge, understanding and proficiency listed in column 2 of table A-V/4-1; and

.2 the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/4-1.

2 Every candidate for certification in advanced training for ships operating in polar waters shall be required to:

.1 demonstrate the competence to undertake the tasks, duties and responsibilities listed in column 1 of table A-V/4-2; and

.2 provide evidence of having achieved:

.1 the minimum knowledge, understanding and proficiency listed in column 2 of table A-V/4-2; and

.2 the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in columns 3 and 4 of table A-V/4-2.
### Table A-V/4-1

Specification of minimum standard of competence in basic training for ships operating in polar waters

<table>
<thead>
<tr>
<th>Column 1 Competence</th>
<th>Column 2 Knowledge, understanding and proficiency</th>
<th>Column 3 Methods for demonstrating competence</th>
<th>Column 4 Criteria for evaluating competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribute to safe operation of vessels operating in polar waters</td>
<td>Basic knowledge of ice characteristics and areas where different types of ice can be expected in the area of operation:</td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>Identification of ice properties and their characteristics of relevance for safe vessel operation</td>
</tr>
<tr>
<td>.1 ice physics, terms, formation, growth, ageing and stage of melt</td>
<td>.1 approved in-service experience</td>
<td></td>
<td>Information obtained from ice information and publications is interpreted correctly and properly applied</td>
</tr>
<tr>
<td>.2 ice types and concentrations</td>
<td>.2 approved training ship experience</td>
<td></td>
<td>Use of visible and infrared satellite images</td>
</tr>
<tr>
<td>.3 ice pressure and distribution</td>
<td>.3 approved simulator training, where appropriate</td>
<td></td>
<td>Use of egg charts</td>
</tr>
<tr>
<td>.4 friction from snow covered ice</td>
<td>.4 approved training programme</td>
<td></td>
<td>Coordination of meteorological and oceanographic data with ice data</td>
</tr>
<tr>
<td>.5 implications of spray-icing; danger of icing up; precautions to avoid icing up and options during icing up</td>
<td></td>
<td></td>
<td>Measurements and observations of weather and ice conditions are accurate and appropriate for safe passage planning</td>
</tr>
<tr>
<td>.6 ice regimes in different regions; significant differences between the Arctic and the Antarctic, first year and multiyear ice, sea ice and land ice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.7 use of ice imagery to recognize consequences of rapid change in ice and weather conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.8 knowledge of ice blink and water sky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.9 knowledge of differential movement of icebergs and pack ice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.10 knowledge of tides and currents in ice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>.11 knowledge of effect of wind and current on ice</td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>Identification of vessel characteristics and limitations under different ice conditions and cold environmental impact</td>
<td></td>
</tr>
<tr>
<td>Basic knowledge of vessel performance in ice and low air temperature:</td>
<td>.1 approved in-service experience</td>
<td>Procedures are made for risk assessment before entering ice</td>
<td></td>
</tr>
<tr>
<td>.1 vessel characteristics</td>
<td>.2 approved training ship experience</td>
<td>Awareness of fresh water ballast freezing in ballast tanks</td>
<td></td>
</tr>
<tr>
<td>.2 vessel types, hull designs</td>
<td>.3 approved simulator training, where appropriate</td>
<td>Actions are carried out in accordance with accepted principles and procedures to prepare the vessel and the crew for operations in ice and low air temperature</td>
<td></td>
</tr>
<tr>
<td>.3 engineering requirements for operating in ice</td>
<td>.4 approved training programme</td>
<td>Communications are clear, concise and effective at all times in a seamanlike manner</td>
<td></td>
</tr>
<tr>
<td>.4 Ice strengthening requirements</td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>Use Polar Code and Polar Water Operations Manual to correctly determine the recommended procedures to load/unload cargo and/or embark/disembark passengers in low</td>
<td></td>
</tr>
<tr>
<td>.5 limitations of ice-classes</td>
<td>.1 safe speed in the presence of ice and icebergs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.6 winterization and preparedness of vessel, including deck and engine</td>
<td>.2 ballast tank monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.7 low-temperature system performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.8 equipment and machinery limitation in ice condition and low air temperature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.9 monitoring of ice pressure on hull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.10 sea suction, water intake, superstructure insulation and special systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>.3</td>
<td>cargo operations in polar waters</td>
<td>approved in-service experience</td>
<td>temperatures, monitor ballast water for icing, monitor engine temperatures, anchor watch concerns in ice, and transit near ice</td>
</tr>
<tr>
<td>.4</td>
<td>awareness of engine loads and cooling problems</td>
<td>approved training ship experience</td>
<td>Interpretation and analysis of information from radar is in accordance with lookout procedures with special caution regarding identification of dangerous ice features</td>
</tr>
<tr>
<td>.5</td>
<td>safety procedures during ice transit</td>
<td>approved simulator training, where appropriate</td>
<td>Information obtained from navigational charts, including electronic charts, and publications is relevant, assessed, interpreted correctly and properly applied</td>
</tr>
<tr>
<td></td>
<td></td>
<td>approved training programme</td>
<td>The primary method of position fixing is frequent and the most appropriate for the prevailing conditions and routing through ice</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performance checks and tests of navigation and communication systems comply with recommendations for high latitude and low air temperature operation</td>
</tr>
<tr>
<td>Column 1 Competence</td>
<td>Column 2 Knowledge, understanding and proficiency</td>
<td>Column 3 Methods for demonstrating competence</td>
<td>Column 4 Criteria for evaluating competence</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Monitor and ensure compliance with legislative requirements | *Basic knowledge of regulatory considerations:*  
  1. Antarctic Treaty and the Polar Code  
  2. Accident reports concerning vessels in polar waters  
  3. IMO standards for operation in remote areas | Examination and assessment of evidence obtained from one or more of the following:  
  1. Approved in-service experience  
  2. Approved training ship experience  
  3. Approved simulator training, where appropriate  
  4. Approved training programme | Locate and apply relevant parts of the Polar Water Operations Manual  
  Communication is in accordance with local/regional and international standard procedures  
  Legislative requirements related to relevant regulations, codes and practices are identified |
| Apply safe working practices, respond to emergencies    | *Basic knowledge of crew preparation, working conditions and safety:*  
  1. Recognize limitations of search and rescue readiness and responsibility, including sea area A4 and its SAR communication facility limitation  
  2. Awareness of contingency planning  
  3. How to establish and implement safe working procedures for crew specific to polar environments such as low temperatures, ice-covered surfaces, personal protective equipment, use of buddy system, and working time limitations  
  4. Recognize dangers when crews are exposed to low temperatures | Examination and assessment of evidence obtained from one or more of the following:  
  1. Approved in-service experience  
  2. Approved training ship experience  
  3. Approved simulator training, where appropriate  
  4. Approved training programme | Identification and initial actions on becoming aware of hazardous situations for vessel and individual crew members  
  Actions are carried out in accordance with Polar Water Operations Manual, accepted principles and procedures to ensure safety of operations to avoid pollution of the marine environment  
  Safe working practices are observed and appropriate safety and protective equipment is correctly used at all times  
  Response actions are in accordance with established plans and are appropriate to the situation and nature of the emergency |
<table>
<thead>
<tr>
<th>Column 1 Competence</th>
<th>Column 2 Knowledge, understanding and proficiency</th>
<th>Column 3 Methods for demonstrating competence</th>
<th>Column 4 Criteria for evaluating competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5</td>
<td>human factors including cold fatigue, medical-first aid aspects, crew welfare</td>
<td>Correctly identifies and applies legislative requirements related to relevant regulations, codes and practices</td>
<td></td>
</tr>
<tr>
<td>.6</td>
<td>survival requirements including the use of personal survival equipment and group survival equipment</td>
<td>Appropriate safety and protective equipment is correctly used</td>
<td></td>
</tr>
<tr>
<td>.7</td>
<td>awareness of the most common hull and equipment damages and how to avoid these</td>
<td>Defects and damages are detected and properly reported</td>
<td></td>
</tr>
<tr>
<td>.8</td>
<td>superstructure-deck icing, including effect on stability and trim</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.9</td>
<td>prevention and removal of ice including the factors of accretion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.10</td>
<td>recognize fatigue problems due to noise and vibrations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11</td>
<td>identify need for extra resources, such as bunker, food and extra clothing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1 Competence</td>
<td>Column 2 Knowledge, understanding and proficiency</td>
<td>Column 3 Methods for demonstrating competence</td>
<td>Column 4 Criteria for evaluating competence</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Ensure compliance with pollution-prevention requirements and prevent environmental hazards</td>
<td><strong>Basic knowledge of environmental factors and regulations:</strong></td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>Legislative requirements related to relevant regulations, codes and practices are identified</td>
</tr>
<tr>
<td>.1 identify particularly sensitive sea areas regarding discharge</td>
<td>.1 approved in-service experience</td>
<td>Correctly identify/select the limitations on vessel discharges contained in the Polar Code</td>
<td></td>
</tr>
<tr>
<td>.2 identify areas where shipping is prohibited or should be avoided</td>
<td>.2 approved training ship experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.3 special areas defined in MARPOL</td>
<td>.3 approved simulator training, where appropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.4 recognize limitations of oil-spill equipment</td>
<td>.4 approved training programme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.5 plan for coping with increased volumes of garbage, bilge water, sewage, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.6 lack of infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.7 oil spill and pollution in ice, including consequences</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Examination and assessment of evidence obtained from one or more of the following:

- .1 approved in-service experience
- .2 approved training programme
- .3 approved simulator training, where appropriate

Legislative requirements related to relevant regulations, codes and practices are identified

Correctly identify/select the limitations on vessel discharges contained in the Polar Code

Correctly apply Polar Water Operations Manual/Waste Management Plan to determine limitations on vessel discharges and plans for storing waste

Identify references that provide details of areas to be avoided, such as wildlife refuges, ecological heritage parks, migratory pathways, etc. (MARPOL, Antarctic Treaty, etc.)

Identify factors that must be considered to manage waste stream during polar voyages
### Table A-V/4-2

**Specification of minimum standard of competence in advanced training**
for ships operating in polar waters

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competence</strong></td>
<td><strong>Knowledge, understanding and proficiency</strong></td>
<td><strong>Methods for demonstrating competence</strong></td>
<td><strong>Criteria for evaluating competence</strong></td>
</tr>
<tr>
<td>Plan and conduct a voyage in polar waters</td>
<td><strong>Knowledge of voyage planning and reporting:</strong></td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>The equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage</td>
</tr>
<tr>
<td></td>
<td>.1 information sources</td>
<td>.1 approved in-service experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 reporting regimes in polar waters</td>
<td>.2 approved training ship experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3 development of safe routing and passage planning to avoid ice where possible</td>
<td>.3 approved simulator training, where appropriate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.4 ability to recognize the limitations of hydrographic information and charts in polar regions and whether the information is suitable for safe navigation</td>
<td>.4 approved training programme</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.5 passage planning deviation and modification for dynamic ice conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Knowledge of equipment limitations:</strong></td>
<td></td>
<td>Voyage plan correctly identified relevant polar regulatory regimes and need for ice-pilotage and/or icebreaker assistance</td>
</tr>
<tr>
<td></td>
<td>.1 understand and identify hazards associated with limited terrestrial navigational aids in polar regions</td>
<td></td>
<td>All potential navigational hazards are accurately identified</td>
</tr>
<tr>
<td></td>
<td>.2 understand and recognize high latitude errors on compasses</td>
<td></td>
<td>Positions, courses, distances and time calculations are correct within accepted accuracy standards for navigational equipment</td>
</tr>
<tr>
<td></td>
<td>.3 understand and identify limitations in discrimination</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>of radar targets and ice features in ice-clutter</td>
<td>.4 understand and recognize limitations of electronic positioning systems at high latitude</td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>All decisions concerning navigating in ice are based on a proper assessment of the ship's manoeuvring and engine characteristics and the forces to be expected while navigating within polar waters</td>
</tr>
<tr>
<td>.5 understand and recognize limitations in nautical charts and pilot descriptions</td>
<td>.6 understand and recognize limitations in communication systems</td>
<td>.1 approved in-service experience</td>
<td>Demonstrate communication skills, request ice routeing, plot and commence voyage through ice</td>
</tr>
<tr>
<td>Manage the safe operation of vessels operating in polar waters</td>
<td><strong>Knowledge and ability to operate and manoeuvre a vessel in ice:</strong></td>
<td>.2 approved training ship experience</td>
<td>All potential ice hazards are correctly identified</td>
</tr>
<tr>
<td>.1 preparation and risk assessment before approaching ice, including presence of icebergs, and taking into account wind, darkness, swell, fog and pressure ice</td>
<td>.3 approved simulator training, where appropriate</td>
<td>.3 approved simulator training, where appropriate</td>
<td>All decisions concerning berthing anchoring, cargo and ballast operations are based on a proper</td>
</tr>
<tr>
<td>.2 conduct communications with an icebreaker and other vessels in the area and with Rescue Coordination Centres</td>
<td>.4 approved training programme</td>
<td>.4 approved training programme</td>
<td></td>
</tr>
<tr>
<td>.3 understand and describe the conditions for the safe entry and exit to and from ice or open water, such as leads or cracks, avoiding icebergs and dangerous ice conditions and</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>maintaining safe distance to icebergs</td>
<td>assessment of the ship's manoeuvring and engine characteristics and the forces to be expected and in accordance with the Polar Code guidelines and applicable international agreements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.4 understand and describe ice-ramming procedures including double and single ramming passage</td>
<td>Safely demonstrate progression of a vessel through ice, manoeuvring vessel through moderate ice concentration (range of 1/10 to 5/10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.5 recognize and determine the need for bridge watch team augmentation based upon environmental conditions, vessel equipment and vessel ice class</td>
<td>Operations are planned and carried out in accordance with established rules and procedures to ensure safety of operation and to avoid pollution of the marine environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.6 recognize the presentations of the various ice conditions as they appear on radar</td>
<td>Safety of navigation is maintained through navigation strategy and adjustment of ship's speed and heading through different types of ice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.7 understand icebreaker convoy terminology, and communications, and take icebreaker direction and move in convoy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.8 understand methods to avoid besetment and to free beset vessel, and consequences of besetment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.9 understand towing and rescue in ice, including risks associated with operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.10 handling ship in various ice concentration and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>coverage, including risks associated with navigation in ice, e.g. avoid turning and backing simultaneously</td>
<td></td>
<td>Actions are understood to permit use of anchoring system in cold temperatures</td>
<td></td>
</tr>
<tr>
<td>.11 use of different type of propulsion and rudder systems, including limitations to avoid damage when operating in ice</td>
<td></td>
<td>Actions are carried out in accordance with accepted principles and procedures to prepare for icebreaker towing, including notch towing</td>
<td></td>
</tr>
<tr>
<td>.12 use of heeling and trim systems, hazards in connection with ballast and trim in relation with ice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.13 docking and undocking in ice-covered waters, including hazards associated with operation and the various techniques to safely dock and undock in ice-covered waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.14 anchoring in ice, including the dangers to anchoring system – ice accretion to hawse pipe and ground tackle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.15 recognize conditions which impact polar visibility and may give indication of local ice and water conditions, including sea smoke, water sky, ice blink and refraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>Knowledge, understanding and proficiency</td>
<td>Methods for demonstrating competence</td>
<td>Criteria for evaluating competence</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------</td>
<td>-------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Maintain safety of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems</td>
<td>Knowledge of safety:</td>
<td>Examination and assessment of evidence obtained from one or more of the following:</td>
<td>Response measures are in accordance with established plans and procedures, and are appropriate to the situation and nature of the emergency</td>
</tr>
<tr>
<td></td>
<td>.1 understand the procedures and techniques for abandoning the ship and survival on ice and in ice-covered waters</td>
<td>.1 approved in-service experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 recognize limitations of fire-fighting systems and life-saving appliances due to low air temperatures</td>
<td>.2 approved training ship experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3 understand unique concerns in conducting emergency drills in ice and low temperatures</td>
<td>.3 approved simulator training, where appropriate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.4 understand unique concerns in conducting emergency response in ice and low air and water temperatures</td>
<td>.4 approved training programme</td>
<td></td>
</tr>
</tbody>
</table>

***
ANNEX 10

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUELS (IGF CODE)

CHAPTER 11
FIRE SAFETY

11.3 Regulations for fire protection

1 In paragraph 11.3.2, the words "and any boundaries above that, including navigation bridge windows, shall have A-0 class divisions" are deleted.

***
ANNEX 11

RESOLUTION MSC.418(97)
(adopted on 25 November 2016)

INTERIM RECOMMENDATIONS ON THE SAFE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD VESSELS ENGAGED ON INTERNATIONAL VOYAGES

THE MARITIME SAFETY COMMITTEE,

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

RECOGNIZING that increasing numbers of offshore projects and innovations are creating new and growing demand for the carriage of industrial personnel to and from offshore facilities and/or other ships,

RECOGNIZING ALSO that, with regard to offshore wind farm service vessels for the carriage of construction and maintenance personnel, difficulties are reported caused by the lack of a clear definition for industrial personnel and the lack of legally binding international safety standards for the carriage of more than 12 industrial personnel on board in the existing instruments,

RECOGNIZING FURTHER that the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, currently does not define industrial personnel and that an interim solution is urgently required,

NOTING that the Maritime Safety Committee, at its ninety-sixth session, decided to develop a mandatory instrument for the carriage of industrial personnel so that such personnel should not be considered or treated as passengers under SOLAS regulation I/2(e),

RECOGNIZING the urgent need for Member States to ensure the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages while the mandatory instrument is developed by the Organization,

HAVING CONSIDERED, at its ninety-seventh session, the Interim Recommendations on the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages,

1 ADOPTS the Interim Recommendations on the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages, the text of which is set out in the annex to the present resolution;

2 INVITES Member States, until such time that the mandatory instrument for the carriage of industrial personnel enters into force, to:

   .1 note that industrial personnel should not be considered or treated as passengers under SOLAS regulation I/2(e); and

   .2 apply the annexed Interim Recommendations when regulating ships, regardless of size, carrying more than 12 industrial personnel.

3 INVITES ALSO Member States to bring this to the attention of all parties concerned.
ANNEX

INTERIM RECOMMENDATIONS ON THE SAFE CARRIAGE OF MORE THAN 12 INDUSTRIAL PERSONNEL ON BOARD VESSELS ENGAGED ON INTERNATIONAL VOYAGES

1. For the purposes of these Interim Recommendations, *industrial personnel* means all persons who are transported or accommodated on board for the purpose of offshore industrial activities performed on board other vessels and/or other offshore facilities and meet the criteria set out below.

2. Such industrial personnel should not be considered or treated as passengers under SOLAS regulation I/2(e).

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

4. For the purpose of these Interim Recommendations, all industrial personnel should:
   
   .1 be not less than 16 years of age;
   
   .2 prior to boarding the ship, receive appropriate safety training, meeting the standard in paragraph 2.1 of section A-VI/1 of the STCW Code. Administrations may accept other industrial training standards such as those of the Global Wind Organisation (GWO), Offshore Petroleum Industry Training Organisation (OPITO), Basic Offshore Safety Induction and Emergency Training (OPITO accredited), if they consider these appropriate alternatives;
   
   .3 receive on board ship specific safety familiarization that includes, but is not limited to, the layout of the ship, and handling of the safety equipment, as appropriate. The standard in paragraph 1 of section A-VI/1 of the STCW Code, or equivalent, should be used as the standard;
   
   .4 be familiarized with specific procedures, e.g. transfer procedures on and off the ship while at sea, as appropriate;
   
   .5.1 be accounted for in the ship's life-saving equipment; and
   
   .5.2 be equipped with personal protective clothing and equipment suitable for the safety risks to be encountered both while on board the ship and being transferred at sea; and
   
   .6 meet appropriate medical standards. The standard in section A-I/9 of the STCW Code, applicable to engineers, or equivalent, may be used as a standard.

5. IMO guidance (MSC-MEPC.7/Circ.10) or relevant industry standards should be taken into account, to the extent possible, when transferring industrial personnel at sea.

6. Industrial personnel may be carried on board ships meeting the provisions of the 2008 SPS Code or other standards, providing they meet an equivalent level of safety acceptable to the Administration, taking into consideration the number of persons on board.

