INTERNATIONAL MARITIME ORGANIZATION

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REPORT OF THE MARITIME SAFETY COMMITTEE ON ITS EIGHTY-NINTH SESSION

Attached are annexes 1 to 13 and 15 to 23 to the report of the Maritime Safety Committee on its eighty-ninth session (MSC 89/25).

LIST OF ANNEXES

(See document MSC 89/25/Add.2 for annex 14, document MSC 89/25/Add.3 for annexes 24 to 26 and MSC 89/25/Add.4 for annexes 27 to 42)

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ANNEX 1

RESOLUTION MSC.317(89)
(adopted on 20 May 2011)

ADOPTION OF 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 FURTHER article VIII(b) of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (hereinafter referred to as "the Convention"), concerning the amendment procedure applicable to the Annex to the Convention, other than to the provisions of chapter I thereof,

HAVING CONSIDERED, at its eighty-ninth session, amendments to the Convention, proposed and circulated in accordance with article VIII(b)(i) thereof,

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 2012, 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 SOLAS 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 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with 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. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

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

CHAPTER III
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

Regulation 1 – Application

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

"5 Notwithstanding paragraph 4.2, for all ships, not later than the first scheduled dry-docking after 1 July 2014, but not later than 1 July 2019, lifeboat on-load release mechanisms not complying with paragraphs 4.4.7.6.4 to 4.4.7.6.6 of the Code shall be replaced with equipment that complies with the Code.*

* Refer to the Guidelines for evaluation and replacement of lifeboat release and retrieval systems (MSC.1/Circ.1392)."

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ANNEX 2

RESOLUTION MSC.318(89)
(adopted on 20 May 2011)

ADOPTION OF AMENDMENTS TO THE INTERNATIONAL MARITIME SOLID BULK CARGOES (IMSBC) 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.268(85) by which it adopted the International Maritime Solid Bulk Cargoes Code (hereinafter referred to as "the IMSBC Code"), which has become mandatory under chapters VI and VII of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (hereinafter referred to as "the Convention"),

NOTING ALSO article VIII(b) and regulation VI/1-1.1 of the Convention concerning the amendment procedure for amending the IMSBC Code,

HAVING CONSIDERED, at its eighty-ninth session, amendments to the IMSBC 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 IMSBC 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 2012, 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 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 2013 upon their acceptance in accordance with paragraph 2 above;

4. AGREES that Contracting Governments to the Convention may apply the aforementioned amendments in whole or in part on a voluntary basis as from 1 January 2012;

5. REQUESTS the Secretary-General, in conformity with 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;

6. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

AMENDMENT 01-11 TO THE INTERNATIONAL MARITIME SOLID BULK CARGOES (IMSBC) CODE

APPENDIX 1

INDIVIDUAL SCHEDULES OF SOLID BULK CARGOES

ALUMINIUM FERROSILICON POWDER, UN 1395

PRECAUTIONS

1 In the second sentence, the words "competent Authority" are replaced by the word "Administration".

ALUMINIUM NITRATE, UN 1438

PRECAUTIONS

2 At the end of the paragraph, the following sentence is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amounts of water may be necessary."

ALUMINIUM SILICON POWDER, UNCOATED UN 1398

PRECAUTIONS

3 In the second sentence, the words "competent Authority" are replaced by the word "Administration".

AMMONIUM NITRATE UN 1942
with not more that 0.2% total combustible substances including any organic substance calculated as carbon, to the exclusion of any other added substance

DESCRIPTION

4 The words "Supporter of combustion. Hygroscopic." are deleted.

5 A new note after Description is added, as follows:

"***Note*:**

This schedule should only be used for substances that do not exhibit properties of class 1 when tested in accordance to Test Series 1 and 2 of class 1 (see UN Manual of Tests and Criteria, part 1).".

HAZARD

6 At the beginning of the first paragraph, the words "Oxidizer, supports combustion." are added.

7 In the existing first sentence, the words "these materials" are replaced by the words "this cargo".

STOWAGE & SEGREGATION

8 In the first sentence, the word "should" is replaced by the word "shall".

LOADING

9 In the first sentence, the references "4 and 5" are replaced by the references "4, 5 and 6".

During loading, the following provisions shall be complied with:

10 The first bullet related to smoking is deleted.

PRECAUTIONS

11 In the first paragraph, the existing third sentence is replaced by the following text:

> "The master and officers are to note that the ship's fixed gas fire-extinguishing installation will be ineffective on the fire involving this cargo and that applying copious amount of water may be necessary."

12 In the first paragraph, the last sentence is deleted.

CARRIAGE

13 A new second sentence is added, as follows:

> "The temperature of this cargo shall be monitored and recorded daily during the voyage to detect decomposition, which may result in heating and oxygen depletion."

DISCHARGE

14 The second sentence is replaced by the following text:

> "Bunkering of fuel oil shall not be allowed. Pumping of fuel oil in spaces adjacent to the cargo spaces for this cargo, other than the engine-room, shall not be allowed."

EMERGENCY PROCEDURES

15 In the provisions regarding Fire in cargo space containing this material, the word "installation" is inserted after the words "Ship's fixed gas fire-extinguishing".

16 In the provisions regarding Fire in cargo space containing this material, the words "Use copious quantities of water" are replaced by the words "Use copious amount of water and isolate the source of heat, if any".

AMMONIUM NITRATE BASED FERTILIZER UN 2067

DESCRIPTION

17 In subparagraph .2, after the word "dolomite", the words "and/or mineral calcium sulphate" are inserted.

NOTES:

18 In note 3, the word "explosive" is deleted.

STOWAGE & SEGREGATION

19 In the fourth sentence, the words "any tank or double bottom" are replaced by the words "any tank, double bottom or pipe".

LOADING

20 In the first sentence, the references "4 and 5" are replaced by the references "4, 5 and 6".

PRECAUTIONS

21 After the first sentence, the following sentence is added:

> "The master and officers are to note that the ship's fixed gas fire-extinguishing installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

CARRIAGE

22 In the second sentence, the words "resulting in spontaneous" are replaced by the words "which may result in".

DISCHARGE

23 The first sentence is replaced by the following text:

> "Bunkering of fuel oil shall not be allowed. Pumping of fuel oil in spaces adjacent to the cargo spaces for this cargo, other than the engine-room, shall not be allowed."

24 After the second new sentence, the following text is added:

> "Ammonium nitrate based fertilizers are hygroscopic and may cake in overhangs, impairing safety during discharge."

EMERGENCY PROCEDURES

25 In the provisions regarding Fire in cargo space containing this material, the words "Ship's fixed fire-fighting installation" are replaced by the words "Ship's fixed gas fire-extinguishing installation".

26 In the provisions regarding Fire in cargo space containing this material, in the third sentence, after the word "water", the words "and isolate the source of heat, if any" are inserted.

AMMONIUM NITRATE BASED FERTILIZER UN 2071

DESCRIPTION

27 In the second paragraph, a footnote associated with "(see UN Manual of Tests and Criteria, part III, subsection 38.2)" is inserted, as follows:

"* See also section 5 of Appendix 2 to this Code."

HAZARD

28 In the first paragraph, the word "mixtures" is replaced by the word "cargoes" in the first sentence, and in the last sentence the words "mixtures is subject to the" are replaced by the words "cargoes are subject to an".

STOWAGE & SEGREGATION

29 In the last sentence, after the word "standard,", the words "this cargo shall be stowed" are inserted.

LOADING

30 In the first paragraph, first sentence, the references "4 and 5" are replaced by the references "4, 5 and 6".

During loading, the following provisions shall be complied with:

31 A new bullet is added, as follows:

"• As far as reasonably practicable, combustible securing and protecting materials shall not be used. When wooden dunnage is necessary, only a minimum amount shall be used."

PRECAUTIONS

32 After the first sentence, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

33 The first sentence is replaced by the following text:

"Bunkering of fuel oil shall not be allowed. Pumping of fuel oil in spaces adjacent to the cargo spaces for this cargo, other than the engine-room, shall not be allowed."

34 After the second new sentence, the following sentence is added:

"Ammonium nitrate based fertilizers are hygroscopic and may cake in overhangs, impairing safety during discharge."

EMERGENCY PROCEDURES

35 In the provisions regarding Fire in cargo space containing this material, the words "Ship's fixed fire-fighting installation" are replaced by the words "Ship's fixed gas fire-extinguishing installation".

AMMONIUM NITRATE BASED FERTILIZER (non-hazardous)

DESCRIPTION

36 In subparagraph .2, after the word "dolomite", the words "and/or mineral calcium sulphate" are inserted.

37 In subparagraph .4, a footnote associated with "(see UN Manual of Tests and Criteria, part III, subsection 38.2)" is inserted, as follows:

"* See also section 5 of Appendix 2 to this Code."

HAZARD

38 The entire text under this heading is replaced by the following text:

"This cargo is non combustible or has a low fire risk. Even though this cargo is classified as non-hazardous, some of the properties of the ammonium nitrate based fertilizer classified in class 9 under UN 2071 are exhibited when heated strongly. When this cargo is heated strongly, it will decompose and give off toxic gases with the risk of toxic fumes in the cargo space, adjacent spaces and on deck. Monitoring of the cargo temperature may give an early indication of decomposition. Fertilizer dust might be irritating to skin and mucous membranes. It is hygroscopic cargo and will cake if wet."

STOWAGE & SEGREGATION

39 In the third sentence, the words "any tank or double bottom" are replaced by the words "any tank, double bottom or pipe".

40 In the fourth sentence, after the words "this type", the word "should" is replaced by the word "shall".

41 In the fifth sentence, the word "barrier" is replaced by the word "arrangement".

42 In the last paragraph, the last sentence is replaced by the following text:

"This requirement need not apply if the bulkhead is class A-60 or to short international voyages."

LOADING

43 In the first paragraph, first sentence, the references "4 and 5" are replaced by the references "4, 5 and 6".

PRECAUTIONS

44 After the first sentence, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

CARRIAGE

45 The second sentence is deleted.

DISCHARGE

46 The first sentence is replaced by the following text:

"Bunkering of fuel oil shall not be allowed. Pumping of fuel oil in spaces adjacent to the cargo spaces for this cargo, other than the engine-room, shall not be allowed. Ammonium nitrate based fertilizers are hygroscopic and may cake in overhangs, impairing safety during discharge."

EMERGENCY PROCEDURES

47 In the provisions regarding Fire in cargo space containing this material, the words "Ship's fixed fire-fighting installation" are replaced by the words "Ship's fixed gas fire-extinguishing installation".

48 In the provisions regarding Fire in cargo space containing this material, in the third sentence, after the word "water", the words "and isolate the source of heat, if any" are inserted.

AMMONIUM SULPHATE

HAZARD

49 At the end of the paragraph, the following text is added:

"This cargo is hygroscopic and will cake if wet."

LOADING

50 In the last sentence, the references " 4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

51 At the beginning of the paragraph, the following text is added:

"Ammonium sulphate is hygroscopic and may cake in overhangs, impairing safety during discharge."

BARIUM NITRATE, UN 1446

PRECAUTIONS

52 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

BORAX (PENTAHYDRATE CRUDE)

DISCHARGE

53 At the beginning of the paragraph, the following text is added:

"Borax (pentahydrate crude) is hygroscopic and may cake in overhangs, impairing safety during discharge."

BORAX, ANHYDROUS (crude or refined)

LOADING

54 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

55 At the beginning of the paragraph, the following text is added:

"Borax anhydrous (crude or refined) is hygroscopic and may cake in overhangs, impairing safety during discharge."

BROWN COAL BRIQUETTES

HAZARD

56 The text is replaced by the following text:

"This cargo is easily ignited, is liable to heat spontaneously, may ignite spontaneously and may deplete oxygen in the cargo space."

APPENDIX

57 In paragraph 1.1, in the section for Precautions, the words "and opening cargo space enclosures" are deleted.

CALCIUM NITRATE, UN 1454

PRECAUTIONS

58 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

59 At the beginning of the paragraph, the following text is added:

"Calcium nitrate is hygroscopic and may cake in overhangs, impairing safety during discharge."

CALCIUM NITRATE FERTILIZER

LOADING

60 The references "4 and 5" are replaced by the references "4, 5 and 6".

CLAY

CLEAN-UP

61 The text is replaced by "After discharge of this cargo, particular attention shall be given to the bilge wells of the cargo spaces".

DIAMMONIUM PHOSPHATE (D.A.P.)

LOADING

62 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

63 At the beginning of the paragraph, the following text is added:

"Diammonium phosphate is hygroscopic and may cake in overhangs, impairing safety during discharge."

DISTILLERS DRIED GRAINS WITH SOLUBLES

64 After existing schedule on DIRECT REDUCED IRON (C), the new schedule on DISTILLERS DRIED GRAINS WITH SOLUBLES is added, as follows:

"**DISTILLERS DRIED GRAINS WITH SOLUBLES**

DESCRIPTION
A dried blend of coarse grains and condensed distillers solubles that remain after the fermentation of the starch fraction of corn with yeasts and enzymes to produce ethanol and carbon dioxide. Yellowish brown in colour with a cooked corn odour. Moisture content not more than 13% and oil content not more than 11%. This schedule is not applicable to wet distillers grain (WDG) and distillers dried grain (DDG), which are not transported in bulk.

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
Not applicable	450 to 520	1.92 to 2.22
SIZE	**CLASS**	**GROUP**
Not applicable	Not applicable	C

HAZARD
No special hazards.
This cargo is non-combustible or has a low fire risk.

STOWAGE & SEGREGATION
No special requirements.

HOLD CLEANLINESS
Clean and dry as relevant to the hazards of the cargo.

WEATHER PRECAUTIONS
This cargo shall be kept as dry as practicable. This cargo shall not be handled during precipitation. During handling of this cargo all non-working hatches of the cargo spaces into which this cargo is loaded shall be closed.

LOADING
Load in open unconfined areas. Trim in accordance with the relevant provision required under sections 4 and 5 of the Code.

PRECAUTIONS
No special requirements.

VENTILATION
No special requirements.

CARRIAGE
Hatches of the cargo spaces carrying this cargo shall be weathertight to prevent the ingress of water.

DISCHARGE
If this cargo has hardened, it shall be trimmed to avoid the formation of overhanging faces, as necessary.

CLEAN-UP
No special requirements."

FERROPHOSPHORUS (including briquettes)

CARRIAGE

65 The text is replaced by the following text:

"For quantitative measurement of flammable and toxic gases such as Phosphine, which may be evolved from this cargo in accordance with the cargo information, suitable detectors for each gas or combination of gases shall be on board while this cargo is carried. The detectors shall be of certified safe type for use in explosive atmosphere. The concentrations of these gases in the cargo spaces carrying this cargo shall be measured regularly, during the voyage, and the results of the measurements shall be recorded and kept on board."

FERROSILICON UN 1408

APPENDIX – DETAILED REQUIREMENTS

66 In the first sentence, the words "competent Authority" are replaced by the word "Administration", in all cases.

FERROSILICON with 25% to 30% silicon, or 90% or more silicon

LOADING

67 The second sentence is replaced by the following text:

"As the density of the cargo is extremely high, the tanktop may be overstressed unless the cargo is evenly spread across the tanktop for homogenous weight distribution. Due consideration shall be paid to ensure that the tanktop is not overstressed during voyage and during loading by a pile of the cargo. Refer to the appendix to this schedule."

APPENDIX – DETAILED REQUIREMENTS

68 In the first and second sentences, the words "competent Authority" are replaced by the word "Administration".

FERROUS SULPHATE HEPTAHYDRATE

69 After existing schedule on FERROUS METAL BORINGS, SHAVINGS, TURNINGS or CUTTINGS UN 2793, a new schedule on FERROUS SULPHATE HEPTAHYDRATE is added, as follows:

"**FERROUS SULPHATE HEPTAHYDRATE**

DESCRIPTION
Pale green crystals. Highly soluble in water. Product commonly referred to as "Copperas".

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
Not applicable	750 to 1250	0.8 to 1.3
SIZE	**CLASS**	**GROUP**
Crystals	Not applicable	C

HAZARD
Harmful if swallowed. Causes serious eye irritation. Causes skin irritation.
This cargo is non-combustible or has a low fire-risk.
Tends to caking when damp.
This cargo is highly soluble and will be acidic when wet.
Excessive levels spilt into water systems may result in oxygen depletion from the water.

STOWAGE & SEGREGATION
"Separated from" Oxidizing substances.

HOLD CLEANLINESS
Clean and dry as relevant to the hazards of the cargo.

WEATHER PRECAUTIONS
This cargo shall be kept as dry as practicable. It shall not be handled during precipitation. During handling of this cargo all non-working hatches of the cargo spaces into which this cargo is loaded shall be closed.

LOADING
Trim in accordance with the relevant provision required under sections 4 and 5 of the Code.

PRECAUTIONS
Avoid contact with eyes and skin. Persons who may be in contact with the product shall wear protective clothing, gloves and eye protection. Typically, this is a non-dusty product, however, in particularly dry conditions, if dust is generated a filter mask shall also be worn. Bilge wells shall be clean, dry and covered, as appropriate, to prevent ingress of the cargo.

VENTILATION
The cargo spaces carrying this cargo shall not be ventilated during voyage.

CARRIAGE
Hatches of the cargo spaces shall be weathertight to prevent water ingress.

DISCHARGE
If this cargo has hardened, it shall be trimmed to avoid the formation of overhangs, as necessary.

CLEAN-UP
After discharge of this cargo, the cargo spaces and the bilge wells shall be swept clean and then thoroughly washed out."

FERTILIZERS WITHOUT NITRATES (non-hazardous)

DISCHARGE

70 At the beginning of the paragraph, the following text is added:

"Fertilizers without nitrates are hygroscopic and may cake in overhangs, impairing safety during discharge."

FLY ASH

71 In the title of the schedule of FLY ASH, the word ", DRY" is added.

FLY ASH, WET

72 After existing schedule on FLY ASH, a new schedule on FLY ASH, WET is added, as follows:

"**FLY ASH, WET**

DESCRIPTION
Greyish powder. This cargo is a mixture of the light, finely divided dusty fine powder residue from coal and oil fired power stations and water (not less than 10% of water). Ammonia odour.

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
Not applicable	900 to 1300	0.77 – 1.11
SIZE	**CLASS**	**GROUP**
Under 1 mm	Not applicable	A

HAZARD
Wet fly ash is liable to flow if it has sufficiently high moisture content.
It is non-combustible or has a low fire-risk.

STOWAGE & SEGREGATION
"Separated from" foodstuffs.

HOLD CLEANLINESS
No special requirements.

WEATHER PRECAUTIONS
When a cargo is carried in a ship other than specially constructed or fitted cargo ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

.1 The moisture content of the cargo shall be kept less than its TML during voyage.

.2 Unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation.

.3 Unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed.

.4 The cargo may be handled during precipitation provided that the actual moisture content of the cargo is sufficiently less than its TML so that the actual moisture content is not liable to be increased beyond the TML by the precipitation.

.5 The cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

LOADING
Trim in accordance with the relevant provisions required under sections 4 and 5 of the Code.

PRECAUTIONS
Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo.

VENTILATION
The cargo spaces carrying this cargo shall not be ventilated during voyage.

CARRIAGE
The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

DISCHARGE
No special requirements.

CLEAN-UP
After discharge of this cargo, the bilge wells and the scuppers of the cargo spaces shall be checked and any blockage in the bilge wells and the scuppers shall be removed."

GRANULAR FERROUS SULPHATE

73 After the new schedule on FLY ASH, WET, a new schedule on GRANULAR FERROUS SULPHATE is added, as follows:

"**GRANULAR FERROUS SULPHATE**

DESCRIPTION
Grey to brown granules. Absorbs moisture and is highly soluble in water.

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
30^o to 45^o	1100 to 1600	0.63 – 0.9
SIZE	**CLASS**	**GROUP**
Up to 15 mm	Not applicable	C

HAZARD
Harmful if swallowed. Causes serious eye irritation. Causes skin irritation.
This cargo is non-combustible or has a low fire-risk.
Tends to caking when damp.
It is highly soluble and will be acidic when wet.
Excessive levels spilt into water systems may result in oxygen depletion from the water.

STOWAGE & SEGREGATION
"Separated from" oxidizing substances.

HOLD AND CLEANLINESS
Clean and dry as relevant to the hazards of the cargo.

WEATHER PRECAUTIONS
This cargo shall be kept as dry as practicable. It shall not be handled during precipitation. During handling of this cargo all non-working hatches of the cargo spaces into which this cargo is loaded shall be closed.

LOADING
Trim in accordance with the relevant provision required under sections 4, 5 and 6 of the Code.

PRECAUTIONS
Avoid contact with eyes and skin. Persons who may be in contact with the product shall wear protective clothing, gloves and eye protection. Minimize dust generation when loading. If dust is generated a filter mask shall also be worn.
Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo.

VENTILATION
The cargo spaces carrying this cargo shall not be ventilated during voyage.

CARRIAGE
Hatches of the cargo spaces shall be weathertight to prevent water ingress.

DISCHARGE
If this cargo has hardened, it shall be trimmed to avoid the formation of overhangs, as necessary.

CLEAN-UP
After discharge of this cargo, the cargo spaces and the bilge wells shall be swept clean and then thoroughly washed out."

GYPSUM

WEATHER PRECAUTIONS

74 In the second and third sentences, the words "handled" and "handling" are replaced by the words "loaded" and "loading", respectively.

LEAD NITRATE, UN 1469

PRECAUTIONS

75 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

MAGNESIUM NITRATE, UN 1474

PRECAUTIONS

76 The sentence is replaced by the following text:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

77 At the beginning of the paragraph, the following text is added:

"Magnesium nitrate is hygroscopic and may cake in overhangs, impairing safety during discharge."

MAGNESIUM SULPHATE FERTILIZERS

78 After existing schedule on MAGNESIUM NITRATE, UN 1474, a new schedule on MAGNESIUM SULPHATE FERTILIZERS is added, as follows:

"**MAGNESIUM SULPHATE FERTILIZERS**

DESCRIPTION
Powdered fertilizers or fertilizer components containing magnesium sulphate.
Grey to brown powder. Partially soluble in water and may be dusty.

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
30^o to 35^o	850 to 1150	0.87 – 1.18
SIZE	**CLASS**	**GROUP**
Powder	Not applicable	C

HAZARD
May be harmful if swallowed. May cause skin or eye irritation.
This cargo is non-combustible or has a low fire-risk.
It is partially soluble.
Dusty but may cake if wetted.

STOWAGE & SEGREGATION
No special requirements.

HOLD CLEANLINESS
Clean and dry as relevant to the hazards of the cargo.

WEATHER PRECAUTIONS
This cargo shall be kept as dry as practicable. It shall not be handled during precipitation. During handling of this cargo all non-working hatches of the cargo spaces into which this cargo is loaded shall be closed.

LOADING
Trim in accordance with the relevant provision required under sections 4, 5 and 6 of the Code.

PRECAUTIONS
Avoid contact with eyes and skin. Minimize dust generation when loading. Persons who may be exposed to the dust of the cargo shall wear goggles or other equivalent dust eye protection and dust filter mask. Those persons shall wear protective clothing, as necessary. Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo.

VENTILATION
The cargo spaces carrying this cargo shall not be ventilated during voyage.

CARRIAGE
Hatches of the cargo spaces shall be weathertight to prevent water ingress.

DISCHARGE
If this cargo has hardened, it shall be trimmed to avoid the formation of overhangs, as necessary.

CLEAN-UP
After discharge of this cargo, the cargo spaces and the bilge wells shall be swept clean and then thoroughly washed out."

METAL SULPHIDE CONCENTRATES

LOADING

79 The text ", in particular on smaller ships, i.e. 100 m long or less." is deleted.

MINERAL CONCENTRATES

BULK CARGO SHIPPING NAMES

80 The sentence "All known Bulk Cargo Shipping Names (BCSN) of mineral concentrates are listed above but the list is not exhaustive" after the list of Bulk Cargo Shipping Names is deleted.

LOADING

81 The text ", in particular on smaller ships, i.e. 100 m long or less." is deleted.

MONOAMMONIUM PHOSPHATE (M.A.P.)

LOADING

82 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

83 At the beginning of the paragraph, the following text is added:

"Monoammonium phosphate is hygroscopic and may cake in overhangs, impairing safety during discharge."

PHOSPHATE ROCK (calcined)

DISCHARGE

84 At the beginning of the paragraph, the following text is added:

"Phosphate rock (calcined) is hygroscopic and may cake in overhangs, impairing safety during discharge."

POTASH

LOADING

85 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

86 At the beginning of the paragraph, the following text is added:

"Potash is hygroscopic and may cake in overhangs, impairing safety during discharge."

POTASSIUM CHLORIDE

LOADING

87 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

88 At the beginning of the paragraph, the following text is added:

"Potassium chloride is hygroscopic and may cake in overhangs, impairing safety during discharge."

POTASSIUM NITRATE UN 1486

LOADING

89 The references "4 and 5" are replaced by the references "4, 5 and 6".

PRECAUTIONS

90 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

91 At the beginning of the paragraph, the following text is added:

"Potassium nitrate is hygroscopic and may cake in overhangs, impairing safety during discharge."

POTASSIUM SULPHATE

LOADING

92 The references "4 and 5" are replaced by the references "4, 5 and 6".

PYRITES, CALCINED (Calcined Pyrites)

PRECAUTIONS

93 In the third sentence, the words "lime before loading" are replaced by the words "protective coating such as lime-wash before loading to avoid any potential corrosive reaction between the cargo, water and steel."

RASORITE (ANHYDROUS)

DISCHARGE

94 At the beginning of the paragraph, the following sentence is added:

"Rasorite (anhydrous) is hygroscopic and may cake in overhangs, impairing safety during discharge."

SALT

WEATHER PRECAUTIONS

95 In the second and third sentences, the words "handled" and "handling" are replaced by the words "loaded" and "loading", respectively.

SEED CAKE, containing vegetable oil UN 1386 (b)

DESCRIPTION

96 In the last paragraph, after the first sentence, the following text is added:

"The provisions of this schedule should also not apply to mechanically expelled citrus pulp pellets containing not more than 2.5% oil and 14% oil and moisture combined."

PRECAUTIONS

97 In the fifth sentence the words "it becomes apparent that fire is not liable to take place in the cargo space, to avoid the possibility of ignition of solvent vapours" are replaced by the words "fire is apparent".

REMARKS

98 The first sentence is deleted.

SEED CAKE UN 2217

PRECAUTIONS

99 In the existing fourth sentence, the words "it becomes apparent that fire is not liable to take place in the cargo space, to avoid the possibility of ignition of solvent vapours" are replaced by the words "fire is apparent".

REMARKS

100 The first sentence is deleted.

SEED CAKE (non-hazardous)

DESCRIPTION

101 At the end of the first paragraph, the following sentence is added:

"The provisions of this schedule also apply to mechanically expelled citrus pulp pellets containing not more that 2.5% oil and 14% oil and moisture combined."

SODIUM NITRATE, UN 1498

PRECAUTIONS

102 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

103 At the beginning of the paragraph, the following text is added:

"Sodium nitrate is hygroscopic and may cake in overhangs, impairing safety during discharge."

SODIUM NITRATE AND POTASSIUM NITRATE MIXTURE UN 1499

LOADING

104 The references "4 and 5" are replaced by the references "4, 5 and 6".

PRECAUTIONS

105 At the end of the paragraph, the following text is added:

"The master and officers are to note that the ship's fixed gas fire-fighting installation will be ineffective on fires involving this cargo and that applying copious amount of water may be necessary."

DISCHARGE

106 At the beginning of the paragraph, the following text is added:

"Sodium nitrate and potassium nitrate mixture is hygroscopic and may cake in overhangs, impairing safety during discharge."

SULPHUR (formed, solid)

PRECAUTIONS

107 The third sentence "Holds including trimming plates and tanktops shall be treated with effective, commercially available protective coating or lime-washed to avoid any potential corrosive reaction between sulphur, water and steel" is replaced by the sentence "Holds including trimming plates and tanktops shall be treated with protective coating such as lime-wash to avoid any potential corrosive reaction between sulphur, water and steel."

SUPERPHOSPHATE

LOADING

108 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

109 At the beginning of the paragraph, the following text is added:

"Superphosphate is hygroscopic and may cake in overhangs, impairing safety during discharge."

TAPIOCA

LOADING

110 The references "4 and 5" are replaced by the references "4, 5 and 6".

UREA

LOADING

111 The references "4 and 5" are replaced by the references "4, 5 and 6".

DISCHARGE

112 At the beginning of the paragraph, the following text is added:

"Urea is hygroscopic and may cake in overhangs, impairing safety during discharge."

WOOD PELLETS

LOADING

113 The references "4 and 5" are replaced by the references "4, 5 and 6".

WOOD PRODUCTS – GENERAL

114 After existing schedule on WOOD PELLETS, a new schedule on Wood products – General is added, as follows:

"**Wood products – General**
(See Bulk Cargo Shipping Names below)
LOGS **PULP WOOD**
TIMBER **ROUNDWOOD**
SAW LOGS

DESCRIPTION
This schedule only applies to wood products transported in bulk, i.e. loaded and discharged by such means as elevator or grab and which are not specifically referred to in a separate schedule.

CHARACTERISTICS

ANGLE OF REPOSE	BULK DENSITY (kg/m^3)	STOWAGE FACTOR (m^3/t)
Not applicable	250 to 500	2 to 4
SIZE	**CLASS**	**GROUP**
-	MHB	B

HAZARD
These cargoes are liable to cause oxygen depletion and increase of carbon dioxide in the cargo space and adjacent spaces.
These cargoes are non-combustible or have a low fire-risk.

STOWAGE & SEGREGATION
No special requirements.

HOLD CLEANLINESS
No special requirements.

WEATHER PRECAUTIONS
No special requirements.

LOADING
Trim in accordance with the relevant provisions required under sections 4 and 5 of the Code.

PRECAUTIONS
Entry of personnel into cargo and adjacent confined spaces shall not be permitted until tests have been carried out and it has been established that the oxygen level is 21%. If this condition is not met, additional ventilation shall be applied to the cargo hold or adjacent enclosed spaces and remeasuring shall be conducted after a suitable interval.

An oxygen meter shall be worn and activated by all crew when entering cargo and adjacent enclosed spaces.

VENTILATION
Ventilation of enclosed spaces adjacent to a cargo hold before entry may be necessary even if these spaces are apparently sealed from the cargo hold.

CARRIAGE
No special requirements.

DISCHARGE
No special requirements.

CLEAN-UP
No special requirements.

EMERGENCY PROCEDURES

SPECIAL EMERGENCY EQUIPMENT TO BE CARRIED Self-contained breathing apparatus and an oxygen meter should be available.
EMERGENCY PROCEDURES Nil **EMERGENCY ACTION IN THE EVENT OF FIRE** Batten down; use ship's fixed fire-fighting installation if fitted. Exclusion of air may be sufficient to control fire. **MEDICAL FIRST AID** Refer to Medical First Aid Guide (MFAG), as amended.

WOOD PULP PELLETS

115 The existing schedule on WOOD PULP PELLETS is deleted in its entirety.

APPENDIX 3

Properties of solid bulk cargoes

116 In subsection 1.1, the following bulk cargo shipping names are deleted:

CASTOR BEANS
SODIUM NITRATE

117 In subsection 1.1, the following bulk cargo shipping names are added:

GRANULAR FERROUS SULPHATE
MAGNESIUM SULPHATE FERTILIZERS
TAPIOCA
WOOD PELLETS

APPENDIX 4

Index

118 The BCSN "FLY ASH" is replaced by "FLY ASH, DRY".

119 The following rows are added in the table:

MATERIAL	GROUP	REFERENCES
DISTILLERS DRIED GRAINS WITH SOLUBLES	**C**	
FERROUS SULPHATE HEPTAHYDRATE	**C**	
FLY ASH, WET	**A**	
GRANULAR FERROUS SULPHATE	**C**	
LOGS	**B**	**see Wood Products – General schedule**
MAGNESIUM SULPHATE FERTILIZERS	**C**	
PULP WOOD	**B**	**see Wood Products – General schedule**
ROUNDWOOD	**B**	**see Wood Products – General schedule**
SAW LOGS	**B**	**see Wood Products – General schedule**
TIMBER	**B**	**see Wood Products – General schedule**
Wood Products – General	**B**	

120 The words "WOOD PULP PELLETS" and "Pellets, wood pulp" are deleted.

***

ANNEX 3

RESOLUTION MSC.319(89)
(adopted on 20 May 2011)

ADOPTION OF 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 (recommendatory part) of the 2008 IS Code, stipulated in paragraph 27.2 of regulation II-1/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (1974 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 a reference to the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code) in the 2008 IS Code,

HAVING CONSIDERED, at its eighty-ninth session, the proposed amendments to part B of the 2008 IS Code, prepared by the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety, at its fifty-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 1974 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 20 May 2011.

ANNEX

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

PART B
RECOMMENDATIONS FOR CERTAIN TYPES OF SHIPS AND ADDITIONAL GUIDELINES

CHAPTER 2
RECOMMENDED DESIGN CRITERIA FOR CERTAIN TYPES OF SHIPS

The existing section 2.6 is replaced by the following:

"**2.6 Mobile offshore drilling units (MODUs)**

For MODUs, constructed:

.1 on or after 1 January 2012, the provisions of chapter 3 of the 2009 MODU Code, adopted by resolution A.1023(26), should apply;

.2 before 1 January 2012, but on or after 1 May 1991, the provisions of chapter 3 of the 1989 MODU Code, adopted by resolution A.649(16), should apply; and

.3 before 1 May 1991, the provisions of chapter 3 of the 1979 MODU Code, adopted by resolution A.414(XI), should apply."

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ANNEX 4

RESOLUTION MSC.320(89)
(adopted on 20 May 2011)

ADOPTION OF AMENDMENTS TO THE INTERNATIONAL LIFE-SAVING APPLIANCE (LSA) 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.48(66), by which it adopted the International Life-Saving Appliance Code (hereinafter referred to as "the LSA Code"), which has become mandatory under chapter III of the International Convention for the Safety of Life at Sea, 1974 (hereinafter referred to as "the Convention"),

NOTING ALSO article VIII(b) and regulation III/3.10 of the Convention concerning the procedure for amending the LSA Code,

HAVING CONSIDERED, at its eighty-ninth session, amendments to the LSA 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 LSA 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 2012, 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 2013 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with 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. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

AMENDMENTS TO THE INTERNATIONAL LIFE-SAVING APPLIANCES (LSA) CODE

CHAPTER IV
SURVIVAL CRAFT

1 In paragraph 4.4.7.6, the following new subparagraphs .2 to .6 are inserted after the existing subparagraph .1:

".2 notwithstanding subparagraph .7.2 the mechanism shall only open when the release mechanism is operated with the boat fully waterborne or, if the boat is not waterborne, by multiple, deliberate and sustained action which shall include the removal or bypassing of safety interlocks designed to prevent premature or inadvertent release;

.2.1 the mechanism shall not be able to open due to wear, misalignment and unintended force within the hook assembly or operating mechanism, control rods or cables as may be connected to, or form part of the hook assembly and with trim of up to 10º and a list of up to 20º either way; and

.2.2 the functional criteria of 4.4.7.6.2 and 4.4.7.6.2.1 apply for the range of loads, representing 0% to 100% of the safe working load of the lifeboat release and retrieval system for which it may be approved;

.3 unless a release mechanism is of the load over centre type, which is held fully closed by the weight of the lifeboat, the hook assembly shall be designed so that the moveable hook component is kept fully closed by the hook locking parts capable of holding its safe working load under any operational conditions until the hook locking part is deliberately caused to open by means of the operating mechanism. For designs utilizing the tail of the movable hook component and cam either directly or indirectly securing the tail of the movable hook component, the hook assembly shall continue to be closed and hold its safe working load through rotation of the cam of up to 45 degrees in either direction, or 45 degrees in one direction if restricted by design, from its locked position;

.4 to provide hook stability, the release mechanism shall be designed so that, when it is fully reset in the closed position, the weight of the lifeboat does not cause any force to be transmitted to the operating mechanism;

.5 locking devices shall be designed so that they can not turn to open due to forces from the hook load; and

.6 if a hydrostatic interlock is provided, it shall automatically reset upon lifting the boat from the water."

2 In paragraph 4.4.7.6, the existing subparagraph .2 is replaced by the following:

".7 the mechanism shall have two release capabilities: normal (off-load) release capability and on-load release capability:

.7.1 normal (off-load) release capability shall release the lifeboat when it is waterborne or when there is no load on the hooks, and not require manual separation of the lifting ring or shackle from the jaw of the hook; and

.7.2 on-load release capability shall release the lifeboat with a load on the hooks. This release mechanism shall be provided with a hydrostatic interlock unless other means are provided to ensure that the boat is waterborne before the release mechanism can be activated. In case of failure or when the boat is not waterborne, there shall be a means to override the hydrostatic interlock or similar device to allow emergency release. This interlock override capability shall be adequately protected against accidental or premature use. Adequate protection shall include special mechanical protection not normally required for off-load release, in addition to a danger sign. The protection shall be deliberately destroyed by applying a suitable minimum force, for instance by breaking a protection glass or translucent cover. A label or thin wire seal is not considered sufficiently robust. To prevent a premature on-load release, on-load operation of the release mechanism shall require multiple, deliberate and sustained action or actions by the operator;".

3 In paragraph 4.4.7.6, the existing subparagraph .3 is renumbered as subparagraph .8 and the words "without excessive force" are replaced by the words ", and any indicators shall not indicate the release mechanism is reset".

4 In paragraph 4.4.7.6, the following new subparagraph .9 is inserted after the renumbered subparagraph 8:

".9 all components of the hook unit, release handle unit, control cables or mechanical operating links and the fixed structural connections in a lifeboat shall be of material corrosion resistant in the marine environment without the need for coatings or galvanizing. Design and manufacturing tolerances shall be such that anticipated wear throughout the service life of the mechanism shall not adversely affect its proper functioning. Mechanical operating links such as control cables shall be waterproof and shall have no exposed or unprotected areas;".

5 In paragraph 4.4.7.6, the existing subparagraphs .4 to .8 are renumbered as subparagraphs .10 to .14, respectively.

6 In paragraph 4.4.7.6, in the renumbered subparagraph .10, the word "clearly" is replaced by the word "unambiguously".

7 In paragraph 4.4.7.6, in the renumbered subparagraph .14, the words "the load-bearing components of the release mechanism and" are added at the beginning and the words "of the release mechanism" are deleted.

8 In paragraph 4.4.7.6, the following new subparagraphs .15 and .16 are inserted after the renumbered subparagraph .14:

".15 a hydrostatic interlock shall be designed for a factor of safety of not less than 6 times maximum operating force based on the ultimate strength of the materials used;

.16 the operating cables shall be designed for a factor of safety of not less than 2.5 times maximum operating force based on the ultimate strength of the materials used; and".

9 In paragraph 4.4.7.6, the existing subparagraph .9 is renumbered as subparagraph .17 and in the renumbered subparagraph .17, the references to paragraphs "4.4.7.6.2.2 and 4.4.7.6.3" are replaced by the references to paragraphs "4.4.7.6.7, 4.4.7.6.8 and 4.4.7.6.15".

10 In paragraph 4.4.7.6, the referenced subparagraph .9 is replaced by .17.

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ANNEX 5

RESOLUTION MSC.321(89)
(adopted on 20 May 2011)

ADOPTION OF AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70)), 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 resolution A.689(17) entitled "Testing of life-saving appliances", by which the Assembly, at its seventeenth session, adopted the Recommendation on testing of life-saving appliances,

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

NOTING resolution MSC.81(70), by which, at its seventieth session, it adopted the Revised recommendation on testing of life-saving appliances, introducing more precise provisions for the testing of life-saving appliances based on the requirements of the International Life-Saving Appliances (LSA) Code,

RECOGNIZING the need to appropriately align the relevant provisions of the Revised recommendation on testing of life-saving appliances with the associated amendments to the LSA Code adopted by resolution MSC.320(89),

HAVING CONSIDERED, at its eighty-ninth session, proposed amendments to the Revised recommendation on testing of life-saving appliances, prepared by the Sub-Committee on Ship Design and Equipment at its fifty-fifth session,

1. ADOPTS amendments to the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), the text of which is set out in the Annex to the present resolution;

2. RECOMMENDS Governments to apply the annexed amendments when testing life-saving appliances.

ANNEX

AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70)), AS AMENDED

PART 1
PROTOTYPE TESTS FOR LIFE-SAVING APPLIANCES

1 The existing paragraphs 6.9.3 and 6.9.4 are replaced by the following:

"6.9.3 With the operating mechanism disconnected it should be demonstrated when the lifeboat is loaded with its full complement of persons and equipment and towed at speeds of 5 knots that the moveable hook component stays closed. Furthermore, with the operating mechanism connected, it should be demonstrated that the lifeboat when loaded with its full complement of persons and equipment when towed at speeds of 5 knots can be released. Both of the above should be demonstrated as follows as follows:

.1 a force equal to 25% of the safe working load of the hook should be applied to the hook in the lengthwise direction of the boat at an angle of 45° to the vertical. This test should be conducted in the aftward as well as the forward direction;

.2 a force equal to the safe working load of the hook should be applied to the hook in an athwartships direction at an angle of 20° to the vertical. This test should be conducted on both sides; and

.3 a force equal to the safe working load of the hook should be applied to the hook in a direction halfway between the positions of tests 1 and 2 (i.e. 45° to the longitudinal axis of the boat in plan view) at an angle of 33° to the vertical. This test should be conducted in four positions.

There should be no damage as a result of these tests.

6.9.4 A release mechanism should be conditioned and tested as follows:

.1 the lifeboat release and retrieval system and the longest used connection cable/linkage associated with the system should be mounted and adjusted according to instructions from the original equipment manufacturer and then loaded to 100% of its safe working load and released. Load and release should be repeated 50 times. During the 50 releases, the lifeboat release and retrieval system should be released simultaneously from each fall to which it is connected without any binding or damage to any part of the lifeboat release and retrieval system. The system should be considered as "failed" if any failure during the conditioning or unintended release occurs when load is applied but the system has not yet been operated;

.2 the lifeboat release and retrieval system should then be disassembled, the parts examined and wear recorded. The release and retrieval system should then be reassembled;

.3 the hook assembly, whilst disconnected from the operating mechanism, should then be tested 10 times with cyclic loading from zero load to 1.1 times the safe working load, at a nominal 10 seconds per cycle; unless the release mechanism has been specifically designed to operate as an off-load hook with on-load capability using the weight of the boat to close the hook, in this case the cyclic load should be from no more than 1% to 1.1 times the SWL. For cam-type designs, the test should be carried out at an initial cam rotation of 0º (fully reset position), and repeated at 45º in either direction, or 45º in one direction if restricted by design. The specimen should remain closed during the test. The system should be considered as "failed" if any failure during this test or any unintended release or opening occurs; and

.4 the cable and operating mechanism should then be reconnected to the hook assembly; and the lifeboat release and retrieval system should then be demonstrated to operate satisfactorily under its safe working load. The actuation force should be no less than 100 N and no more than 300 N, if a cable is used it should be the maximum length specified by the manufacturer, and secures in the same manner it would be secured in the lifeboat. The demonstration should verify that any interlocks, indicators and handles are still functioning and are correctly positioned in accordance with the operation and safety instruction from the original equipment manufacturer. The release mechanism is deemed to have passed the testing under paragraph 6.9.4 when the tests have been conducted successfully. The system should be considered as "failed" if any failure during this test or any unintended release or opening occurs.

6.9.5 A second release mechanism should be tested as follows:

.1 the actuation force of the release mechanism should be measured loaded with 100% of its safe working load. The actuation force should be no less than 100 N and no more than 300 N. If a cable is used, it should be of the maximum length specified by the manufacturer, and secured in the same manner it would be secured in a lifeboat. The demonstration should verify that any interlocks, indicators and handles are still functioning and are correctly positioned in accordance with the operation and safety instruction from the original equipment manufacturer; and

.2 the release mechanism should be mounted on a tensile strength testing device. The load should be increased to at least six times the working load of the release mechanism without failure of the release mechanism."

2 The existing paragraphs 6.9.5 and 6.9.6 are renumbered as 6.9.6 and 6.9.7, respectively.

3 In paragraph 6.11.3, the referenced paragraph number "6.9.4" is replaced with "6.9.3".

4 In paragraphs 7.1.1 and 7.4.1, the referenced paragraph numbers "6.9.5" and "6.9.6" are replaced by "6.9.6" and "6.9.7", respectively.

5 In paragraphs 7.2.1, 7.3.1, 7.5 and 7.6, the referenced paragraph numbers "6.9.1 to 6.9.4" are replaced by "6.9.1 to 6.9.5".

***

ANNEX 6

EDITORIAL CORRECTIONS TO THE ANNEX TO RESOLUTION MSC.171(79) FOR ISSUING A NOTE VERBALE OF RECTIFICATION

In the existing paragraph 7, the sub-title is replaced by the following:

"Record of Equipment for the Cargo Ship Safety Certificate (Form C)"

***

ANNEX 7

EDITORIAL CORRECTIONS TO ANNEX 1 TO RESOLUTION MSC.216(82) FOR ISSUING A NOTE VERBALE OF RECTIFICATION

1 The existing paragraph 49 is replaced by the following:

> "49 In the Passenger Ship Safety Certificate and Cargo Ship Safety Construction Certificate, the phrase "Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced ……" is replaced by the following:
>
> "Date of build:
> - Date of building contract …….....
> - Date on which keel was laid or ship was at similar stage of construction …….....
> - Date of delivery …….....
> - Date on which work for a conversion or an alteration or modification of a major character was commenced (where applicable)
>
> All applicable dates shall be completed.""

2 The contents of the existing paragraph 52 are deleted, together with its sub-title "Record of Equipment for the Cargo Ship Safety Certificate (Form C)", and the existing paragraph 53 is renumbered as paragraph 52.

***

ANNEX 8

RESOLUTION MSC.322(89)
(adopted on 20 May 2011)

OPERATION OF THE INTERNATIONAL LRIT DATA EXCHANGE

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO the provisions of regulation V/19-1 (Long-range identification and tracking (LRIT) of ships) of the International Convention for the Safety of Life at Sea (SOLAS), 1974 as amended (the Convention) and, in particular, paragraph 10.1 of the Revised performance standards and functional requirements for the long-range identification and tracking of ships, adopted by resolution MSC.263(84),

FURTHER RECALLING that, at its eighty-fourth session, it adopted resolution MSC.264(84) on the Establishment and operation of the International LRIT Data Exchange on an interim basis by the United States for a period of two years as from 1 January 2008, and, at its eighty-fifth session, it adopted resolution MSC.276(85) on the Operation of the International LRIT Data Exchange on an interim basis and agreed that, whilst noting with appreciation the offer of the United States, the International LRIT Data Exchange (IDE) should continue to be provided on an interim basis by the United States until 31 December 2011,

BEARING IN MIND that, at its eighty-seventh session, having considered a proposal submitted by the Contracting Governments to the Convention of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom (the proposing Contracting Governments), for the establishment, maintenance and operation of the IDE by the European Maritime Safety Agency (EMSA) in Lisbon, Portugal, at no cost either to the Contracting Governments to the Convention or the Organization for the years 2011, 2012 and 2013 (the proposal), it adopted resolution MSC.297(87) on Establishment of the International LRIT Data Exchange and invited EMSA to establish the IDE in the testing environment of the LRIT system and submit, through the proposing Contracting Governments and the European Commission, the results of developmental testing for consideration of the Committee, at its eighty-ninth session,

NOTING WITH APPRECIATION the offer of the United States to make the interim IDE available as the disaster recovery site for the IDE after its transfer of operations, subject to the United States national procurement regulations, at no cost to either the Contracting Governments to the Convention or the Organization,

CONSIDERING that any suspension of operations or reduction of the service provided by the IDE has direct and immediate implications across the entire LRIT system,

DESIRING to put in place all the necessary arrangements so as to ensure that the LRIT system continues to operate satisfactorily after 31 December 2011,

TAKING INTO ACCOUNT that, at its eighty-eighth session, it had approved, for the benefit of Contracting Governments to the Convention and, in particular, those involved in the operation of components of the LRIT system, the Continuity of service plan for the LRIT system, as set out in MSC.1/Circ.1376, which provides, *inter alia*, a formalized governance framework to address any issues that might require immediate decisions or actions in order to safeguard the LRIT system, defined as the chairman of the *Ad Hoc* LRIT Group, a representative of the IDE and a representative from the IMO Secretariat (the LRIT Operational governance body),

HAVING CONSIDERED, at its eighty-ninth session, the report on the satisfactory transfer of operations of the IDE operating in the testing environment from the United States to EMSA, and the results of developmental testing of the IDE,

1. EXPRESSES its appreciation to the United States for having established, operated and maintained the IDE, on an interim basis, and, in particular, for having borne the capital costs for the establishment and testing of, including all operating and maintenance costs for, the operation of the IDE since its establishment in December 2008;

2. AGREES that the transfer of operations of the IDE operating in the production environment from the United States to EMSA should be conducted before 31 December 2011 in consultation with the LRIT Operational governance body;

3. INVITES EMSA to establish the IDE in the production environment of the LRIT system at EMSA premises in Lisbon, Portugal, and submit the results of integration testing, through the proposing Contracting Governments and the European Commission, to the Secretariat, for consideration of the LRIT Operational governance body;

4. AUTHORIZES the LRIT Operational governance body to consider, on behalf of the Committee, the results of integration testing of the IDE operated by EMSA and authorize, subject to the final consideration and endorsement of the action by the Committee, at its ninetieth session, the operation of the IDE by EMSA in the production environment of the LRIT system;

5. AGREES ALSO, subject to the satisfactory results of the integration testing phase, that EMSA should operate the IDE until 31 December 2013;

6. FURTHER AGREES that the disaster recovery site for the IDE operating in the production environment should be established, maintained and operated by the United States, subject to their national procurement regulations;

7. INVITES ALSO the United States to establish, maintain and operate the disaster recovery site for the IDE operating in the production environment, until 31 December 2013;

8. AGREES to review, at its ninetieth session, the continued operation of the IDE by EMSA and the disaster recovery site for the IDE by the United States after 2013, together with any associated new information for the maintenance, finance and operation of the IDE by EMSA and the disaster recovery site for the IDE by the United States, after 2013;

9. REQUESTS the Secretariat to report to the Committee, at its ninetieth session, on any issues relating to the transfer of operations of the IDE in the production environment, the actions taken by the LRIT Operational governance body in this respect and the integration testing results of the IDE.

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ANNEX 9

DRAFT ASSEMBLY RESOLUTION

ADOPTION OF THE CODE OF SAFE PRACTICE FOR SHIPS CARRYING TIMBER DECK CARGOES, 2011 (2011 TDC CODE)

THE ASSEMBLY,

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

RECALLING further that, by resolution A.715(17), it had adopted the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991,

RECOGNIZING the need to improve the provisions contained in the Code in the light of experience gained,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee, at its eighty-ninth session,

1. ADOPTS the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 2011 (2011 TDC Code), set out in the Annex to the present resolution;

2. RECOMMENDS Governments to use the provisions of the 2011 TDC Code as a basis for relevant safety standards;

3. AUTHORIZES the Maritime Safety Committee to amend the Code as necessary in the light of further studies and experience gained from the implementation of the provisions contained therein;

4. REVOKES resolution A.715(17).

ANNEX

DRAFT REVISED CODE OF SAFE PRACTICE FOR SHIPS CARRYING TIMBER DECK CARGOES, 2011 (2011 TDC CODE)

PREFACE

The Code of Safe Practice for Ships Carrying Timber Deck Cargoes was first developed by the Organization in 1972 and subsequently amended in 1978.

The Code was revised by IMO resolution A.715(17) – Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991, which was adopted on 6 November 1991.

This Code is based on the previous Code, which has been revised and amended in order to reflect the capability of today's ships and the equipment available on board and also taking expected future innovations in mind.

This Code is designed to assist:

.1 shipowners, charterers, operating companies and ships' crew;

.2 port industries, shippers and pre-packaging organizations, which are involved in preparation, loading, and stowing of timber deck cargoes; and

.3 Administrations, manufacturers and designers of ships and equipment associated with the carriage of timber deck cargoes and those developing cargo securing manuals,

in the carriage of timber deck cargoes.