***
ANNEX 12

RESOLUTION MSC.419(97)
(adopted on 25 November 2016)

AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS’ ROUTEING
(RESOLUTION A.572(14), AS AMENDED)

THE MARITIME SAFETY COMMITTEE,

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

RECOGNIZING the importance of safeguarding manoeuvring space for ships in the vicinity of multiple structures at sea in ships’ routeing systems,

TAKING INTO ACCOUNT the decision of the Sub-Committee on Navigation, Communications and Search and Rescue, at its third session, to include a guidance on the multiple structures at sea in annex 1 of the General Provisions on Ships’ Routeing,

HAVING CONSIDERED, at its ninety sixth session, the text of proposed amendments to annex 1 of the General Provisions on Ships’ Routeing (resolution A.572(14), as amended),

1 ADOPTS the amendments to the General Provisions on Ships’ Routeing (resolution A.527(14), as amended), to include a guidance on the multiple structures at sea, the text of which is set out in the annex to the present resolution;

2 DETERMINES that amendments to the General Provisions on Ships’ Routeing shall be adopted for implementation by the Committee in accordance with the provisions of resolution A.572(14), as amended, subject to confirmation by the Assembly;

3 INVITES Governments intending to submit proposals for the adoption of ships’ routeing systems to take account of the annexed amendments to the General Provisions;

4 INVITES ALSO Governments concerned to bring the contents of this resolution to the attention of all parties concerned.
ANNEX

AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING
(RESOLUTION A.572(14), AS AMENDED)

Amend annex 1 (resolution A.572(14), as amended), as follows:

Section 3 (Responsibilities of Contracting Governments and recommended and mandatory practices)

Insert after existing paragraph 3.13, a new paragraph 3.14, as follows:

"3.14 In planning to establish multiple structures at sea, including but not limited to wind turbines, Governments should take into account, as far as practicable, the impact these could have on the safety of navigation, including any radar interference. Traffic density and prognoses, the presence or establishment of routeing measures in the area, and the manoeuvrability of ships and their obligations under the 1972 Collision Regulations should be considered when planning to establish multiple structures at sea. Sufficient manoeuvring space extending beyond the side borders of traffic separation schemes should be provided to allow evasive manoeuvres and contingency planning by ships making use of routeing measures in the vicinity of multiple structure areas."

and renumber the following paragraphs accordingly.

***
ANNEX 13

DRAFT AMENDMENTS TO SOLAS REGULATION II-2/9.4.1.3¹

CHAPTER II-2
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART C
SUPPRESSION OF FIRE

Regulation 9 – Containment of fire

1 The following new paragraphs 4.1.3.4 to 4.1.3.6 are added after the existing paragraph 4.1.3.3:

*4.1.3.4 Notwithstanding the requirement in paragraph 4.1.3.3, the requirements in paragraphs 4.1.3.5 and 4.1.3.6 shall apply to ships constructed on or after [date of entry into force].*

4.1.3.5 For ships carrying more than 36 passengers, windows facing survival craft, embarkation and assembly stations, external stairs and open decks used for escape routes, and windows situated below liferaft and escape slide, embarkation areas shall have fire integrity as required in table 9.1. Where automatic dedicated sprinkler heads are provided for windows, "A-0" windows may be accepted as equivalent. To be considered under this paragraph, the sprinkler heads must either be:

.1 dedicated heads located above the windows, and installed in addition to the conventional ceiling sprinklers; or

.2 conventional ceiling sprinkler heads arranged such that the window is protected by an average application rate of at least 5 l/min per square metre and the additional window area is included in the calculation of the area of coverage; or

.3 water-mist nozzles that have been tested and approved in accordance with the guidelines approved by the Organization*; and

Windows located in the ship's side below the lifeboat embarkation area shall have fire integrity at least equal to "A-0" class.

4.1.3.6 For ships carrying not more than 36 passengers, windows facing survival craft and escape slide, embarkation areas and windows situated below such areas shall have fire integrity at least equal to "A-0" class.

* Refer to the Revised guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS regulation II-2/12 (resolution A.800(19), as amended).*

***

¹ Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.
ANNEX 14

DRAFT AMENDMENTS TO SOLAS REGULATION II-2/3.56

CHAPTER II-2
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART A
GENERAL

Regulation 3 – Definitions

1 Regulation II-2/3.56 is amended as follows:

"Vehicle carrier means a cargo ship with multi deck ro-ro spaces designed only for the carriage of empty cars and trucks as cargo and excludes other types of ro-ro cargo ships or container/ro-ro ships, even when carrying empty cars and trucks as cargo."

***

*Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.
ANNEX 15

DRAFT AMENDMENTS TO THE 1994 HSC CODE

CHAPTER 8
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

8.10 Survival craft and rescue boats

1 Paragraphs 8.10.1.4 to 8.10.1.6 are amended to read as follows:

"8.10.1 All craft should carry:

..."

.4 at least one rescue boat for retrieving persons from the water, but not less than one such boat on each side when the craft is certified to carry more than 450 passengers;

.5 craft of less than 20 m in length may be exempted from carrying a rescue boat, provided the craft meets all of the following requirements:

.5.1 the craft is arranged to allow a helpless person to be recovered from the water;

.5.2 recovery of the helpless person can be observed from the navigating bridge; and

.5.3 the craft is sufficiently manoeuvrable to close and recover persons in the worst intended conditions.

.6 notwithstanding the provisions of .4 and .5 above, craft should carry sufficient rescue boats to ensure that, in providing for abandonment by the total number of persons the craft is certified to carry:

.6.1 not more than nine of the liferafts provided in accordance with 8.10.1.1 are marshalled by each rescue boat; or

.6.2 if the Administration is satisfied that the rescue boats are capable of towing a pair of such liferafts simultaneously, not more than 12 of the liferafts provided in accordance with 8.10.1.1 are marshalled by each rescue boat; and

.6.3 the craft can be evacuated within the time specified in 4.8.

.6 craft of less than 20 m in length may be exempted from carrying a rescue boat, provided the craft meets all of the following requirements:

*Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.*
.6.1 the craft is arranged to allow a helpless person to be recovered from the water in a horizontal or near-horizontal body position;

.6.2 recovery of the helpless person can be observed from the navigating bridge; and

.6.3 the craft is sufficiently manoeuvrable to close and recover persons in the worst intended conditions."

***
ANNEX 16

DRAFT AMENDMENTS TO THE 2000 HSC CODE

CHAPTER 8
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

8.10 Survival craft and rescue boats

1 Paragraphs 8.10.1.4 to 8.10.1.6 are amended to read as follows:

"8.10.1 All craft shall carry:

... .4 at least one rescue boat for retrieving persons from the water, but not less than one such boat on each side when the craft is certified to carry more than 450 passengers;

.5 craft of less than 30 m in length may be exempted from carrying a rescue boat, provided the craft meets all of the following requirements:

.5.1 the craft is arranged to allow a helpless person to be recovered from the water;

.5.2 recovery of the helpless person can be observed from the navigating bridge; and

.5.3 the craft is sufficiently manoeuvrable to close in and recover persons in the worst intended conditions.

.6 notwithstanding the provisions of .4 and .5 above, craft shall carry sufficient rescue boats to ensure that, in providing for abandonment by the total number of persons the craft is certified to carry:

.6.1 not more than nine of the liferafts provided in accordance with 8.10.1.1 are marshalled by each rescue boat; or

.6.2 if the Administration is satisfied that the rescue boats are capable of towing a pair of such liferafts simultaneously, not more than 12 of the liferafts provided in accordance with 8.10.1.1 are marshalled by each rescue boat; and

.6.3 the craft can be evacuated within the time specified in 4.8.

* Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.
.6 craft of less than 30 m in length may be exempted from carrying a rescue boat, provided the craft meets all of the following requirements:

.6.1 the craft is arranged to allow a helpless person to be recovered from the water in a horizontal or near-horizontal body position;

.6.2 recovery of the helpless person can be observed from the navigating bridge; and

.6.3 the craft is sufficiently manoeuvrable to close in and recover persons in the worst intended conditions;"
ANNEX 17

DRAFT AMENDMENTS TO THE LSA CODE

CHAPTER VI
LAUNCHING AND EMBARKATION APPLIANCES

Section 6.1 – Launching and embarkation appliances

1 Paragraphs 6.1.1.5 and 6.1.1.6 of the LSA Code are amended to read as follows:

"6.1.1.5 The launching appliance and its attachments other than winch brakes shall be of sufficient strength to withstand a factory static proof load test of not less than 2.2 times the maximum working load.

6.1.1.6 Structural members and all blocks, falls, padeyes, links, fastenings and all other fittings used in connection with launching equipment shall be designed with a factor of safety on the basis of the maximum working load assigned and the ultimate strengths of the materials used for construction. A minimum factor of safety of 4.5 shall be applied to all structural members including winch structural components and a minimum factor of safety of 6 shall be applied to falls, suspension chains, links and blocks."

***

* Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.
RESOLUTION MSC.420(97)
(adopted on 25 November 2016)

INTERIM RECOMMENDATIONS FOR CARRIAGE OF LIQUEFIED HYDROGEN IN BULK

THE MARITIME SAFETY COMMITTEE,

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

NOTING that the International Convention for the Safety of Life at Sea ("the Convention"), 1974 and the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk ("the IGC Code") currently do not specifically provide requirements for carriage of liquefied hydrogen in bulk by sea,

NOTING ALSO that paragraph 5 of Preamble of the IGC Code states that requirements for new products and their conditions of carriage will be circulated as recommendations, on an interim basis, prior to the entry into force of the appropriate amendments.

RECOGNIZING a need for the development of the Interim Recommendations for carriage of liquefied hydrogen in bulk,

ACKNOWLEDGING that, in the interim, there is an urgent need to provide recommendations to the Administrations on safe carriage of liquefied hydrogen in bulk,

ACKNOWLEDGING FURTHER that the Interim Recommendations are intended to facilitate establishment of a tripartite agreement for a pilot ship, which will be developed for the research and demonstration of safe long-distance overseas carriage of liquefied hydrogen in bulk,

HAVING CONSIDERED the Interim Recommendations prepared by the Sub-Committee on Carriage of Cargoes and Containers at its third session,

1 ADOPTS the Interim Recommendations for carriage of liquefied hydrogen in bulk, the text of which is set out in the annex to the present resolution;

2 INVITES Member States to apply the Interim Recommendations to the pilot ship carrying liquefied hydrogen in bulk taking the explanatory notes into consideration;

3 AGREES to acquire information on safe carriage of liquefied hydrogen in bulk prior to amendment to the IGC Code for the inclusion of liquefied hydrogen;

4 AGREES further that these Interim Recommendations may need to be reviewed if they are to be applied to ships other than the pilot ship; and

5 URGES Member States and the industry to submit information, observations, comments and recommendations based on the practical experience gained through the application of the Interim Recommendations and submit relevant safety analysis on ships carrying liquefied hydrogen in bulk.
ANNEX

INTERIM RECOMMENDATIONS FOR CARRIAGE
OF LIQUEFIED HYDROGEN IN BULK

1 INTRODUCTION

1.1 For the carriage of liquefied gases in bulk by ships, the ships should comply with the relevant requirements in the IGC Code, as amended by resolution MSC.370(93) ("the Code"). The scope of the Code provided in paragraph 1.1.1 is:

"The Code applies to ships regardless of their size, including those of less than 500 gross tonnage, engaged in the carriage of liquefied gases having a vapour pressure exceeding 0.28 MPa absolute at a temperature of 37.8°C, and other products, as shown in chapter 19, when carried in bulk".

1.2 A ship carrying liquefied hydrogen in bulk (hereinafter called "liquefied hydrogen carrier") should comply with the Code.

1.3 The Code requires that a gas carrier should comply with the minimum requirements for the cargo listed in chapter 19. However, the requirements for liquefied hydrogen are not specified in the Code.

1.4 This annex provides the interim recommendations, as referred to in paragraph 5 of the preamble of the Code, for the carriage of liquefied hydrogen in bulk, which are intended to provide the basis for the future minimum requirements for the carriage of this cargo.

1.5 These recommendations have been developed under the assumption that a liquefied hydrogen carrier does not carry liquefied gases other than liquefied hydrogen. These recommendations, therefore, are not applicable to liquefied hydrogen carriers carrying gases other than liquefied hydrogen.

1.6 In the Code, reference is made to paragraph 5 of the Preamble; paragraph 1.1.6.1; and Note No.8 on completion of certificate in "model form of international certificate of fitness for the carriage of liquefied gases in bulk" in appendix 2 to the Code.

2 INTERIM RECOMMENDATIONS FOR CARRIAGE OF LIQUEFIED HYDROGEN IN BULK

2.1 The Interim Recommendations for the carriage of liquefied hydrogen in bulk have been developed based on the results of a comparison study of similar cargoes listed in chapter 19 of the Code, e.g. liquefied natural gas.

2.2 In the Code, chapter 19 governs the application of general requirements for respective cargoes. Selections of the general requirements for respective cargoes are expressed in columns 'c' to 'g'. In addition to general requirements, special requirements may apply to specific cargoes depending on the properties/hazards of the cargoes.

2.3 Tables 1 and 2 specify the proposed selection of the general requirements and the special requirements, respectively, for liquefied hydrogen.
Table 1: Interim Recommendations for carriage of liquefied hydrogen in bulk

<table>
<thead>
<tr>
<th>Product name</th>
<th>Ship type</th>
<th>Independent tank type C required</th>
<th>Control of vapour space within cargo tanks</th>
<th>Vapour detection</th>
<th>Gauging</th>
<th>Special requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>2G</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>C</td>
<td>See table 2</td>
</tr>
</tbody>
</table>

Table 2: Special Requirements for carriage of liquefied hydrogen in bulk

<table>
<thead>
<tr>
<th>No.</th>
<th>Special Requirement</th>
<th>Related hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Requirements for materials whose design temperature is lower than -165°C should be agreed with the Administration, paying attention to appropriate standards. Where minimum design temperature is lower than -196°C, property testing for insulation materials should be carried out with the appropriate medium, over a range of temperatures expected in service.</td>
<td>Low temperature (see 4.2.1)</td>
</tr>
<tr>
<td>2</td>
<td>Materials of construction and ancillary equipment such as insulation should be resistant to the effects of high oxygen concentrations caused by condensation and enrichment at the low temperatures attained in parts of the cargo system (refer to the requirement for nitrogen).</td>
<td>Low temperature (see 4.2.2)</td>
</tr>
<tr>
<td>3</td>
<td>For cargo pipes containing liquid hydrogen and cold hydrogen vapour, measures should be taken to prevent the exposed surfaces from reaching -183°C. For places where preventive measures against low temperature are not sufficiently effective, such as cargo manifolds, other appropriate measures such as ventilation which avoids the formation of highly enriched oxygen and the installation of trays recovering liquid air may be permitted in lieu of the preventive measures. Insulation on liquid hydrogen piping systems exposing to air should be of non-combustible material and should be designed to have a seal in the outer covering to prevent the condensation of air and subsequent oxygen enrichment within the insulation.</td>
<td>Low temperature (see 4.2.2)</td>
</tr>
<tr>
<td>4</td>
<td>Appropriate means, e.g. filtering, should be provided in cargo piping systems to remove impure substances condensed at low temperature.</td>
<td>Low temperature (see 4.2.3)</td>
</tr>
<tr>
<td>5</td>
<td>Pressure relief systems should be suitably designed and constructed to prevent blockage due to formation of water or ice.</td>
<td>Low temperature (see 4.2.4)</td>
</tr>
<tr>
<td>6</td>
<td>At places where contact with hydrogen is anticipated, suitable materials should be used to prevent any deterioration owing to hydrogen embrittlement, as necessary.</td>
<td>Hydrogen embrittlement (see 4.3)</td>
</tr>
<tr>
<td>7</td>
<td>All welded joints of the shells of cargo tanks should be of the in-plane butt weld full penetration type. For dome-to-shell connections only, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure.</td>
<td>Permeability (see 4.4.1)</td>
</tr>
<tr>
<td>No.</td>
<td>Special Requirement</td>
<td>Related hazard</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Double tube structures ensuring no leakage, or fixed hydrogen detectors being capable of detecting a hydrogen leak, should be provided for places where leakage of hydrogen may occur, such as cargo valves, flanges, and seals.</td>
<td>Permeability (see 4.4.2)</td>
</tr>
<tr>
<td>9</td>
<td>Helium or a mixture of 5% hydrogen and 95% nitrogen should be used as the tightness test medium for cargo tank and cargo piping.</td>
<td>Permeability (see 4.4.3)</td>
</tr>
<tr>
<td>10</td>
<td>The amount of carbon dioxide carried for a carbon dioxide fire-extinguishing system should be sufficient to provide a quantity of free gas equal to 75% or more of the gross volume of the cargo compressor and pump rooms in all cases.</td>
<td>Fire by Hydrogen (see 4.7.3) Wide range of flammability limits (see 4.10)</td>
</tr>
<tr>
<td>11</td>
<td>When deterioration of insulation capability by single damage is possible, appropriate safety measures should be adopted taking into account the deterioration.</td>
<td>High pressure (see 4.8)</td>
</tr>
<tr>
<td>12</td>
<td>When vacuum insulation is used for a cargo containment system, the insulation performance should be evaluated to the satisfaction of the Administration based on experiments, as necessary.</td>
<td>General (see 4.1)</td>
</tr>
<tr>
<td>13</td>
<td>Appropriate measures should be provided to prevent vents becoming blocked by accumulations of ice formed from moisture in the air.</td>
<td>Low temperature (see 4.2.2)</td>
</tr>
<tr>
<td>14</td>
<td>Due consideration should be given to means for handling boil-off gas.</td>
<td>High pressure (see 4.8)</td>
</tr>
<tr>
<td>15</td>
<td>Due consideration should be given to static electricity associated with rotating or reciprocating machinery including the installation of conductive machinery belts and precautionary measures incorporated in operating and maintenance procedures. Anti-static clothing and footwear, and a portable hydrogen detector should be provided for each crew member working in the cargo area.</td>
<td>Static electricity (see 4.9.2)</td>
</tr>
<tr>
<td>16</td>
<td>An operation manual for a liquefied hydrogen carrier should include limitations of various operations in relation to environmental conditions.</td>
<td>Wide range of flammability limits (see 4.10)</td>
</tr>
<tr>
<td>17</td>
<td>An appropriate procedure should be established for warm-up, inert gas purge, gas-free, hydrogen purge and pre-cooling. The procedure should include:</td>
<td>Prevention of dangerous purging operation (see 4.11)</td>
</tr>
<tr>
<td></td>
<td>.1 selection of inert gas in relation to temperature limit;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.2 measurement of gas concentration;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.3 measurement of temperature;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.4 rates of supply of gases;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.5 conditions for commencement, suspension, resuming and termination of each operation;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.6 treatment of return gases; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.7 discharge of gases.</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Special Requirement</td>
<td>Related hazard</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>18</td>
<td>Only almost pure para-hydrogen (i.e. more than 95%) should be loaded in order to avoid excessive heating by ortho- to para-hydrogen conversion.</td>
<td>General (see 4.1)</td>
</tr>
<tr>
<td>19</td>
<td>Fire detectors for detecting hydrogen fire should be selected after due deliberation, taking into account the features of hydrogen fire, to the satisfaction of the Administration.</td>
<td>Features of hydrogen fire (see 4.7.4)</td>
</tr>
<tr>
<td>20</td>
<td>At the design stage, dispersion of hydrogen from vent outlets should be analysed in order to minimize risk of ingress of flammable gas into accommodation spaces, service spaces, machinery spaces and control stations. Extension of hazardous areas should be considered based on the results of the analysis.</td>
<td>Low density and high diffusivity (see 4.5)</td>
</tr>
<tr>
<td>21</td>
<td>Due consideration should be given to appropriate safety measures to prevent formation of explosive mixture in the case of a leakage of hydrogen, including:</td>
<td>General (see 4.1)</td>
</tr>
<tr>
<td></td>
<td>.1 installation of hydrogen detectors in order to detect a possible ground-level travel of low temperature hydrogen gas, and at high points in spaces where warm hydrogen gas can be trapped; and</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>In the case that fusible elements are used as a means of fire detection required by paragraph 18.10.3.2 of the Code, flame detectors suitable for hydrogen flames should be provided in addition at the same locations. Appropriate means should be adopted to prevent the activation of ESD system owing to false alarm of flame detectors, e.g. avoiding activation of ESD system by single sensor (voting method).</td>
<td>Fire hazard (see 4.7.4)</td>
</tr>
<tr>
<td>23</td>
<td>Consideration should be given to enhance the ventilation capacity of the enclosed spaces subject to liquefied hydrogen leakage, taking into account the latent heat of vapourization, specific heat and the volume of hydrogen gas in relation to temperature and heat capacity of adjacent spaces.</td>
<td>Low density and high diffusivity (see 4.5)</td>
</tr>
</tbody>
</table>
24 Liquid and gas hydrogen pipes should not pass through enclosed spaces other than those referred to in paragraph 5.2.2.1.2 of the Code, unless:

.1.1 the spaces are equipped with gas detection systems which activate the alarm at not more than 30% LFL and shut down the isolation valves, as appropriate, at not more than 60% LFL (see sections 16.4.2 and 16.4.8 of the Code); and

.1.2 the spaces are adequately ventilated; or

.2 the spaces are maintained in an inert condition.

This requirement is not applicable to spaces constituting a part of a cargo containment system using vacuum insulation where the degree of vacuum is monitored.

25 A risk assessment should be conducted to ensure that risks arising from liquefied hydrogen cargo affecting persons on board, the environment, the structural strength or the integrity of the ship are addressed. Consideration should be given to the hazards associated with properties of liquefied hydrogen and hydrogen gas, physical layout, operation and maintenance, following any reasonably foreseeable failure. For the risk assessment, appropriate methods, e.g. HAZID, HAZOP, FMEA/FMECA, what-if analysis, etc., should be adopted taking into account IEC/ISO 31010:2009 “Risk management – Risk assessment techniques”77) and SAE ARP 5580-2001 “Recommended failure modes and effects analysis (FMEA) practices for non-automobile applications”9).

26 Relief valve sizing should be undertaken for the most onerous scenario. Whether this scenario is brought into existence due to fire or by loss of vacuum from the overall insulation system should be assessed and the resulting magnitude of the heat flux on the containment system considered in each case.

27 A filling limit exceeding 98% at reference temperature should not be permitted.

28 Bolted flange connections of hydrogen piping should be avoided where welded connections are feasible.

29 Due consideration should be given to the invisible nature of hydrogen fire.

### 3 EXPLANATION ON GENERAL REQUIREMENTS

#### 3.1 Properties of liquefied hydrogen

The application of general requirements in the Code for liquefied hydrogen has been considered based on a comparison study on the physical properties of liquefied hydrogen and LNG. LNG and liquefied hydrogen are cryogenic liquids, non-toxic, and generate flammable high pressure gas. For reference, table 3 shows the comparison of physical properties of hydrogen and methane, the major component of LNG.
**Table 3: Comparison of physical properties of Hydrogen and Methane**

<table>
<thead>
<tr>
<th>Property</th>
<th>Hydrogen</th>
<th>Methane</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling temperature (K)</td>
<td>20.3</td>
<td>111.6</td>
<td>ISO(^1), Annex A, Table A.3</td>
</tr>
<tr>
<td>Liquid density (kg/m(^3))</td>
<td>70.8</td>
<td>422.5</td>
<td>ISO(^1), Annex A, Table A.3</td>
</tr>
<tr>
<td>Gas density (kg/m(^3)) (^(*)) (Air: 1.198)</td>
<td>0.084</td>
<td>0.668</td>
<td>NIST RefProp(^{10})</td>
</tr>
<tr>
<td>Viscosity (g/cm(^*)s x 10(^{-6}))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>8.8</td>
<td>10.91</td>
<td>NIST RefProp(^{10})</td>
</tr>
<tr>
<td>Liquid</td>
<td>13.49</td>
<td>116.79</td>
<td>NIST RefProp(^{10})</td>
</tr>
<tr>
<td>Flame temperature in air (°C)</td>
<td>2396</td>
<td>2230</td>
<td>Calculated using Cantera and GRI 3.0 mechanism</td>
</tr>
<tr>
<td>Maximum burning velocity (m/s)</td>
<td>3.15</td>
<td>0.385</td>
<td>Calculated using Cantera and GRI 3.0 mechanism</td>
</tr>
<tr>
<td>Heat of vapourization (J/g) (^(*))</td>
<td>448.7</td>
<td>510.4</td>
<td>ISO(^1), Annex A, Table A.3</td>
</tr>
<tr>
<td>Lower flammability limit (% vol. fraction) (^(*))</td>
<td>4.0</td>
<td>5.3</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Upper flammability limit (% vol. fraction) (^(**))</td>
<td>75.0</td>
<td>17.0</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Lower detonation limit (% vol. fraction) (^(**))</td>
<td>18.3</td>
<td>6.3</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Upper detonation limit (% vol. fraction) (^(**))</td>
<td>59.0</td>
<td>13.5</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Minimum ignition energy (mJ) (^(**))</td>
<td>0.017</td>
<td>0.274</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Auto-ignition temp. (°C) (^(**))</td>
<td>585</td>
<td>537</td>
<td>ISO(^1), Annex B, Table B.2</td>
</tr>
<tr>
<td>Toxicity</td>
<td>Non</td>
<td>Non</td>
<td>Orange book(^5)</td>
</tr>
<tr>
<td>Temperature at critical point (K)</td>
<td>33.19(^{****})</td>
<td>190.55</td>
<td>Hydrogen: ISO(^1), Annex A, Table A.1</td>
</tr>
<tr>
<td>Pressure at critical point (kPaA)</td>
<td>1297(^{****})</td>
<td>4595</td>
<td>Methane: The Japan Society of Mechanical Engineers, Data Book, Thermophysical Properties of Fluids (1983)</td>
</tr>
</tbody>
</table>

Remarks:  
* At their normal boiling points for comparison purpose.  
** At normal temperature and pressure.  
*** Ignition and combustion properties for air mixtures at 25°C and 101.3 kPaA.  
**** Normal Hydrogen.
3.2 Explanation on respective requirements

3.2.1 Ship type (column ‘c’)

3.2.1.1 As a result of the studies, the following points were noted in relation to ship type allocated in the Code:

.1 type 1G is allocated only to dangerous goods of class 2.3* in the International Maritime Dangerous Goods Code, but not to class 2.2 and class 2.1;

.2 type 2G and type 2PG are allocated mainly to non-toxic flammable gases of class 2.1; and

.3 type 3G is allocated only to non-flammable and non-toxic gases of class 2.2.

3.2.1.2 "Type 2PG" is not applicable to liquefied hydrogen for the reason that the design temperature is lower than -55°C. Taking into account that liquefied hydrogen is a class 2.1 dangerous good, it is appropriate to allocate "type 2G" to liquefied hydrogen.

3.2.2 Independent tank type C required (column ‘d’)

Independent tank type C is allocated only to dangerous goods of class 2.3 whose vapour density is heavier than air. Independent tank type C is considered not to be required for liquefied hydrogen.

3.2.3 Control of vapour space within cargo tank (column ‘e’)

Special environment controls such as drying and inerting are generally required for liquid chemical products in consideration of the reactivity of cargo vapour and air. As is the case for LNG, it is considered not to be necessary to apply such requirements for liquefied hydrogen.

3.2.4 Vapour detection (column ‘f’)

Because hydrogen is flammable and non-toxic, it is appropriate to require Flammable (F) as vapour detection for liquefied hydrogen.

3.2.5 Gauging (column ‘g’)

On the grounds that Closed (C) gauging is required, in principle, for flammable or toxic cargoes, such as methane, it is considered to be appropriate to require Closed (C) gauging for hydrogen, taking into account that hydrogen has high ignitability and a wide flammable range in air and that closed gauging is effective to prevent leakage of gases into air.

4 SPECIAL REQUIREMENTS AGAINST HAZARDS OF LIQUEFIED HYDROGEN

4.1 Hazards of liquefied hydrogen to be considered

4.1.1 The hazards related to liquefied hydrogen are low ignition energy, a wide range of flammability limits, low visibility of flames in case of fire, high flame velocity which may lead to the detonation with shockwave, low temperature and liquefaction/solidification of inert gas and constituents of air which may result in an oxygen-enriched atmosphere, high permeability, low viscosity, and hydrogen embrittlement including weld metals. Where vacuum insulation is adopted, due consideration should be given to the possibility of untimely deterioration of insulation properties at the envisaged carriage temperatures of liquid hydrogen. The vacuum

* Toxic and flammable gases are classified as class 2.3 with subsidiary class 2.1.
insulation evaluation should be specified for the normal range or upper limit of cold vacuum pressure (CVP), and loss of vacuum should be defined with respect to this value. Accordingly, effect of vacuum pressure should be taken into account at the time of design and testing of cargo containment systems and piping. Supporting structure and adjacent hull structure should be designed taking into account the cooling owing to loss of vacuum insulation.

4.1.2 Hydrogen is essentially a mixture of ortho- and para-hydrogen, with an equilibrium concentration of 75% ortho-hydrogen and 25% para-hydrogen at ambient temperature. When liquefied at 20K, there is a slow but continuous transformation of ortho-hydrogen to para-hydrogen. The exothermic conversion of the nuclear spin isomers of hydrogen (ortho- to para-hydrogen) may take place and the effect of the conversion may have an impact on the cooling capacity and relief valve capacity of the vessel's equipment.

4.1.3 For consideration on the special requirements for liquefied hydrogen carriers, bibliographic studies were conducted using the references at the end of this document, in particular, ISO/TR 15916, "High Pressure Gas Safety Act" (Japanese law), "Safety standard for hydrogen and hydrogen system" by AIAA and NFPA 2 "Hydrogen Technologies Code". The majority of special requirements for liquefied hydrogen carriers are provided based on ISO/TR 15916. This standard refers to liquefied hydrogen tank storage facilities on shore, tank trucks and so on, and includes basic viewpoints when discussing the properties of liquefied hydrogen.

4.1.4 Trace amounts of air will condense or solidify in an environment with liquid hydrogen possibly resulting in an unstable and explosive mixture. Precautions should be taken to assure that the possibility of condensed air is accounted within properly secured hazard areas.

4.2 Low temperature hazard

4.2.1 Selection of appropriate material

4.2.1.1 Tables 6.3 and 6.4 in the Code prescribe material selection for piping or cargo tanks whose design temperature is -165°C or higher. According to Note 2 of table 6.3 and Note 3 of table 6.4 of the Code, the requirements for materials whose design temperatures are lower than -165°C should be specially agreed with the Administration. In this regard, the publication by AIAA introduces some appropriate materials corresponding to the design temperature and the Administration should take into account such references for the material selection.

4.2.1.2 Although paragraph 4.19.3 in the Code requires testing of materials used for thermal insulation for various properties adequate for the intended service temperature, the minimum test temperature is -196°C. The requirements in the Code do not refer to the normal boiling point of hydrogen, being -253°C. In case of carriage of liquefied hydrogen, special requirements should be provided to consider the lower design temperature.

4.2.2 Measures for condensed air

4.2.2.1 In the case of nitrogen whose normal boiling point is -196°C, for which air condensation and oxygen enrichment are concerns, the following special requirement has already been included in paragraph 17.17 in the Code:

"Material of construction and ancillary equipment such as insulation shall be resistant to the effect of high oxygen concentrations caused by condensation and enrichment at the low temperatures attained in parts of the cargo system. Due consideration shall be given to ventilation in such areas where condensation might occur to avoid the stratification of oxygen-enriched atmosphere."

A similar special requirement is applicable to hydrogen.
4.2.2.2 A vent may be blocked by accumulation of ice formed from moisture in the air, which may result in excessive pressure leading to rupture of the vent and relevant piping (see paragraph 4.2.4).

4.2.3 Removal of impure substances condensed

The removal of impure substances, such as those contained in condensate in pipes, should be separately considered. Installation of filters can be an appropriate measure and should be stipulated as a special requirement.

4.2.4 Prevention of blockage due to formation of water or ice

Pressure relief systems may become blocked due to formation of water or ice, depending on the temperature and humidity of air, resulting from the low temperature of the cargo and its vapour (see paragraph 4.2.2). Appropriate means should be provided to prevent such phenomena.

4.3 Hydrogen embrittlement

4.3.1 Selection of appropriate materials should be required to prevent failures owing to hydrogen embrittlement. The publication by AIAA\(^2\) introduces some appropriate materials resistant to hydrogen embrittlement, and concludes that aluminium is the material least affected.

4.3.2 International or national standards should be followed for the selection of materials for the design of liquefied and gaseous hydrogen installations in a marine environment.

4.4 Permeability

4.4.1 Prevention of leakage from cargo tanks

To mitigate leakage of hydrogen, it is deemed appropriate to require "butt weld full penetration" type welds, regardless of tank types, taking into account the high permeability of hydrogen. Furthermore, dome-to-shell connections welds and nozzle welds should be designed with full penetration regardless of tank types, taking into account paragraphs 4.20.1.1 and 4.20.1.2 of the Code.

4.4.2 Prevention of leakage from pipes

To mitigate undetected accumulation of hydrogen in a confined space, effective measures should be employed to reduce the possibility of leakage of hydrogen, taking its high permeability into account. Effective measures can be double tube structures, or fixed hydrogen leak detectors in areas assessed as being highly hazardous with regard to hydrogen leakage. Hydrogen leakage through welds, joints and seals is an important consideration for the design of hydrogen systems and an important operational issue.

4.4.3 Implementation of effective tightness test

4.4.3.1 Tightness tests for cargo tanks and cargo pipes/valves are required by paragraphs 4.20.3.2, 5.13.1 and 5.13.2.3 in the Code respectively. Helium or a mixture of 5% hydrogen and 95% nitrogen should be used as the medium for tightness tests, instead of air, because the permeability of hydrogen is high.
4.4.3.2 For a hydrogen installation, the pipework should be pressure-tested at its design pressure. Consideration should be given to using oxygen-free nitrogen with a small molecule tracer gas, such as helium as the test medium and an electronic leak detector for identifying leaks.

4.4.4 Confirmation of appropriate operating procedure

Instructions/manuals containing the operating procedures for the prevention of leakage during transport, methods for early detection in case of leakage, and appropriate measures after such events, should be provided. For this, paragraph 18.3 of the Code requires that the information shall be on board and available to all concerned, giving the necessary data for the safe carriage of cargo. In detail, the Code requires such information on action to be taken in the event of spills or leak, countermeasures against accidental personal contact, procedures for cargo transfer, and emergency procedures to be on board. With regard to the manuals on procedures for liquefied hydrogen during carriage and transfer operations, the requirements in the Code are applicable and no special requirement is necessary.

4.5 Low density and high diffusivity

Though low density and high diffusivity of hydrogen may reduce the possibility of formation of a flammable atmosphere in open spaces, adequate ventilation is necessary for enclosed spaces in cargo areas where formation of hydrogen-oxygen/air mixture may occur. Paragraph 12.2 of the Code requires fixed ventilation systems or portable mechanical ventilation for such enclosed spaces. These requirements in the Code are applicable to liquefied hydrogen carriers and no special requirement is necessary in this regard.

4.6 Ignitability

4.6.1 The Code requires electrical bonds of the piping and the cargo tanks in paragraph 5.7.4, exclusion of all sources of ignition in paragraph 11.1.2, electrical installations to minimize the risk of fire and explosion from flammable products in paragraph 10.2.1 and so on, in order to prevent ignition of flammable cargoes.

4.6.2 The Code requires compliance with the relevant standards issued by the International Electrotechnical Commission (IEC) and the IEC standards specify the details of such safety measures depending on the respective properties of flammable gases including hydrogen. No special requirement is necessary with regard to ignitability of hydrogen.

4.7 Fire hazard

4.7.1 Safety of personnel in case of fire

To avoid the effects of flame and UV radiation produced by a hydrogen fire, it is effective to use firefighter’s outfits and protective equipment. The Code already requires firefighter’s outfits for ships carrying flammable products in paragraph 11.6.1 and safety equipment in paragraph 14.3. This issue should be considered as the matter of cargo information required by paragraph 18.3 of the Code. Due consideration should be given to the invisible nature of hydrogen fire.

* Electrical equipment used in hydrogen/air mixture should be, at least, the type of "Il-C" and "T-1" as the group based on the maximum experimental safe gap for flameproof enclosures and the temperature class based on maximum surface temperature, respectively, according to IEC 60079-20-145.

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
4.7.2 **Compatibility of fire-extinguishing systems**

Dry chemical powder fire-extinguishing or carbon dioxide fire-extinguishing systems are considered to be effective in case of hydrogen fire and such fire-extinguishing systems are already required by paragraphs 11.4 and 11.5 of the Code. Special requirements for installation of other types of fire-extinguishing systems are considered unnecessary, except with regard to the increased amount of carbon dioxide required, as mentioned in the next paragraph in this document.

4.7.3 **Increase of the amount of gas for carbon dioxide fire-extinguishing systems**

4.7.3.1 Paragraph 11.5.1 of the Code requires as follows:

"Enclosed spaces meeting the criteria of cargo machinery spaces in 1.2.10, and the cargo motor room within the cargo area of any ship, shall be provided with a fixed fire-extinguishing system complying with the provisions of the FSS Code and taking into account the necessary concentrations/application rate required for extinguishing gas fires."

4.7.3.2 Chapter 5 of the FSS Code, i.e. Fixed gas fire-extinguishing systems, requires that the quantity of carbon dioxide for cargo spaces, unless otherwise provided, shall be sufficient to give a minimum volume of free gas equal to 30% of the gross volume of the largest cargo space to be protected in the ship, in paragraph 2.2.1.1.

4.7.3.3 On the other hand, NFPA 12\(^3\) requires that the design quantity of carbon dioxide for hydrogen fire should be 75% or more of the gross volume of the protected space. The special requirement for an increased amount of carbon dioxide should be provided for carbon dioxide fire-extinguishing systems.

4.7.4 **Features of hydrogen fire**

Hydrogen burns at high temperature, but generally gives off less radiant heat than propane or other hydrocarbons (e.g. only about 10% of that radiated by an equal-sized propane flame). Although the heat radiated by a hydrogen flame is also relatively low compared to hydrocarbons, it is important to take into account the differences in heats of combustion, burning rate and flame size. Hydrogen flames are colourless or nearly colourless. Both of these characteristics make it more difficult to detect a hydrogen fire. Even relatively small hydrogen fires are very difficult to extinguish. The only reliable approach to extinguish a fire is to shut off the source of hydrogen supply.

4.8 **High pressure hazard**

4.8.1 High pressure is a hazard common to hydrogen and other flammable gases listed in the Code. To prevent overpressure, the Code requires various measures such as pressure control and pressure design. Specifically, paragraph 8.2, in regard to the provision of pressure control of cargo tanks, requires fittings of pressure relief valves to the cargo tanks. Furthermore, paragraph 7.1.1 requires temperature control by the use of mechanical refrigeration and/or design to withstand possible increases of temperature and pressure. In addition, paragraph 15.2 specifies the filling limit of cargo tanks taking into account cargo volume increase by its thermal expansion. These requirements are applicable for hydrogen and no special requirement is considered necessary in this regard.
4.8.2 Vacuum insulation systems are likely to be used for liquefied hydrogen containment systems and the insulation capability of such systems may be adversely affected by damage to the system, depending on the design of the system. If a rapid deterioration of the insulation system took place, rapid increase of temperature in the cargo tank would occur and/or the rate of vapourization of liquefied hydrogen might exceed the capacity of pressure relief valves. To prevent such dangerous deterioration of insulation, appropriate safety measures should be taken.

4.8.3 Boil-off may be a bigger problem for hydrogen than for LNG in particular when insulation properties have deteriorated. Means of handling boil-off gas should be carefully considered taking into account the following issues:

.1 Re-liquefaction of hydrogen involves very specific and costly equipment. Cargo cooling in order to avoid boil-off shows the same kind of issues; and

.2 Notwithstanding the provision in paragraph 7.4.1 of the Code, thermal oxidation of hydrogen may be permitted in accordance with paragraph 1.3 of the Code.