This Code is directed primarily at providing recommendations for the safe carriage of timber deck cargoes.

Status of references

The references given in this consolidated text do not form part of the Code but are inserted for ease of reference.

CHAPTER 1 – GENERAL

1.1 Purpose

1.1.1 The purpose of the Code is to ensure that timber deck cargoes are loaded, stowed and secured to prevent, as far as practicable, throughout the voyage, damage or hazard to the ship and persons on board as well as loss of cargo overboard(1).

1.1.2 The Code provides:

.1 practices for safe transportation;

.2 methodologies for safe stowage and securing;

.3 design principles for securing systems;

.4 guidance for developing procedures and instructions to be included in ships' cargo securing manuals on safe stowage and securing; and

.5 sample checklists for safe stowage and securing.

1.2 Application

1.2.1 The provisions of this Code apply to all ships of 24 metres or more in length, carrying a timber deck cargo. This Code will be effective from [*to be decided*].

1.2.2 Cargo securing of timber deck cargoes should be in accordance with the requirements in the ship's Cargo Securing Manual (CSM), based on the principles in chapter 5 or chapter 6 of Part B of this Code.

1.2.3 The Master should note that national requirements may exist which may restrict the application of either chapter 5 or chapter 6, and these may also require third party inspections to ensure that the cargo has been properly secured according to the ship's cargo securing manual.

1.2.4 Cargo securing manuals for timber deck cargoes, approved following the implementation date of this Code, should meet the contents of this Code. Existing cargo securing manuals approved under the previous Timber Deck Cargo Code (resolution A.715(17)) may remain valid.

1.3 Definitions

1.3.1 The following *definitions* apply to this Code:

General expressions

.1 *Administration* means the Government of the State whose flag the ship is entitled to fly.

.2 *Company* means the Owner of the ship or any other organization or person such as the Manager, or the Bareboat Charterer, who has assumed the responsibility for operation of the ship from the Ship owner and who, on assuming such responsibility, has agreed to take over all duties and responsibilities imposed by SOLAS(2).

.3 *Load Lines Convention* means the International Convention on Load Lines, 1966, or the 1988 Protocol relating thereto, as applicable.

.4 *Organization* means the International Maritime Organization (IMO).

.5 *Port industries* means the port facilities and/or stevedoring companies serving ships engaged in the stowage of timber deck cargoes.

.6 *Shipper* means any person, organization or Government which prepares or provides a consignment for transport(3).

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

.8 *2008 IS Code* means the International Code on Intact Stability, 2008.

Cargo related expressions

.9 *Cant* means a log which is "slab-cut", i.e. ripped lengthwise so that the resulting thick pieces have two opposing, parallel flat sides and in some cases a third side which is sawn flat.

.10 *Non-rigid cargo* means sawn wood or lumber, cants, logs, poles, pulpwood and all other types of loose timber or timber in packaged forms not fulfilling specified strength requirement, as defined in section 4.7.

.11 *Rigid cargo package* means sawn wood or lumber, cants, logs, poles, pulpwood and all other types of timber in packaged forms, fulfilling specified strength requirement, as defined in section 4.7.

.12 *Round wood* means parts of trees that have not been sawn on more than one long side. The term includes, among others, logs, poles and pulpwood in loose or packed form.

.13 *Sawn wood* means parts of trees that have been sawn so that they have at least two parallel flat long sides. The term includes, among others, lumber and cants in loose or packed form.

.14 *Timber* is used as a collective expression used for all types of wooden material covered by this Code, including both round and sawn wood but excluding wood pulp and similar cargo.

Technically related expressions

.15 *Blocking device* means physical measures to prevent sliding and/or tipping of cargoes and/or collapse of stow.

.16 *Lashing plan* means a sketch or drawing showing the required number and strength of securing items for the timber deck cargo to obtain safe stowage and securing of timber deck cargoes.

.17 *Timber deck cargo* means a cargo of timber carried on an uncovered part of a freeboard or superstructure deck.

.18 *Timber load line* means a special load line assigned to ships complying with certain conditions set out in the International Convention on Load Lines.

.19 *Stowage Factor (SF)* means the volume occupied by one tonne of a cargo when stowed and separated in the accepted manner.

.20 *Weather deck* means the uppermost complete deck exposed to weather and sea.

.21 *Reeving* means the process where a rope, chain or any other type of lashing can freely move through a sheave or over a fulcrum such as a rounded angle piece, in such a manner so as to minimize the frictional effect of such movement.

.22 *Height of cargo* means the distance from the base of the deck cargo stow to the highest part of the cargo.

PART A – OPERATIONAL REQUIREMENTS

CHAPTER 2 – GENERAL RECOMMENDATIONS ON STOWAGE AND SECURING OF TIMBER DECK CARGOES

2.1 Goals

2.1.1 The stowage and cargo securing arrangements for timber deck cargoes should enable a safe yet rational securing of the cargo so that it is satisfactorily prevented from shifting by collapsing, sliding or tipping in any direction, taking into account the acceleration forces the cargo may be subjected to throughout the voyage in the worst sea and weather conditions which may be expected.

2.1.2 This chapter lists measures and factors that should be taken under consideration in order to achieve such level of cargo securing.

2.1.3 Procedures should be established for the preparation of plans and instructions, including checklists as appropriate, for key shipboard operations(5). Guidance is provided in Annex A to assist the development of such checklists.

2.2 Pre-loading operation

2.2.1 Prior to loading the vessel, relevant cargo information,(4) as defined in chapter 4 of this Code, should be provided by the shipper, according to the custom of the trade.

2.2.2 The master of the vessel should study the relevant cargo information and take the precautions necessary for proper stowage, securing and safe carriage of the cargo as defined in this Code and as prescribed in the vessel's Cargo Securing Manual.

2.2.3 Prior to loading, the stevedoring company should be made aware of specific requirements according to the ship's Cargo Securing Manual regarding stowage and securing of timber deck cargoes.

2.2.4 During loading of deck cargo the master should ensure that all tanks are maintained in such a condition that free surface effects are minimized. Ballast tanks should as far as practicable be either full or empty and ballast movement during loading operations should be avoided.

2.2.5 Before timber deck cargo is loaded on any area of the weather deck:

.1 hatch covers and other openings to spaces below that area should be securely closed and battened down;

.2 air pipes and ventilators should be effectively protected and check-valves or similar devices should be examined to ascertain their effectiveness against the entry of water;

.3 objects which might obstruct cargo stowage on deck should be removed and safely secured in places appropriate for storage;

.4 the condition of friction enhancing arrangements, where fitted, should be checked;

.5 accumulations of ice and snow on such area should be removed;

.6 it is normally preferable to have all deck lashings, uprights, etc., readily available before loading on that specific area. This will be necessary should a preloading examination of securing equipment be required in the loading port; and

.7 all sounding pipes on the deck should be reviewed and arrangements made that access to these remain as far as practicable.

2.2.6 Further aspects to be considered during pre-loading operations are given in Annex A, chapter A.1.

2.3 Permitted loading weights on decks and hatch covers

2.3.1 The hatch cover securing and support arrangements, chocks, etc., as well as coamings should be designed and reinforced as necessary for carriage of timber deck cargoes. Potential weight increase of timber deck cargoes due to water absorption, icing, etc., should be taken under consideration.

2.3.2 Care should be taken not to exceed the designed maximum permissible loads on weather deck and hatch covers during any stage of the voyage [(6)].

2.4 Stability

2.4.1 The master should ensure that the ship condition complies with its stability booklet at all times.

2.4.2 A ship carrying timber deck cargo must comply with applicable parts of the damage stability requirements as well as the 2008 IS Code[(11)], particularly the timber deck cargo requirements. Since excessive GM values induce large accelerations, GM should preferably not exceed 3% of the breadth of the vessel, as indicated in paragraph 3.7.5 of the 2008 IS Code.

2.4.3 Ballast water exchange operations should be carried out in accordance with instructions in the Ballast Water Management Plan, if available[(12)]. The ballast water exchange operation, if required, should be considered when planning the amount of cargo to be loaded on deck.

2.4.4 According to the 2008 IS Code[(11)], account may be taken of the buoyancy of timber deck cargo when calculating stability curves, assuming that such cargo has a permeability up to 25%. Permeability is defined as the percentage of empty space of the volume occupied by the deck cargo. Additional curves of stability may be required if the Administration considers it necessary to investigate the influence of different permeabilities and/or assumed effective height of the deck cargo. 25% permeability corresponds to sawn wood cargo and 40%-60% permeability corresponds to round wood cargo with increasing permeability with increasing log diameters.

2.5 Load line

Ships assigned and making use of their timber load line should follow relevant regulations of the applicable Load Lines Convention[(13)] for stowage and securing of timber as prescribed in the ship's Cargo Securing Manual.

2.6 Timber freeboard

2.6.1 The timber freeboard, if applicable, will be found in the ship's Load Line Certificate.

2.6.2 Instructions on computation of the timber freeboard are given in the applicable Load Lines Convention(14).

2.7 Visibility

2.7.1 Timber deck cargo should be loaded in such a manner as to ensure that the ship complies with the visibility requirements contained in SOLAS chapter V. National deviations may exist and should be taken into consideration as required dependent on the intended voyage.

2.7.2 The SOLAS requirements on visibility as well as instructions on how to calculate the visibility range are given in chapter 3.

2.8 Work safety and work environment aspects

2.8.1 The Company should establish procedures by which the ship's personnel receive relevant information on the Safety Management System(16) in a working language or languages understood by them.

2.8.2 When deck cargo is being lashed and secured, special measures may be needed to ensure safe access to the top of, and across, the cargo so that the risk of falling is minimized. Safety helmets, proper footwear and non-obstructive high visibility garments should be worn during work on deck.

2.8.3 The risk of slipping should especially be considered during winter time when loading timber packages covered by plastic wrapping or tarpaulins. Plastic wrapping on packages with lumber of uneven length should be avoided otherwise clearly identified.

2.8.4 Lighting during loading and discharge operations should be reasonably constant and arranged to minimize glare and dazzle, the formation of deep shadows and sharp contrasts in the level of illumination between one area and another.

2.8.5 Any obstruction such as lashings or securing points in the access way of escape routes and spaces essential to operation of the vessel, such as machinery spaces and crew's quarters, as well as obstructions to safety equipment, fire-fighting equipment and sounding pipes, should be clearly marked. In no case should an obstruction prevent safe access or egress of escape arrangements and spaces referred to above.

2.8.6 During the course of the voyage, if there is no convenient passage for the crew on or below the deck of the ship(18) giving safe means of access from the accommodation to all parts used in the necessary working of the ship, guard lines or rails, not more than 330 mm apart vertically, should be provided on each side of the deck cargo to a height of at least 1 m above the cargo. In addition, a lifeline, preferably wire rope, set up taut with a tightening device should be provided as near as practicable to the centreline of the ship. The stanchion supports to all guardrails or lifelines should be spaced so as to prevent undue sagging. Where the cargo is uneven, a safe walking surface of not less than 600 mm in width should be fitted over the cargo and effectively secured beneath, or adjacent to, the lifeline.

2.8.7 Fencing or means of closing should be provided for all openings in the stow such as at masthouses, winches, etc.

2.8.8 Where uprights are not fitted or where alternative to the provisions of 2.8.6 are permitted, a walkway of substantial construction should be provided having an even walking surface and consisting of two fore and aft sets of guardlines or rails about 1 m apart, each having a minimum of three courses of guardlines or rails to a height of not less than 1 m above the walking surface. Such guardlines or rails should be supported by rigid stanchions spaced not more than 3 m apart and lines should be set up taut by tightening devices.

2.8.9 As an alternative to 2.8.6, 2.8.7 and 2.8.8, a lifeline, preferably wire rope, may be erected above the timber deck cargo such that a crew member equipped with a fall protection system can hook on to it and work about the timber deck cargo. The lifeline should be:

.1 erected about 2 m above the timber deck cargo as near as practicable to the centreline of the ship;

.2 stretched sufficiently taut with a tightening device to support a fallen crew member without collapse or failure.

2.8.10 Properly constructed ladders, steps or ramps fitted with guard lines or handrails should be provided from the top of the cargo to the deck, and in other cases where the cargo is stepped, in order to provide reasonable access.

2.8.11 Personnel safety equipment referred to in this chapter should be kept in an easily accessible place.

2.8.12 When lashings need to be checked and/or retightened during voyage, the Master should take appropriate actions to reduce the motion of the vessel during such operation.

2.8.13 Additional guidance regarding work safety and work environment aspects can be found in the relevant International Labour Organization (ILO) Conventions(17).

2.9 Stowage

2.9.1 The basic principle for the safe carriage of timber deck cargo is to make the stow as solid, compact and stable as practicable. The purpose of this is to:

.1 prevent movement in the stow which could cause the lashings to slacken;

.2 produce a binding effect within the stow; and

.3 reduce to a minimum the permeability of the stow.

2.9.2 Openings in the deck exposed to weather over which cargo is stowed should be securely closed and battened down. The ventilators and air pipes should be effectively protected(19).

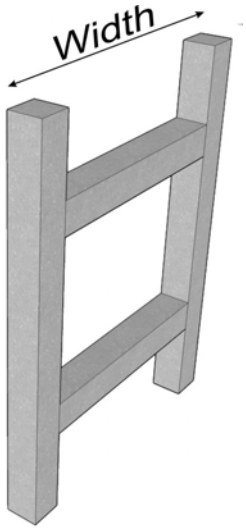
2.9.3 Deck cargo should be stowed so that access is provided to and from designated escape routes and spaces essential to operation of the vessel, such as machinery spaces and crew's quarters, as well as to safety equipment, fire-fighting equipment and sounding pipes(18). It should not interfere in any way with the navigation and necessary work of the ship(19).

2.9.4 When cargo is loaded voids may occur in the stow between packages as well as between bulwarks or gantry crane rails, etc., and other fixed constructions such as the hatch coaming.

2.9.5 Care should be taken to avoid the creation of voids or open spaces when loading cargo. Voids, where created, should be filled with loose timber or blocked by vertical H-frames with required strength to avoid cargo from shifting. The MSL for double H-frames of different widths and dimensions are given in the table below. The values apply to H-frames made of sound softwood timber without knots.

***Table 2.1**. MSL (maximum secure load) of H-frames for different dimensions*

Dimensions of battens *mm*	**MSL in kN of double H-frames with different widths**			
	0.5 m	*1.0 m*	*1.5 m*	*2.0 m*
50 x 50	75	53	30	17
50 x 75	113	79	46	26
50 x 100	151	106	61	34
50 x 150	226	159	91	51
75 x 75	186	153	119	85
75 x 100	248	203	159	114
75 x 150		305	238	171
75 x 200			317	227
100 x 100		301	256	212



2.9.6 Timber deck cargo which substantially overhangs (one-third of the package length) hatch coamings or other structures in the longitudinal direction, should be supported at the outer end by other cargo stowed on deck or railing or equivalent structure of sufficient strength to support it.

2.9.7 For ships assigned and making use of a timber load line, additional practices apply in accordance with the applicable Load Lines Convention.[(19)]

2.10 Securing

2.10.1 One or more of the following principal methods may be used to secure timber deck cargoes, by themselves or in combination with each other:

.1 different types of lashing arrangements; and

.2 bottom blocking of the base tier in combination with lashing arrangements;

.3 blocking over the full height of the cargo by, e.g., uprights alternatively complemented by lashing arrangements;

.4 frictional securing, taking into account scientific research and appropriate weather and voyage criteria; and

.5 other practical securing enhancement, (taking into account appropriate weather and voyage criteria), such as:

.1 non slip paints on hatch covers;

.2 liberal use of dunnage in the stow to shore and bridge gaps;

.3 double lashing in exposed areas; and

.4 consideration given to the use of locking tiers.

2.10.2 Securing arrangements used should be designed in accordance with Part B and documented in accordance with section 2.13 of this Code.

Lashings

2.10.3 Different lashing arrangements are described in Part B of this Code.

2.10.4 The following three types of lashing equipment with different strength and elongation characteristics are most frequently used for securing timber deck cargoes. Individual suitability should be determined by such factors as ship type, size and area of operation, and as described in this Code and as prescribed in the cargo securing manual:

.1 chain lashings;

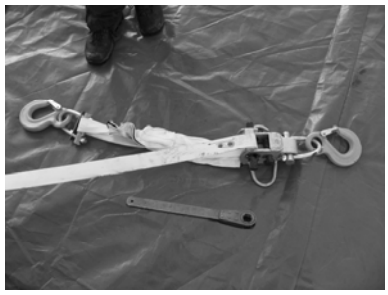
.2 wire lashings; and

.3 fabricated web lashings.

Chain lashing

Wire lashing

Fabricated web lashing



Chain lashing

Wire lashing

Fabricated web lashing

Figure 2.1 *Examples of different types of lashing equipment*

Open hooks, which may loosen if the lashing becomes slack, should not be used in securing arrangements for timber deck cargoes. Web lashing should not be used in combination with chain or wire lashings.

2.10.5 The appropriate safety factors for the different types of equipment are described in Annex 13 to the Code of Safe Practice for Cargo Stowage and Securing (CSS Code).

2.10.6 All lashing equipment should be visually examined according to the instruction in the cargo securing manual before use and only equipment fit for purpose should be used for securing of timber deck cargoes.

2.10.7 The necessary pre-tension in the lashings used should be maintained throughout the voyage. It is of paramount importance that all lashings be carefully examined and tightened at the beginning of the voyage as the vibration and working of the ship will cause the cargo to settle and compact. They should be further examined at regular intervals during the voyage and tightened as necessary.

2.10.8 Entries of all examinations and adjustments to lashings should be made in the ship's log-book.

2.10.9 Slip hooks or other appropriate methods may be used for quick and safe adjustment of lashings. Pelican hooks, when used, should be moused.

2.10.10 Corner protectors should be used to prevent lashings from cutting into the cargo and to protect lashings from sharp corners. The latter especially applies to fabricated web lashings.

2.10.11 Every lashing should be provided with a tightening device or system so placed that it can safely and efficiently operate when required.

Uprights

2.10.12 Uprights should be fitted when required by this Code and as prescribed in the ship's cargo securing manual in accordance with the nature, height or character of the timber deck cargo. They should be designed in accordance with the criteria in chapter 7 of this Code and fitted in accordance with the ship's cargo securing manual. If there is an operational limit of the uprights (in terms of wave heights) this should be indicated in the ship's cargo securing manual.

2.10.13 The uprights should be well fastened to the deck, hatches or coamings of the vessel (where adequate strength exists) and restrained from falling inwards during loading and discharging operations.

Lashing arrangements

2.10.14 In order to achieve a more secure stowage of logs when stowed on deck hog wires may be utilized. Such hog wire should be installed in the following manner:

.1 At approximately three quarters of the height of the stow, the hog wire should be rove through a padeye attached to the uprights at this level so as to run transversely, connecting the respective port and starboard uprights. The hog lashing wire should not be too tight when laid so that it becomes taut when overstowed with other logs.

.2 A second hog wire may be applied in a similar manner if the height of the hatch cover is less than 2 m. Such second hog wire should be installed approximately 1 m above the hatch covers.

.3 The aim of having the hog wires applied in this manner is to assist in obtaining as even a tension as possible throughout, thus producing an inboard pull on the respective uprights.

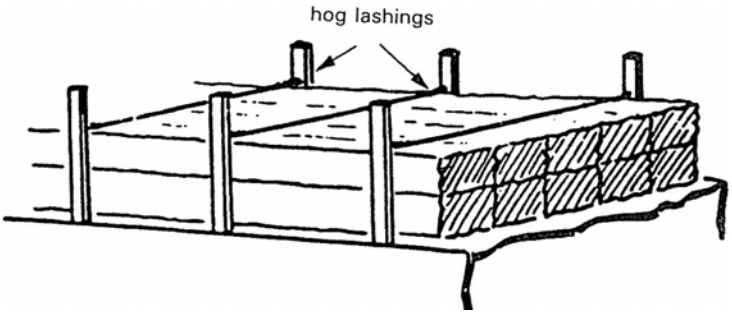


Figure 2.2 *Example of hog lashings*

2.10.15 In addition to uprights and hog lashings, an arrangement with top-over and continuous wiggle lashings (wiggle wires), as shown in the following figures, may be utilized at each hatch meeting the specifications of chapter 5.

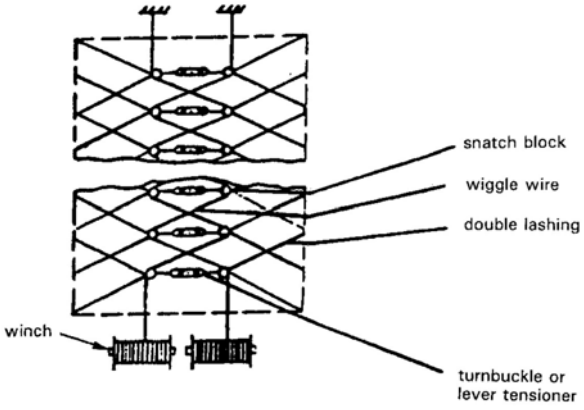


Figure 2.3. *Example of wiggle lashings*

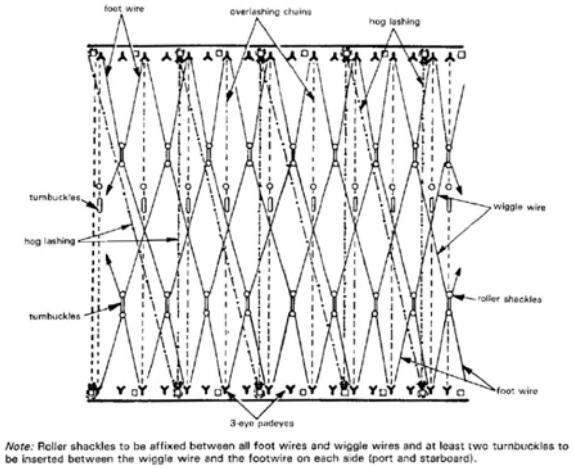


Figure 2.4. *Arrangement of wiggle and top-over lashings*

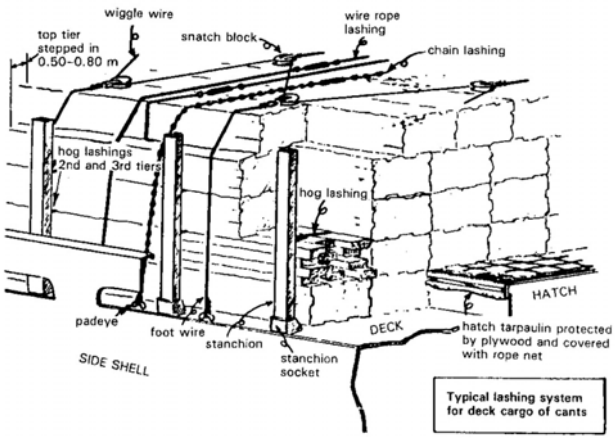


Figure 2.5. *Example of an arrangement with hog, top-over and wiggle lashings*

2.10.16 If a wiggle wire is not fitted, then extra chain or chain/wire combination overlashings should be fitted instead, as described in 5.4.1.

2.11 Post-loading operation

The Company should establish procedures for the preparation of plans and instructions, including checklists as appropriate, for key post loading operations.[5]

2.12 Voyage planning

2.12.1 Prior to proceeding to sea, the master should ensure that the intended voyage has been planned using the appropriate nautical charts and nautical publications for the area concerned, taking into account the guidelines and recommendations developed by the Organization[23].

2.12.2 In order to reduce excessive accelerations, the master should plan the voyage so as to avoid potential severe weather and sea conditions. To this effect, weather reports, weather facsimiles or where available weather routeing may be consulted and the latest available weather information should always be used.[24]

2.12.3 If deviation from the intended voyage plan is considered during the voyage, the same procedure as described in 2.12.1 and 2.12.2 should be followed.

2.12.4 In cases where severe weather and sea conditions are unavoidable, the Master should be conscious of the need to reduce speed and/or alter course at an early stage in order to minimize the forces imposed on the cargo, structure and lashings. The lashings are not designed to provide a means of securing against imprudent ship handling in severe weather and sea conditions. There can be no substitute for good seamanship. The following precautions should be observed:

.1 in the case of marked roll resonance with amplitudes above 30° to either side, the cargo securing arrangements could be overstressed. Effective measures should be taken to avoid this condition;

.2 in the case of heading into the seas at high speed with marked slamming shocks, excessive longitudinal and vertical acceleration may occur. An appropriate reduction of speed should be considered; and

.3 in the case of running before large stern or quartering seas with a stability which does not amply exceed the accepted minimum requirements, large roll amplitudes should be expected with great transverse accelerations as a result. An appropriate change of heading should be considered.

Foreseeable risks

2.12.5 During voyage planning, all foreseeable risks, which could lead to either excessive accelerations causing cargo to shift or conditions leading to water absorption and ice aggregation, should be considered. The following list comprises the most significant situations that should be taken under consideration to that effect:

.1 extreme weather conditions predicted by weather forecasts;

.2 severe wave conditions that have been known to appear in certain navigational areas;

.3 unfavourable directions of encountered waves(25); and

.4 swell caused by recent weather phenomena in the vicinity of the area of the intended voyage.

2.13 Cargo Securing Manual

2.13.1 Timber deck cargoes should be loaded, stowed and secured, throughout the voyage, in accordance with the Cargo Securing Manual as required by SOLAS chapter VI.

2.13.2 The Cargo Securing Manual should be based on the guidelines in this Code and drawn up to a standard at least equivalent to the guidelines developed by the Organization [(26), (27)] and approved by the Administration.[(26)]

2.13.3 Each cargo securing arrangement for timber deck cargoes should be documented in the ship's Cargo Securing Manual in accordance with the instructions in MSC/Circ.745.

2.13.4 According to the CSS Code and MSC/Circ.745, among others, the following parameters should be taken into account at the design stage of cargo securing systems:

.1 duration of the voyage;

.2 geographical area of the voyage;

.3 sea conditions which may be expected;

.4 dimensions, design and characteristics of the ship;

.5 expected static and dynamic forces during the voyage;

.6 type and packaging of cargo units;

.7 intended stowage pattern of the cargo units; and

.8 mass and dimensions of the cargo units.