4.8.4 The special requirements in these aspects are considered necessary.

4.9 Health hazard

4.9.1 Human safety concern under low temperature

With regard to the influences of cold hydrogen on persons' bodies, suitable protective equipment is effective. In this aspect, paragraph 14.1 of the Code requires suitable protective equipment taking into account the character of the products, therefore, no special requirement is considered necessary.

4.9.2 Static electricity

Hydrogen ignition energy is very low and hydrogen can be easily ignitable by static electricity and due consideration should be given to this issue, in accordance with the requirement in the Code on suitable protective equipment.

4.9.3 Oxygen depletion and asphyxiation

Leakage of hydrogen may cause low level of oxygen and associated asphyxiation.

4.10 Wide range of flammable limits

4.10.1 Extinguishing hydrogen fire

4.10.1.1 As mentioned in paragraph 4.6, for flammable products the Code already requires elimination of sources of ignition, including use of electrical installations of appropriate types in order to minimize the risk of fire and explosion. No special requirement is considered necessary with regard to ignitability of hydrogen.

4.10.1.2 Furthermore, with regard to the wide range of flammable limits of hydrogen, the increased quantities of carbon dioxide as a fire-extinguishing medium should be specified as mentioned in paragraph 4.7. No additional special requirement is considered to be necessary with regard to the wide range of flammable limits of hydrogen.
4.10.2 Disposal of cold hydrogen gas

The wide flammability range makes disposal of cold hydrogen gas a major hazard. Cold plumes downwind and inadequate dilution to below 4% provide possibilities for flash-back to the vent from distant ignition sources outside safety-controlled areas. The low ignition energy and wide flammable range may present significant challenges.

4.11 Prevention of dangerous purging operation

4.11.1 During cargo operations for maintenance, pipes and tanks should be purged with an inert gas or inert gases as illustrated in the figure below. For safety, due consideration should be given to temperature and boiling points of the inert gases. Residual pockets of hydrogen or the purge gas will remain in the enclosure if the purging rate, duration, or extent of mixing is too low. Therefore, reliable gas concentration measurements should be obtained at a number of different locations within the system for suitable purges. Temperature should also be measured at a number of locations. Oxidizing agents may exist in a hydrogen containing equipment, specifically: air, cold box atmospheres containing air diluted with nitrogen, or oxygen-enriched air that can be condensed on process pipe work within the cold box in special circumstances.

4.11.2 There are special measures that may need to be put in place in order to mitigate the hazards, e.g. air should be eliminated by nitrogen purge prior to introduction of hydrogen into cargo piping or processing equipment. Nitrogen should then be eliminated by hydrogen purge, where there is a possibility of its solidification in the subsequent process.
References

1) ISO/TR 15916, Basic consideration for the safety of hydrogen systems (ISO)


4) IEC 60079-20-1 Ed. 1.0:2010 (b) Explosive atmospheres – Part 20-1: Material characteristics for gas and vapour classification – Test methods and data

5) UN Recommendations on the Transport of Dangerous Goods – Model Regulations, Nineteenth revised edition


9) SAE ARP 5580-2001 "Recommended failure modes and effects analysis (FMEA) practices for non-automobile applications"

10) National Institute of Standards and Technology (NIST) RefProp database

***
ANNEX 19

DRAFT AMENDMENTS TO PARAGRAPHS 4.5.1 AND 4.5.2 OF THE IMSBC CODE

SECTION 4

ASSESSMENT OF ACCEPTABILITY OF CONSIGNMENTS FOR SAFE SHIPMENT

4.5 Interval between sampling/testing and loading for TML and moisture content determination

1 Replace the existing paragraphs 4.5.1 and 4.5.2 with the following:

"4.5.1 The shipper shall be responsible for ensuring that a test to determine the TML of a solid bulk cargo is conducted within six months to the date of loading the cargo. Notwithstanding this provision, where the composition or characteristics of the cargo are variable for any reason, the shipper shall be responsible for ensuring that a test to determine the TML is conducted again after it is reasonably assumed that such variation has taken place.

4.5.2 The shipper shall be responsible for ensuring that sampling and testing for moisture content is conducted as near as practicable to the date of commencement of loading. The interval between sampling/testing and the date of commencement of loading shall never be more than seven days. If the cargo has been exposed to significant rain or snow between the time of testing and the date of completion of loading, the shipper shall be responsible for ensuring that the moisture content of the cargo is still less than its TML, and evidence of this is provided to the master as soon as practicable."

***
ANNEX 20

DRAFT AMENDMENTS TO SOLAS REGULATION II-2/20.2

CHAPTER II-2
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART G
SPECIAL REQUIREMENTS

Regulation 20 – Protection of vehicle, special category and ro-ro spaces

1. The existing paragraph under 2.1 is numbered as 2.1.1 and the following new paragraph 2.1.2 is added after paragraph 2.1.1:

"2.1.2 Notwithstanding the above, cargo spaces on all ships, which contain vehicles with fuel in their tanks for their own propulsion that are loaded/unloaded into spaces which do not meet the requirements of this regulation and which do not use their own propulsion within the cargo space, are not required to comply with this regulation, providing the vehicles are carried in compliance with the appropriate requirements of regulation 19 and the IMDG Code, as defined in regulation VII/1.1."

***
ANNEX 21

DRAFT AMENDMENTS TO THE IMSBC CODE RELATED TO SUBSTANCES THAT ARE HARMFUL TO THE MARINE ENVIRONMENT

SECTION 1
GENERAL PROVISIONS

1.4 Application and implementation of this Code

1 In paragraph 1.4.2, the words "Paragraph 4.2.2.2;" and "Section 14 Prevention of pollution by cargo residues from ships;" are deleted.

SECTION 4
ASSESSMENT OF ACCEPTABILITY OF CONSIGNMENTS FOR SAFE SHIPMENT

2 The existing paragraph 4.2.2.1 is renumbered as "4.2.2".

3 In the renumbered paragraph 4.2.2, in subparagraph .15, the word "and" is deleted.

4 In the renumbered paragraph 4.2.2, a new subparagraph .16 is inserted as follows:

",.16 whether or not the cargo is classified as harmful to the marine environment in accordance with Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended; and"

5 In the renumbered paragraph 4.2.2, the existing subparagraph .16 is renumbered as subparagraph .17.

6 Paragraph 4.2.2.2 "The cargo information should include whether or not the cargo is harmful to the marine environment" and the corresponding footnote are deleted.

SECTION 13
REFERENCES TO RELATED INFORMATION AND RECOMMENDATION

7 In section 13.2.7 "Minimum information/documentation", new rows are added at the end of section as follows:

<table>
<thead>
<tr>
<th>4.2</th>
<th>MARPOL Annex V, regulation 4.3</th>
<th>Discharge of garbage outside special areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2</td>
<td>MARPOL Annex V, regulation 6.1.2.2</td>
<td>Discharge of garbage within special areas</td>
</tr>
</tbody>
</table>

SECTION 14
PREVENTION OF POLLUTION BY CARGO RESIDUES FROM SHIPS

8 Section 14 is deleted.

***
# ANNEX 22

## BIENNIAL STATUS REPORTS OF THE SUB-COMMITTEES

### SUB-COMMITTEE ON CARRIAGE OF CARGOES AND CONTAINERS (CCC)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 78/26, paragraph 22.12; CCC 3/15, section 10; MSC 97/22, paragraphs 10.9 and 10.10</td>
</tr>
<tr>
<td>2.0.1.5</td>
<td>Amendments to SOLAS regulations II-2/20.2 and II 2/20-1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>CCC</td>
<td>Completed</td>
<td></td>
<td>MSC 96/25, paragraph 23.6; MSC 97/22, paragraphs 10.4 and 10.5</td>
</tr>
<tr>
<td>5.2.1.2</td>
<td>Amendments to the IGF Code and development of guidelines for low-flashpoint fuels</td>
<td>2016</td>
<td>MSC</td>
<td>HTW / PPR / SDC / SSE</td>
<td>CCC</td>
<td>Extended</td>
<td></td>
<td>MSC 94/21, paragraphs 18.5 and 18.6; MSC 96/25, paragraphs 10.1 to 10.3</td>
</tr>
</tbody>
</table>

Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.

Notes: MSC 97 approved the request of CCC 3 to extend the target completion year to 2017 (MSC 97/22, paragraph 19.2)
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.9</td>
<td>Safety requirements for carriage of liquefied hydrogen in bulk</td>
<td>2016</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 94/21, paragraph 18.3; MSC 97/22, paragraph 10.2</td>
</tr>
<tr>
<td>5.2.1.26)</td>
<td>Suitability of high manganese austenitic steel for cryogenic service and development of any necessary amendments to the IGC Code and IGF Code</td>
<td>2017</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25 paragraph 23.4; CCC 3/15, section 8</td>
</tr>
<tr>
<td>5.2.3.3</td>
<td>Amendments to the IMSBC Code and supplements</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>CCC</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 86/26, paragraph 7.2; CCC 3/15, section 5</td>
</tr>
<tr>
<td>5.2.3.4</td>
<td>Amendments to the IMDG Code and supplements</td>
<td>Continuous</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 75/24, paragraph 7.36; CCC 3/15, section 6</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>----------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>7.1.1.1</td>
<td>Mandatory requirements for classification and declaration of solid bulk cargoes as harmful to the marine environment</td>
<td>2017</td>
<td>MEPC</td>
<td>CCC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MEPC 68/21, paragraphs 12.35, 17.16 and 17.17; MSC 95/22, paragraph 19.1; MEPC 69/21, paragraphs 13.13 to 13.21; MSC 96/25, paragraphs 10.14 and 10.15; MEPC 70/18, paragraph 3.31; MSC 97/22, paragraph 10.6</td>
</tr>
<tr>
<td>12.3.1.1</td>
<td>Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td>CCC</td>
<td>Completed</td>
<td></td>
<td>MSC 79/23, paragraph 12.7; CCC 3/15, section 11</td>
</tr>
<tr>
<td>14.0.1.1</td>
<td>Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR</td>
<td>2017</td>
<td>Council</td>
<td>III / HTW / PPR / CCC / SDC / SSE / NCSR</td>
<td>MSC / MEPC / FAL / LEG</td>
<td>No work requested</td>
<td></td>
<td>MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>----------------------------</td>
<td>----------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>5.1.1.6</td>
<td>Amendments to SOLAS chapter II-1 and associated guidelines on damage control drills for passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SDC</td>
<td>Completed</td>
<td></td>
<td>MSC 93/22, paragraphs 6.28.4, 20.5 and 20.14; MSC 97/22, paragraphs 3.11 and 3.23</td>
</tr>
<tr>
<td>5.1.2.4</td>
<td>Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SSE</td>
<td>No work requested</td>
<td></td>
<td>MSC 94/21, paragraph 18.24; HTW 3/19, paragraph 13.2</td>
</tr>
<tr>
<td>5.2.1.1</td>
<td>Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SSE</td>
<td>SDC</td>
<td>No work requested</td>
<td></td>
<td>MSC 95/22, paragraph 19.22</td>
</tr>
<tr>
<td>5.2.1.2</td>
<td>Amendments to the IGF Code and development of guidelines for low-flashpoint fuels</td>
<td>2016</td>
<td>MSC</td>
<td>HTW / PPR / SDC / SSE</td>
<td>CCC</td>
<td>No work requested</td>
<td></td>
<td>MSC 94/21, paragraphs 18.5 and 18.6; MSC 96/25, paragraphs 10.1 to 10.3</td>
</tr>
<tr>
<td>5.2.1.14</td>
<td>Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SSE</td>
<td>Completed</td>
<td></td>
<td>MSC 93/22, paragraph 20.17; HTW 3/19, paragraph 15.9</td>
</tr>
</tbody>
</table>

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).

Notes: MSC 97 approved the request of CCC 3 to extend the target completion year to 2017 (MSC 97/22, paragraph 19.2)

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).
### SUB-COMMITTEE ON HUMAN ELEMENT, TRAINING AND WATCHKEEPING (HTW)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.29 (New)</td>
<td>Review SOLAS chapter II-2 and associated codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships (2019)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SDC</td>
<td>SSE</td>
<td>In progress</td>
<td></td>
<td>MSC 97/22, paragraph 19.19</td>
</tr>
</tbody>
</table>

**Notes:** Pending endorsement by C 118

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.2.1</td>
<td>Guidance for the implementation of the 2010 Manila Amendments</td>
<td>2017</td>
<td>MSC</td>
<td>HTW</td>
<td></td>
<td>In progress</td>
<td></td>
<td>HTW 3/19, section 5</td>
</tr>
<tr>
<td>5.2.2.2</td>
<td>Review of STCW passenger ship-specific safety training</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 96/25, paragraph 12.5</td>
</tr>
<tr>
<td>5.2.2.3</td>
<td>Validated model training courses</td>
<td>Continuous</td>
<td>MSC</td>
<td>HTW</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>HTW 3/19, section 3</td>
</tr>
<tr>
<td>5.2.2.4</td>
<td>Reports on unlawful practices associated with certificates of competency</td>
<td>Annual</td>
<td>MSC</td>
<td>HTW</td>
<td></td>
<td>Completed</td>
<td></td>
<td>HTW 3/19, paragraphs 4.1 and 4.2</td>
</tr>
<tr>
<td>5.2.5.2</td>
<td>Completion of the detailed review of the Global Maritime Distress and Safety System (GMDSS)</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>Completed</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
<tr>
<td>5.2.5.3</td>
<td>Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>No work requested</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
</tbody>
</table>

**Notes:** MSC 96 approved the outcome of the GMDSS Review (output 5.2.5.2) and the continuation of the project in developing the Modernization Plan (this output)
### SUB-COMMITTEE ON HUMAN ELEMENT, TRAINING AND WATCHKEEPING (HTW)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3.1.1</td>
<td>Measures to harmonize port State control (PSC) activities and procedures worldwide</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>HTW / PPR / NCSR</td>
<td>III</td>
<td>No work requested</td>
<td></td>
<td>MEPC 66/21, paragraph 18.8; MSC 94/21, paragraph 18.2.1; MEPC 68/21, paragraph 17.3; MEPC 70/18, paragraph 15.20; MSC 97/22, paragraph 19.8</td>
</tr>
</tbody>
</table>

Notes: MEPC 70 and MSC 97 agreed to amend the output to reflect the coordinating role of III and to add PPR, NCSR and HTW as associated organs.

<p>| 5.4.1.1       | Comprehensive review of the 1995 STCW-F Convention (2018)                     | 2017                   | MSC             | HTW                | In progress            |                             |                             | MSC 95/22, paragraph 19.3; HTW 3/19, paragraph 6.11                     |
| 5.4.1.2       | Revision of the Guidelines on Fatigue                                        | 2017                   | MSC             | HTW                | In progress            |                             |                             | MSC 95/22, paragraph 19.18; HTW 3/19, paragraphs 8.13 and 8.14          |
| 12.2.1.1      | Revised Guidelines on the Implementation of the ISM Code by Administrations (resolution A.1071(28)) on training audits | 2016                   | MSC             | HTW                | Completed              |                             |                             | MSC 95/22, paragraph 19.5; MSC 96/25, paragraph 12.4                     |
| 14.0.1.1      | Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR | 2017                   | Council         | III / HTW / PPR / CCC / SDC / SSE / NCSR | MSC / MEPC / FAL / LEG |                             |                             | MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10                         |</p>
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 78/26, paragraph 22.12</td>
</tr>
<tr>
<td></td>
<td>Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.1.2</td>
<td>Revised guidance on ballast water sampling and analysis</td>
<td>2017</td>
<td>MEPC</td>
<td>PPR</td>
<td>III</td>
<td>No work requested</td>
<td></td>
<td>MEPC 68/21, paragraphs 7.14 and 17.26</td>
</tr>
<tr>
<td>2.0.1.6 (New)</td>
<td>Review the Model Agreement for the authorization of recognized organizations acting on behalf of the Administration (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 19.7</td>
</tr>
<tr>
<td></td>
<td>Notes: Pending endorsement by C 118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.2.1</td>
<td>Analysis of consolidated audit summary reports</td>
<td>Annual</td>
<td>Assembly</td>
<td>MSC / MEPC / LEG / TCC / III</td>
<td>Council</td>
<td>Completed</td>
<td></td>
<td>MEPC 61/24, paragraph 11.14.1; MSC 88/26, paragraph 10.8, C 116/D, agenda item 6</td>
</tr>
<tr>
<td>5.1.2.2</td>
<td>Measures to protect the safety of persons rescued at sea</td>
<td>2017</td>
<td>MSC / FAL</td>
<td>III</td>
<td>NCSR</td>
<td>No work requested</td>
<td></td>
<td>MSC 96/25, paragraph 14.11</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.2.1.17</td>
<td>Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MEPC 68/21, paragraphs 14.5 and 14.6</td>
</tr>
<tr>
<td>5.2.1.20</td>
<td>Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MEPC 64/23, paragraph 11.49; MSC 91/22, paragraph 10.30; MEPC 52/24, paragraph 10.15</td>
</tr>
<tr>
<td>5.3.1.1</td>
<td>Measures to harmonize port State control (PSC) activities and procedures worldwide</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>HTW / PPR / NCSR</td>
<td>III</td>
<td>Ongoing</td>
<td></td>
<td>MEPC 66/21, paragraph 18.8; MSC 94/21, paragraph 18.2.1; MEPC 68/21, paragraph 17.3; MEPC 70/18, paragraph 15.20; MSC 97/22, paragraph 19.8</td>
</tr>
</tbody>
</table>

Notes: MEPC 70 and MSC 97 agreed to amend the output to reflect the coordinating role of III and to add PPR, NCSR and HTW as associated organs
### SUB-COMMITTEE ON IMPLEMENTATION OF IMO INSTRUMENTS (III)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0.3.1</td>
<td>Requirements for access to, or electronic versions of, certificates and documents, including record books required to be carried on ships</td>
<td>2017</td>
<td>FAL</td>
<td>MSC / MEPC / LEG / III</td>
<td>No work requested</td>
<td>FAL.5/Circ.39/Rev.2; FAL 40/19, paragraphs 6.18 to 6.21; MEPC 68/21, paragraphs 13.2 and 17.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** FAL 40 completed the output

<table>
<thead>
<tr>
<th>12.1.2.1</th>
<th>Lessons learned and safety issues identified from the analysis of marine safety investigation reports</th>
<th>Annual</th>
<th>MSC / MEPC</th>
<th>III</th>
<th>Completed</th>
<th>MSC 92/26, paragraph 22.29</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1.2.2</td>
<td>Identified issues relating to the implementation of IMO instruments from the analysis of PSC data</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>12.3.1.1</td>
<td>Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td>CCC</td>
<td>No work requested</td>
</tr>
<tr>
<td>14.0.1.1</td>
<td>Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR</td>
<td>2017</td>
<td>Council</td>
<td>III / HTW / PPR / CCC / SDC / SSE / NCSR</td>
<td>MSC / MEPC / FAL / LEG</td>
<td>No work requested</td>
</tr>
</tbody>
</table>
## SUB-COMMITTEE ON NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE (NCSR)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.2</td>
<td>Response to matters related to the Radiocommunication ITU R Study Group and ITU World Radiocommunication Conference</td>
<td>Annual</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 97/22, paragraph 7.6</td>
</tr>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 78/26, paragraph 22.12; NCSR 3/29, section 25 and annex 11</td>
</tr>
</tbody>
</table>

Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.

<p>| 1.3.4.1       | Amendments to the IAMSAR Manual                                             | Continuous             | MSC             | NCSR                |                       | Ongoing                    |                             | NCSR 3/29, section 23                                                       |
| 2.0.3.1       | Further development of the provision of global maritime SAR services      | 2017                   | MSC             | NCSR                |                       | In progress                 |                             | NCSR 3/29, section 22                                                       |
| 2.0.3.2       | Guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters | 2017                   | MSC             | NCSR                |                       | In progress                 |                             | NCSR 3/29, section 21                                                       |
| 2.0.3.3       | Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079) | 2017                   | MSC             | NCSR                |                       | In progress                 |                             | MSC 95/22, paragraph 19.11 NCSR 3/29, section 24                           |</p>
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.2.2</td>
<td>Measures to protect the safety of persons rescued at sea</td>
<td>2017</td>
<td>MSC / FAL</td>
<td>III</td>
<td>NCSR</td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 14.11</td>
</tr>
<tr>
<td>5.2.1.15</td>
<td>Consequential work related to the new Code for ships operating in polar waters</td>
<td>2017</td>
<td>MSC / MEPC</td>
<td>NCSR / PPR / SSE</td>
<td>SDC</td>
<td>No work requested</td>
<td></td>
<td>MSC 93/22, paragraphs 10.44, 10.50 and 20.12; MSC 96/25, paragraph 3.77, MSC 97/22, paragraphs 19.14 and 21.8</td>
</tr>
<tr>
<td>5.2.4.1</td>
<td>Routeing measures and mandatory ship reporting systems</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td>Ongoing</td>
<td></td>
<td></td>
<td>MSC 96/25, paragraphs 14.2 to 14.5</td>
</tr>
<tr>
<td>5.2.4.2</td>
<td>Updates to the LRIT system</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td>Ongoing</td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 7.3</td>
</tr>
<tr>
<td>5.2.4.3</td>
<td>Amendment to the General Provisions on 'Ships' Routeing (resolution A.572(14)) on establishing multiple structures at sea</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td>Completed</td>
<td></td>
<td></td>
<td>NCSR 3/29, section 4 and annex 5; resolution MSC.A419(97)</td>
</tr>
<tr>
<td>5.2.4.4</td>
<td>Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td>Extended</td>
<td></td>
<td></td>
<td>MSC 96/25, paragraph 23.22</td>
</tr>
</tbody>
</table>

Notes: Extended to 2017, to wait for the outcome of outputs 5.2.6.1 and 5.2.6.2 before concluding or finalizing this output.
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.4.5</td>
<td>Guidelines associated with multi-system shipborne radionavigation receivers dealing with the harmonized provision of PNT data and integrity information</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>NCSR 3/29, section 8</td>
</tr>
<tr>
<td>5.2.4.6</td>
<td>Recognition of Galileo as a component of the WWRNS</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 96/25, paragraph 14.6</td>
</tr>
<tr>
<td>5.2.5.1</td>
<td>Updating of the GMDSS Master Plan and guidelines on MSI (maritime safety information)</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 97/22, paragraphs 7.4 and 7.5</td>
</tr>
<tr>
<td>5.2.5.2</td>
<td>Completion of the detailed review of the Global Maritime Distress and Safety System (GMDSS)</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>Completed</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
<tr>
<td>5.2.5.3</td>
<td>Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>No work requested</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
</tbody>
</table>

Notes: MSC 96 approved the outcome of the GMDSS Review (output 5.2.5.2) and the continuation of the project in developing the Modernization Plan (this output)

| 5.2.5.4       | Developments in GMDSS satellite services                                     | Continuous             | MSC            | NCSR                |                       | Ongoing                    |                             | MSC 96/25, paragraph 14.17                                               |

Notes: Description changed from "Analysis of information on developments in Inmarsat and Cospas-Sarsat" to "Developments in GMDSS satellite services".
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.5.5</td>
<td>Revised Performance Standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second-generation beacons</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>NCSR 3/29, section 20</td>
</tr>
<tr>
<td>5.2.5.6</td>
<td>Performance Standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 96/25, paragraph 14.8</td>
</tr>
</tbody>
</table>

Notes: Extended to 2017, since the performance standards could not be finalized in 1 session.

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.5.7</td>
<td>Analysis of developments in maritime radiocommunication systems and technology</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 14.7</td>
</tr>
<tr>
<td>5.2.5.8</td>
<td>Review SOLAS chapter IV and appendix (Certificates: Forms P, R and C) to accommodate additional mobile satellite systems</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 96/25 paragraph 23.18</td>
</tr>
<tr>
<td>5.2.6.1</td>
<td>Additional modules to the Revised Performance Standards for Integrated Navigation Systems (INS) (resolution MSC.252(83) relating to the harmonization of bridge design and display of information</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>NCSR 3/29, section 6</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>---------------------------</td>
<td>---------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>5.2.6.2</td>
<td>Guidelines for the harmonized display of navigation information received via communications equipment</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>NCSR 3/29, section 9</td>
</tr>
<tr>
<td>5.2.6.3</td>
<td>Revised Guidelines and criteria for ship reporting systems (resolution MSC.43(64))</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>NCSR 3/29, section 10</td>
</tr>
<tr>
<td>5.3.1.1</td>
<td>Measures to harmonize port State control (PSC) activities and procedures worldwide</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>HTW / PPR / NCSR</td>
<td>III</td>
<td>No work requested</td>
<td></td>
<td>MEPC 66/21, paragraph 18.8; MSC 94/21, paragraph 18.2.1; MEPC 68/21, paragraph 17.3; MEPC 70/18, paragraph 15.20; MSC 97/22, paragraph 19.8</td>
</tr>
<tr>
<td>7.1.2.2</td>
<td>Designated Special Areas and PSSAs and their associated protective measures</td>
<td>Continuous</td>
<td>MEPC</td>
<td>NCSR</td>
<td></td>
<td>No work requested</td>
<td></td>
<td>MEPC 68/21, paragraph 10.11</td>
</tr>
<tr>
<td>14.0.1.1</td>
<td>Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR</td>
<td>2017</td>
<td>Council</td>
<td>III / HTW / PPR / CCC / SDC / SSE / NCSR</td>
<td>MSC / MEPC / FAL / LEG</td>
<td>No work requested</td>
<td></td>
<td>MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10</td>
</tr>
</tbody>
</table>

Notes: MEPC 70 and MSC 97 agreed to amend the output to reflect the coordinating role of III and to add PPR, NCSR and HTW as associated organs.
## SUB-COMMITTEE ON SHIP DESIGN AND CONSTRUCTION (SDC)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td>Ongoing</td>
<td></td>
<td></td>
<td>MSC 78/26, paragraph 22.12; SDC 3/21, section 14</td>
</tr>
</tbody>
</table>

Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.

| 2.0.1.1       | Amendments to the ESP Code                                                  | Continuous             | MSC             | SDC                  | Ongoing               |                            |                             | MSC 91/22, paragraph 19.24; SDC 3/21, section 13                           |

| 5.1.1.1       | Guidelines on safe return to port for passenger ships                       | 2016                   | MSC             | SDC                  | Completed             |                            |                             | MSC 81/25, paragraph 23.54; MSC 96/25, paragraph 11.10                     |

| 5.1.1.3       | Amendments to SOLAS and FSS Code to make evacuation analysis mandatory for new passenger ships and review of the Recommendation on evacuation analysis for new and existing passenger ships | 2016                   | MSC             | SDC                  | Extended              |                            |                             | MSC 83/28, paragraph 25.25; MSC 93/22, paragraph 20.11; MSC 96/25, paragraph 11.13; MSC 96/25, paragraph 11.15 |

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.25).
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1.6</td>
<td>Amendments to SOLAS chapter II-1 and associated guidelines on damage control drills for passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SDC</td>
<td>Completed</td>
<td></td>
<td>MSC 93/22, paragraphs 6.28.4, 20.5 and 20.14; MSC 97/22, paragraphs 3.11 and 3.23</td>
</tr>
<tr>
<td>5.2.1.1</td>
<td>Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SSE</td>
<td>SDC</td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraph 19.22; SDC 3/21, section 15</td>
</tr>
<tr>
<td>5.2.1.2</td>
<td>Amendments to the IGF Code and development of guidelines for low-flashpoint fuels</td>
<td>2016</td>
<td>MSC</td>
<td>HTW / PPR / SDC / SSE</td>
<td>CCC</td>
<td>No work requested</td>
<td></td>
<td>MSC 94/21, paragraphs 18.5 and 18.6; MSC 96/25, paragraphs 10.1 to 10.3</td>
</tr>
</tbody>
</table>

Notes: MSC 97 approved the request of CCC 3 to extend the target completion year to 2017 (MSC 97/22, paragraph 19.2)
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.5</td>
<td>Revised SOLAS regulations II-1/13 and II-1/13-1 and other related regulations for new ships</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>SSE</td>
<td>No work requested</td>
<td></td>
<td>MSC 95/22, paragraphs 19.20 and 19.32</td>
</tr>
<tr>
<td>5.2.1.6</td>
<td>Revision of section 3 of the Guidelines for damage control plans and information to the master (MSC.1/Circ.1245) for passenger ships</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 93/22, paragraphs 6.28 and 20.15; SDC 3/21, section 10</td>
</tr>
<tr>
<td>5.2.1.7</td>
<td>Computerized stability support for the master in case of flooding for existing passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 94/21, paragraph 18.20; SDC 3/21, section 4</td>
</tr>
</tbody>
</table>

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.25).

| 5.2.1.12     | Finalization of second generation intact stability criteria (2019) | 2017 | MSC | SDC | | In progress | | MSC 85/26, paragraphs 12.7 and 23.42; SDC 3/21, section 6 |
| 5.2.1.13     | Amendments to SOLAS regulations II-1/6 and II-1/8-1 | 2017 | MSC | SDC | | In progress | | MSC 85/26, paragraph 23.35; MSC 97/22, paragraph 3.11 |
| 5.2.1.15     | Consequential work related to the new Code for ships operating in polar waters | 2017 | MSC / MEPC | NCSR / PPR / SSE | SDC | No work requested | | MSC 93/22, paragraphs 10.44, 10.50 and 20.12; MSC 96/25, paragraph 3.77 |
### SUB-COMMITTEE ON SHIP DESIGN AND CONSTRUCTION (SDC)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.21</td>
<td>Guidelines for use of Fibre Reinforced Plastics (FRP) within ship structures</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>In progress</td>
<td>MSC 95/22, paragraph 10.16; SDC 3/21, section 17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.24</td>
<td>Amendments to Part B of the 2008 IS Code on towing, lifting and anchor handling operations</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td>Completed</td>
<td>MSC 88/26, paragraph 23.36; MSC 97/22, paragraphs 3.88 and 3.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.29</td>
<td>Review SOLAS chapter II-2 and associated codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships (2019)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SDC</td>
<td>SSE</td>
<td>MSC 97/22, paragraph 19.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Pending endorsement by C 118

| 7.1.2.3       | Code for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels | 2017 | MSC / MEPC | SDC / SSE | PPR | No work requested |
|---------------|-----------------------------------------------------------------------------------------------------------------|-----|------------|---------|-------------|---------------|---------------|-----------|
| 14.0.1.1      | Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR | 2017 | Council | III / HTW / PPR / CCC / SDC / SSE / NCSR | MSC / MEPC / FAL / LEG | No work requested | MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10 |
## COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td>Ongoing</td>
<td></td>
<td></td>
<td>MSC 78/26, paragraph 22.12; SSE 3/16, section 12</td>
</tr>
<tr>
<td>Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.1.5</td>
<td>Amendments to SOLAS regulations II-2/20.2 and II 2/20.1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>CCC</td>
<td>No work requested</td>
<td></td>
<td>MSC 96/25, paragraph 23.6; MSC 97/22, paragraphs 10.4 and 10.5</td>
</tr>
<tr>
<td>5.1.1.2</td>
<td>Clarification of the requirements in SOLAS chapter II-2 for fire integrity of windows on passenger ships carrying not more than 36 passengers and special purpose ships with more than 60 (but no more than 240) persons on board</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>Completed</td>
<td></td>
<td></td>
<td>MSC 95/22, paragraph 19.30; MSC 97/22, paragraphs 8.6 and 8.7</td>
</tr>
<tr>
<td>5.1.1.4</td>
<td>Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002)</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td>Completed</td>
<td></td>
<td></td>
<td>MSC 90/28, paragraph 25.12; MSC 97/22, paragraph 8.2</td>
</tr>
</tbody>
</table>
## COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.2.1</td>
<td>Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td>Extended</td>
<td>MSC 95/22, paragraphs 12.36 and 19.29; MSC 96/25, paragraphs 3.82 and 3.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes: Target completion year extended to 2017 (MSC 96/25, paragraphs 8.15 and 23.34).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.2.4</td>
<td>Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SSE</td>
<td>Extended</td>
<td>MSC 94/21, paragraph 18.24; SSE 3/16, paragraphs 10.5 to 10.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.2.5</td>
<td>Develop new requirements for ventilation of survival crafts (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>MSC 97/22, paragraph 19.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes: Pending endorsement by C 118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.1</td>
<td>Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SSE</td>
<td>SDC</td>
<td>No work requested</td>
<td>MSC 95/22, paragraph 19.22</td>
<td></td>
</tr>
<tr>
<td>5.2.1.2</td>
<td>Amendments to the IGF Code and development of guidelines for low-flashpoint fuels</td>
<td>2016</td>
<td>MSC</td>
<td>HTW / PPR / SDC / SSE</td>
<td>CCC</td>
<td>No work requested</td>
<td>MSC 94/21, paragraphs 18.5 and 18.6; MSC 96/25, paragraphs 10.1 to 10.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes: MSC 97 approved the request of CCC 3 to extend the target completion year to 2017 (MSC 97/22, paragraph 19.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>----------------------------</td>
<td>--------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>5.2.1.5</td>
<td>Revised SOLAS regulations II-1/13 and II-1/13-1 and other related regulations for new ships</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>SSE</td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraphs 19.20 and 19.32; SSE 3/16, section 11</td>
</tr>
<tr>
<td>5.2.1.10</td>
<td>Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 82/24, paragraph 3.92; SSE 3/16, section 3</td>
</tr>
<tr>
<td>5.2.1.11</td>
<td>Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645)</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 90/28, paragraph 25.35; SSE 3/16, paragraph 9.7</td>
</tr>
</tbody>
</table>

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).

| 5.2.1.14 | Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1 | 2016 | MSC | HTW | SSE | Extended | | MSC 93/22, paragraph 20.17; SSE 3/16, paragraphs 5.13 and 5.14 |

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.15</td>
<td>Consequential work related to the new Code for ships operating in polar waters</td>
<td>2017</td>
<td>MSC / MEPC</td>
<td>NCSR / PPR / SSE</td>
<td>SDC</td>
<td>No work requested</td>
<td></td>
<td>MSC 93/22, paragraphs 10.44, 10.50 and 20.12; MSC 96/25, paragraph 3.77 MSC 97/22, paragraphs 8.32 and 19.25</td>
</tr>
<tr>
<td>5.2.1.22</td>
<td>Requirements for onboard lifting appliances and winches</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 89/25, paragraph 22.26; SSE 3/16, section 8</td>
</tr>
<tr>
<td>5.2.1.27</td>
<td>Amendments to the FSS Code for CO2 pipelines in under-deck passageways</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>No work requested</td>
<td></td>
<td></td>
<td>MSC 96/25, paragraph 23.26</td>
</tr>
<tr>
<td>5.2.1.28</td>
<td>Uniform implementation of paragraph 6.1.1.3 of the LSA Code</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>No work requested</td>
<td></td>
<td></td>
<td>MSC 96/25, paragraph 23.28</td>
</tr>
<tr>
<td>5.2.1.29</td>
<td>Review SOLAS chapter II-2 and associated codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships (2019)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SDC</td>
<td>SSE</td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 19.19</td>
</tr>
</tbody>
</table>

Notes: Pending endorsement by C 118
| Output number | Description                                                                                                                                                                                                 | Target completion year | Parent organ(s) | Associated organ(s) | Coordinating organ(s) | Status of output for Year 1 | Status of output for Year 2 | References                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------|--------------------|-----------------------|-----------------------------|--------------------------------|--------------------------------------------------------------------------------|---|
| 7.1.2.3       | Code for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels | 2017                   | MSC / MEPC      | SDC / SSE         | PPR                   | No work requested           |                                |                                                                              |   |
| 14.0.1.1      | Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR | 2017                   | Council         | III / HTW / PPR    | MSC / MEPC / FAL / LEG | No work requested           |                                | MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10 |   |

***
ANNEX 23

PROVISIONAL AGENDAS FOR THE SUB-COMMITTEES

PROPOSED PROVISIONAL AGENDA FOR CCC 4

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Amendments to the IGF Code and development of guidelines for low-flashpoint fuels (5.2.1.2)

4 Suitability of high manganese austenitic steel for cryogenic service and development of any necessary amendments to the IGC Code and IGF Code (5.2.1.26)

5 Amendments to the IMSBC Code and supplements (5.2.3.3)

6 Amendments to the IMDG Code and supplements (5.2.3.4)

7 Unified interpretation of provisions of IMO safety, security and environment-related conventions (1.1.2.3)

8 Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas (12.3.1.1)

9 Biennial status report and provisional agenda for CCC 5

10 Election of Chair and Vice-Chair for 2018

11 Any other business

12 Report to the Committees
PROVISIONAL AGENDA FOR HTW 4

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Validated model training courses (5.2.2.3)

4 Reports on unlawful practices associated with certificates of competency (5.2.2.4)

5 Guidance for the implementation of the 2010 Manila Amendments (5.2.2.1)

6 Comprehensive review of the 1995 STCW-F Convention (5.4.1.1)

7 Role of the Human Element

8 Revision of the Guidelines on Fatigue (5.4.1.2)

9 Draft Modernization Plan of the GMDSS (5.2.5.3)

10 Amendments to the IGF Code and development of guidelines for low-flashpoint fuels (5.2.1.2)

11 Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments (5.1.2.4)

12 Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships (5.2.1.1)

13 Biennial agenda and provisional agenda for HTW 5

14 Election of Chair and Vice-Chair for 2018

15 Any other business

16 Report to the Maritime Safety Committee
PROPOSED PROVISIONAL AGENDA FOR III 4

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Consideration and analysis of reports on alleged inadequacy of port reception facilities (7.1.3.1)
4 Lessons learned and safety issues identified from the analysis of marine safety investigation reports (12.1.2.1)
5 Measures to harmonize port State control (PSC) activities and procedures worldwide (5.3.1.1)
6 Identified issues relating to the implementation of IMO instruments from the analysis of PSC data (12.1.2.2)
7 Analysis of consolidated audit summary reports (2.0.2.1)
8 Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC) (5.2.1.17)
9 Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code) (5.2.1.20)
10 Unified interpretation of provisions of IMO safety, security, and environment related Conventions (1.1.2.3)
11 Review the Model Agreement for the authorization of recognized organizations acting on behalf of the Administration*;
12 Biennial status report and provisional agenda for III 5
13 Election of Chair and Vice-Chair for 2018
14 Any other business
15 Report to the Committees

* Output number to be decided by the Council.
PROPOSED PROVISIONAL AGENDA FOR NCSR 4

Opening of the session

1 Adoption of the agenda
2 Decisions of other IMO bodies
3 Routeing measures and mandatory ship reporting systems (5.2.4.1)
4 Updates to the LRIT system (5.2.4.2)
5 Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems (5.2.4.4)
6 Guidelines associated with multi-system shipborne radionavigation receivers dealing with the harmonized provision of PNT data and integrity information (5.2.4.5)
7 Additional modules to the Revised Performance Standards for Integrated Navigation Systems (INS) (resolution MSC.252(83) relating to the harmonization of bridge design and display of information (5.2.6.1)
8 Guidelines for the harmonized display of navigation information received via communications equipment (5.2.6.2)
9 Revised Guidelines and criteria for ship reporting systems (resolution MSC.43(64)) (5.2.6.3)
10 Performance Standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services (5.2.5.6)
11 Updating of the GMDSS master plan and guidelines on MSI (maritime safety information) provisions (5.2.5.1)
12 Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (5.2.5.3)
13 Analysis of developments in maritime radiocommunication systems and technology (5.2.5.7)
14 Review SOLAS chapter IV and appendix (Certificates: Forms P, R and C) to accommodate additional mobile satellite systems (5.2.5.8)
15 Response to matters related to the Radiocommunication ITU R Study Group (1.1.2.2)
16 Response to matters related to ITU World Radiocommunication Conference (1.1.2.2)
17 Measures to protect the safety of persons rescued at sea (5.1.2.2)
18 Developments in GMDSS satellite services (5.2.5.4)
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Revised Performance Standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second generation beacons (5.2.5.5)</td>
</tr>
<tr>
<td>20</td>
<td>Further development of the provision of global maritime SAR services (2.0.3.1)</td>
</tr>
<tr>
<td>21</td>
<td>Guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters (2.0.3.2)</td>
</tr>
<tr>
<td>22</td>
<td>Amendments to the IAMSAR Manual (1.3.4.1)</td>
</tr>
<tr>
<td>23</td>
<td>Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079) (2.0.3.3)</td>
</tr>
<tr>
<td>24</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions (1.1.2.3)</td>
</tr>
<tr>
<td>25</td>
<td>Biennial status report and provisional agenda for NCSR 5</td>
</tr>
<tr>
<td>26</td>
<td>Election of Chair and Vice-Chair for 2018</td>
</tr>
<tr>
<td>27</td>
<td>Any other business</td>
</tr>
<tr>
<td>28</td>
<td>Consequential work related to the new Polar Code (5.2.1.15)</td>
</tr>
<tr>
<td>29</td>
<td>Report to the Maritime Safety Committee</td>
</tr>
</tbody>
</table>
PROVISIONAL AGENDA FOR SDC 4