2.13.5 In the Cargo Securing Manual, each stowage and securing arrangements should additionally be documented by a Lashing Plan showing at least the following:

.1 maximum cargo weight for which the arrangement is designed;

.2 maximum stowage height;

.3 required number and strength of blocking devices and lashings as applicable;

.4 required pretension in lashings;

.5 other cargo properties of importance for the securing arrangement such as friction, rigidity of timber packages, etc.;

.6 illustrations of all securing items that might be used; and

.7 any restriction regarding maximum accelerations, weather criteria, for non-winter conditions only, restricted sea areas, etc.

CHAPTER 3 – VISIBILITY

3.1 According to SOLAS chapter V, the view of the sea surface from the conning position should not be obscured by more than two ship lengths, or 500 m, whichever is the less, forward of the bow to 10° on either side under all conditions of draught, trim and deck cargo. National deviations may exist and should be taken into consideration as required dependent on the intended voyage.

3.2 No blind sector, caused by cargo, cargo gear or other obstructions outside of the wheelhouse forward of the beam which obstructs the view of the sea surface as seen from the conning position, should exceed 10°. The total arc of blind sectors should not exceed 20°. The clear sectors between blind sectors should be at least 5°. However, in the view described in 3.1, each individual blind sector should not exceed 5°.

3.3 The following formula can be used for calculating the bridge visibility:

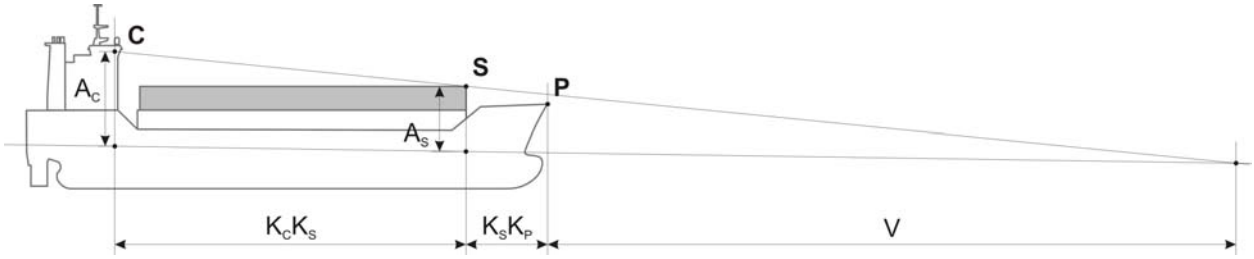


Figure 3.1. *Distances used for calculating the bridge visibility*

$$V = \frac{K_C K_S \cdot A_S}{A_C - A_S} - K_S K_P$$

Where:

K_CK_S	*Horizontal distance from conning position to position '**S**'*
K_SK_P	*Horizontal distance from position '**S**' to position '**P**'*
A_C	*Airdraft of conning position*
A_S	*Airdraft of position '**S**'*

CHAPTER 4 – PHYSICAL PROPERTIES OF TIMBER CARGOES

4.1 Stowage factors

4.1.1 Typical values for density and stowage factors are given in the table below for different types of timber deck cargoes.

***Table 4.1**. Typical values for density and stowage factors*

Type of timber cargo	Density [ton / m^3]	Volume factor [m^3 hold space / m^3 cargo]	Stowage factor [m^3 hold space / ton of cargo]
Sawn wood			
Packages of sawn wood with even ends	0.5 – 0.8	1.4 -1.7	1.8 – 3.4
Packages of sawn wood with uneven ends	0.5 – 0.8	1.6 – 1.9	2.0 - 3.8
Packages of planed wood with even ends	0.5	1.2 – 1.4	2.4 - 2.8
Round wood			
Coniferous round wood, fresh (bark on)	0.9 – 1.1	1.5 - 2.0	1.4 - 2.2
Broad-leaf round wood, fresh (bark on)	0.9 – 1.5	2.0 - 2.5	1.3 - 2.8
Round wood, dried (bark on)	0.65	1.5 - 2.0	2.3 - 3.1
Debarked coniferous round wood, fresh	0.85 – 1.2	1.5 – 2.0	1.2 – 2.4
Debarked broad-leaf round wood, fresh	0.9 – 1.0	1.5 – 2.5	1.5 – 2.8
Debarked round wood, dried	0.6 – 0.75	1.2 – 2.0	1.6 – 3.3

4.1.2 The densities and stowage factors in the table above are presented for information purpose only to aid preplanning operations. The corresponding values for actual loads may vary significantly from those presented in the table depending on the timber type and condition. During actual loading more accurate values of the cargo weight are obtained by repeated checks of the vessel's displacement. The weights of sawn wooden packages are normally more accurate.

4.1.3 The weight of uncovered timber cargo may change during a voyage due to loss or absorption of water (but wrapped bundled cargoes do not). Timber cargo stowed under deck may lose weight whereas timber stowed on deck may gain weight by absorption of water, see special instruction in Annex C. Particular attention should be given to the impact that these and other changing conditions have on stability throughout a voyage.

4.2 Friction factors

4.2.1 Cargo at rest is prevented from sliding by static friction. When movement has been initiated the resistance of the material contact is reduced and sliding is counteracted by dynamic friction, see 4.2.6, instead.

4.2.2 The static friction may be determined by an inclination test. The angle ρ is measured when the timber cargo starts to slide. The static friction is calculated as:

$$\mu = \tan(\rho).$$

4.2.3 Five inclination tests should be performed with the same combination of materials. The highest and the lowest values should be disregarded and the friction factor is taken as the average of the three middle values. This average figure should be rounded down to the nearest fraction of 0.05.

4.2.4 If the values are intended to be used for non-winter conditions, the coefficient of friction for both dry and wet contact surfaces should be measured in separate series of tests and the lower of the two values are to be the used when designing cargo securing arrangements.

4.2.5 If the values are intended to be used for winter conditions when exposed surfaces are covered by snow and ice, the lowest coefficient of friction found for either dry, wet or snowy and icy contact surfaces should be used when designing cargo securing arrangements.

4.2.6 If not specially measured the dynamic friction factor may be taken as 70% of the static values.

4.2.7 The following values of static friction for the mentioned conditions may be used when designing securing arrangements for timber deck cargoes unless the actual coefficient of friction is measured and documented as described above.

***Table 4.2**. Typical values of static friction for different material combinations*

Contact surface	**Non winter conditions** *Dry or wet*	**Winter conditions**
Sawn wooden package		
against painted steel	0.45	0.05
against sawn wood	0.50	0.30
against plastic cover or webbing slings	0.30	0.25
Round wood		
coniferous round wood (bark on) *against* painted steel	0.35	
coniferous round wood (bark on) *between layers*	0.75	

4.2.8 Static friction may be used for tight block stowage arrangements as well as for the design of frictional lashing systems such as top-over lashing systems.

4.2.9 Dynamic friction should be used for non rigid lashing systems, which due to elasticity of securing equipment allow for minor dislocation of the cargo before full capacity of the securing arrangement is reached.

4.3 Plastic covers

4.3.1 Plastic sheeting is often used on packages of sawn wood to protect the cargo. High friction coatings (friction coefficient 0.5 and above) can be incorporated into plastic sheeting as an important means of improving the safe transport of these cargoes.

4.3.2 Special precautions should be taken to prevent slippery plastic hoods with low friction coefficients, from being used as a sawn wood package cargo covering on deck.

4.4 Package marking

All sawn wooden packages should be clearly marked with the volume of the package. The marking should be clearly visible on the top of the package as well as both long sides. The approximate weight should also be shown(29).

4.5 Water absorption

Sea spray may increase the weight of the timber deck cargo and thus influence the stability. The weight increase of the timber varies with time, exposure and type of timber. The value of increased weight of timber deck cargo due to water absorption should be considered in accordance with the 2008 IS Code and special instructions in Annex C.

4.6 Weight of ice

During cold weather conditions ice may form from sea spray and the stability may be affected as the ice can add weight rapidly. Increasing of the weight due to icing should be considered in accordance with the 2008 IS Code.

4.7 Rigidity of sawn wood packages

4.7.1 The Racking Strength, RS, of a sawn wood package is defined as the horizontal force that a package can withstand per metre package length without collapsing or deforming more than 10% of its width, B, or a maximum of 100 mm as shown in figure 4.1.

4.7.2 The racking strength of timber packages can be measured by a test setup as shown in figure 4.2. The angle α should not be greater than 30°.

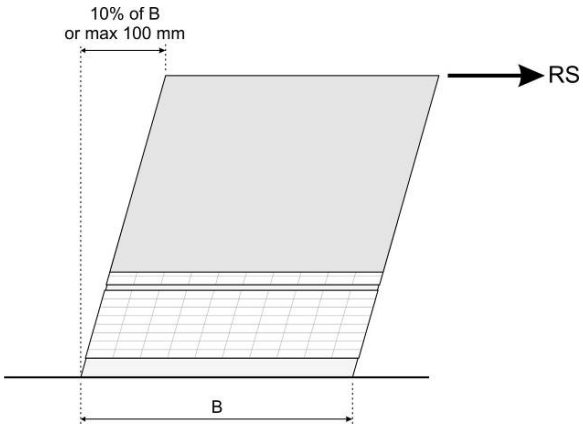


***Figure 4.1**. Racking strength of timber packages*

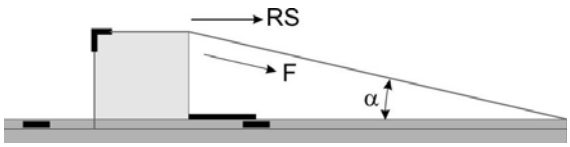


***Figure 4.2**. Test setup for racking strength*

4.7.3 The Racking Strength, RS, is taken as the applied force $F \cdot \cos \alpha$ (see figure above) when the package collapses or when the deflection in the top is 10% of the package width, B, or maximum 100 mm.

4.7.4 Racking strength measurements will have to be carried out by the shipper and the information should be provided to the master as part of the required cargo information mentioned in SOLAS chapter VI.

PART B – DESIGN OF CARGO SECURING ARRANGEMENTS

To accommodate proven designs and practices but to also embrace advances in technology and materials, part B has been split into two chapters, each providing different design principles. Chapter 5: (Design Principles) incorporates **prescriptive** requirements. Chapter 6: (Alternative Design Principles) provides for alternative designs and equipment to be developed and includes **functional** requirements.

CHAPTER 5 – DESIGN PRINCIPLES

This chapter applies primarily, but is not limited to, ships of 24 metres in beam and above engaged in international deep-sea trade and incorporates experience based prescriptive requirements on the securing of timber deck cargoes. It primarily applies the use of steel components for lashings but is not limited to their sole use. Consideration may be given to allowing chapter 5 ships to make use of proven alternative technologies in cargo securing design, which provide at least the level of safety as specified in this chapter.

5.1 General

5.1.1 Every lashing should pass over the timber deck cargo and be secured to suitable eyeplates, lashing bollards or other devices adequate for the intended purpose which are efficiently attached to the deck stringer plate or other strengthened points. They should be installed in such a manner as to be, as far as practicable, in contact with the timber deck cargo throughout its full height.

5.1.2 All lashings and components used for securing should:

.1 possess a breaking strength of not less than 133 kN;

.2 after initial stressing, show an elongation of not more than 5% at 80% of their breaking strength; and

.3 show no permanent deformation after having been subjected to a proof load of not less than 40% of their original breaking strength.

5.1.3 Every lashing should be provided with a tightening device or system so placed that it can safely and efficiently operate when required. The load to be produced by the tightening device or system should not be less than:

.1 27 kN in the horizontal part; and

.2 16 kN in the vertical part.

5.1.4 Upon completion and after the initial securing, the tightening device or system should be left with not less than half the threaded length of screw or of tightening capacity available for future use.

5.1.5 Every lashing should be provided with a device or an installation to permit the length of the lashing to be adjusted.

5.1.6 The spacing of the lashings should be such that the two lashings at each end of each length of continuous deck stow are positioned as close as practicable to the extreme end of the timber deck cargo.

5.1.7 If wire rope clips are used to make a joint in a wire lashing, the following conditions should be observed to avoid a significant reduction in strength:

.1 the number and size of rope clips utilized should be in proportion to the diameter of the wire rope and should not be less than three, each spaced at intervals of not less than 150 mm;

.2 the saddle portion of the clip should be applied to the live load segment and the U-bolt to the dead or shortened end segment; and

.3 rope clips should be initially tightened so that they visibly compress the wire rope and subsequently be re-tightened after the lashing has been stressed.

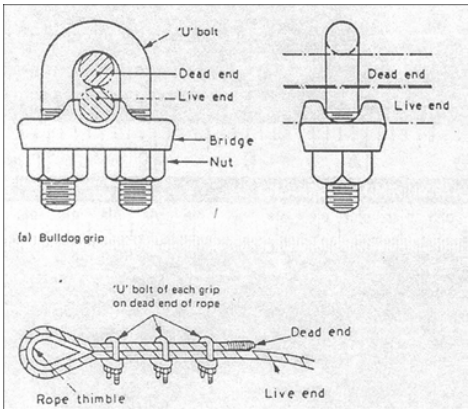


***Figure 5.1**. Wire rope clips*

5.1.8 Greasing the threads of grips, clips, shackles and turnbuckles increases their holding capacity and prevents corrosion.

5.1.9 Bulldog grips are only suitable for a standard wire rope of right-hand lay having six strands. Left-hand lay or different construction should not be used with such grips.

5.2 Uprights

5.2.1 Uprights, designed in accordance with chapter 7, should be used when required by the nature, height or character of the timber deck cargo as outlined in this code.

5.2.2 When uprights are used, they should:

.1 be made of material of adequate strength, taking into account relevant parameters such as; the breadth of the deck cargo, the weight and height of the cargo, the type of timber cargo, friction factors, additional lashings, etc.;

.2 be spaced at intervals between the centrelines of two uprights not exceeding 3 m so that preferably all sections of the stow are supported by at least two uprights; and

.3 be fixed to the deck and/or hatch cover by angles, sockets or equally efficient means and be secured in position as required by the CSM.

5.3 Loose or packaged sawn wood

5.3.1 Uprights should be used for loose sawn wood. Uprights or stoppers (low uprights) should also be used to prevent packaged sawn wood loaded on top of the hatch covers only from sliding. The timber deck cargo should in addition be secured throughout its length by independent lashings.

5.3.2 Subject to 5.3.3, the maximum spacing of the lashings referred to above should be determined by the maximum height of the timber deck cargo in the vicinity of the lashings:

.1 for a height of 2.5 m and below, the maximum spacing should be 3 m;

.2 for heights of above 2.5 m, the maximum spacing should be 1.5 m; and

.3 on the foremost and aft most sections of the deck cargo the distance between the lashings according to above should be halved.

5.3.3 As far as practicable, long and sturdy packages should be stowed in the outer rows of the stow and the packages stowed at the upper outboard edge should be secured by at least two lashings each.

5.3.4 When the outboard packages of the timber deck cargo are in lengths of less than 3.6 m, the spacing of the lashings should be reduced as necessary or other suitable provisions made to suit the length of timber.

5.3.5 Rounded angle pieces of suitable material and design should be used along the upper outboard edge of the stow to bear the stress and permit free reeving of the lashings.

5.3.6 Timber packages may alternatively be secured by a chain or wire loop lashing system, based on the design principles contained in chapter 6.

5.4 Logs, poles, cants or similar cargo

5.4.1 The round wood deck cargo should be supported by uprights and secured throughout its length by independent lashings spaced not more than 1.5 m apart.

5.4.2 If the round wood deck cargo is stowed over the hatches and higher, it should, in addition to being secured by the lashings recommended in 5.4.1, be further secured by a system of athwartship lashings (hog lashings as described in section 2.10.14) joining each port and starboard pair of uprights.

5.4.3 If winches or other adequate tensioning systems are available on board, every other of the lashings mentioned in 5.4.1 may be connected to a wiggle wire system as described in section 2.10.15.

5.4.4 The recommendation of 5.3.5 should apply to a timber deck cargo of cants.

5.5 Testing, marking, examination and certification

All lashings and components used for the securing of the timber deck cargo should be tested, marked, examined and certified, as per the guidelines in MSC/Circ.745[(27)], and be specific to the requirements for lashing and components outlined in 5.1.2 and 5.1.3.

5.6 Lashing plans

One or more generic lashing plans complying with the recommendations of this Code should be provided and maintained on board a ship carrying timber deck cargo. Lashing plans should be incorporated in the cargo securing manual and the most relevant lashing plan should be consulted when stowing and securing timber deck cargoes.

CHAPTER 6 – ALTERNATIVE DESIGN PRINCIPLES

This chapter permits the development (and use) of new designs and securing arrangements, by providing functional based requirements on the securing of timber deck cargoes, which may be used as an alternative to the requirements in chapter 5 for ships of less than 24 metres in beam and for designers considering alternative technologies in cargo securing. When chapter 6 is applied, operational procedures based on design risk assessment should be included within the ship's safety management system.

6.1 General requirements

6.1.1 The construction of deck, bulwarks, uprights, hatches and coamings should be of a design that allows a load of timber deck cargo to be carried in a satisfactory manner.

6.1.2 The goal is to prevent cargo shifting as far as practicable and the securing system should be designed according to the principles laid down in this chapter.

6.1.3 Loose sawn or round wood should as a general rule be longitudinally stowed and supported on the sides by uprights to the full height of the stow.

6.1.4 Packaged sawn wood deck cargoes may be secured without uprights if the racking strength of the packages has been tested and found sufficient and sliding is prevented by bottom blocking, friction or lashing.

6.1.5 If the friction is sufficient and the expected transverse accelerations are limited, unpackaged sawn wood cargo may be transversely stowed.

6.1.6 All denotations used in the formulae in this chapter are listed in section 6.7 of this Code.

6.2 Accelerations and forces acting on the cargo

6.2.1 The cargo securing arrangement should in the transverse direction be designed for accelerations generated as well as forces by wind and sea according to the CSS Code, Annex 13.

6.2.2 Special securing of timber deck cargoes in the longitudinal direction may be dispensed with only if great care is taken to avoid excessive acceleration forces in heavy head seas.

6.2.3 To take account of the factors mentioned in 2.13.4, the acceleration data calculated according to Annex 13 of the CSS Code may be multiplied by a reduction factor ranging from 0 to 1, depending on expected maximum significant wave height during the intended voyage. The reduction factor is obtained by the following formula:

$$f_R = \sqrt[3]{\frac{H_M}{19.6}}$$

Where the variable H_M means the maximum expected significant wave height in metres.

(The value 19.6 is the assumed twenty year wave that will occur in the Northern Atlantic Ocean. Relevant significant wave heights for different sea areas and seasons can be obtained from "Ocean Wave Statistics".)

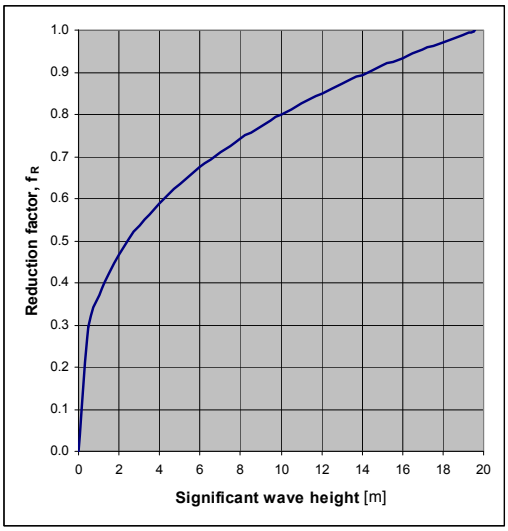


***Figure 6.1**. Plot of the reduction factor as a function of the expected significant wave height*

6.2.4 Reduced acceleration may be used for the design of securing arrangements for timber deck cargoes in any of the following ways:

.1 Required securing arrangements are designed for different wave heights and the securing arrangement is selected according to the maximum expected wave height for each voyage.

.2 The maximum wave height that a particular securing arrangement can withstand is calculated and the vessel is limited to operate in wave heights up to the maximum calculated. Examples on such arrangements are unsecured transversely stowed timber deck cargoes in restricted sea areas.

.3 The required securing arrangement is calculated for the maximum expected twenty year wave in a particular restricted area and the cargo is always secured according to the designed arrangement when operating in that area.

6.2.5 If one of the two first mentioned methods in 6.2.4 are used for decision on securing arrangements, it is important that procedures for forecasting the maximum expected wave height on intended voyages is developed and followed and documented in the ship's approved Cargo Securing Manual.

6.3 Physical properties of timber deck cargoes

6.3.1 Prior to loading of timber deck cargoes, all relevant cargo information, as described in this section and in chapter 4, should be provided to the master of the vessel.

Friction

6.3.2 Friction is one of the most important factors preventing cargo from shifting. Deck cargo may shift due to a lack of internal friction. Snow, ice, frost, rain, and other slippery

surface conditions drastically affect friction. Special consideration should be given to package materials, contact surfaces, and weather conditions.

6.3.3 Static friction may be used for tight block stowage arrangements as well as for the design of frictional lashing systems such as top-over lashing systems.

6.3.4 Dynamic friction should be used for non rigid lashing systems, e.g., loop lashings, which due to elasticity of securing equipment allow for minor dislocation, see 6.5.16, of the cargo before full capacity of the securing arrangement is reached.

6.3.5 Test procedures for determining coefficients of friction as well as generic friction values for material contacts common for timber deck cargoes are given in chapter 4.

Rigidity of timber packages

6.3.6 The rigidity of timber packages is of great importance for the stability of the deck cargo and the racking strength of the timber packages should be taken into consideration when securing systems are designed.

Figure 6.2. *Example of poor rigidity*

6.3.7 The definition of the rigidity of timber packages for the purpose of this Code as well as methods for determining it are presented in chapter 4. The racking strength should not be less than 3.5 kN/m of package length.

6.4 Safety factors

6.4.1 Safety factors are to be used when:

.1 calculating the Maximum Securing Load (MSL) of the lashings from the Minimum Breaking Load (MBL); and

.2 calculating the maximum allowed Calculated Strength (CS) in the lashings as function of MSL.

6.4.2 MSL as function of the MBL should be taken according to Annex 13 of the CSS Code, provided inspection and maintenance of the equipment have been carried out in accordance with the ship's cargo securing manual.

6.4.3 The maximum allowed Calculated Strength (CS) in lashings and uprights used in the calculations should be taken from the following formula:

$$CS \leq \frac{MSL}{1.35}$$

6.5 Design criteria for different securing arrangements

6.5.1 Securing arrangements for timber deck cargoes should be based on accelerations, physical properties and safety factors as described in 6.4 above.

6.5.2 Design criteria for some different securing arrangements are given below. Other securing arrangements may also be used as long as the system is designed according to the principles given in this code.

6.5.3 In Annex B detailed descriptions and example design calculations are given for some stowage and securing arrangements.

6.5.4 The denotations used in the formulas in this chapter are listed in chapter 8.

Top-over lashed longitudinally stowed timber packages

6.5.5 Top-over lashing alone is a frictional lashing method and the effect of the lashing is to apply vertical pressure increasing the friction force between the outer stows of deck cargo and the ship's deck/hatch cover.

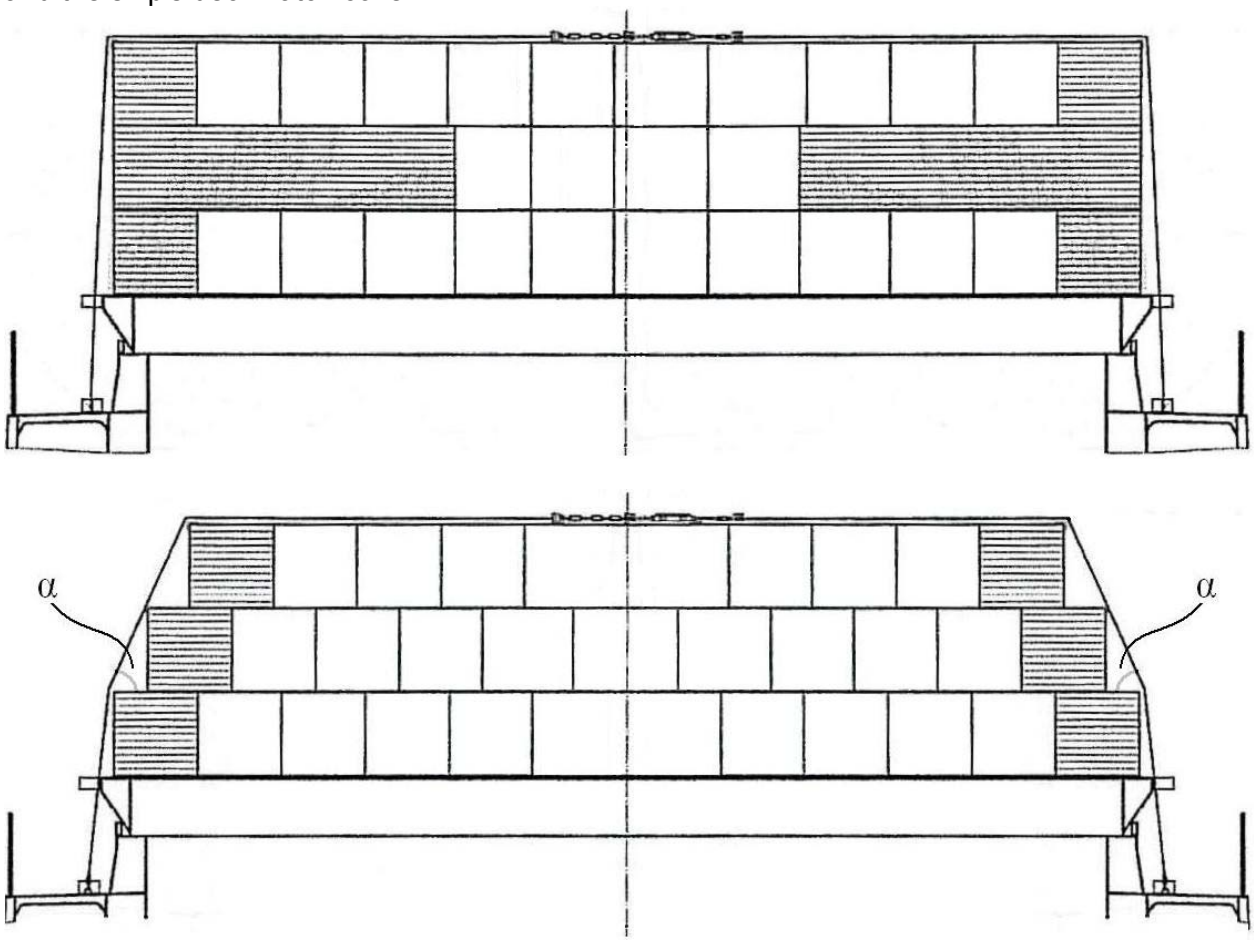


***Figure 6.3**. Principles for top-over lashing*

6.5.6 For pure top-over lashing arrangements the friction alone will have to counteract the transverse forces so that the following equilibrium of forces is satisfied:

$$\left(m \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha\right) \cdot \mu_{static} \geq m \cdot a_t + PW + PS$$

6.5.7 In practice, sliding between the layers is often prevented due to slightly different heights of the timber packages. Alternatively it may be prevented by inserting vertical sturdy battens of proper dimensions between the columns.

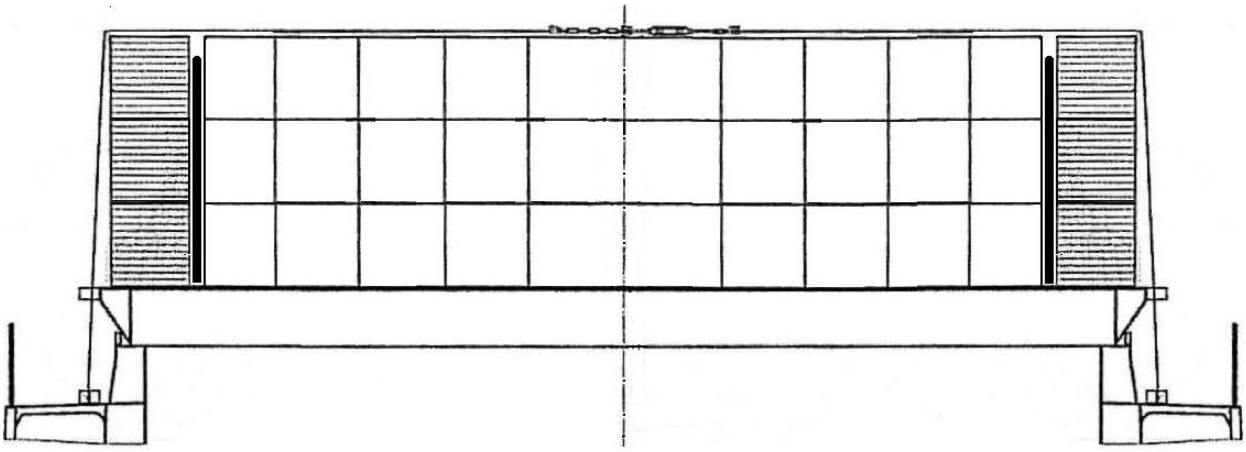


***Figure 6.4**. Sliding of upper layer prevented by vertical sturdy battens*

6.5.8 If sliding between layers is not prevented, sliding between each individual layer should be considered by the following equilibrium of forces:

$$\left(m_a \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha\right) \cdot \mu_{static\ a} \geq m_a \cdot a_t + PW_a + PS_a$$

Units denoted with **a** consider cargo units above the sliding level only.

6.5.9 To prevent the packages in the bottom layer from collapsing due to racking, the weight of the cargo stowed on top of the bottom layer should be limited so that the following equilibrium of forces is satisfied:

$$n_p \cdot L \cdot RS \geq m_a \cdot \left(a_t - 0.5 g_o\right) + PW_a + PS_a$$

Units denoted with **a** consider cargo units above the bottom layer only.

6.5.10 Lashings used should comply with 6.5.20 and 6.5.21. It is extremely important to keep the lashings tight when a top-over lashing arrangement is used as the arrangement is based on the vertical pressure from the lashings.

6.5.11 When top-over lashings are used as the only means of securing longitudinally stowed packages of sawn wood, adequate friction against the hatch covers should be sought and/or the transverse accelerations should if possible be limited.

Loop lashed longitudinally stowed timber packages

6.5.12 Loop lashings are always applied in pairs as shown in the figure below. The lashings are drawn from one side of the cargo, under the cargo to the other side, up over the cargo and back to the same side. Alternatively, the lower part of the lashing may be fastened to a securing point on top of the hatch cover underneath the cargo.

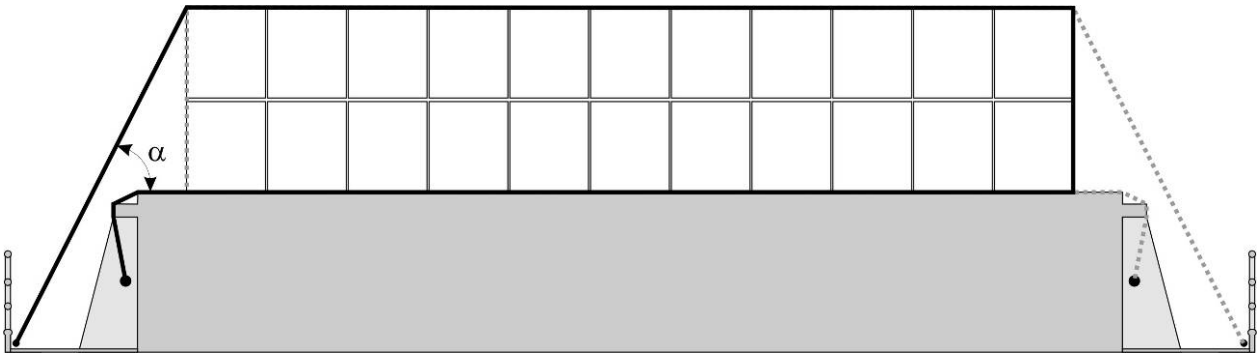


Figure 6.5. *Principals of loop lashing alternative 1 (be aware of chafing where lashings are lead around ship's structure as shown in the above figure, see section 2.10.10)*

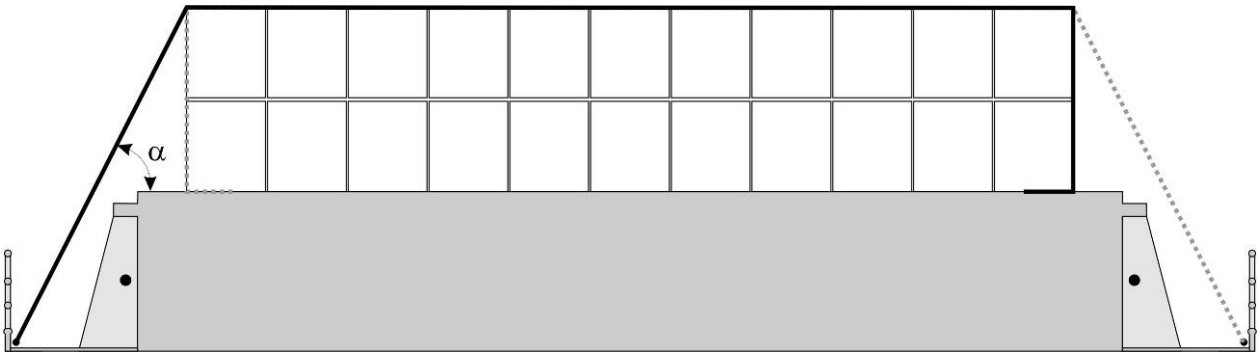


Figure 6.6*. Principles for loop lashing alternative 2. The shorter length of the lashing compared to alternative 1 reduces the movement of the cargo due to elongation of the lashing*

6.5.13 The number and strength of the lashings are to be chosen so that the following equilibrium is satisfied:

$$(m \cdot g_0 + n \cdot CS \cdot \sin\alpha) \cdot \mu_{dynamic} + n \cdot CS + n \cdot CS \cdot \cos\alpha \geq m \cdot a_t + PW + PS$$

6.5.14 Sliding between the layers should be prevented (see 6.5.7).

6.5.15 To prevent the packages in the bottom layer from racking, the weight of the cargo stowed on top of the bottom layer should be limited so that the following equilibrium is satisfied:

$$n_p \cdot L \cdot RS + n \cdot CS \cdot \cos\alpha \geq m_a \cdot (a_t - 0.5g_0) + PW_a + PS_a$$

Units denoted with $_a$ consider cargo units above the bottom layer only.

6.5.16 The transverse movement of the deck cargo due to elongation of the lashings is calculated according to the following formula:

$$\delta = L_L \cdot \frac{(CS - PT_V)}{MSL} \cdot \varepsilon$$

The elongation factor ε should be taken as 2% for chain and wire lashings and 7% for web lashings unless otherwise specified by certificate from the manufacturer.

The maximum heeling angle of the vessel due to a small transverse movement of the cargo should in no case be more than 5°, based on the full timber deck load condition of the vessel calculated according to the following formula:

$$HA = \arctan\left(\frac{HM}{G'M \cdot \Delta}\right)$$

Where:

HA	=	Heeling angle in degrees
HM	=	Heeling moment due to transverse movement of the deck cargo in tonmetres
G'M	=	Metacentric height corrected for free surface moments in metres
Δ	=	Ship's actual displacement in tons

Bottom blocked and top-over lashed longitudinally stowed timber packages

6.5.17 Blocking means that the cargo is stowed against a blocking structure or fixture on the ship. If the cargo consists of packages with large racking capacity, bottom blocking should be sufficient in combination with top-over lashings.

***Figure 6.7**. Example of uprights for bottom blocking*

6.5.18 The required strength, MSL, of the bottom blocking devices is calculated by satisfying the following equilibrium:

$$\left(m \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha\right) \cdot \mu_{static} + n_b \cdot \frac{MSL}{1.35} \geq m \cdot a_t + PW + PS$$

6.5.19 The spacing between top-over lashings in a longitudinal direction should be maximum 3 m for stowage heights below 2.5 m and maximum 1.5 m for stowage heights above 2.5 m.

6.5.20 The pretension PT_V in the vertical part of the lashings should be not less than 16 kN and the pretension PT_H in the horizontal part of the lashing should not be less than 27 kN.

6.5.21 All lashings and components used for securing in combination with bottom blocking should:

.1 possess a breaking strength MBL of not less than 133 kN;

.2 after initial stressing, show an elongation of not more than 5% at 80% of their breaking strength; and

.3 show no permanent deformation after having been subjected to a proof load of not less than 40% of their original breaking strength.

6.5.22 The bottom blocking devices are to be placed on both sides of the deck cargo equally spaced. Two blocking device per side should be used per cargo section and the height should extend to a height of at least 200 mm.

6.5.23 Sliding between the layers should be prevented (see 6.5.7). If no such measures are taken, sliding between layers should be checked by the calculation for equilibrium of forces in 6.5.8.

6.5.24 To prevent the packages in the bottom layer from racking, the weight of the cargo stowed on top of the bottom layer should be limited so that the following equilibrium of forces is satisfied:

$$n_p \cdot L \cdot RS \geq m_a \cdot (a_t - 0.5g_0) + PW_a + PS_a$$

Units denoted with $_a$ consider cargo units above the bottom layer only.

Uprights blocked and top-over lashed longitudinally stowed sawn wood packages and round wood

6.5.25 Longitudinally stowed sawn wood packages, loose sawn wood or round wood may be supported by uprights in combination depending on trading pattern with or without top-over lashings or hog-wires.

6.5.26 The uprights should be designed in accordance with chapter 7.

6.5.27 The uprights should be placed on both sides of the cargo, equally spaced. Each cargo block of the stow should be supported by at least two uprights per side.

6.5.28 The spacing of top-over lashings should for packaged sawn wood be a maximum of 3 m for stowage heights below 2.5 m and maximum 1.5 m for stowage heights above 2.5 m for round wood the spacing should be 1.5 m irrespective of the height.

6.5.29 The pretension PT_V in the vertical part of the lashings should be not less than 16 kN and the pretension PT_H in the horizontal part of the lashing should not be less than 27 kN.

6.5.30 All lashings and components used for securing in combination with bottom blocking should:

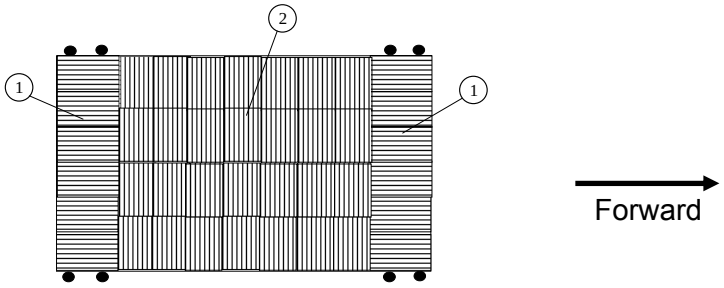
.1 possess a breaking strength MBL of not less than 133 kN;

.2 after initial stressing, show an elongation of not more than 5% at 80% of their breaking strength; and

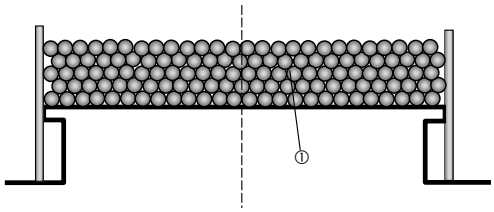
.3 show no permanent deformation after having been subjected to a proof load of not less than 40% of their original breaking strength.

Frictional securing

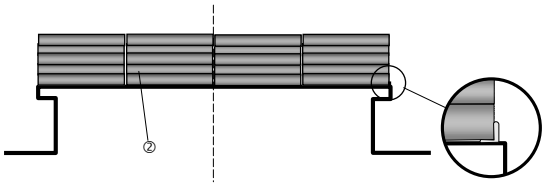
6.5.31 In restricted sea areas, round wood may be transversely stowed and secured by bottom blocking and/or friction between tiers only. This may be done only if the friction between layers is sufficient and the expected transverse accelerations are limited. When the friction is sufficient between bottom layers and deck/hatch, then the bottom blocking may not be required.



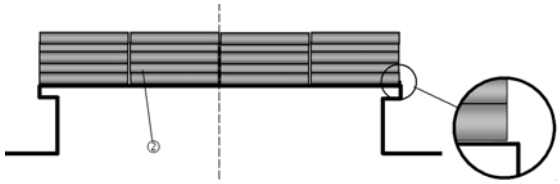
Example of round wood stowage pattern for restricted sea areas.
Sections marked 1 are longitudinally stowed round wood secured by uprights. Section marked 2 are transversely stowed round wood secured by friction in combination with or without bottom blocking.



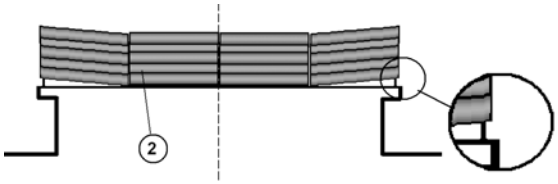
Section with longitudinally stowed round wood secured by uprights.



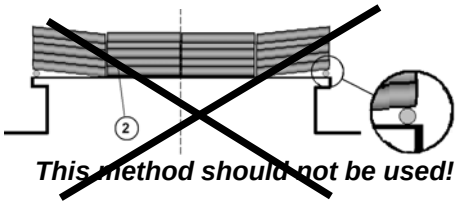
Section with transversely stowed timber cargo secured by friction in combination with bottom blocking.



Section with transversely stowed round wood secured by friction only (Alternative 1). Non-slip paint on hatch cover or non-slip material between hatch cover and round wood should be used.



Section with transversely stowed round wood secured by friction only (Alternative 2). Non-slip paint on hatch cover or non-slip material between hatch cover and round wood should be used.



Section with transversely stowed round wood secured by friction only (Alternative 3).

***Figure 6.8**. Principles for friction securing of round wood in restricted sea areas*

6.5.32 The required strength, MSL, of the bottom blocking devices is calculated by satisfying the following equilibrium:

$$m \cdot g_0 \cdot \mu_{static} + n_b \cdot \frac{MSL}{1.35} \geq m \cdot a_t + PW + PS$$

6.5.33 The required friction between the layers can be calculated by satisfying the following equilibrium:

$$m \cdot g_0 \cdot \mu_{static} \geq m \cdot a_t + PW + PS$$

CHAPTER 7 – UPRIGHTS

7.1 Longitudinally stowed round wood, loose sawn wood and sawn wood packages with limited racking strength should be supported by uprights at least as high as the stow.

7.2 Uprights should be designed for the forces they have to take up according to the formulas in this section. Especially the design of high uprights should be such that the deflection is limited. Uprights may be complemented by different lashing arrangements.

***Figure 6.9**. Uprights for blocking over the entire height of the stow*

7.3 For vessels carrying loose sawn wood and round timber, the design bending moment per upright is calculated as the greater of the two moments given by the following formulas:

$$CM_{bending1} = 0.1 \cdot \frac{H^2}{k \cdot B \cdot N} \cdot m \cdot g_0$$

$$CM_{bending2} = \frac{H}{3 \cdot k \cdot N} \cdot \left(m \cdot \left(a_t - 0.6 \cdot \mu_{static} \cdot g_0\right) + PW + PS\right)$$

$$M_{bending} \geq 1.35 \cdot max\left(CM_{bending1}, CM_{bending2}\right)$$

In the table below the required bending resistance for uprights supporting loose sawn wood or round wood have been calculated based on the formulae above and by using typical cargo properties and configurations.

Height [m]	Transverse Acceleration [m/s^2]							
	3.0	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**	**6.0**	**6.5**
2	107	150	193	235	278	321	363	406
3	330	474	618	762	906	1050	1194	1338
4	756	1097	1438	1780	2121	2462	2803	3144
5	1452	2118	2785	3451	4118	4784	5451	6117
6	2486	3638	4790	5941	7093	8245	9396	10548
7	3926	5755	7584	9413	11242	13070	14899	
8	5840	8570	11300	14030	16759			

***Table 7.1**. Required bending resistance in cm^3 on uprights supporting round wood.*

If **top-over lashings** are applied in accordance with sections 5.4 or 6.5.28 – 6.5.30, the bending moment of the uprights may be reduced by 12%.

7.4 The design bending moment per upright supporting timber packages is to be taken as the greatest of the three moments given by the following formulas:

$$CM_{bending1} = \frac{m}{n_p \cdot k \cdot N} \cdot \left(a_t \cdot \frac{H}{2} - g_0 \cdot \frac{b}{2} \right) \cdot \frac{1-(1-f_i)^n}{f_i}$$ *(Moment required to prevent tipping)*

where: $f_i = \mu_{\text{int ernal}} \cdot \frac{2b}{H}$ *(f_i = Factor for considering internal moment)*

$$CM_{bending2} = \frac{H}{2 \cdot k \cdot N} \cdot m \cdot \left(a_t - \mu_{\text{int ernal}} \cdot g_0 \right) \cdot \frac{q-1}{2q}$$ *(Moment required to prevent sliding)*

$$CM_{bending3} = \frac{H}{k \cdot N} \cdot \left(m \cdot a_t - \left(n_p - 4 \right)(q-2) \cdot L \cdot RS \right) \cdot \frac{q-1}{2q}$$ *(Moment required to prevent racking)*

$$M_{bending} \geq 1.35 \cdot \max\left(CM_{bending1},\ CM_{bending2}, CM_{bending3} \right)$$

In the tables below the required bending resistance for uprights supporting timber packages have been calculated based on the formulae above and by using typical cargo properties and configurations for **sturdy** timber packages with a racking strength of 7 kN/m and for weaker packages with a racking strength of 3.5 kN/m.

Height [m]	Transverse Acceleration [m/s^2]						
	3.0	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**	**6.0**
2					26	70	115
3		22	70	118	165	213	378
4	124	237	350	463	576	689	953
5	458	679	900	1120	1341	1562	1927
6	1040	1421	1803	2184	2565	2946	3405
7	1934	2539	3144	3748	4353	4958	5563
8	3202	4104	5007	5909	6812	7714	8617
9	4907	6192	7477	8761	10046	11331	12615

***Table 7.2**. Required bending resistance in cm^3 on uprights supporting **sturdy** packages of sawn wood.*

Height [m]	**Transverse Acceleration** [m/s^2]						
	3.0	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**	**6.0**
2	3	32	61	90	118	147	176
3	524	660	797	934	1071	1207	1344
4	724	1095	1466	1837	2208	2579	2950
5	725	1304	2084	2864	3644	4423	5203
6	1645	2248	2982	4393	5804	7215	8626
7	3055	4011	4966	7200	9512	11824	14136

***Table 7.3**. Required bending resistance in cm^3*
*on uprights supporting **weaker** packages of sawn wood.*

7.5 If hog lashings are used, the required MSL of each hog lashing is calculated by the following formula:

$$MSL \geq \frac{M_{bending}}{2 \cdot h}$$

7.6 The design bending moment should not produce greater stress than 50% of the ultimate stress for the material in any part of the uprights.

CHAPTER 8 – DENOTATIONS USED

The denotations used in the formulas in the design criteria of this code are listed below:

a_t = Largest transverse acceleration at the centre of gravity of the deck cargo in the forward or aft end of the stow in m/s^2
B = Width of deck cargo in metres
b = Width of each individual stack of packages
CS = Calculated strength of lashing in kN, see section 6.4
f_R = Reduction factor for accelerations due to expected sea state
g_0 = Gravity acceleration 9.81 m/s^2
H = Height of deck cargo in metres
H_M = Maximum significant wave height
h = Height above deck at which hoglashings are attached to the uprights in metres
k = Factor for considering hog lashings:
k = 1 if no hog lashings are used
k = 1.8 if hog lashings are used
L = Length of the deck cargo or section to be secured in metres
L_L = Length of each lashing in metres
$M_{bending}$ = Design bending moment on uprights in kNm
MSL = Maximum Securing Load in kN of cargo securing devices
m = Mass of the deck cargo or section to be secured in tonnes, including absorbed water and possible icing
N = Number of uprights supporting the considered section on each side
n = Number of lashings
n_b = Number of bottom blocking devices per side of the deck cargo
n_p = Number of stacks of packages abreast in each row
PS = Pressure from unavoidable sea sloshing in kN based on 1 kN per m^2 exposed area, see CSS Code, Annex 13

PT_V = Pretension in the vertical part of the lashings in kN
PT_H = Pretension in the horizontal part of the lashings in kN
PW = Wind pressure in kN based on 1 kN per m^2 wind exposed area, see CSS Code, Annex 13
q = Number of layers of timber packages
RS = Racking Strength per metre of timber package in kN/m, see section 4.7
α = Angle between the hatch cover top plating and the lashings in degrees
δ = Small transverse movement of deck cargo in metres due to elasticity of lashing arrangement
ε = Elasticity factor for lashing equipment, taken as fraction of elongation experienced at the load of MSL for the lashing
$\mu_{dynamic}$ = Dynamic coefficient of friction between the timber deck cargo and the ship's deck/hatch cover and considered to be 70% of the static friction value
$\mu_{internal}$ = Coefficient of dynamic friction found internally between the packages of sawn wood
μ_{static} = Static coefficient of friction between the timber deck cargo and the ship's deck/hatch cover

ANNEX A – GUIDANCE IN DEVELOPING PROCEDURES AND CHECKLISTS

Items in A.1 to A.5 should be taken into account when developing the checklists for timber deck cargo operations.

A.1 Preparations before loading of timber deck cargoes

General preparations

A.1.1 The following information as applicable for each parcel of cargo should be provided by the shipper and collected by the master or his representative:

.1 total amount of cargo intended as deck cargo;

.2 typical dimensions of the cargo;

.3 number of bundles;

.4 density of the cargo;

.5 stowage factor of the cargo;

.6 racking strength for packaged cargo;

.7 type of cover of packages and whether non-slip type; and

.8 relevant coefficients of friction including covers of sawn wooden packages if applicable.

A.1.2 A confirmation on when the deck cargo will be ready for loading should be received.

A.1.3 A pre-loading plan according to the ship's Trim and Stability Book should be done and the following should be calculated and checked:

.1 stowage height;

.2 weight per m^2;

.3 required amount of water ballast; and

.4 displacement, draught, trim and stability at departure and arrival.

A.1.4 The stability should be within required limits during the entire voyage.

A.1.5 When undertaking stability calculations, variation in displacement, centre of gravity and free surface moments due to the following factors should be considered:

.1 absorption of water in timber carried as timber deck cargo according to special instruction, see annex c;

.2 ice accretion, if applicable;

.3 variations in consumables; and

.4 ballast water exchange operations, in accordance with approved procedures.

A.1.6 Proper instructions for ballast water exchange operations, if applicable for the intended voyage, should be available in the Ballast Water Management Plan.

A.1.7 A lashing plan according to the ship's Cargo Securing Manual (CSM) should be prepared and the following calculated:

.1 weight and height of stows per hatch;

.2 number of sections in longitudinal direction per hatch;

.3 required number of pieces of lashing equipment; and

.4 required number of uprights, if applicable.

A.1.8 The certificates for the lashing equipment should be available in the ship's Cargo Securing Manual.

A.1.9 When the initial stability calculations and lashing plan have been satisfactorily completed, the maximum cargo intake should be confirmed.

A.1.10 Pre-load, loading and pre-lashing plans should be distributed to all involved parties (i.e. supercargo, stevedores, agent, etc.).

A.1.11 Weather report for loading period and forecasted weather for the sea voyage should be checked.

A.1.12 It should be confirmed that the stevedoring company is aware of the ship's specific requirements regarding stowage and securing of timber deck cargoes.

Ship readiness

A.1.13 All ballast tanks required for the voyage and included in the stability calculations should be filled before the commencement of loading on deck and it should be ensured that free surfaces are eliminated in all tanks intended to be completely full or empty.

A.1.14 Hatch covers and other openings to spaces below deck should be closed, secured and battened down.

A.1.15 Air pipes, ventilators, etc., should be protected and examined to ascertain their effectiveness against entry of water.

A.1.16 Objects which might obstruct cargo stowage on deck should be removed and secured safely in places appropriate for storage.

A.1.17 Accumulation of ice and snow on areas to be loaded and on packaged timber should be removed.

A.1.18 All sounding pipes on the deck should be reviewed and necessary precautions should be taken that safe access to these remains.