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Amendments to SOLAS regulations II-1/6 and II-1/8-1 (5.2.1.13)

4 Computerized stability support for the master in case of flooding for existing passenger ships (5.2.1.7)

5 Finalization of second generation intact stability criteria (5.2.1.12)

6 Amendments to SOLAS and FSS Code to make evacuation analysis mandatory for new passenger ships and review of the Recommendation on evacuation analysis for new and existing passenger ships (5.1.1.3)

7 Revision of section 3 of the Guidelines for damage control plans and information to the master (MSC.1/Circ.1245) for passenger ships (5.2.1.6)

8 Mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages (5.2.1.4)

9 Amendments to the 2011 ESP Code (2.0.1.1)

10 Unified interpretation to provisions of IMO safety, security, and environment-related Conventions (1.1.2.3)

11 Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships (5.2.1.1)

12 Guidelines for use of Fibre Reinforced Plastic (FRP) within ship structures (5.2.1.21)

13 Biennial status report and provisional agenda for SDC 5

14 Election of Chair and Vice-Chair for 2018

15 Any other business

16 Report to the Maritime Safety Committee
PROVISIONAL AGENDA FOR SSE 4

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III (5.2.1.10)

4 Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory (5.1.2.1)

5 Uniform implementation of paragraph 6.1.1.3 of the LSA Code (5.2.1.28)

6 Review the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1 (5.2.1.14)

7 Amendments to the FSS Code for CO₂ pipelines in under-deck passageways (5.2.1.27)

8 Requirements for onboard lifting appliances and winches (5.2.1.22)

9 Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645) (5.2.1.11)

10 Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments (5.1.2.4)

11 Revised SOLAS regulations II-1/13 and II-1/13-1 and other related regulations for new ships (5.2.1.5)

12 Unified interpretation of provisions of IMO safety, security, and environment-related conventions (1.1.2.3)

13 Review SOLAS chapter II-2 and associated codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships

14 Develop new requirements for ventilation of survival crafts*

15 Consequential work related to the new Polar Code (5.2.1.15)

16 Biennial status report and provisional agenda for SSE 5

17 Election of Chair and Vice-Chair for 2018

18 Any other business

19 Report to the Maritime Safety Committee

***

* Output number to be decided by the Council.
## ANNEX 24

### REPORT ON THE STATUS OF PLANNED OUTPUTS FOR THE 2016-2017 BIENNium

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1</td>
<td>Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance</td>
<td>2017</td>
<td>Assembly</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td>Council</td>
<td></td>
<td></td>
<td>C 116/D, paragraph 15(a)</td>
</tr>
<tr>
<td>1.1.2.1</td>
<td>Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance</td>
<td>2017</td>
<td>Assembly</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td>Council</td>
<td></td>
<td></td>
<td>C 116/D, paragraphs 15 (b) and 15 (c)</td>
</tr>
<tr>
<td>1.1.2.2</td>
<td>Response to matters related to the Radiocommunication ITU R Study Group and ITU World Radiocommunication Conference</td>
<td>Annual</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 97/22, paragraph 7.6</td>
</tr>
<tr>
<td>1.1.2.3</td>
<td>Unified interpretation of provisions of IMO safety, security, and environment-related Conventions</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>III / PPR / CCC / SDC / SSE / NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 78/26, paragraph 22.12</td>
</tr>
</tbody>
</table>

Notes: The Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment-related Conventions.

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.4.1</td>
<td>Amendments to the IAMSAR Manual</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>2.0.1.1</td>
<td>Amendments to the ESP Code</td>
<td>Continuous</td>
<td>MSC</td>
<td>SDC</td>
<td>Ongoing</td>
<td>MSC 91/22, paragraph 19.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.1.5</td>
<td>Amendments to SOLAS regulations II-2/20.2 and II 2/20-1 to clarify the fire safety requirements for cargo spaces containing vehicles with fuel in their tanks for their own propulsion</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td>CCC</td>
<td>In progress</td>
<td>MSC 96/25, paragraph 23.6; MSC 97/22, paragraphs 10.4 and 10.5</td>
<td></td>
</tr>
<tr>
<td>2.0.1.6 (New)</td>
<td>Review the Model Agreement for the authorization of recognized organizations acting on behalf of the Administration (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>III</td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 19.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes: Pending endorsement by C 118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.2.1</td>
<td>Analysis of consolidated audit summary reports</td>
<td>Annual</td>
<td>Assembly</td>
<td>MSC / MEPC / LEG / TCC / III</td>
<td>Council</td>
<td></td>
<td></td>
<td>MEPC 61/24, paragraph 11.14.1; MSC 88/26, paragraph 10.8, C 116/D, agenda item 6</td>
</tr>
<tr>
<td>2.0.3.1</td>
<td>Further development of the provision of global maritime SAR services</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0.3.2</td>
<td>Guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>2.0.3.3</td>
<td>Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079)</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 95/22, paragraph 19.11</td>
</tr>
<tr>
<td>3.4.1.1</td>
<td>Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP</td>
<td>Continuous</td>
<td>TCC</td>
<td>MSC / MEPC / FAL / LEG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5.1.1</td>
<td>Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation</td>
<td>Annual</td>
<td>TCC</td>
<td>MSC / MEPC / FAL / LEG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5.1.2</td>
<td>Input to the ITCP on emerging issues relating to sustainable development and achievement of the MDGs</td>
<td>2017</td>
<td>TCC</td>
<td>MSC / MEPC / FAL / LEG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0.1.3</td>
<td>Endorsed proposals for new outputs for the 2016-2017 biennium as accepted by the Committees</td>
<td>Annual</td>
<td>Council</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td></td>
<td></td>
<td>Completed</td>
<td>C 116/D, paragraph 7.4(i)</td>
</tr>
<tr>
<td>4.0.2.1</td>
<td>Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GiSIS, websites, etc.)</td>
<td>Continuous</td>
<td>Council</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td></td>
<td></td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>4.0.3.1</td>
<td>Development of a new strategic framework for the Organization for 2018-2023</td>
<td>2017</td>
<td>Council</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td></td>
<td></td>
<td></td>
<td>C 116/D, paragraphs 4.3-4.6</td>
</tr>
<tr>
<td>4.0.5.1</td>
<td>Revised guidelines on organization and method of work, as appropriate</td>
<td>2016</td>
<td>Council</td>
<td>MSC / MEPC / FAL / LEG / TCC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>C 116/D, paragraph 4.8; MSC 97/22, paragraph 18.19</td>
</tr>
<tr>
<td>5.1.1.1</td>
<td>Guidelines on safe return to port for passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 81/25, paragraph 23.54; MSC 96/25, paragraph 11.10</td>
</tr>
<tr>
<td>5.1.1.2</td>
<td>Clarification of the requirements in SOLAS chapter II-2 for fire integrity of windows on passenger ships carrying not more than 36 passengers and special purpose ships with more than 60 (but no more than 240) persons on board</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 95/22, paragraph 19.30; MSC 97/22, paragraphs 8.6 and 8.7</td>
</tr>
<tr>
<td>5.1.1.3</td>
<td>Amendments to SOLAS and FSS Code to make evacuation analysis mandatory for new passenger ships and review of the Recommendation on evacuation analysis for new and existing passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 83/28, paragraph 25.25; MSC 93/22, paragraph 20.11; MSC 96/25, paragraph 11.13; MSC 96/25, paragraph 11.15</td>
</tr>
</tbody>
</table>

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.25).
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1.4</td>
<td>Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002)</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 90/28, paragraph 25.12; MSC 97/22, paragraph 8.2</td>
</tr>
<tr>
<td>5.1.1.5</td>
<td>Passenger ship safety</td>
<td>2017</td>
<td>MSC</td>
<td></td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 96/25, paragraph 6.6</td>
</tr>
<tr>
<td>5.1.1.6</td>
<td>Amendments to SOLAS chapter II-1 and associated guidelines on damage control drills for passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SDC</td>
<td>Completed</td>
<td></td>
<td>MSC 93/22, paragraphs 6.28.4, 20.5 and 20.14; MSC 97/22, paragraphs 3.11 and 3.23</td>
</tr>
<tr>
<td>5.1.2.1</td>
<td>Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 95/22, paragraphs 12.36 and 19.29; MSC 96/25, paragraphs 3.82 and 3.86</td>
</tr>
</tbody>
</table>

Notes: Target completion year extended to 2017 (MSC 96/25, paragraphs 8.15 and 23.34).

| 5.1.2.2       | Measures to protect the safety of persons rescued at sea                     | 2017                   | MSC / FAL        | III                 | NCSR                  | In progress                |                             | MSC 96/25, paragraph 14.11                              |
| 5.1.2.3       | IMO's contribution to addressing Unsafe Mixed Migration by Sea               | 2017                   | MSC / FAL / LEG   |                     |                       |                           |                             |                                                   |
| 5.1.2.4       | Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments | 2016                   | MSC             | HTW                 | SSE                   | Extended                   |                             | MSC 94/21, paragraph 18.24                              |

Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).
### Output number | Description | Target completion year | Parent organ(s) | Associated organ(s) | Coordinating organ(s) | Status of output for Year 1 | Status of output for Year 2 | References |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.2.5 (New)</td>
<td>Develop new requirements for ventilation of survival crafts (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 19.22</td>
</tr>
<tr>
<td><strong>Notes:</strong> Pending endorsement by C 118</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.1</td>
<td>Revised SOLAS regulation II-1/3-8 and associated guidelines (MSC.1/Circ.1175) and new guidelines for safe mooring operations for all ships</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SSE</td>
<td>SDC</td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraph 19.22;</td>
</tr>
<tr>
<td>5.2.1.2</td>
<td>Ammendments to the IGF Code and development of guidelines for low-flashpoint fuels</td>
<td>2016</td>
<td>MSC</td>
<td>HTW / PPR / SDC / SSE</td>
<td>CCC</td>
<td></td>
<td></td>
<td>MSC 94/21, paragraphs 18.5 and 18.6; MSC 96/25, paragraphs 10.1 to 10.3</td>
</tr>
<tr>
<td><strong>Notes:</strong> MSC 97 approved the request of CCC 3 to extend the target completion year to 2017 (MSC 97/22, paragraph 19.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.3</td>
<td>Revision of requirements for automatic sprinkler systems</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.4</td>
<td>Mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraphs 10.13 and 19.25; MSC 96/25, paragraphs 7.10 and 7.12; MSC 97/22, paragraphs 6.22 to 6.25</td>
</tr>
<tr>
<td>5.2.1.5</td>
<td>Revised SOLAS regulations II-1/13 and II-1/13-1 and other related regulations for new ships</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>SSE</td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraphs 19.20 and 19.32</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>5.2.1.6</td>
<td>Revision of section 3 of the Guidelines for damage control plans and information to the master (MSC.1/Circ.1245) for passenger ships</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 93/22, paragraphs 6.28 and 20.15</td>
</tr>
<tr>
<td>5.2.1.7</td>
<td>Computerized stability support for the master in case of flooding for existing passenger ships</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 94/21, paragraph 18.20</td>
</tr>
<tr>
<td></td>
<td>Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.25).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.8</td>
<td>Review of flashpoint requirements for oil fuel in SOLAS chapter II-2</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.9</td>
<td>Safety requirements for carriage of liquefied hydrogen in bulk</td>
<td>2016</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 94/21, paragraph 18.3; MSC 97/22, paragraph 10.2</td>
</tr>
<tr>
<td>5.2.1.10</td>
<td>Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 82/24, paragraph 3.92</td>
</tr>
<tr>
<td>5.2.1.11</td>
<td>Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645)</td>
<td>2016</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 90/28, paragraph 25.35</td>
</tr>
<tr>
<td></td>
<td>Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>5.2.1.12</td>
<td>Finalization of second generation intact stability criteria (2019)</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>In progress</td>
<td>MSC 85/26, paragraphs 12.7 and 23.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.13</td>
<td>Amendments to SOLAS regulations II-1/6 and II-1/8-1</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td>In progress</td>
<td>MSC 85/26, paragraph 23.35; MSC 97/22, paragraph 3.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.14</td>
<td>Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>SSE</td>
<td>Extended</td>
<td>MSC 93/22, paragraph 20.17</td>
<td></td>
</tr>
<tr>
<td>Notes: Target completion year extended to 2017 (MSC 96/25, paragraph 23.34).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.15</td>
<td>Consequential work related to the new Code for ships operating in polar waters</td>
<td>2017</td>
<td>MSC / MEPC</td>
<td>NCSR / PPR / SSE</td>
<td>SDC</td>
<td>In progress</td>
<td>MSC 93/22, paragraphs 10.44, 10.50 and 20.12; MSC 96/25, paragraph 3.77</td>
<td></td>
</tr>
<tr>
<td>5.2.1.16</td>
<td>Finalization of a non-mandatory instrument on regulations for non-convention ships</td>
<td>2017</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.17</td>
<td>Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td></td>
<td>MEPC 68/21, paragraphs 14.5 and 14.6</td>
<td></td>
</tr>
<tr>
<td>5.2.1.19</td>
<td>[output deleted by MSC 96]</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td>Completed</td>
<td>MSC 96/25, paragraph 7.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.2.1.20</td>
<td>Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td>MEPC 64/23, paragraph 11.49; MSC 91/22, paragraph 10.30; MEPC 52/24, paragraph 10.15</td>
</tr>
<tr>
<td>5.2.1.21</td>
<td>Guidelines for use of Fibre Reinforced Plastics (FRP) within ship structures</td>
<td>2017</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 95/22, paragraph 10.16</td>
</tr>
<tr>
<td>5.2.1.22</td>
<td>Requirements for onboard lifting appliances and winches</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 89/25, paragraph 22.26</td>
</tr>
<tr>
<td>5.2.1.23</td>
<td>Guidelines for wing-in-ground craft</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td>Postponed</td>
<td></td>
<td>MSC 88/26, paragraph 23.30, MSC 96/25, paragraph 23.25</td>
</tr>
<tr>
<td></td>
<td>Notes: Output moved to the post-biennial agenda by MSC 96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.1.24</td>
<td>Amendments to Part B of the 2008 IS Code on towing, lifting and anchor handling operations</td>
<td>2016</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 88/26, paragraph 23.36; MSC 97/22, paragraphs 3.88 and 3.89</td>
</tr>
<tr>
<td>5.2.1.25</td>
<td>Amendments to the requirements for foam-type fire extinguishers in SOLAS regulation II 2/10.5</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# MARITIME SAFETY COMMITTEE (MSC)

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1.26</td>
<td>Suitability of high manganese austenitic steel for cryogenic service and development of any necessary amendments to the IGC Code and IGF Code</td>
<td>2017</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 23.4</td>
</tr>
<tr>
<td>5.2.1.27</td>
<td>Amendments to the FSS Code for CO2 pipelines in under-deck passageways</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 23.26</td>
</tr>
<tr>
<td>5.2.1.28</td>
<td>Uniform implementation of paragraph 6.1.1.3 of the LSA Code</td>
<td>2017</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 23.28</td>
</tr>
<tr>
<td>5.2.1.29</td>
<td>Review SOLAS chapter II-2 and associated codes to minimize the incidence and consequences of fires on ro-ro spaces and special category spaces of new and existing ro-ro passenger ships (2019)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW / SDC</td>
<td>SSE</td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 19.19</td>
</tr>
<tr>
<td>(New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Pending endorsement by C 118

<p>| 5.2.2.1      | Guidance for the implementation of the 2010 Manila Amendments               | 2017                   | MSC             | HTW                 |                       |                             |                             |                                  |
| 5.2.2.2      | Review of STCW passenger ship-specific safety training                      | 2016                   | MSC             | HTW                 |                       | Completed                   |                             | MSC 96/25, paragraph 12.5      |
| 5.2.2.3      | Validated model training courses                                           | Continuous             | MSC             | HTW                 |                       |                             |                             |                                  |
| 5.2.2.4      | Reports on unlawful practices associated with certificates of competency   | Annual                  | MSC             | HTW                 |                       |                             |                             |                                  |</p>
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.2.5</td>
<td>Reports to the MSC on information communicated by STCW Parties</td>
<td>Annual</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.2.6</td>
<td>Guidelines for shipowners and seafarers for implementation of relevant IMO instruments in relation to the carriage of dangerous goods in packaged form by sea</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.3.1</td>
<td>Amendments to CSC 1972 and associated circulars</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.3.2</td>
<td>Revised Guidelines for packing of cargo transport units</td>
<td>2016</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.3.3</td>
<td>Amendments to the IMSBC Code and supplements</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>CCC</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 86/26, paragraph 7.2</td>
</tr>
<tr>
<td>5.2.3.4</td>
<td>Amendments to the IMDG Code and supplements</td>
<td>Continuous</td>
<td>MSC</td>
<td>CCC</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 75/24, paragraph 7.36</td>
</tr>
<tr>
<td>5.2.4.1</td>
<td>Routeing measures and mandatory ship reporting systems</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 96/25, paragraphs 14.2 to 14.5</td>
</tr>
<tr>
<td>5.2.4.2</td>
<td>Updates to the LRIT system</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 97/22, paragraph 7.3</td>
</tr>
<tr>
<td>5.2.4.3</td>
<td>Amendment to the General Provisions on 'Ships' Routeing (resolution A.572(14)) on establishing multiple structures at sea</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Completed</td>
<td></td>
<td>resolution MSC.419(97)</td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>5.2.4.4</td>
<td>Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 96/25, paragraph 23.22</td>
</tr>
<tr>
<td></td>
<td><strong>Notes:</strong> Extended to 2017, to wait for the outcome of outputs 5.2.6.1 and 5.2.6.2 before concluding or finalizing this output.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.4.5</td>
<td>Guidelines associated with multi-system shipborne radionavigation receivers dealing with the harmonized provision of PNT data and integrity information</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.4.6</td>
<td>Recognition of Galileo as a component of the WWRNS</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Completed</td>
<td></td>
<td>MSC 96/25, paragraph 14.6</td>
</tr>
<tr>
<td>5.2.5.1</td>
<td>Updating of the GMDSS Master Plan and guidelines on MSI (maritime safety information)</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 97/22, paragraphs 7.4 and 7.5</td>
</tr>
<tr>
<td>5.2.5.2</td>
<td>Completion of the detailed review of the Global Maritime Distress and Safety System (GMDSS)</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>Completed</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
<tr>
<td>5.2.5.3</td>
<td>Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (2018)</td>
<td>2017</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>In progress</td>
<td></td>
<td>MSC 90/28, paragraph 25.18; MSC 96/25, paragraph 14.9</td>
</tr>
</tbody>
</table>

**Notes:** MSC 96 approved the outcome of the GMDSS Review (output 5.2.5.2) and the continuation of the project in developing the Modernization Plan (this output)
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.5.4</td>
<td>Developments in GMDSS satellite services</td>
<td>Continuous</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Ongoing</td>
<td></td>
<td>MSC 96/25, paragraph 14.17</td>
</tr>
<tr>
<td></td>
<td>Notes: Description changed from &quot;Analysis of information on developments in Inmarsat and Cospas-Sarsat&quot; to &quot;Developments in GMDSS satellite services&quot;.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.5.5</td>
<td>Revised Performance Standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second-generation beacons</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 96/25, paragraph 14.8</td>
</tr>
<tr>
<td>5.2.5.6</td>
<td>Performance Standards for ship-borne GMDSS equipment to accommodate additional providers of GMDSS satellite services</td>
<td>2016</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>Extended</td>
<td></td>
<td>MSC 96/25, paragraph 14.8</td>
</tr>
<tr>
<td></td>
<td>Notes: Extended to 2017, since the performance standards could not be finalized in 1 session.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.5.7</td>
<td>Analysis of developments in maritime radiocommunication systems and technology</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>In progress</td>
<td></td>
<td>MSC 96/25, paragraph 14.7</td>
</tr>
<tr>
<td>5.2.5.8</td>
<td>Review SOLAS chapter IV and appendix (Certificates: Forms P, R and C) to accommodate additional mobile satellite systems</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td>MSC 96/25 paragraph 23.18</td>
</tr>
<tr>
<td>5.2.6.1</td>
<td>Additional modules to the Revised Performance Standards for Integrated Navigation Systems (INS) (resolution MSC.252(83) relating to the harmonization of bridge design and display of information</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.2.6.2</td>
<td>Guidelines for the harmonized display of navigation information received via communications equipment</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.6.3</td>
<td>Revised Guidelines and criteria for ship reporting systems (resolution MSC.43(64))</td>
<td>2017</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3.1.1</td>
<td>Measures to harmonize port State control (PSC) activities and procedures worldwide</td>
<td>Continuous</td>
<td>MSC / MEPC</td>
<td>HTW / PPR / NCSR</td>
<td>III</td>
<td></td>
<td></td>
<td>MEPC 66/21, paragraph 18.8; MSC 94/21, paragraph 18.2.1; MEPC 68/21, paragraph 17.3; MEPC 70/18, paragraph 15.20; MSC 97/22, paragraph 19.8</td>
</tr>
</tbody>
</table>

Notes: MEPC 70 and MSC 97 agreed to amend the output to reflect the coordinating role of III and to add PPR, NCS and HTW as associated organs.