A.1.19 Cargo securing equipment should be examined in preparation for use in securing of timber deck cargoes and any defective equipment found should be removed from service, tagged for repair and replaced.

A.1.20 It should be confirmed that uprights utilized are in compliance with the requirements in the ship's Cargo Securing Manual.

A.1.21 A firm and level stowage surface should be prepared. Dunnage, where used, should be of rough lumber and placed in the direction which will spread the load across the ship's hatches or main deck structure and assist in draining.

A.1.22 Extra lashing points, if required, should be approved by the Administration.

A.1.23 It should be ensured that dunnage is readily available and in good condition.

A.1.24 Friction enhancing arrangements, where fitted, should be checked for their condition.

A.1.25 Cranes with wires, brakes, micro switches and signals (if they are to be used) should be controlled.

A.1.26 It should be verified that illumination on deck is working and ready for use.

Ship to shore communication

A.1.27 Radio channels to be used during cargo operations should be assigned and tested.

A.1.28 It should be confirmed that crane drivers and loading stevedores/crew understands signals to be used during cargo operations.

A.1.29 A plan should be worked out to halt loading or unloading operations due to any unforeseen circumstances that may jeopardize safety of ship and/or anyone on board.

A.2 Safety during loading and securing of timber deck cargoes

Lashing equipment

A.2.1 If applicable, uprights should be mounted before loading on deck is commenced.

A.2.2 It should be checked that all lashing equipment is in place.

Ship's safety

A.2.3 All loading operations should be planned to immediately cease if a list develops for which there is no satisfactory explanation.

A.2.4 In the event that the vessel takes up an unexplained list, then no further work should be undertaken until all ship's tanks are sounded and assessment made of the ship's stability condition.

A.2.5 If deemed necessary, samples of the timber cargo should be weighed during loading and their actual weight should be compared to the weight stated by the shipper, in order to correctly assess the ship's stability.

A.2.6 Draught checks should be regularly carried out during the course of loading and the ship's displacement should be calculated to ensure the ship's stability and draft in the final condition are within prescribed limits.

A.2.7 Permitted loading weights on deck and hatches should not be exceeded.

A.2.8 The stability of the ship should at all times be positive and in compliance with the ship's intact stability requirements.

A.2.9 Emergency escape routes should be free and ready for use.

A.2.10 There should be free access to ventilation ducts and valves if required.

A.2.11 Any obstruction such as lashings or securing points in the access way of escape routes or operational spaces and to safety equipment, fire fighting equipment or sounding pipes should be kept to a minimum and in any case they should be clearly marked.

A.2.12 An approximation of the metacentric height should be obtained (when safe to do so) from the rolling period or static list at a late stage of loading. Rolling or static list may be initiated by quick or slow (as appropriate) shifting of cargo with the deck cranes or lowering cargo bundles onto other deck cargo at one side of the ship.

Stowage

A.2.13 The stow of the deck cargo should be as solid, compact and stable as practicable. Slack in the stow should be prevented as such could cause lashings to slacken and/or water to accumulate.

A.2.14 A binding effect should, as far as practicable, be obtained within the stow to enhance the stability of stack structure and to minimize the risk of cargo shifting during the sea voyage.

A.2.15 Stowage of damaged timber packages should not be allowed. Timber packages that have deformed or are found with broken bands should be returned to shore for rectification.

A.2.16 Cargo should not be stowed overhanging the ship's side.

A.2.17 Timber deck cargo which overhangs the outer side of hatch coamings or other structures, should be supported at the outer end by other cargo stowed on deck or railing or equivalent structure of sufficient strength to support it (refer to 2.9.6).

Avoid the risk of sliding in the stow

A.2.18 Ice and snow accretions should be cleared from the hatches and deck cargo before placing further cargo layers in order to obtain a high coefficient of friction in the stow.

A.2.19 Sliding between the layers should if possible be prevented by stowing timber packages of different heights in the same layer or by inserting vertical, sturdy battens between the layers. Transverse tipping of wooden packages could be prevented by overlapping packages in successive tiers so as to create a binding stow (refer to 6.5.7).

Work safety

A.2.20 Personnel involved in the loading process should be equipped with protective clothing, i.e. hardhats, proper footwear, gloves, etc., according to ship's and harbour requirements.

A.2.21 Personnel working on cargo stowed at heights 2 m and above, within 1 m of an unguarded edge, should if deemed necessary be protected from falls with fall restraint equipment such as a safety harness or other fall restraining devices approved by the Administration.

A.2.22 While working on the cargo there should be provisions to attach a safety harness.

A.2.23 Safe access should be available to the top of, and across the cargo stow.

A.2.24 Personnel should exercise caution when working or moving on timber packages covered by plastic wrapping or tarpaulins.

A.3 Securing of timber deck cargoes

Basic requirements on the securing

A.3.1 The stevedoring company and the crew should be informed about the requirements on the securing arrangements.

A.3.2 Uprights, when used, should be well fastened and protected from falling inwards during loading and discharging operations.

A.3.3 If required by this Code and as prescribed in the cargo securing manual, uprights should be connected by hog lashings, running between each pair of uprights on opposing sides of the stow.

Repair or replacement of damaged securing equipment

A.3.4 Only undamaged cargo securing equipment should be used for securing timber deck cargo.

A.3.5 Damaged equipment that is beyond repair should be marked as unserviceable and removed from the vessel.

A.3.6 If any damage is noted on any of the uprights or their support on deck, coamings or hatches, this should immediately be repaired.

A.3.7 If any damage is noted on the fixed lashing equipment this should immediately be repaired.

A.3.8 If any damage is noted on the portable lashing equipment this should immediately be repaired or the equipment should be exchanged by new certified equipment.

Tightening of lashings

A.3.9 Threads on turnbuckles should be greased to increase pre-tension in the lashings.

A.3.10 All lashings should be thoroughly tightened and all bolts and screws on shackles and turnbuckles should be tightly fastened.

A.3.11 Turnbuckles should have sufficient threads remaining to permit lashings to be tightened during the voyage as needed.

A.3.12 Lashings should be tensioned as specified in this Code and as prescribed in the cargo securing manual.

A.3.13 Edge protectors should be used when required according to this code and as prescribed in the ship's Cargo Securing Manual to obtain good pretension in both vertical and horizontal parts of the lashings.

Provision of catwalk

A.3.14 If there is no convenient passage on or below the deck of the ship, a sturdy catwalk with strong railings should be provided above the deck cargo (refer to 2.8.6).

Securing according to the ship's Cargo Securing Manual

A.3.15 The timber deck cargo should be stowed and secured according to this code and as prescribed in the ship's Cargo Securing Manual.

A.3.16 Number and strength of uprights and lashing equipment used for the securing of the timber deck cargo should be in accordance with this code and as prescribed in the ship's Cargo Securing Manual.

A.4 Actions to be taken during the voyage

Voyage planning

A.4.1 During voyage planning, all foreseeable risks which could lead to either excessive accelerations causing cargo to shift or sloshing sea causing water absorption and ice aggregation, should be taken under consideration.

A.4.2 Before the ship proceeds to sea, the following should be verified:

.1 The ship is upright;

.2 The ship has an adequate metacentric height;

.3 The ship meets the required stability criteria; and

.4 The cargo is properly secured.

A.4.3 Soundings of tanks should be regularly carried out throughout the voyage.

A.4.4 The rolling period of the ship should be regularly checked in order to establish that the metacentric height is still within the acceptable range.

A.4.5 In cases where severe weather and sea conditions are unavoidable, the Master should be conscious of the need to reduce speed and/or alter course at an early stage in order to minimize the forces imposed on the cargo, structure and lashings.

A.4.6 If deviation from the intended voyage plan is considered during the voyage, a new plan should be made.

Cargo safety inspections during sea voyages

A.4.7 Cargo safety inspections, in accordance with the items below, should be frequently conducted throughout the voyage.

A.4.8 Prior to any inspections being commenced on deck, the Master should take appropriate actions to reduce the motions of the ship during such operations.

A.4.9 Close attention should be given to any movement of the cargo which could compromise the safety of the ship.

A.4.10 When safety permits fixed and portable lashing equipment should be visually examined for any abnormal wear and tear or other damages.

A.4.11 Since vibrations and working of the ship will cause the cargo to settle and compact, lashing equipment should be retightened to produce the necessary pre-tension, as needed.

A.4.12 Uprights should be checked for any damage or deformation.

A.4.13 Supports for upright should be undamaged.

A.4.14 Corner protections should still be in place.

A.4.15 All examinations and adjustments to cargo securing equipment during the voyage should be entered in the ship's log-book.

List during voyage

A.4.16 If a list occurs that cannot be attributed to normal use of consumables the matter should be immediately investigated. This should consider that the cause may be due to one or more of the following:

.1 cargo shift;

.2 water ingresses; and

.3 an angle of loll (inadequate GM).

A.4.17 Even if no major shift of the deck cargo is apparent, it should be examined whether the deck cargo has shifted slightly or if there has been a shift of cargo below deck. However, prior to entering any closed hold that contains timber the atmosphere should be checked to make sure that the hold atmosphere has not been oxygen depleted by the timber.

A.4.18 It should be considered whether the weather conditions are such that sending the crew to release or tighten the lashings on a moving or shifted cargo present a greater hazard than retaining an overhanging load.

A.4.19 The possibility of water ingress should be determined by sounding throughout the vessel. In the event that unexplained water is detected, all available pumps, as appropriate, should be used to bring the situation under control.

A.4.20 An approximation of the current metacentric height should be determined by timing the rolling period.

A.4.21 If the list is corrected by ballasting and deballasting operations, the order in which tanks are filled and emptied should be decided with consideration to the following factors:

.1 when the draft of the vessel increases, water ingress may occur through openings and ventilation pipes;

.2 if ballast has been shifted to counteract a cargo shift or water ingress, a far greater list may rapidly develop to the opposite side;

.3 if the list is due to the ship lolling, and if empty divided double bottom space is available, the tank on the lower side should be ballasted first in order to immediately provide additional metacentric height – after which the tank on the high side should also be ballasted; and

.4 free surface moments should be kept at a minimum by operating only one tank at a time.

A.4.22 As a final resort when all other options have been exhausted if the list is to be corrected by jettisoning deck cargo, the following aspects should be noted:

.1 jettisoning is unlikely to improve the situation entirely as the whole stack would probably not fall at once;

.2 severe damage may be sustained by the propeller if it is still turning when the timber is jettisoned;

.3 it will be inherently dangerous to anyone involved in the actual jettison procedure; and

.4 the position of the jettisoning procedure and estimated navigational hazard must be immediately reported to coastal authorities.

A.4.23 If the whole or partial timber deck load is either jettisoned or accidentally lost overboard, the information on a direct danger to navigation[28] should be communicated by the master by all means at his disposal to the following parties:

.1 ships in the vicinity; and

.2 competent authorities at the first point on the coast with which he can communicate directly.

Such information is to include the following:

.3 the kind of danger;

.4 the position of the danger when last observed; and

.5 the time and date (coordinated universal time) when the danger was last observed.

A.5 Safety during discharge of timber deck cargoes

Cargo securing equipment

A.5.1 The cargo securing equipment should be collected and examined and damaged equipment should be either repaired or scrapped.

A.5.2 Uprights, when used, should be well fastened to the deck, hatches or coamings of the vessel and protected from falling inwards during discharging operations.

Ship's safety

A.5.3 All discharge operations should be planned to immediately cease if a list develops for which there is no satisfactory explanation and it would be imprudent to continue loading.

A.5.4 The stability of the ship should, at all times, be positive and in compliance with the vessels intact stability requirements.

A.5.5 Emergency escape routes should be free and ready for use.

Work safety

A.5.6 Personnel involved in the discharge process should be dressed with protective clothing, i.e. hardhats, proper footwear, gloves, etc., according to ship's and harbour requirements.

A.5.7 While working on the cargo there should be provisions to attach a safety harness.

A.5.8 Correct signals should be agreed and used with crane operator(s).

A.5.9 Safe access should be available to the top of, and across the cargo stow.

A.5.10 All possible actions should be taken to minimize the risk of slipping on the cargo (i.e. when plastic wrapping or tarpaulins are used as covers).

A.5.11 Illumination should be used when required during the cargo operation.

ANNEX B – SAMPLES OF STOWAGE AND SECURING ARRANGEMENTS

B.1 Example calculation – Top-over lashings

In the examples below, the number of lashings required to secure packages of sawn wood on deck as well as the required racking strength in the packages in the bottom layer are calculated for a 16,600 DWT ship.

Example B.1.1 – Top-over lashings on a 16,600 DWT ship

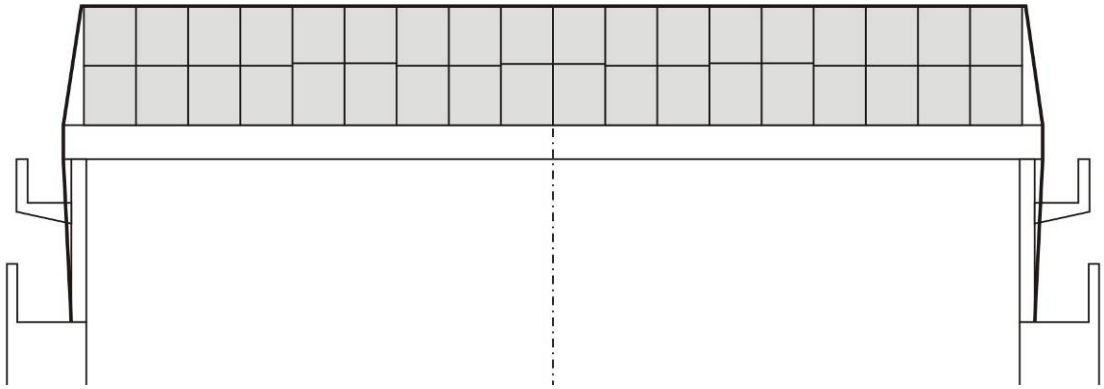


Figure B.1. *Midship section of 16,600 DWT ship with packages of sawn wood in two layers secured with top-over lashings*

Ship particulars

Length between perpendiculars, LPP:	134	metres
Moulded breadth, BM:	22	metres
Service speed:	14.5	knots
Metacentric height, GM:	0.70	metres

The deck cargo has the dimensions L × B × H = 80 × 19.7 × 2.4 metres. The total weight of the deck cargo is taken as 1,600 tons. Sliding between the layers is prevented by packages of different heights in the bottom layer.

Dimensioning transverse acceleration

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *5.3 m/s*^{2}, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5* *m/s*^{2}	=	*Basic transverse acceleration*
f_{R1}	=	*0.81*	=	*Correction factor for length and speed*
f_{R2}	=	*1.00*	=	*Correction factor for B_M/GM*

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} = 6.5 \cdot 0.81 \cdot 1.00 = 5.3\, m/s^2$$

Cargo properties

m	=	*1,600*	*ton*	=	Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	*0.45*		=	Coefficient of static friction between the timber deck cargo and the ship's deck/hatch cover
H	=	*2.4*	*m*	=	Height of deck cargo in metres
B	=	*19.7*	*m*	=	Width of deck cargo in metres
L	=	*80*	*m*	=	Length of the deck cargo or section to be secured in metres
PW	=	*192*	*kN*	=	Wind pressure in kN based on 1 kN per m^2 wind exposed area, see CSS Code, Annex 13
PS	=	*160*	*kN*	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m^2 exposed area, see CSS Code, Annex 13
PT_V	=	*16*	*kN*	=	Pretension in the vertical part of the lashings in kN
α	=	*85°*		=	Angle between the horizontal plane and the lashings in degrees
n_p	=	*18*	*pcs*	=	Number of stacks of packages abreast in each row

Number of required top-over lashings

For pure top-over lashing arrangements with no bottom blocking, the friction alone will have to counteract the transverse forces so that the following equilibrium of forces is satisfied:

$$\left(m \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha\right) \cdot \mu_{static} \geq m \cdot a_t + PW + PS$$

Units denoted with **a** consider cargo units above the bottom layer only.

Thus the required number of top-over lashings can be calculated as:

$$n \geq \frac{\frac{m \cdot a_t + PW + PS}{\mu_{static}} - m \cdot g_0}{2 \cdot PT_V \cdot \sin\alpha} = \frac{\frac{1600 \cdot 5.3 + 192 + 160}{0.45} - 1600 \cdot 9.81}{2 \cdot 16 \cdot \sin 85} = 123 \; pcs$$

Racking strength

To prevent the packages in the bottom layer from collapsing due to racking, the weight of the cargo stowed on top of the bottom layer should be limited so that the following equilibrium of forces is satisfied:

$$n_p \cdot L \cdot RS \geq m_a \cdot \left(a_t - 0.5 g_0\right) + PW_a + PS_a$$

Units denoted with **a** consider cargo units above the bottom layer only.

Thus the required racking strength can be calculated to 0.33 kN/metre:

$$RS \geq \frac{m_a \cdot \left(a_t - 0.5 \cdot g_0\right) + PW_a + PS_a}{n_p \cdot L} =$$

$$= \frac{800 \cdot \left(5.3 - 0.5 \cdot 9.81\right) + 96 + 64}{18 \cdot 80} = 0.33 \; kN/m = 0.034 \; ton/m$$

B.2 Example calculation – Bottom blocking and top-over lashings

In the example below, the required strength of the bottom blocking devices are calculated for a deck load of packages of sawn wood. The number of lashings used and the pretension of the lashings have been taken in accordance with sections 6.5.19 and 6.5.20 of this Code.

Example B.2.1 – Bottom blocking and top-over lashings on a 16,600 DWT ship

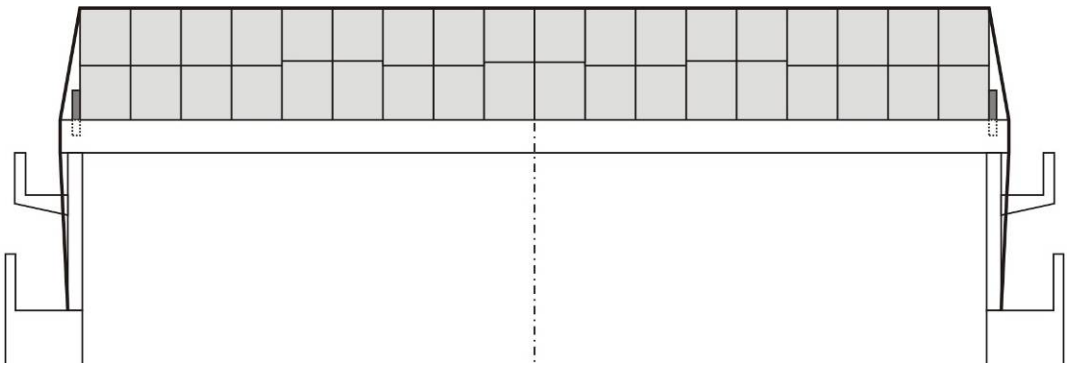


Figure B.2. *Midship section of 16,600 DWT ship with packages of sawn wood in two layers secured with bottom blocking devices and top-over lashings*

Ship particulars

Length between perpendiculars, LPP:	134	metres
Moulded breadth, BM:	22	metres
Service speed:	14.5	knots
Metacentric height, GM:	0.70	metres

The deck cargo has the dimensions L × B × H = 80 × 19.7 × 2.4 metres. The total weight of the deck cargo is taken as 1,600 tons. Sliding between the layers is prevented by packages of different heights in the bottom layer.

Dimensioning transverse acceleration

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *5.3 m/s*^{2}, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5* *m/s*^{2}	=	*Basic transverse acceleration*
f_{R1}	=	*0.81*	=	*Correction factor for length and speed*
f_{R2}	=	*1.00*	=	*Correction factor for B_M/GM*

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} = 6.5 \cdot 0.81 \cdot 1.00 = 5.3\, m/s^2$$

Cargo properties

m	=	1,600	ton	=	Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	0.45		=	Coefficient of static friction between the timber deck cargo and the ship's deck/hatch cover
H	=	2.4	m	=	Height of deck cargo in metres
B	=	19.7	m	=	Width of deck cargo in metres

L	=	80	m	=	Length of the deck cargo or section to be secured in metres
PW	=	192	kN	=	Wind pressure in kN based on 1 kN per m^2 wind exposed area, see CSS Code, Annex 13
PS	=	160	kN	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m^2 exposed area, see CSS Code, Annex 13
n	=	26	pcs	=	Number of top-over lashings
PT_V	=	16	kN	=	Pretension in the vertical part of the lashings in kN
α	=	85°		=	Angle between the horizontal plane and the lashings in degrees
n_p	=	18	pcs	=	Number of stacks of packages abreast in each row
n_b	=	26	pcs	=	Number of bottom blocking devices per side of the deck cargo

Required strength of the bottom blocking

The required strength, MSL, of the bottom blocking devices is given by the following equilibrium:

$$(m \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha) \cdot \mu_{static} + n_b \frac{MSL}{1.35} \geq m \cdot a_t + PW + PS$$

$$MSL \geq \frac{1.35}{n_b}(m \cdot a_t + PW + PS - (m \cdot g_0 + 2 \cdot n \cdot PT_V \cdot \sin\alpha) \cdot \mu_{static})$$

$$MSL \geq \frac{1.35}{26}(2000 \cdot 5.3 + 192 + 160 - (2000 \cdot 9.81 + 2 \cdot 26 \cdot 16 \cdot \sin 85) \cdot 0.45) = 91kN$$

B.3 Example calculation – Loop lashings

In the example below, the required strength in loop lashings used for secure packages of sawn wood on deck is calculated.

Example B.3.1 – Loop lashings on a 16,600 DWT ship

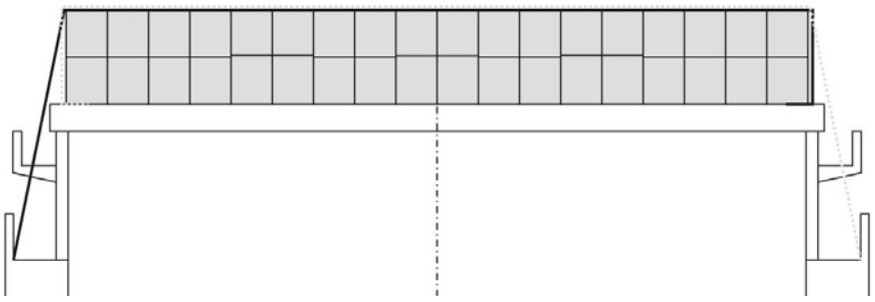


Figure B.3. *Midship section of 16,600 DWT ship with packages of sawn wood secured with loop lashings*

Ship particulars

Length between perpendiculars, LPP:	134	metres
Moulded breadth, BM:	22	metres
Service speed:	14.5	knots
Metacentric height, GM:	0.70	metres

The deck cargo has the dimensions L × B × H = 80 × 19.7 × 2.4 metres. The total weight of the deck cargo is taken as 1,600 tons. Sliding between the layers is prevented by packages of different heights in the bottom layer.

Dimensioning transverse acceleration

With vessel particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *5.3 m/s²*, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5* *m/s²*	=	*Basic transverse acceleration*
f_{R1}	=	*0.81*	=	*Correction factor for length and speed*
$f_{R\ 2}$	=	*1.00*	=	*Correction factor for B_M/GM*

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} = 6.5 \cdot 0.81 \cdot 1.00 = 5.3\, m/s^2$$

Cargo properties

m	=	*1,600*	*ton*	=	Mass of the section to be secured in tons, including absorbed water and possible icing
$\mu_{dynamic}$	=	*0.32*		=	Coefficient of dynamic friction between the timber deck cargo and the ship's deck/hatch cover
H	=	*2.4*	*m*	=	Height of deck cargo in metres
B	=	*19.7*	*m*	=	Width of deck cargo in metres
L	=	*80*	*m*	=	Length of the deck cargo or section to be secured in metres
PW	=	*192*	*kN*	=	Wind pressure in kN based on 1 kN per m² wind exposed area, see CSS Code, Annex 13
PS	=	*160*	*kN*	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m² exposed area, see CSS Code, Annex 13
α	=	*70°*		=	Angle between the horizontal plane and the lashings in degrees
n	=	*36*	*pcs*	=	Number of loop lashings pairs
L_L	=	*25*	*m*	=	Length of each lashing in metres
PT_V	=	*16*	*kN*	=	Pretension in the vertical part of the lashings in kN
n_p	=	*13*	*pcs*	=	Number of stacks of packages abreast in each row

Number of required loop lashings

The number and strength of the lashings are to be chosen so that the following equilibrium is satisfied:

$$(m \cdot g_0 + n \cdot CS \cdot \sin\alpha) \cdot \mu_{dynamic} + n \cdot CS + n \cdot CS \cdot \cos\alpha \geq m \cdot a_t + PW + PS$$

If the number of loop lashings pairs is 36 then the required strength in the lashings can be calculated as:

$$CS \geq \frac{m \cdot (a_t - g_0 \cdot \mu_{dynamic}) + PW + PS}{n \cdot (\sin\alpha \cdot \mu_{dynamic} + 1 + \cos\alpha)} = \frac{1600 \cdot (5.3 - 9.81 \cdot 0.32) + 192 + 160}{36 \cdot (\sin 70 \cdot 0.32 + 1 + \cos 70)} = 64\ kN$$

The required MSL in the lashings is calculated as:

$$MSL = CS \cdot 1.35 = 64 \cdot 1.35 = 86\ kN = 8.8\ ton$$

Transverse movement of cargo due to elongation in lashings

The transverse movement of the deck cargo due to elongation of the lashings is calculated according to the formula below. If chains are used the elongation factor is set to ε = 0.02, and the transverse movement is calculated as:

$$\delta = L_L \cdot \frac{(CS - PT_V)}{MSL} \cdot \varepsilon = 25 \cdot \frac{(64 - 16)}{86} \cdot 0.02 = 0.28\ m$$

If web lashings are used the elongation factor is set to ε = 0.07, and the transverse movement is calculated as:

$$\delta = L_L \cdot \frac{(CS - PT_V)}{MSL} \cdot \varepsilon = 25 \cdot \frac{(64 - 16)}{86} \cdot 0.07 = 0.98\ m$$

In accordance with 6.5.16 the transverse movement of the cargo should not generate a greater heeling angle than 5 degrees. In order to comply with this requirement significantly more and/or stronger lashings than described above have to be used.

Racking strength

To prevent the packages in the bottom layer from collapsing due to racking, the weight of the cargo stowed on top of the bottom layer should be limited so that the following equilibrium of forces is satisfied:

$$n_p \cdot L \cdot RS + n \cdot CS \cdot \cos\alpha \geq m_a \cdot (a_t - 0.5 g_0) + PW_a + PS_a$$

Units denoted with **a** consider cargo units above the bottom layer only.

Thus the required racking strength can be calculated as:

$$RS \geq \frac{m_a \cdot (a_t - 0.5 \cdot g_0) + PW_a + PS_a - n \cdot CS \cdot \cos\alpha}{n_p \cdot L} =$$

$$= \frac{800 \cdot (5.3 - 0.5 \cdot 9.81) + 96 + 64 - 46 \cdot 62 \cdot \cos 70}{13 \cdot 80} < 0\ kN/m$$

There is no requirement on the racking strength of the packages, since the calculated value is less than zero.

B.4 Example Calculation – Uprights for packages of sawn wood

In the example below, the dimensioning moment for uprights supporting packages of sawn wood on deck is calculated for a 16,600 DWT ship.

Example B.4.1 – Uprights on a 16,600 DWT Vessel

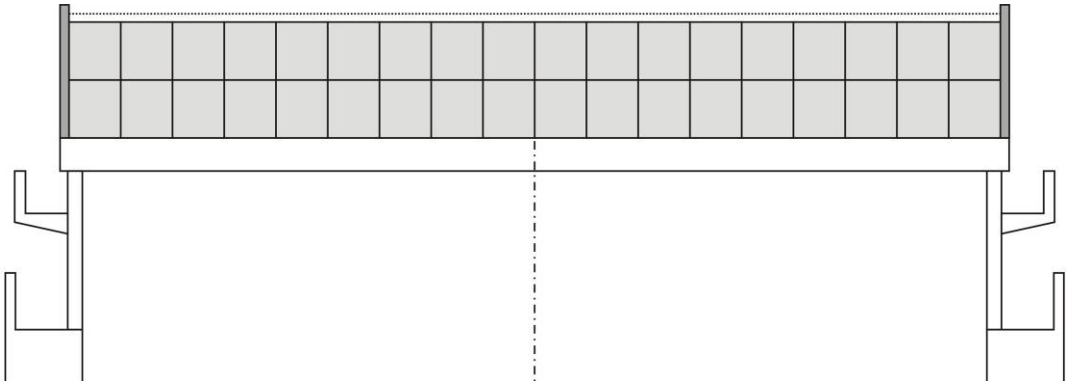


Figure B.4. *Midship section of ship with timber packages secured with uprights*

Ship particulars

Length between perpendiculars, L_{PP}:	134	metres
Moulded breadth, B_M:	22	metres
Service speed:	14.5	knots
Metacentric height, GM:	0.7	metres

The deck cargo has the dimensions L × B × H = 80 × 19.7 × 2.4 metres. The total weight of the deck cargo is taken as 1,600 tons.

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *5.3 m/s²*, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5*	=	*Basic transverse acceleration*
f_{R1}	=	*0.80*	=	*Correction factor for length and speed*
$f_{R\ 2}$	=	*1.00*	=	*Correction factor for B_M/GM*

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} = 6.5 \cdot 0.81 \cdot 1.00 = 5.3\, m/s^2$$

Cargo properties

m	=	1,600	ton	=	Mass of the section to be secured in tons, including absorbed water and possible icing
$\mu_{internal}$	=	0.30		=	Coefficient of internal friction between the timber packages
H	=	2.4	m	=	Height of deck cargo in metres
b	=	1.1	m	=	Width of each individual stack of packages
n_p	=	18	pcs	=	Number of stacks of timber packages abreast in each row
q	=	2	pcs	=	Number of layers of timber packages
RS	=	3.5	kN	=	Racking Strength per timber package in kN
N	=	36	pcs	=	Number of uprights supporting the considered section on each side
H	=	2.4	m	=	Height above deck at which hoglashings are attached to the uprights in metres

K = 1.8 = Factor for considering hog lashings
k = 1 if no hog lashings are used
k = 1.8 if hog lashings are used

Bending moment in uprights

The design bending moment per upright supporting timber packages is to be taken as the greatest of the three moments given by the following formulas:

$$CM_{bending1} = \frac{m}{n_p \cdot k \cdot N} \cdot \left(a_t \cdot \frac{H}{2} - g_0 \cdot \frac{b}{2} \right) \cdot \frac{1-(1-f_i)^{n_p}}{f_i}$$ *(Moment required to prevent tipping)*

where $f_i = \mu_{\text{int}ernal} \cdot \frac{2b}{H}$ *(f_i = Factor for considering internal moment)*

$$CM_{bending2} = \frac{H}{2 \cdot k \cdot N} \cdot m \cdot \left(a_t - \mu_{\text{int}ernal} \cdot g_0 \right) \cdot \frac{q-1}{2q}$$ *(Moment required to prevent sliding)*

$$CM_{bending3} = \frac{H}{k \cdot N} \cdot \left(m \cdot a_t - \left(n_p - 4 \right)\left(q - 2 \right) \cdot L \cdot RS \right) \cdot \frac{(q-1)}{2q}$$ *(Moment required to prevent racking)*

With cargo properties and acceleration as given above, the following bending moments are calculated:

$$f_i = 0.3 \cdot \frac{2 \cdot 1.1}{2.4} = 0.275$$

$$CM_{bending1} = \frac{1600}{18 \cdot 1.8 \cdot 36} \cdot \left(5.3 \cdot \frac{2.4}{2} - 9.81 \cdot \frac{1.1}{2} \right) \cdot \frac{1-(1-0.275)^{18}}{0.275} = 4.8\ kNm$$

$$CM_{bending2} = \frac{2.4}{2 \cdot 1.8 \cdot 36} \cdot 1600 \cdot \left(5.3 - 0.30 \cdot 9.81 \right) \cdot \frac{2-1}{2 \cdot 2} = 17.5\ kNm$$

$$CM_{bending3} = \frac{2.4}{1.8 \cdot 36} \cdot \left(1600 \cdot 5.3 - \left(18 - 4 \right)\left(2 - 2 \right) \cdot 80 \cdot 3.5 \right) \cdot \frac{(2-1)}{2 \cdot 2} = 78.5\ kNm$$

The design bending moment, taken as the maximum bending moment calculated by the three formulae above multiplied with the safety factor of 1.35, thus becomes 106 kNm:

$$M_{bending} \geq 1.35 \cdot \max\left(CM_{bending1},\ CM_{bending2},\ CM_{bending3} \right) = 1.35 \cdot 78.5 = 106\ kNm$$

Suitable dimensions for uprights

With MSL taken as 50% of the MBL for steel with the ultimate strength 360 MPa (N/mm^2), the required bending resistance, W, can be calculated as:

$$W = \frac{M_{bending}}{50\%\ of\ 360MPa} = \frac{106 \cdot 10^6}{180} = 589 \cdot 10^3\ mm^3 = 589\ cm^3$$

Thus, uprights made from either HE220A profiles or a cylindrical profile with an outer diameter of 324 mm and a wall thickness of 10.3 mm are suitable (see section B.7).

Strength in hoglashings

The required MSL of each hog lashing is calculated by the following formula:

$$MSL \geq \frac{M_{bending}}{2 \cdot h}$$

In this case, the hoglashings are attached at a height of h = 3.5 m and the required strength is calculated as:

$$MSL \geq \frac{M_{bending}}{2 \cdot h} = \frac{106}{2 \cdot 3.5} = 15\ kN \approx 1.5\ ton$$

B.5 Example Calculation – Uprights for round wood

In the examples below, the dimensioning moments for uprights supporting round wood on deck are calculated for three different ships of varying sizes.

Example B.5.1 – Uprights for round wood on a 28,400 DWT ship

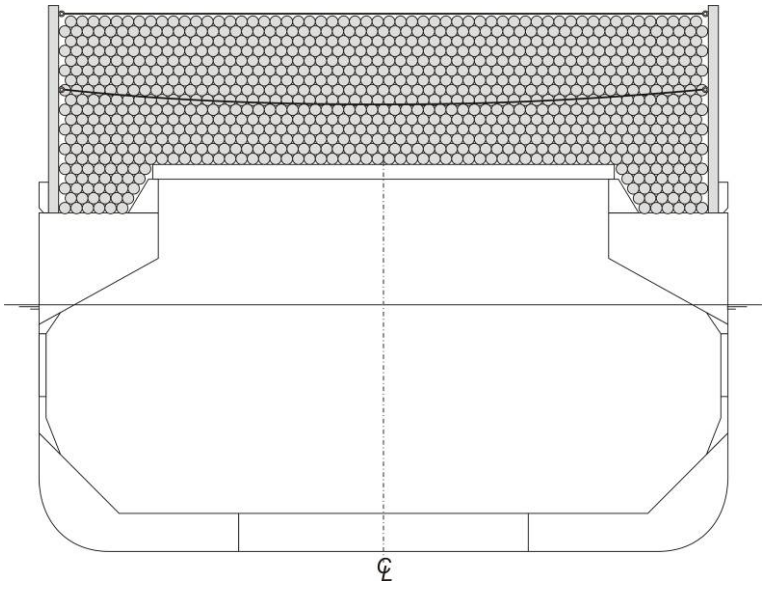


Figure B.5. *Midship section of 28,400 DWT ship with round wood secured with uprights*

Ship particulars

Length between perpendiculars, LPP:	160	metres
Moulded breadth, BM:	27	metres
Service speed:	14	knots
Metacentric height, GM:	0.80	metres

The deck cargo has the dimensions L × B × H = 110 × 25.6 × 7 metres and is supported by 42 uprights on each side. The total weight is taken as 10,500 tons.

In addition to the uprights and hog-lashings, the cargo has been secured with top-over lashings applied in accordance with sections 5.4 and 6.5.28 – 6.5.30 .

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *4.6 m/s²*, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5*	*m/s²*	= Basic transverse acceleration
f_{R1}	=	*0.71*		= Correction factor for length and speed
$f_{R\ 2}$	=	*1.00*		= Correction factor for B_M/GM

$$a_t = a_{t\ basic} \cdot k_1 \cdot k_2 = 6.5 \cdot 0.71 \cdot 1.00 = 4.6\, m/s^2$$

Cargo properties

M	=	*10,500*	*ton*	= Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	*0.5*		= Coefficient of static friction between the timber deck cargo and the ship's deck/hatch cover
H	=	*7*	*m*	= Height of deck cargo in metres
B	=	*25.6*	*m*	= Width of deck cargo in metres
L	=	*110*	*m*	= Length of the deck cargo or section to be secured in metres
PW	=	*770*	*kN*	= Wind pressure in kN based on 1 kN per m² wind exposed area, see CSS Code, Annex 13
PS	=	*220*	*kN*	= Pressure from unavoidable sea sloshing in kN based on 1 kN per m² exposed area, see CSS Code, Annex 13
N	=	*42*	*pcs*	= Number of uprights supporting the considered section on each side
h	=	*3.7 / 6.7*	*m*	= Height above deck at which hog lashings are attached to the uprights in metres
n_{hog}	=	*2*	*pcs*	= Number of hog lashings for each upright
k	=	*1.8*		= Factor for considering hog lashings; k = 1 if no hog lashings are used k = 1.8 if hog lashings are used

Bending moment in uprights

For ships carrying loose sawn wood and round wood, the design bending moment per upright is calculated as the greater of the two moments given by the following formulas:

$$CM_{bending1} = 0.1 \cdot \frac{H^2}{k \cdot B \cdot N} \cdot m \cdot g_0$$

$$CM_{bending\,2} = \frac{H}{3 \cdot k \cdot N} \cdot \left(m \cdot \left(a_t - 0.6 \cdot \mu_{static} \cdot g_0\right) + PW + PS\right)$$

With cargo properties and acceleration as given above, the following bending moments are calculated:

$$CM_{bending1} = 0.1 \cdot \frac{7^2}{1.8 \cdot 25.6 \cdot 42} \cdot 10500 \cdot 9.81 = 260\ kNm$$

$$CM_{bending2} = \frac{7}{3 \cdot 1.8 \cdot 42} \cdot \left(10500 \cdot \left(4.6 - 0.6 \cdot 0.5 \cdot 9.81\right) + 770 + 220\right) = 568\ kNm$$

The design bending moment, taken as the maximum bending moment calculated by the formulae above multiplied with a safety factor of 1.35 and considering the 12% reduction allowed for by the use of properly applied top-over lashings, thus becomes:

$$M_{bending} \geq 88\% \cdot 1.35 \cdot \max\left(CM_{bending1},\ CM_{bending2}\right) = 0.88 \cdot 1.35 \cdot 568 = 675\ kNm$$

Suitable dimensions for uprights

With MSL taken as 50% of the MBL for steel with the ultimate strength 360 MPa (N/mm^2), the required bending resistance, W, can be calculated as:

$$W = \frac{M_{bending}}{50\%\ of\ 360MPa} = \frac{675 \cdot 10^6}{180} = 3749 \cdot 10^3\ mm^3 = 3749\ cm^3$$

Thus, uprights made from either HE500B profiles or a cylindrical profile with an outer diameter of 508 mm and a wall thickness of 26.2 mm are suitable (see section B.7).

Strength in hog lashings

The required MSL of each hog lashing is calculated by the following formula:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}}$$

In this case, the hog lashings are attached at the heights 3.7 and 6.7 metres (mean height=5.2) and the required strength is calculated as:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}} = \frac{528}{2 \cdot 5.2 \cdot 2} = 25\ kN \approx 2.5\ ton$$

Example B.5.2 – Uprights for round wood on a 16 600 DWT ship

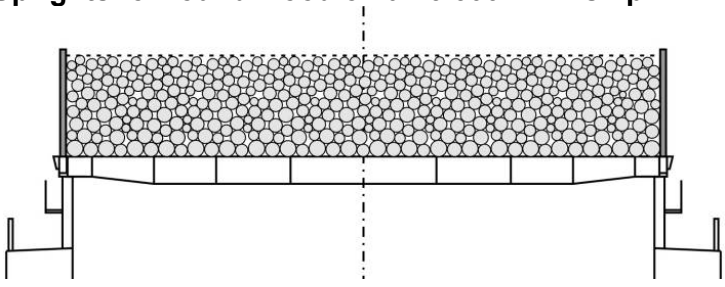


Figure B.6. *Midship section of 16 600 DWT ship with round wood secured with uprights*

Ship particulars

Length between perpendiculars, LPP:	134	metres
Moulded breadth, BM:	22	metres
Service speed:	14.5	knots
Metacentric height, GM:	0.70	metres

The deck cargo has the dimensions L × B × H = 80 × 19.7 × 3.7 metres and is supported by 30 uprights on each side. The weight of the cargo is taken as 3,000 tons.

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives a transverse acceleration of a_t = *5.3 m/s²*, using the following basic acceleration and correction factors:

$a_{t\ basic}$	=	*6.5* *m/s²*	=	Basic transverse acceleration
f_{R1}	=	*0.81*	=	Correction factor for length and speed
$f_{R\ 2}$	=	*1.00*	=	Correction factor for B_M/GM

$$a_t = a_{t\ basic} \cdot k_1 \cdot k_2 = 6.5 \cdot 0.81 \cdot 1.00 = 5.3\, m/s^2$$

Cargo properties

M	=	*3,000*	*ton*	=	Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	*0.35*		=	Coefficient of static friction between the timber deck cargo and the ship's deck / hatch cover
H	=	*3.7*	*m*	=	Height of deck cargo in metres
B	=	*19.7*	*m*	=	Width of deck cargo in metres
L	=	*80*	*m*	=	Length of the deck cargo or section to be secured in metres
PW	=	*296*	*kN*	=	Wind pressure in kN based on 1 kN per m² wind exposed area, see CSS Code, Annex 13
PS	=	*160*	*kN*	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m² exposed area, see CSS Code, Annex 13
N	=	*30*	*pcs*	=	Number of uprights supporting on each side
h	=	*3.7*	*m*	=	Height above deck at which hog lashings are attached to the uprights in metres
n_{hog}	=	*1*	*pcs*	=	Number of hog lashings for each uprights
k	=	*1.8*		=	Factor for considering hog lashings; k = 1 if no hog lashings are used k = 1.8 if hog lashings are used

Bending moment in uprights

For ships carrying loose sawn wood and round timber, the design bending moment per upright is calculated as the greater of the two moments given by the following formulas:

$$CM_{bending1} = 0.1 \cdot \frac{H^2}{k \cdot B \cdot N} \cdot m \cdot g_0$$

$$CM_{bending\,2} = \frac{H}{3 \cdot k \cdot N} \cdot \left(m \cdot \left(a_t - 0.6 \cdot \mu_{static} \cdot g_0\right) + PW + PS\right)$$

With cargo properties and acceleration as given above, the following bending moments are calculated:

$$CM_{bending1} = 0.1 \cdot \frac{3.7^2}{19.7 \cdot 30} \cdot 3000 \cdot 9.81 = 68\ kNm$$

$$CM_{bending2} = \frac{3.7}{3 \cdot 2 \cdot 30} \cdot \left(3000 \cdot \left(5.3 - 0.6 \cdot 0.35 \cdot 9.81\right) + 296 + 160\right) = 209\ kNm$$

The design bending moment, taken as the maximum bending moment calculated by the formulae above multiplied with a safety factor of 1.35, thus becomes 282 kNm:

$$M_{bending} \geq 1.35 \cdot \max\left(CM_{bending1},\ CM_{bending2}\right) = 1.35 \cdot 209 = 282\ kNm$$

Suitable dimensions for uprights

With MSL taken as 50% of the MBL for steel with the ultimate strength 360 MPa (N/mm^2), the required bending resistance, W, can be calculated as:

$$W = \frac{M_{bending}}{50\%\ of\ 360MPa} = \frac{282 \cdot 10^6}{180} = 1568 \cdot 10^3\ mm^3 = 1568\ cm^3$$

Thus, uprights made from either HE320B profiles or a cylindrical profile with an outer diameter of 406 mm and a wall thickness of 16.7 mm are suitable (see section B.7).

Strength in hog lashings

The required MSL of each hog lashing is calculated by the following formula:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}}$$

In this case, the hog lashings are attached at a height of 3.7 metres and the required strength is calculated as:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}} = \frac{282}{2 \cdot 3.7 \cdot 1} = 38\ kN \approx 3.9\ ton$$

Example B.5.3 – Uprights for round wood on a 6,000 DWT ship on the Baltic Sea

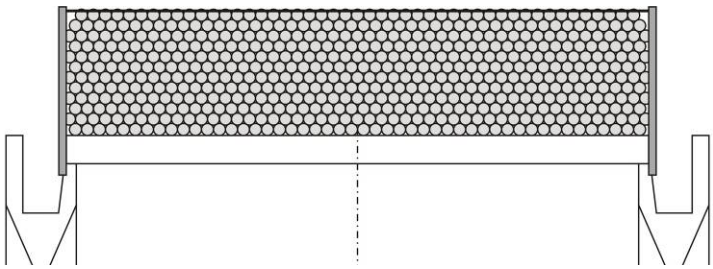


Figure B.7. *Midship section of 6,000 DWT ship with round wood secured with uprights*

Ship particulars

Length between perpendiculars, LPP:	101	metres
Moulded breadth, BM:	17.5	metres
Service speed:	13	knots
Metacentric height, GM:	0.50	metres

The deck cargo has the dimensions L × B × H = 65 × 14.5 × 3.1 metres and is supported by 25 uprights on each side. The weight of the cargo is taken as 1,500 tons.

With ship particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives the following basic transverse acceleration and correction factors:

$a_{t\ basic}$	=	*6.5*	*m/s²*	=	Basic transverse acceleration
f_{R1}	=	*0.93*		=	Correction factor for length and speed
$f_{R\ 2}$	=	*1.00*		=	Correction factor for B_M/GM

The ship is trading in the Baltic Sea where the maximum expected significant wave height on a 20-year basis can be taken as 8.5 metres. Thus, the reduction factor for operation in restricted waters is taken as:

$$f_R = \sqrt[3]{\frac{H_M}{19.6}} = \sqrt[3]{\frac{8.5}{19.6}} = 0.76$$

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} \cdot f_R = 6.5 \cdot 0.93 \cdot 1.00 \cdot 0.76 = 4.6\, m/s^2$$

Cargo properties

M	=	1,500	ton	=	Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	0.35		=	Coefficient of static friction between the timber deck cargo and the ship's deck/hatch cover
H	=	3.1	m	=	Height of deck cargo in metres
B	=	14.5	m	=	Width of deck cargo in metres
L	=	65	m	=	Length of the deck cargo or section to be secured in metres
PW	=	202	kN	=	Wind pressure in kN based on 1 kN per m^2 wind exposed area, see CSS Code, Annex 13

PS	=	130	kN	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m^2 exposed area, see CSS Code, Annex 13
N	=	25	pcs	=	Number of uprights supporting the considered section on each side
h	=	3.1	m	=	Height above deck at which hog lashings are attached to the uprights in metres
n_{hog}	=	1	pcs	=	Number of hog lashings for each uprights
k	=	1.8		=	Factor for considering hog lashings; k = 1 if no hog lashings are used k = 1.8 if hog lashings are used

Bending moment in uprights

For ships carrying loose sawn wood and round timber, the design bending moment per upright is calculated as the greater of the two moments given by the following formulas:

$$CM_{bending1} = 0.1 \cdot \frac{H^2}{k \cdot B \cdot N} \cdot m \cdot g_0$$

$$CM_{bending2} = \frac{H}{3 \cdot k \cdot N} \cdot \left(m \cdot \left(a_t - 0.6 \cdot \mu_{static} \cdot g_0\right) + PW + PS\right)$$

With cargo properties and acceleration as given above, the following bending moments are calculated:

$$CM_{bending1} = 0.1 \cdot \frac{3.1^2}{14.5 \cdot 25} \cdot 1500 \cdot 9.81 = 39\ kNm$$

$$CM_{bending2} = \frac{3.1}{3 \cdot 1.8 \cdot 25} \cdot \left(1500 \cdot \left(4.6 - 0.6 \cdot 0.35 \cdot 9.81\right) + 202 + 130\right) = 95\ kNm$$

The design bending moment, taken as the maximum bending moment calculated by the formulae above multiplied with a safety factor of 1.35, thus becomes 128 kNm:

$$M_{bending} \geq 1.35 \cdot \max\left(CM_{bending1},\ CM_{bending2}\right) = 1.35 \cdot 95 = 128\ kNm$$

Suitable dimensions for uprights

With MSL taken as 50% of the MBL for steel with the ultimate strength 360 MPa (N/mm^2), the required bending resistance, W, can be calculated as:

$$W = \frac{M_{bending}}{50\%\ of\ 360MPa} = \frac{128 \cdot 10^6}{180} = 713 \cdot 10^3\ mm^3 = 713\ cm^3$$

Thus, uprights made from either HE220 B profiles or a cylindrical profile with an outer diameter of 324 mm and a wall thickness of 10 mm are suitable (see section B.7).

Strength in hog lashings

The required MSL of each hog lashing is calculated by the following formula:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}}$$

In this case, the hog lashings are attached at a height of 3.7 m and the required strength is calculated as:

$$MSL \geq \frac{M_{bending}}{2 \cdot h \cdot n_{hog}} = \frac{128}{2 \cdot 3.1 \cdot 1} = 20.6\ kN \approx 2.1\ ton$$

B.6 Example calculation – frictional securing of transversely stowed round wood

Example B.6.1 – Frictional securing of round wood on a 6,000 DWT ship

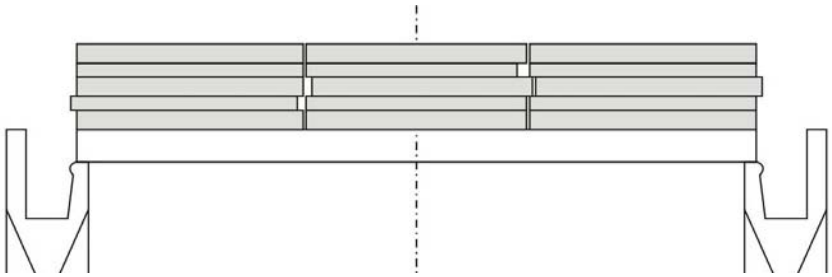


Figure B.8. *Midship section of 6,000 DWT ship frictional secured wood secured*

Ship particulars

Length between perpendiculars, LPP:	101	metres
Moulded breadth, BM:	17.5	metres
Service speed:	13	knots
Metacentric height, GM:	0.50	metres

The deck cargo has the dimensions L × B × H = 65 × 14.5 × 3.1 metres. The weight of the cargo is taken as 1,500 tons.