<p>| 5.4.1.1       | Comprehensive review of the 1995 STCW-F Convention (2018)                    | 2017                   | MSC             | HTW                 |                       |                          |                           |                                                                           |
| 5.4.1.2       | Revision of the Guidelines on Fatigue                                       | 2017                   | MSC             | HTW                 |                       |                          |                           |                                                                           |
| 6.1.1.1       | Guidelines and guidance on the implementation and interpretation of SOLAS chapter XI-2 and the ISPS Code | Annual                 | MSC             |                     |                       |                          |                           |                                                                           |</p>
<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.1.1</td>
<td>Consideration and analysis of reports on piracy and armed robbery against ships</td>
<td>Annual</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2.1.2</td>
<td>Revised guidance relating to the prevention of piracy and armed robbery to reflect emerging trends and behaviour patterns</td>
<td>Annual</td>
<td>MSC</td>
<td></td>
<td>LEG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1.2.3</td>
<td>Code for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels</td>
<td>2017</td>
<td>MSC / MEPC</td>
<td>SDC / SSE</td>
<td>PPR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0.2.1</td>
<td>Consideration and analysis of reports and information on persons rescued at sea and stowaways</td>
<td>Annual</td>
<td>MSC / FAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0.3.1</td>
<td>Requirements for access to, or electronic versions of, certificates and documents, including record books required to be carried on ships</td>
<td>2017</td>
<td>FAL</td>
<td>MSC / MEPC / LEG / III</td>
<td></td>
<td></td>
<td></td>
<td>FAL.5/Circ.39/Rev.2; FAL 40/19, paragraphs 6.18 to 6.21; MEPC 68/21, paragraphs 13.2 and 17.26</td>
</tr>
</tbody>
</table>

Notes: FAL 40 completed the output

<table>
<thead>
<tr>
<th>Output number</th>
<th>Description</th>
<th>Target completion year</th>
<th>Parent organ(s)</th>
<th>Associated organ(s)</th>
<th>Coordinating organ(s)</th>
<th>Status of output for Year 1</th>
<th>Status of output for Year 2</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0.1.1</td>
<td>Verified goal-based new ship construction standards for tankers and bulk carriers</td>
<td>Continuous</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0.1.2</td>
<td>Consideration of development of goal-based ship construction standards for all ship types</td>
<td>2017</td>
<td>MSC / MEPC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output number</td>
<td>Description</td>
<td>Target completion year</td>
<td>Parent organ(s)</td>
<td>Associated organ(s)</td>
<td>Coordinating organ(s)</td>
<td>Status of output for Year 1</td>
<td>Status of output for Year 2</td>
<td>References</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
<td>---------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>12.1.1.1</td>
<td>Review of FSA studies by the FSA Experts’ Group</td>
<td>Continuous</td>
<td>MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSC 92/26, paragraph 22.29</td>
</tr>
<tr>
<td>12.1.2.1</td>
<td>Lessons learned and safety issues identified from the analysis of marine safety investigation reports</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.1.2.2</td>
<td>Identified issues relating to the implementation of IMO instruments from the analysis of PSC data</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.2.1.1</td>
<td>Revised Guidelines on the Implementation of the ISM Code by Administrations (resolution A.1071(28)) on training audits</td>
<td>2016</td>
<td>MSC</td>
<td>HTW</td>
<td></td>
<td>Completed</td>
<td>MSC 95/22, paragraph 19.5; MSC 96/25, paragraph 12.4</td>
<td></td>
</tr>
<tr>
<td>12.3.1.1</td>
<td>Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</td>
<td>Annual</td>
<td>MSC / MEPC</td>
<td>III</td>
<td>CCC</td>
<td></td>
<td>MSC 79/23, paragraph 12.7</td>
<td></td>
</tr>
<tr>
<td>14.0.1.1</td>
<td>Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR</td>
<td>2017</td>
<td>Council</td>
<td>III / HTW / PPR / CCC / SDC / SSE / NCSR</td>
<td>MSC / MEPC / FAL / LEG</td>
<td>In progress</td>
<td>MSC 96/25, paragraphs 19.4.5, 19.4.9 and 19.4.10</td>
<td></td>
</tr>
</tbody>
</table>
# ANNEX 25

**POST-BIENNIAL AGENDA OF THE MARITIME SAFETY COMMITTEE**

<table>
<thead>
<tr>
<th>Number</th>
<th>Biennium (when the output was placed on the post-biennial agenda)</th>
<th>Reference to High-level Actions</th>
<th>Description</th>
<th>Parent organ(s)</th>
<th>Associated organs(s)</th>
<th>Coordinating organ(s)</th>
<th>Timescale (sessions)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>2012-2013</td>
<td>2.0.1</td>
<td>Mandatory application of the Performance standard for protective coatings for void spaces on bulk carriers and oil tankers</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>2</td>
<td>MSC 76/23, paragraphs 20.41.2 and 20.48; DE 50/27, section 4</td>
</tr>
<tr>
<td>8</td>
<td>2012-2013</td>
<td>2.0.1</td>
<td>Performance standard for protective coatings for void spaces on all types of ships</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>2</td>
<td>MSC 76/23, paragraphs 20.41.2 and 20.48</td>
</tr>
<tr>
<td>9</td>
<td>2012-2013</td>
<td>2.0.1</td>
<td>Revision of the provisions for helicopter facilities in SOLAS and the MODU Code</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>2</td>
<td>MSC 86/26, paragraph 23.39</td>
</tr>
<tr>
<td>129</td>
<td>2016-2017</td>
<td>5.2.1</td>
<td>Guidelines for wing-in-ground craft</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>2</td>
<td>MSC 88/26, paragraph 23.30; MSC 96/25, paragraph 23.25</td>
</tr>
<tr>
<td>Number</td>
<td>Biennium (when the output was placed on the post-biennial agenda)</td>
<td>Reference to High-level Actions</td>
<td>Description</td>
<td>Parent organ(s)</td>
<td>Associated organs(s)</td>
<td>Coordinating organ(s)</td>
<td>Timescale (sessions)</td>
<td>References</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>-----------------------</td>
<td>------------</td>
</tr>
<tr>
<td>130</td>
<td>2016-2017</td>
<td>5.2.1</td>
<td>Review SOLAS chapter II-1, parts B-2 to B-4, to ensure consistency with parts B and B-1 with regard to watertight integrity</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>3</td>
<td>MSC 96/25, paragraph 23.23</td>
</tr>
<tr>
<td>42</td>
<td>2012-2013</td>
<td>5.2.1</td>
<td>Review of the 2009 Code on Alerts and Indicators</td>
<td>MSC</td>
<td>NCSR</td>
<td>SDC</td>
<td>2</td>
<td>MSC 89/25, paragraph 22.25</td>
</tr>
<tr>
<td>65</td>
<td>2012-2013</td>
<td>5.2.1</td>
<td>Application of amendments to SOLAS and related codes and guidelines</td>
<td>MSC</td>
<td></td>
<td>SDC</td>
<td>2</td>
<td>MSC 91/22, paragraphs 3.16 to 3.35</td>
</tr>
<tr>
<td>76</td>
<td>2014-2015</td>
<td>5.2.1</td>
<td>Application of the Mandatory Code to non-SOLAS ships operating in polar waters</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>3</td>
<td>Output 5.2.1.15</td>
</tr>
<tr>
<td>90</td>
<td>2014-2015</td>
<td>5.2.1</td>
<td>Amendments to the LSA Code for thermal performance of immersion suits</td>
<td>MSC</td>
<td>SSE</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Biennium (when the output was placed on the post-biennial agenda)</td>
<td>Reference to High-level Actions</td>
<td>Description</td>
<td>Parent organ(s)</td>
<td>Associated organs(s)</td>
<td>Coordinating organ(s)</td>
<td>Timescale (sessions)</td>
<td>References</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>------------</td>
</tr>
<tr>
<td>131</td>
<td>2016-2017</td>
<td>5.2.4</td>
<td>Application of the 'Indian Regional Navigation Satellite System (IRNSS)' in the maritime field and development of performance standards for shipborne IRNSS receiver equipment</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>2</td>
<td>MSC 96/25, paragraph 23.17</td>
</tr>
<tr>
<td>32</td>
<td>2012-2013</td>
<td>5.2.4</td>
<td>Recommendations related to navigational sonar on crude oil tankers</td>
<td>MSC</td>
<td>SDC</td>
<td></td>
<td>1</td>
<td>MSC 91/22, paragraph 19.23</td>
</tr>
<tr>
<td>38</td>
<td>2012-2013</td>
<td>5.2.5</td>
<td>Approval of the modernization plan of the Global Maritime Distress and Safety System (GMDSS)</td>
<td>MSC</td>
<td>HTW</td>
<td>NCSR</td>
<td>2</td>
<td>MSC 90/28, paragraph 25.18; MSC 94/21, paragraph 9.26</td>
</tr>
<tr>
<td>111</td>
<td>2014-2015</td>
<td>5.2.6</td>
<td>Guidelines on standardized modes of operation, S-mode</td>
<td>MSC</td>
<td>NCSR</td>
<td></td>
<td>2</td>
<td>MSC 95/22, paragraph 19.12.1</td>
</tr>
<tr>
<td>Number</td>
<td>Biennium (when the output was placed on the post-biennial agenda)</td>
<td>Reference to High-level Actions</td>
<td>Description</td>
<td>Parent organ(s)</td>
<td>Associated organs(s)</td>
<td>Coordinating organ(s)</td>
<td>Timescale (sessions)</td>
<td>References</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>-----------------</td>
<td>--------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>------------</td>
</tr>
<tr>
<td>112</td>
<td>2014-2015</td>
<td>5.2.6</td>
<td>Revised 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)) relating to Built-In Integrity Testing (BIIT) for navigation equipment</td>
<td>MSC</td>
<td>NCSR</td>
<td>2</td>
<td></td>
<td>MSC 95/22, paragraph 19.12.4</td>
</tr>
<tr>
<td>132</td>
<td>2016-2017</td>
<td>5.2.6</td>
<td>Develop guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)</td>
<td>MSC</td>
<td>NCSR</td>
<td>2</td>
<td></td>
<td>MSC 96/25, paragraph 23.14</td>
</tr>
</tbody>
</table>

***
ANNEX 26

DRAFT AMENDMENTS TO SOLAS FORMS E, C AND P

APPENDIX
CERTIFICATES

RECORD OF EQUIPMENT FOR PASSENGER SHIP SAFETY (FORM P)

1 In part 5, the existing item 3.1 is replaced by the following:

3.1 Receiver for a global navigation satellite system/terrestrial radionavigation system/multi-system shipborne radionavigation receiver

RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM E)

2 In part 3, the existing item 3.1 is replaced by the following:

3.1 Receiver for a global navigation satellite system/terrestrial radionavigation system/multi-system shipborne radionavigation receiver

RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM C)

3 In part 5, the existing item 3.1 is replaced by the following:

3.1 Receiver for a global navigation satellite system/terrestrial radionavigation system/multi-system shipborne radionavigation receiver

***

* Tracked changes are created using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.
ANNEX 27

STATEMENTS BY DELEGATIONS AND OBSERVERS

AGENDA ITEM 4

Statement by the delegation of Ukraine

"On behalf of co-sponsors, we’re pleased to introduce document MSC 97/4/2.

Georgia and Ukraine attach high importance to the safety and security of navigation in the Black Sea region and the protection of the marine environment.

However, due to continued illegal actions of the Russian Federation, Georgian and Ukrainian authorities are unable to exercise their coastal State rights and carry out their international obligations regarding provision of safety and security of navigation in the North-Eastern part of the Black Sea.

As a result, the safety and security of navigation in the area have been severely compromised. North-Eastern part of the Black Sea has literally turned into a "grey area" for international shipping.

Given the significant uncertainty of this situation and its possibly dangerous implications for the safety and security of navigation, it would be in the interest of all flag States to address the above-mentioned issue and produce clear safety and security guidance to ships operating in the area.

Mr. Chair, against this background the allegations raised by the Russian Federation in document MSC 97/4/3 as to politicizing the work of the Organization are obviously groundless. Are there any political considerations behind the problems with navigational and hydrographic support of navigation in the Strait of Kerch?

Is there any political factor in preventing serious marine casualties or marine pollution?

Let me just give you a few examples of the outcomes of Russia's illegal activity in the North-Eastern part of the Black Sea:

- on 30 October 2014 the railway ferry "Petrovsk" collided with the oil tanker "Sudak";
- on 7 October 2015 while attempting to tow a boat "Rumb" it capsized in the Strait of Kerch. Two crew members died;
- on 19 March 2016 the Turkish cargo vessel "Lira" collided in the Kerch Strait with a bridge pillar, which is being constructed unlawfully by the Russian Federation;
- on 8 May 2016 a large number of fuel oil was noticed from one of the vessels in waters and on land surface near the village of Lyubimovka which is the water area of Russian-occupied Sevastopol. Local media reported severe coast and water pollution;

* Statements have been included in this annex in the order in which they are listed in the report, sorted by agenda items, and in the language of submission (including translation into any other language if such translation was provided).
- on 12 October 2016 three people died aboard floating crane that sank 4 kilometres off the coast near the city of Yalta, again during towing. One of the tugboat stalled in the course of search and rescue operation. Head of the so-called “Marine Rescue Service” in Crimea was taken into custody and charged with a violation of safety rules;

- on 12 November 2016 a boat "Rostulov" capsized off the coast of Sevastopol. One person is considered to be missing as a result of the casualty.

‘Who’s going to be responsible for the death of innocent people?

No doubt these questions are rhetoric ones.

Therefore, the Russian Federation's interpretation of the draft resolution as political in nature and its request that the Committee should reject it on that ground is entirely unfounded.

As it has already been mentioned, the draft resolution is aimed at addressing a series of threats to the safety and security of navigation in the North-Eastern part of the Black Sea arising from actions taken by the Russian Federation in violation of international law. Apart from that, the Committee has an obligation to deal with threats to the safety and security of navigation no matter from what cause they arise.

The Russian Federation is also wrong to suggest that the subject matter of the draft resolution lies outside the mandate of the Maritime Safety Committee and the IMO Assembly because it relates to a dispute concerning sovereignty over the Crimean peninsula. No bona fide territorial dispute can arise from an illegal act of aggression and no member of the IMO may recognize as lawful a situation created by a serious breach of an obligation arising under a peremptory norm of general international law. A decision by the Committee to refrain from exercising its competence for the reason advanced by the Russian Federation would contravene these fundamental principles.

Distinguished delegates,

Aggressive actions of the Russian Federation that affect Georgia and Ukraine's ability to effectively fulfil obligations under IMO Conventions on part of their sovereign territory have to be addressed by IMO also in order to prevent possible occurrence of marine casualties and incidents in the region.

The IMO has within its mandate to make trade and travel by sea as safe and secure as possible. To manage and mitigate any threats with the potential to compromise maritime security, the Organization develops suitable regulations and guidance through the Maritime Safety Committee.

In conclusion, taking into account the leading role of the International Maritime Organization in promoting the navigation safety, the co-sponsors believe that the most appropriate way forward would be to consider all suggestions to the proposed draft Assembly resolution at the Working Group on Maritime Security with the aim of presenting the consolidated text for deliberation at future sessions of the Committee."
Statement by the delegation of the Russian Federation

"First of all we would like to remind you that in May of this year the Committee rejected a similar draft Assembly resolution submitted by Ukraine. Then the decision taken by the Committee was that our Organization cannot discuss the matter approached therein since it goes outside the purview of its competence. Notwithstanding this decision for this Committee session again a draft resolution has been put forward on the very same issue. However, this time the sponsors (two) of the draft go even further adding to it another politicized issue relating to shipping in the maritime area of Abkhazia. This is a completely different issue, Mr. Chair. We would like to recall that the Republic of Abkhazia proclaimed its independence in the first half of the 1990s. Russia recognized it as an independent State in 2008. The recognition was also carried out by number of other states including members of International Maritime Organization. We consider that our Organization is not at all entitled to consider that issue even regardless of the fact that Abkhazia is not a universally recognized State.

Ladies and Gentlemen, we get the impression that we are dealing with persistent attempts to politicize the work of the Organization and to use its forum to suit 'one's own interests which have nothing to do with the statutory goals and tasks of the IMO. Such actions in our opinion undermine the foundations of the Organization and inevitably lead to blurring of its mandate as an exclusively technical body which is enshrined in Article 1 of the IMO Convention.

We are sure of the need for joint actions by Member States to confront these attempts so that we do not allow the setting of a dangerous precedent, Mr. Chair, one which may disrupt the stable and consistent work of our Organization. We feel that accepting for discussion the proposed draft resolution will open up the so called «Pandora's box» with completely unpredictable consequences for the Organization.

From our part we again reaffirm that as Flag and Port State the Russian Federation is fulfilling its obligations under the IMO conventions throughout its territory in good faith. Accordingly in Russia we have a comprehensive system of ensuring safety and security of navigation as well as the protection of marine environment from pollution. This includes, inter alia, vessel traffic systems (VTS), State Port Control, GMDSS, ship-to- ship communication and automatic identification, LRIT, navigational and hydrographic support, search and rescue measures. In comparison with the recent past the level of maritime safety and security in Crimea and adjacent areas has been significantly enhanced. Today its ports meet modern-day standards for safety and security both in technical terms and with respect to the relevant measures. The ports are equipped with the port facility security plans, as required by Chapter XI-2 of the SOLAS Convention and the ISPS Code, and are opened for calling by all vessels. Taking this into account we see no grounds for raising the question of safety and security of Crimea’s ports and the sea area of the peninsular, especially when this is done by means of the allegations which are not underpinned by facts. The accidents listed by the Ukrainian colleague are within the customary ship practice. Nothing extraordinary happened in those cases.

Regarding to the submitted draft Assembly resolution, we are indeed seeing certain changes in comparison with the similar document submitted to the previous session of the Committee. At the same time the essence of the draft resolution has remained the same. To bring this under the IMO mandate an attempt was made to portray the subject matter of the draft resolution as one of the safety and security of shipping. But this is not at all the case.

The document continues to contain a whole range of political anti-Russian statements. It appears from its content that in the maritime areas adjacent to Crimea Russia is illegally exercising its rights as a coastal State, as well as its rights and obligations under the IMO conventions, thereby preventing Ukraine from implementing its corresponding rights.

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
It is obvious that in this manner Ukraine is using IMO as a tool in disputing the Russian sovereignty over the Crimean peninsula and, consequently, the legitimacy of the Russian Federation exercising sovereignty and jurisdiction over adjacent maritime areas. However, this Organization is in no way entitled to determine such sovereignty and legitimacy.

The central provision in the draft resolution is an appeal to the Member States – not to recognize any activities that would affect Georgia and Ukraine's ability effectively exercise rights and obligations under the IMO conventions. In addition to a very vague nature of this provision which does not make possible to establish its actual meaning, it is not within the competence of IMO as well since it is directed at the adoption of certain measures which are in an area of recognition of states and not declared guarantying of safety of the navigation. We view this appeal as a proposal to actually ignore the maritime safety and security measures adopted by Russia in the maritime areas of Crimea.

Such an appeal in its essence runs directly counter to the objectives of IMO. If such a resolution would be adopted it may lead to serious violations in the field of maritime safety since apart of the Russian Federation no one is able to guaranty safety in those areas.

Besides multiple violations of material norms and standards the draft resolution again has been submitted in the way that violates applicable procedural requirements.

Firstly, as it is clear from the document itself it has been submitted after deadline established for such documents. We would be grateful to the Secretariat if it could make comments thereupon.

Moreover we again draw the Committee's attention to the fact that the document patently falls outside High-level action plan of the Organization. The output mentioned therein 6.1.1.1 "Guidelines and guidance on the implementation and interpretation of SOLAS chapter XI-2 and the ISPS Code" has nothing to do with the subject matter and the purpose of the draft resolution.

I feel that all what I have said is sufficient for the states objectively assessing the draft resolution to come to a firm and accurate understanding of its unacceptability."

Statement by the delegation of the Georgia

"Today the North-Eastern part of the Black Sea is a "grey zone" for international shipping due to severely compromised safety and security of navigation.

Presented draft Resolution "Safety and security of navigation in the North-Eastern part of the Black Sea", which Georgia has submitted together with Ukraine reflects the threats to safety and security of navigation in maritime areas adjacent to Georgian region of Abkhazia and the Autonomous Republic of Crimea, Ukraine.

We believe, that despite the comments made by previous delegation there is no need to remind Member States that Abkhazia is a part of Georgia and Crimea is a part of Ukraine as territories of internationally recognized sovereign states. Moreover Abkhazia is a part of the IMO conventions, as it is part of Georgia. However, due to the foreign occupation, our authorities are deprived of the possibility to exercise control of these territories including navigation.
Georgia is highly committed to the development of the South Caucasus transportation corridor to facilitate global trade and economic growth. Together with our partners we are introducing modern customs systems, modernizing railroads and highways, developing port infrastructure for better flow of global cargo. Therefore, safety and security of navigation is a critical part of the endeavour.

We believe, it is our obligation to inform member States of this organization and the Secretariat about reality on the ground regarding maritime safety, security and marine environment challenges to generate possible discussions related to safety of international shipping within the Black Sea basin.

This delegation is of the opinion, that every technical issue can be translated into political one if anyone in this room wishes so. However current situation in maritime area adjacent to Abkhazia, Georgia represents the risks to safety and security of navigation. May we kindly remind the distinguished delegates of the various nations in this room that keeping silent on the alternative realities does not serve the interest of this Organization.

The Mission of this Organization as derived from its founding document is to ensure, that so called "black holes" and unregulated issues do not challenge international shipping. Moreover, all UNGA or Security Council resolutions on Georgia and Ukraine calls upon the technical bodies of the UN not to allow/accept any actions that might violate territorial integrity and sovereignty of Georgia and Ukraine. Therefore we consider this Committee appropriate forum, where this draft Resolution should be discussed and further considered within maritime safety working group."

Statement by the delegation of the United States

"The United States thanks the distinguished delegations of Ukraine and Georgia for their paper MSC 9/4/2, and reiterates our concerns about the safety and security of navigation in the Black Sea. The evidence provided by Georgia only heightens the concern we expressed multiple times in this forum.

Russia's occupation and attempted annexation of Crimea was an unprecedented challenge to European and Trans-Atlantic security, necessitating deeper and increased security cooperation, particularly in the Black Sea. Now, with the issues raised by Georgia in this matter, it is evident that Russia's actions have considerable implications for the safety and security of navigation even outside of Ukraine's internationally recognized borders.

The United States joins the international community in once again reaffirming what is the near universal recognition of the reality in Ukraine: Crimea is part of Ukraine. The United States does not recognize and continues to condemn Russia's occupation of Crimea. The United States remains committed to upholding the sovereignty and territorial integrity of Ukraine within its internationally recognized borders.

The United States reminds all Member States that Crimea is an integral part of Ukraine and that Russia's occupation of sovereign Ukrainian territory violates international norms.

Such dangers also exist in Georgia's breakaway region of Abkhazia, where Georgian authorities are denied the ability to ensure safe navigation in the Black Sea.
The United States reiterates its unequivocal support for Georgia’s sovereignty and territorial integrity within its internationally recognized borders, and calls on Russia to fulfill its obligations under the 2008 ceasefire agreement. Russia should withdraw its forces to pre-conflict positions, reverse its recognition of the Georgian regions of Abkhazia and South Ossetia as independent states, and provide free access for humanitarian assistance to these regions.

The United States again condemns Russia’s ratification of a "treaty" with Abkhazia to establish a joint armed force. This agreement does not constitute a valid international agreement, and the United States does not recognize any so-called "treaties" between the de facto leaders of Georgia's breakaway region of Abkhazia and the Russian Federation.

While we agree with the UK that the proposed resolution may not be appropriate for this Committee to undertake, we also agree with the UK’s suggestion to invite member states and interested observers to inform the Secretariat of threats to the safety and security of navigation flowing from this situation."

AGENDA ITEM 6

Statement by the observer from the ILO

"The International Labour Office (ILO) has taken note of the Supplemental legal advice regarding the introduction of mandatory safety standards for the carriage of more than 12 industrial personnel (MSC 97/6). The Office has noted in particular the proposed definition of industrial personnel which refers to "all persons who are not passengers or members of the crew or children under one year of age, and (…)".

While noting that the proposed definition would be adopted for the purpose of the SOLAS Convention, the ILO wishes to draw attention to the need to ensure coherence between international treaties dealing with maritime issues. In this regard, the ILO wishes recall the definition of seafarer contained in Article II (f) of the Maritime Labour Convention, 2006 (MLC, 2006) according to which seafarer "means any person who is employed or engaged or works in any capacity on board a ship to which this Convention applies". Ship is defined as "a ship other than one which navigates exclusively inland waters or waters within, or closely adjacent to, sheltered waters or areas where port regulations apply".

The ILO wishes further to refer to Article II, paragraph 3 of the MLC, 2006, which provides that: "In the event of doubt as to whether any categories of persons are to be regarded as seafarers for the purpose of this Convention, the question shall be determined by the competent authority in each Member after consultation with the shipowners' and seafarers' organization concerned with this question".

In order to ensure uniform implementation of the MLC, 2006, the International Labour Conference adopted in 2006 a Resolution concerning information on occupation groups which establishes a set of criteria that should be considered by competent authorities when resolving doubts about designating a particular category of persons working on board as a seafarer. These include the following:

(i) the duration of the stay on board of the persons concerned;
(ii) the frequency of periods of work spent on board;
(iii) the location of the person's principal place of work;
(iv) the purpose of the person's work on board; and

(v) the protection that would normally be available to the persons concerned with regard to their labour and social conditions to ensure they are comparable to that provided for under the Convention.

The ILO trusts that the Committee members will give due consideration to the points highlighted above and looks forward to the outcome of the Committee's discussions."

**Statement by the delegation of Ireland**

"Ireland would like to thank all the members of the Working Group and in particular the Chair and the Secretariat.

Ireland's concerns, previously expressed at MSC 96 regarding this issue remain.

In relation to the draft MSC Resolution and the Interim Recommendations Ireland continues to have significant concerns relating to the safe carriage of industrial personnel. We do not consider that the draft proposals provide clear guidance on how to deal with vessels engaged on international voyages on an interim basis and that therefore port state control officers and more importantly the persons being transported on these vessels will not have a clear understanding of the standards that have been applied for their safe carriage.

In this regard we note that the draft recommendation refers to the carriage of industrial personnel on-board vessels meeting the provisions of the SPS Code but it is not clear that a vessel undertaking such carriage of industrial personnel requires a certificate. Whereas we recognise such vessels may be small in size, the SPS Code does contain provision for vessels < 500GT to be issued with a certificate and it is our view that this should have been considered in the recommendation.

Likewise whereas these vessels may be often less than 500 GT, they may be carrying quite large numbers of persons on international voyages. The non-application of mandatory maritime security measures of SOLAS and the ISPS Code on the basis that these vessels are not passenger ships is of serious concern and we noted that the industrial personnel themselves will not be required to have any basic security awareness training.

We noted the recommendation offers a definition of offshore industrial activities, but this would seem to this delegation to refer more to domestic non-international voyages undertaken to and from installations within a single State's jurisdiction.

In light of the above, we continue to be of the view that persons being transported to or from their place of work should be considered as passengers, as is the case in other transport modes and that this would also clarify their status on-board in relation to other International Instruments. Therefore we cannot support the draft resolution and recommendations at this time.

Finally, we would request that a copy of our intervention be included in the report of the Committee."

**Statement by the delegation of the United States**

"The United States congratulates the industrial personnel working group and its chair along with the Secretariat staff on the good cooperation, detailed discussions, and spirit of compromise that all participants showed during the group's work.
When the Committee established this working group last session, the United States expressed concern that an interim solution was unnecessary and potentially ineffective. A reason for our statement then was uncertainty associated with any interim solution with respect to the requirements of SOLAS chapter I, given that any interim solution would be recommendatory in nature and would not change Parties' obligations under SOLAS. It is our view that this is the case with the proposed interim solution before us today. Again, we believe that the only viable approach, consistent with sound treaty practice, is to focus the work on bringing a mandatory long-term solution into effect to provide regulatory certainty and global consistency.

That said, we do not intend that our observation interfere with the will of the Committee to adopt the resolution and the Interim Recommendations. The United States is not in a situation to need an interim solution, but we are sympathetic to those who are so situated. The sincere efforts and hard work this week serve us well for the future work. We look forward with great eagerness to the start of this work on the development of a new chapter of SOLAS to address the safety issues associated with offshore industrial personnel.

We would like this statement to be included in the report of the Committee."

**Statement by the delegation of Germany**

"As we have now approved the roadmap for the development of the mandatory solution for the carriage of more than 12 industrial personal, Germany again wants to stress the importance of actually enabling this organization to reach that long term goal as early as possible. This requires firstly, that substantial submissions are made by the members to be discussed in this organization and secondly, that this organization allocates the necessary time to the discussions of this submissions. Being aware of the time constrains within the SDC Subcommittee, we nonetheless believe that it will be necessary to actually discuss this urgent topic in a group at SDC 4. In our experience substantial progress within a correspondence group requires substantial previous considerations."

**AGENDA ITEM 7**

**Statement by the delegation of Japan**

"Taking the opportunity of consideration of the report of NCSR 3, Japan would like raise one issue which is regarding pilot ladders.

According to the 'recommendation on pilot transfer arrangements' (Res. A.1045 (27)), which is referred to in regulation 23 of chapter V of annex to SOLAS, 'the steps of the pilot ladders should be free of knots.'

As steps of pilot ladders are usually made of natural wood, it is not easy to find wood which are completely free of knots. Almost all wood have sound or unsound knots in themselves. Japan considers that small sound knots should be allowed in common sense. However, there could be various implementation by Port State Control Officers based on ununiformed interpretation of the 'free of knots'. Some PSCO could strictly interpret it and carry out PSC on that basis, and thereby serious confusion is caused to relevant entities. In our understanding, this has been happened due to the lack of clear interpretation on 'free of knots'.

https://edocs.imo.org/Final Documents/English/MSC 97-22-ADD.1 (E).docx
In order to prevent such confusion, Japan is of the view that IMO should clarify the meaning of ‘free of knots’. To this end, Japan is preparing submission to NCSR 4 in this regard under the agenda item of Unified interpretation of provisions of IMO safety, security, and environment related Conventions.

This delegation would like to have a record of this intervention in your report of this session."

Statement by the delegation of the Democratic People's Republic of Korea

"Summary of MSC 97/7/5 submitted by DPR Korea to comment on MSC 97/7/3

The Democratic People's Republic of Korea (DPR Korea) would like to comment on document MSC 97/7/3 suggested by the Republic of Korea, Japan, United States and etc.

With regard to our missile launches, those had been conducted based on the scientific calculation of their whole courses, as normal military drills of the Korean People's Army to defend our country and people against the aggressive threats from the United States and the hostile forces.

It is well known that the missile firing exercises had no slight adverse impact not only on neighbouring countries but also on the international navigation order and ecological environment.

In respect to the allegation on jamming GPS by the DPR Korea in the Document, as we have already stated at MSC 96, it has none of foundation and is no value to discuss.

Furthermore, regarding the issue of implementing the relevant UN Security Council Resolutions related to our ballistic missile launches in the Document, the DPR Korea have neither recognised nor accepted it, because the Resolution is wanton violation of the universal international laws, justice and impartiality.

And also, we would like to remind you that in April, far from the IMO's mission, commitment and mandate, the Republic of Korea submitted a letter to IMO to disseminate the IMO Circular Letter No. 3631, in which it is informed that the UN Secretary Council Resolution 2270 calls upon Member States to de-register any DPR Korea owned, operated, or crewed vessel and not to register any such vessel.

In particular, the draft MSC Circular annexed to the Document is blaming the specific Member State by mentioning the name of DPR Korea.

From all the above, it is concluded that the Document MSC 97/7/3 has been prepared and submitted under the sinister political purpose to blame, defame and isolate the DPR Korea through IMO forum.

In this context, the DPR Korea would like to take this opportunity to emphasise that any intention to use the IMO forum for achieving their political and hostile purpose against other Member State, should not be accepted.

The DPR Korea insists that the Document MSC 97/7/3 should not be endorsed by the Committee, because it is including the serious political and military issues, going beyond the mandate of the IMO, which is a technical body of United Nations.
Second Statement of DPR Korea Delegation to be made, if any Delegation makes comment against the DPR Korea's statement

Since some delegates have just before referred to our missile launches, our delegation would like to draw your attention once again to what the greatest threats to the security of counties and navigation safety of vessels in Korean peninsula waters.

Even this year, the United States and Republic of Korea had conducted large scale military exercises targeting DPR Korea with huge military forces including dozens of combat warships, such as Key Resolve and Foal Eagle 16 joint military exercises in March and Ulji Freedom Guardian joint military drill in August.

This delegation would like to ask all the distinguished delegates where and which country has been being seriously threaten from such aggressive large scale joint military drills as the above every year in the world.

In fact, the above artillery live-shell firing drills are of the serious threats and impediments to navigation safety and traffic of vessels in Korean peninsula waters.

The Korean People's Army cannot but conduct such defensive military drills as missile launches to safeguard the security of the country and people against the threats from the United States and the hostile forces.

Since the draft MSC Circular annexed to the Document MSC 97/7/3 is blaming and defaming the specific Member State by mentioning the name of DPR Korea under the sinister political purpose, this delegation reemphasizes that the proposal of the Document should not be endorsed by the Committee.

In particular, in the first paragraph of the draft MSC Circular annexed to the Document MSC 97/7/3, the words "by the Democratic People's Republic of Korea" should be deleted.

This delegation would like to iterate that if the draft MSC Circular would be endorsed as it is, in future, the IMO forum will change as the political debate forum between the hostile Member States.

Final Statement of DPR Korea Delegation during consideration of draft Report of MSC 97

The Democratic People's Republic of Korea can never accept the Committee's approval of the draft Circular annexed to the Document MSC 97/7/3.

If such documents as the previous mentioned would be considered by the IMO in the future as well, the IMO will be deemed to be degraded to the political tool of the hostile forces, which pursue their sinister purposes to defame and isolate our country.

This delegation would like to take this opportunity, to remind the important responsibilities of the IMO, as the specialized technical agency under the UN, so that the IMO forum could not be used as the stage for debating political issues between hostile Member States.

Our delegation requests that the introductory statement and thereafter additional statement made by DPR Korea during the discussion, should be set out together in annex to the final Report of this session without fail."
Statement by the delegation of the United States

"As a co-sponsor of MSC 97/7/3, the United States shares the concerns expressed by the distinguished delegate of the Republic of Korea concerning the dangers created by the Democratic Peoples’ Republic of Korea to the safety of navigation.

This proposal is in response to DPRK’s accelerating and destabilizing series of UN-prohibited ballistic missile launches by DPRK this year without circulating advance warnings of dangers to mariners and to navigation. These incidents are not the first time that the DPRK launched missiles without giving prior navigational warning. As this delegation stated at MSC 96 this year, these unannounced missile launches are a serious threat not only to neighboring States but also to the established order of maritime safety, and are unacceptable to all IMO Member States who have interests in the safe use of the seas. Likewise, the disruption by the DPRK of the use of GPS by ships presents an obvious danger to the safety of navigation. It is concerning that these incidents occurred again even after this Committee’s discussion at MSC 96.

We call again on the DPRK to provide adequate notice for all operations that affect the safety of navigation."

Statement by the observer from IFSMA

"Any un-notified firings and deliberate disruption of GPS, wherever they take place in the world in Territorial or International Waters, is of great concern to IFSMA as it poses a very real and significant danger to all seafarers and shipping and clearly effects their ability to navigate safely around the world. I would wish this Intervention to be included in the report."

AGENDA ITEM 14

Statement by the delegation of the Philippines

"We thank the Secretariat for document MSC 7/14 for providing us with developments on piracy and armed robbery against ships since our last meeting and for ReCAAP-ISC for document MSC 7/INF-7 regarding the progress report on measures to combat piracy and robbery against ships in the Asian region.

In particular, we convey our thanks for the capacity-building Workshop jointly organized by the ReCAAP-ISC and the Philippines Coast Guard (PCG) ReCAAP Focal Point for Philippines, held in Manila from 21 to 23 June 2016. This workshop enhanced the capabilities of ReCAAP Focal Points through sharing of knowledge and best practices.

Our intervention is mainly on the report last month of the 26 Asian sailors freed after being held hostage by Somali pirates for more than four years. They arrived in Nairobi last October 23 which ends the captivity for the last remaining seafarers taken hostage during the height of the Somali piracy. Five Filipino seafarers are among those freed along with seafarers from Vietnam, Taiwan, China; Cambodia, Indonesia and China. We are extremely happy for the freedom of these seafarers.

Unfortunately, one seafarer died in the hijacking and two died of illnesses in their over 4 years of captivity. Seafarers should not be subjected to such ordeals but that is the reality or danger in the seafaring profession."
We sincerely thank all the NGOs along with our partner government agencies especially the Hostage Support Partners of the U.S.-based organization Oceans Beyond Piracy for securing the freedom of these seafarers.

We are happy that the combined actions of nations have found the solution to piracy off the coast of Somalia. Our thanks to the Contact Group on Piracy off the Coast of Somalia, international organisations such as the European Union, the International Maritime Organisation, shipping industry and seafarers' representatives and non-governmental organisations.

We thank the contributing countries in the Combined Task Force 150, a multinational coalition task force, for its role of fighting piracy off the coast of Somalia by establishing a Maritime Security Patrol Area (MSPA) within the Gulf of Aden. Piracy off Somalia's coast was once a serious threat to the global shipping industry, but attacks have dropped dramatically in recent years.

The release of these seafarers and rejoining families in their respective countries will remind us of the need to continue our efforts to ensure the safety of the seafaring profession in its workplace, the ships and ports, and from its external environment such as the sealanes and coasts they traverse. The safety of seafarers is fundamental in our goal of ensuring that shipping is indispensable to the world.

With regards to the subjects – Areas of Improvement and ReCAAP-ISC issued special reports – in paragraphs 6, 7 and 8 of MSC 97/INF-7, the Philippines is working with the relevant authorities in its neighbouring coastal states to establish a coordinated action to resolve this festering problem in our waters. There are complex social, economic, political and security issues on the problem of piracy and armed robbery against ships in our region which the concerned governments are carefully addressing. But certainly, we are working with ReCAAP, regional organizations and stakeholders in putting in place effective and inclusive counter measures to resolve this problem."