Cargo properties

M	=	1,500	ton	=	Mass of the section to be secured in tons, including absorbed water and possible icing
μ_{static}	=	0.35		=	Coefficient of static friction between the timber deck cargo and the ship's deck/hatch cover
H	=	3.1	m	=	Height of deck cargo in metres
B	=	14.5	m	=	Width of deck cargo in metres
L	=	65	m	=	Length of the deck cargo or section to be considered in metres
PW	=	202	kN	=	Wind pressure in kN based on 1 kN per m^2 wind exposed area, see CSS Code, Annex 13
PS	=	130	kN	=	Pressure from unavoidable sea sloshing in kN based on 1 kN per m^2 exposed area, see CSS Code, Annex 13

Transverse acceleration

With a static friction of 0.35 between the layers of wood and between the wood and the hatch cover the maximum acceptable transverse acceleration can be calculated by satisfying the following equilibrium:

$$m \cdot g_0 \cdot \mu_{static} \geq m \cdot a_t + PW + PS$$

In this case transverse acceleration can not exceed 3.2 m/s^2 as shown below:

$$a_t \leq \frac{m \cdot g_0 \cdot \mu_{static} - PW - PS}{m}$$

$$a_t \leq \frac{1500 \cdot 9.81 \cdot 0.35 - 202 - 130}{1500} = 3.2 m/s^2$$

With vessel particulars as above and considering a stowage position on deck low, Annex 13 of the CSS Code gives the following basic acceleration and correction factors:

$a_{t\ basic}$	=	6.5 m/s^2	=	Basic transverse acceleration
f_{R1}	=	0.93	=	Correction factor for length and speed
f_{R2}	=	1.00	=	Correction factor for B_M/GM

The maximum allowed significant wave height with this stowage arrangement is calculated to 2.9 m according to the following:

$$a_t = a_{t\ basic} \cdot f_{R1} \cdot f_{R2} \cdot f_R$$

$$f_R = \frac{a_t}{a_{t\ basic} \cdot f_{R1} \cdot f_{R2}} = \frac{3.2}{6.5 \cdot 0.93 \cdot 1.00} = 0.53 m/s^2$$

$$f_R = \sqrt[3]{\frac{H_M}{19.6}}$$

$$H_M = 19.6 \cdot f_R{}^3 = 19.6 \cdot 0.53^3 = 2.9 m$$

B.7 Maximum bending resistance in common profiles for uprights

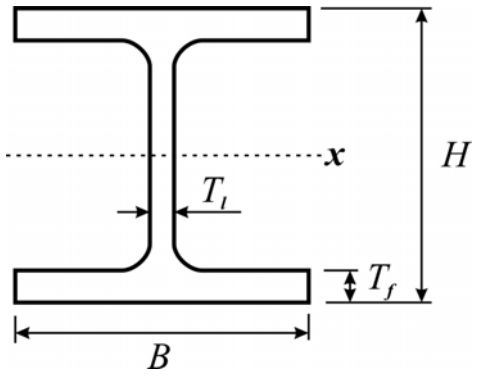
HE-A beams

Size	**H** [mm]	**B** [mm]	**T_l** [mm]	**T_f** [mm]	**Maximum bending resistance W_x [cm^3]**
HE 220 A	210	220	7	11	515
HE 240 A	230	240	7.5	12	675
HE 260 A	250	260	7.5	12.5	836
HE 280 A	270	280	8	13	1010
HE 300 A	290	300	8.5	14	1260
HE 320 A	310	300	9	15.5	1480
HE 340 A	330	300	9.5	16.5	1680
HE 360 A	350	300	10	17.5	1890
HE 400 A	390	300	11	19	2310
HE 450 A	440	300	11.5	21	2900
HE 500 A	490	300	12	23	3550

Size	H [mm]	B [mm]	T_l [mm]	T_f [mm]	Maximum bending resistance W_x [cm^3]
HE 550 A	540	300	12.5	24	4150
HE 600 A	590	300	13	25	4790
HE 650 A	640	300	13.5	27	5470

HE-B beams

Size	H [mm]	B [mm]	T_l [mm]	T_f [mm]	Maximum bending resistance, W_x [cm^3]
HE 220 B	210	220	9.5	16	736
HE 240 B	230	240	10	17	938
HE 260 B	250	260	10	17.5	1150
HE 280 B	270	280	10.5	18	1380
HE 300 B	290	300	11	19	1680
HE 320 B	310	300	11.5	20.5	1930
HE 340 B	330	300	12	21.5	2160
HE 360 B	350	300	12.5	22.5	2400
HE 400 B	390	300	13.5	24	2880
HE 450 B	440	300	14	26	3550
HE 500 B	490	300	14.5	28	4290
HE 550 B	540	300	15	29	4970
HE 600 B	590	300	15.5	30	5700
HE 650 B	640	300	16	31	6480



Pipes

Size	Schedule	Outer diameter [mm]	Wall thickness [mm]	Bending resistance, W [cm^3]
8"	40	219.1	8.2	276
	60	219.1	10.3	337
	80	219.1	12.7	402
12"	40	323.9	10.3	772
	60	323.9	14.3	1029
	80	323.9	17.5	1223
16"	40	406.4	12.7	1499
	60	406.4	16.7	1910
	80	406.4	21.4	2371
18"	40	457.2	14.3	2132
	60	457.2	19.1	2758
	80	457.2	23.8	3342
20"	40	508.0	15.1	2797

Size	Schedule	Outer diameter [mm]	Wall thickness [mm]	Bending resistance, W [cm^3]
	60	508.0	20.6	3697
	80	508.0	26.2	4542
	100	508.0	32.5	5433
24"	40	610.0	17.5	4686
	60	610.0	24.6	6368
	80	610.0	31.0	7761

ANNEX C

INSTRUCTION TO A MASTER ON CALCULATION OF MASS CHANGE OF A TIMBER DECK CARGO DUE TO WATER ABSORPTION

C.1 Mass increase due to water absorption for a timber deck cargo in protective packaging or covered by a protective awning or timber that has been immersed in water until loaded on board should not be taken into account in the ship's stability calculation for arrival at the port of destination.

C.2 Calculation of mass change P of a timber deck cargo should be done by the formula:

$$\delta P,\% = T_{pl} \cdot \delta P_{day},\%$$

where:

T_{pl} – *planned duration of the voyage, days;*
δP_{day}, *%* – *wood mass change per day, to be chosen from table C.1*

C.3 Corresponding line in table C.1 should be chosen by means of comparison of the forthcoming voyage with the timber cargo transportation lines specified in the leftmost column "Line".

C.4 With calculation value being $\delta P \leq$ **2%,** water absorption of a timber deck cargo should not be taken into account in the ship's stability calculations as it is commensurable with initial calculation data determination errors.

C.5 With calculation value being $\delta P \geq$ **10%,** water absorption of a timber deck cargo δP **= 10%** should be taken into account.

Table C.1. *Daily wood mass change*

Line	**Deck cargo mass change per day, δP_{day}, %**	
	Sawn wood	**Round wood cargo**
Vladivostok – ports of Japan	1.00	0.14
Ports of Malaysia – ports of Japan	0.73	0.10
Ports of Canada, USA – ports of Japan	1.00	0.14
Saint-Petersburg – London	0.83	0.11
Arkhangelsk – Manchester	1.16	0.15
Australasia – North Asia	-	-0.10

ANNEX D

REFERENCES

(1) **SOLAS** – Chapter VI Regulation 5 Section 1 – Carriage of cargoes – Stowage and securing

(2) **ISM Code** – Part A – Implementation – Paragraph 1.1.2

(3) **IMDG Code** – Part 1 – Chapter 1.2.1 – Definitions

(4) **SOLAS** – Chapter VI Regulation 2 – Cargo information

(5) **ISM Code** – Paragraph 7 – Development of plans for shipboard operations

(6) **Load Lines, 1966** – Annex I – Chapter II – Regulation 16 – Regulations for determining load lines − Conditions of assignment of freeboard

(7) **SOLAS** – Chapter II-1 – Part B-1 – Regulation 25-8 – Stability information

(8) **2008 IS Code** – Part A – Chapter 3.3 Cargo ships carrying timber deck cargoes

(9) **2008 IS Code** – Part B – Chapter 3.6.3 Stability booklet (for ships carrying timber deck cargoes)

(10) **2008 IS Code** – Part B – Chapter 3.7 Operational measures for ships carrying timber deck cargoes

(11) **2008 IS Code**

(12) **MEPC.127(53)** – Development of Ballast Water Management Plans

(13) **Load Lines Convention, 1966** – Annex I – Regulations for determining load lines – Chapter IV – Special requirements for ships assigned timber freeboards – Regulation 44 – Stowage, uprights, lashings, stability, protection of crew, access to machinery spaces, etc.

(14) **Load Lines Convention, 1966** – Annex I – Regulations for determining load lines – Chapter IV – Special requirements for ships assigned timber freeboards – Regulation 45 – Computation for freeboard

(15) **SOLAS** – Chapter V – Regulation 22 – Navigational bridge visibility

(16) **ISM Code** – Paragraph 6.6 – Resources and personnel

(17) **ILO Convention No. 152** – Convention Concerning Occupational Safety and Health in Dock Work

(18) **Load Lines Convention, 1966** – Annex I – Regulations for determining load lines – Chapter II – Conditions of assignment of freeboard – Regulation 25 – Protection of the crew

(19) **Load Lines Convention, 1966** – Annex I – Regulations for determining load lines – Chapter IV – Special requirements for ships assigned timber freeboards – Regulation 44 – Stowage, uprights, lashings, stability, protection of crew, access to machinery spaces, etc.

(20) **CSS Code** – Annex 13 – Chapter 4 – Strength of securing equipment.

(21) **ISM Code** – Paragraph 7 – Development of plans for shipboard operations

(22) **STCW Code** – Section A – VIII/2 – Watchkeeping arrangements and principles to be observed – Part 2 – Voyage planning

(23) **SOLAS** – Chapter V – Regulation 34 – Safe navigation

(24) **CSS Code** – Chapter 6 – Actions which may be taken in heavy weather – 6.3

(25) **MCS/Circ.1228** – Revised guidance to the master for avoiding dangerous situations in adverse weather and sea conditions

(26) **SOLAS** – Chapter VI – Regulation 5 – Section 2 – Carriage of cargoes – Stowage and securing

(27) **MSC/Circ.745** – Guidelines for the preparation of the Cargo Securing Manual

(28) **SOLAS** – Chapter V – Regulation 31– Safety of navigation – Danger messages

(29) **ILO Convention No. 27** – Marking of weight (packages transported by vessels) Convention, 1929.

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ANNEX 10

AMENDMENTS TO THE IMO/ILO/UNECE GUIDELINES FOR PACKING OF CARGO TRANSPORT UNITS (CTUs)

SCOPE

1 The existing text of this section is replaced by the following:

"These Guidelines are essential to the safe packing of cargo transport units by those responsible for the packing and securing of the cargo and by those whose task it is to train people to pack such units. However, they are not exhaustive and other sources of information may be relevant. Training is essential if safety standards are to be maintained. These Guidelines detail practical measures to ensure the safe packing of cargo onto or into cargo transport units. As such they are concerned with issues of safety and are not intended to address practical measures to enhance security, *per se*.

These Guidelines are not intended to conflict with, or to replace or supersede, any existing regulations or recommendations which may concern the carriage of cargo in cargo transport units. They do not cover the filling or emptying of tank containers, portable tanks or road tank vehicles, or the transport of any cargo in bulk containers.

Guidance on the security aspects of the movement of cargo transport units intended for carriage by sea may be found in a variety of documents including the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended; the International Ship and Port Facility Security (ISPS) Code; the ILO/IMO Code of Practice on Security in Ports; and the Standards and the Publicly Available Specifications developed or being developed by the International Standards Organization (ISO) to address cargo security management and other aspects of supply chain security. Furthermore, the World Customs Organization (WCO) has developed a SAFE Framework of standards to secure and facilitate global trade.

However, it is important to bear in mind that all personnel involved in the transport chain have a significant role to play enhancing safety and security, not only in the prevention of unlawful acts. Significant financial losses are incurred through theft of cargo and the costs must ultimately be borne by customers and end users through increased insurance and transport costs. The trafficking of illicit drugs has a detrimental effect on society. The movement of weapons in contravention of national laws and internationally agreed arms embargoes; the illegal migration and human trafficking; the smuggling of nuclear materials and precursors for weapons of mass destruction; protection of national revenues; environmental and cultural concerns, and the need to deprive terrorist organizations of funding are all issues of relevance to the transport of cargo transport units. Furthermore, cargo handlers' and transporters' lives are lost and environments are damaged through the transport of undeclared, improperly described and unsafely packed dangerous goods.

It is therefore, extremely important that all personnel involved in the packing, security sealing, handling, transport and processing of cargo should be made aware of the need for vigilance and the diligent application of practical procedures to enhance security, in accordance with national legislation and international agreements."

4 ADDITIONAL ADVICE ON THE PACKING AND SECURING OF DANGEROUS CARGOES

2 The existing title and the text of section 4 is replaced by the following:

"**4 ADVICE ON THE PACKING AND SECURING OF DANGEROUS GOODS**

4.1 General

4.1.1 The advice of this section applies to cargo transport units in which dangerous goods are packed. It should be followed in addition to the advice given elsewhere in these Guidelines.

4.1.2 International (and often national) transport of dangerous goods may be subject to several dangerous goods transport regulations, depending on the origin, final destination and the modes of transport used.

4.1.3 For intermodal transport, involving several modes of transport other than by sea, the rules and regulations applicable depend on whether it is a national movement or international transport or transport within a political or economic union or trading zone.

4.1.4 Transport of dangerous goods by road, rail or inland waterways may be subject to various regulations and agreements. Examples are:

.1 European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);

.2 Regulations concerning the International Carriage of Dangerous Goods by Rail (RID); and

.3 Title 49 of the Code of Federal Regulations of the United States.

4.1.5 Most national and international regulations are based on the United Nations Recommendations on the Transport of Dangerous Goods (Orange Book). However, national rules, applicable to domestic transport, may differ from international regulations.

4.1.6 For maritime transport, the provisions of the International Maritime Dangerous Goods (IMDG)[1] Code apply. The IMDG Code provides detailed provisions on all aspects of the transport of packaged dangerous goods by sea. Special attention is drawn to the following chapters of the IMDG Code:

.1	1.3	Training
.2	1.4	Security provisions
.3	5.1	General provisions for consignment procedures
.4	5.2	Marking and labelling of packages
.5	5.3	Placarding and marking of cargo transport units
.6	5.4	Documentation
.7	7.1	Stowage

[1] International Maritime Dangerous Goods (IMDG) Code, Amendment (35-10), published by the International Maritime Organization (IMO).

.8	7.2	Segregation
.9	7.4	Transport of cargo transport units on board ships
.10	7.5	Packing of cargo transport units
.11	7.7	Temperature control provisions

4.1.7 Dangerous goods are classified as stated below. Some of these classes are subdivided into divisions. The shipper is responsible that packages with dangerous goods bear the appropriate labels and marks.

Class 1 – Explosives

Division 1.1: Substances and articles which have a mass explosion hazard

Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard

Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard

Division 1.4: Substances and articles which present no significant hazard

Division 1.5: Very insensitive substances which have a mass explosion hazard

Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard

(No.1)
Divisions 1.1, 1.2 and 1.3

(No.1.4)
Division 1.4

(No.1.5)
Division 1.5

(No.1.6)
Division 1.6

** Place for division – to be left blank if explosive is the subsidiary risk.
* Place for compatibility group – to be left blank if explosive is the subsidiary risk.

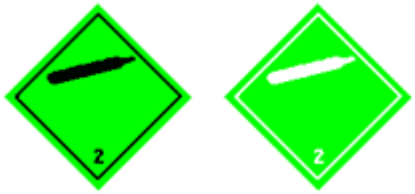
Class 2 – Gases: compressed, liquefied or dissolved under pressure

Class 2.1 – Flammable[2] gases

Class 2.2 – Non-flammable, non-toxic gases

Class 2.3 – Toxic[3] gases

(No.2.1)
Class 2.1
Flammable gases



(No.2.2)
Class 2.2.
Non-flammable, non-toxic gases

(No.2.3)
Class 2.3
Toxic gases

Class 3 - Flammable liquids

(No.3)

Class 4 – Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water, emit flammable gases

Class 4.1 – Flammable solids, self-reactive substances and solid desensitized explosives

Class 4.2 – Substances liable to spontaneous combustion

Class 4.3 – Substances which, in contact with water, emit flammable gases

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2 "inflammable" has the same meaning as "flammable".

3 "poisonous" has the same meaning as "toxic".

(No.4.1)
Class 4.1
Flammable solids

(No.4.2)
Class 4.2
Substances liable to spontaneous combustion

(No.4.3)
Class 4.3
Substances which, in contact with water, emit flammable gases

Class 5 – Oxidizing substances and organic peroxides

Class 5.1 – Oxidizing substances

Class 5.2 – Organic peroxides

(No.5.1)
Class 5.1
Oxidizing substances

(No.5.2)
Class 5.2
Organic peroxides

Class 6 – Toxic and infectious substances

Class 6.1 – Toxic substances

Class 6.2 – Infectious substances

(No.6.1)
Class 6.1
Toxic substances

.

(No.6.2)
Class 6.2
Infectious substances

Class 7 – Radioactive materials

(No.7A)
Category I – White

(No.7B)
Category II – Yellow

(No.7C)
Category III – Yellow

(No.7E)
Class 7
Fissile material

.

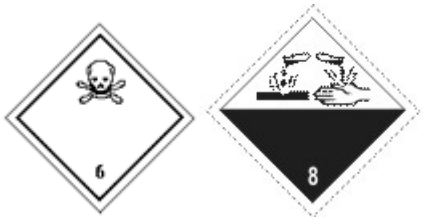
Class 8 – Corrosives

(No.8)

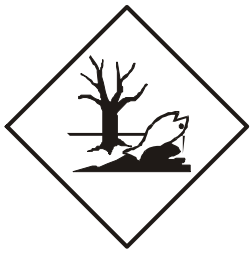
Class 9 – Miscellaneous dangerous substances and articles and environmentally hazardous substances

(No.9)

Subsidiary risks
Some substances or articles can exhibit more than one hazard. In these cases additional label(s) for the subsidiary risks are required, e.g., class 6.1 with subsidiary risk 8

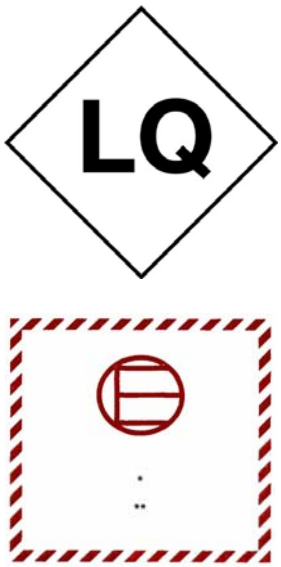


Environmentally Hazardous Substances (Aquatic environment)
For maritime transport these substances are known as marine pollutants and subject to the provisions of Annex III of MARPOL 73/78, as amended



4.1.8 Limited quantities and excepted quantities

Under certain conditions the IMDG Code provides exemptions from some requirements if the dangerous goods are transported in "limited quantities" or "excepted quantities". Packages to which these exemptions apply, are marked as follows:



4.1.9 There may be other marks in addition to 4.1.7 and 4.1.8 of these Guidelines as required by the IMDG Code.

4.2 Before packing

4.2.1 The IMDG Code and other international and national regulations require that the shipper provides transport information on each dangerous substance, material or article. This information shall include at least the following basic item:

.1 the UN Number;

.2 the Proper Shipping Name (including the technical name, as applicable);

.3 the class and/or division (and the compatibility group letter for goods of class 1);

.4 subsidiary risks when assigned;

.5 the packing group when assigned;

.6 the total quantity of dangerous goods (by volume or mass, and for explosives the net explosive content); and

.7 the number and kind of packages.

Other items of information may be required, depending on the mode of transport and the classification of the goods (e.g., flashpoint for transport by sea). The various items of information required under each regulation and applicable during intermodal transport operations should be provided so that appropriate documentation may be prepared for each shipment.

4.2.2 The shipper should also ensure that dangerous goods are classified, packaged, packed, marked, labelled, placarded and provided with the required signs, in accordance with the applicable regulations. A declaration by the shipper that this has been carried out is normally required. Such a declaration may be included with the required transport information.

4.2.3 The shipper should also ensure that the goods to be transported are authorized for transport by the modes to be used during the transport operation. For example, self-reacting substances and organic peroxides requiring temperature control are not authorized for transport by rail under the RID regime. Certain types of dangerous goods are not authorized to be transported on board passenger ships and therefore the requirements of the IMDG Code should be carefully studied.

4.2.4 Current versions of all applicable regulations should be easily accessible and referred to during packing to ensure compliance.

4.2.5 Dangerous goods should only be handled, packed and secured by trained personnel. Supervision by a responsible person who is familiar with the legal provisions, the risks involved and the measures that should be taken in an emergency is required.

4.2.6 Suitable measures to prevent fires should be taken, including the prohibition of smoking in the vicinity of dangerous goods.

4.2.7 Packages of dangerous goods should be examined and any found to be damaged, leaking or sifting should not be packed. Packages showing evidence of staining, etc., should not be packed without first determining that it is safe and acceptable to do so. Water, snow, ice or other matter adhering to packages should be removed before packing. Substances that have accumulated on drum heads should initially be treated with caution in case they are the result of leakage or sifting of contents. If pallets have been contaminated by spilt dangerous goods they should be destroyed by appropriate disposal methods to prevent use at a later date.

4.2.8 If dangerous goods are palletized or otherwise unitized they should be compacted so as to be regularly shaped, with approximately vertical sides and level at the top. They should be secured in a manner unlikely to damage the individual packages comprising the unit load. The materials used to bond a unit load together should be compatible with the substances unitized and retain their efficiency when exposed to moisture, extremes of temperature and sunlight.

4.2.9 An overpack and unit load should be marked with the Proper Shipping Name and the UN Number and marked and labelled, as required for packages, for each item of dangerous goods contained in the overpack or unit load unless markings and labels representative of all dangerous goods in the overpack or unit load are clearly visible. An overpack, in addition, should be marked with the word "OVERPACK" unless markings and labels representatives of all dangerous goods as required for packages in to overpack are visible.

4.2.10 The stowage and method of securing of dangerous goods in a cargo transport unit should be planned before packing is commenced.

4.3 Packing and securing

4.3.1 Special care should be taken during handling to avoid damage to packages. However, if a package containing dangerous goods is damaged during handling so that the contents leak out, the immediate area should be evacuated until the hazard potential can be assessed. The damaged

package should not be shipped. It should be moved to a safe place in accordance with instructions given by a responsible person who is familiar with the risks involved and knows the measures that should be taken[1] in an emergency.

4.3.2 If a leakage of dangerous goods presents safety or health hazards such as explosion, spontaneous combustion, poisoning or similar danger, personnel should immediately be moved to a safe place and the Emergency Response Organization notified.

4.3.3 Dangerous goods should not be packed in the same cargo transport unit with incompatible goods. In some instances even goods of the same class are incompatible with each other and should not be packed in the same unit, e.g., acids and alkalis of class 8. The requirements of the IMDG Code concerning the segregation of dangerous goods inside cargo transport units are usually more stringent than those for road and rail transport. Whenever an intermodal transport operation does not include transport by sea, compliance with the respective inland transport regulations may be sufficient. However, if there is any possibility that a part of the transport operation will be by sea, the segregation requirements of the IMDG Code should be strictly complied with.

4.3.4 When dangerous goods are being handled, smoking or the consumption of food and drink should be prohibited.

4.3.5 Packages marked with orientation arrows should be packed with the arrows pointing upwards. Vented packages should be packed in such a way that the vents will not be blocked.

4.3.6 Drums containing dangerous goods should always be stowed in an upright position unless otherwise authorized by the competent Authority.

4.3.7 Dangerous goods consignments which form only part of the load of a cargo transport unit should, whenever possible, be packed adjacent to the doors with markings and labels visible. Particular attention is drawn to 3.3.1 concerning the securing of cargo by the doors of a unit.

4.3.8 The number of packages containing dangerous goods in excepted quantities in any cargo transport unit is limited to a maximum of 1,000.

4.4 On completion of packing

4.4.1 *Placarding*

4.4.1.1 Placards (enlarged labels and marks) as shown in 4.1.7 (minimum size 250 mm x 250 mm) and other signs should be affixed to the exterior surfaces of a cargo transport unit.

[1] The Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS) and the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) in the Supplement of the IMDG Code give further useful advice, but it should be borne in mind that the former may not be appropriate for use on land; emergency response handbooks, giving emergency response information cross-referenced to the United Nations identification number (UN Number) of the substance are usually available at the national level. More information for emergency response action can be found in the appropriate Safety Data Sheet (SDS) which should be available.

4.4.1.2 Cargo transport units containing dangerous goods or residues of dangerous goods should clearly display placards and marks or other signs as follows:

.1 a freight container or semi trailer, one on each side and one on each end of the unit;

.2 a railway wagon, at least one on each side; and

.3 any other cargo transport unit, at least one on both sides and on the back of the unit, unless otherwise specified in the applicable transport regulations.

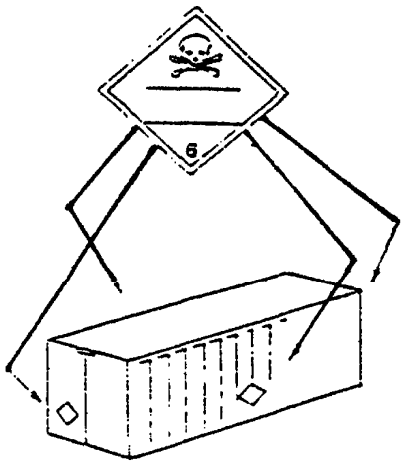


Figure 37 - Placards on a container

Figure 38

Road freight vehicle and full-trailer:
Each unit shall be placarded on both sides and on the rear

Semi-trailer:
The unit shall be placarded on both sides and both ends

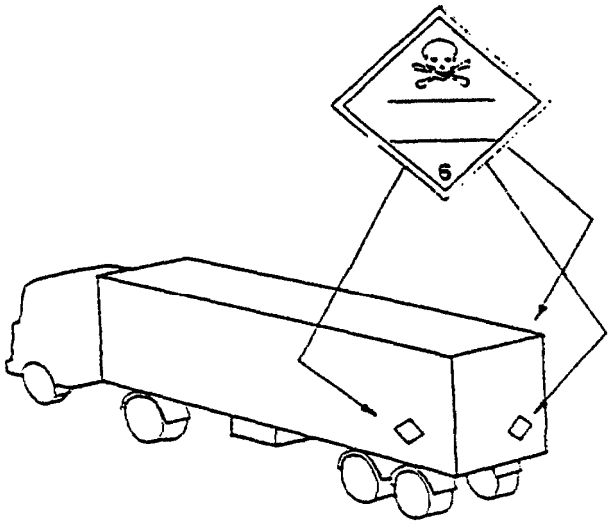


Figure 39 – Placards on a road vehicle

4.4.1.3 Whenever dangerous goods present several risks, subsidiary risk placards should be displayed in addition to primary risk placards. However, cargo transport units containing goods of more than one class, need not bear a subsidiary risk placard, if the hazard represented is already indicated by the primary risk placard.

4.4.1.4 The IMDG Code requires that, except for goods of Class 1, the UN Number shall be displayed as required in 4.4.1.5 on consignments of:

.1 packaged dangerous goods loaded in excess of 4,000 kg gross mass, to which only one UN Number has been assigned and which are the only dangerous goods in the cargo transport unit;

.2 unpackaged LSA-1 or SCO-1 material of class 7 in or on a vehicle or in a freight container; and

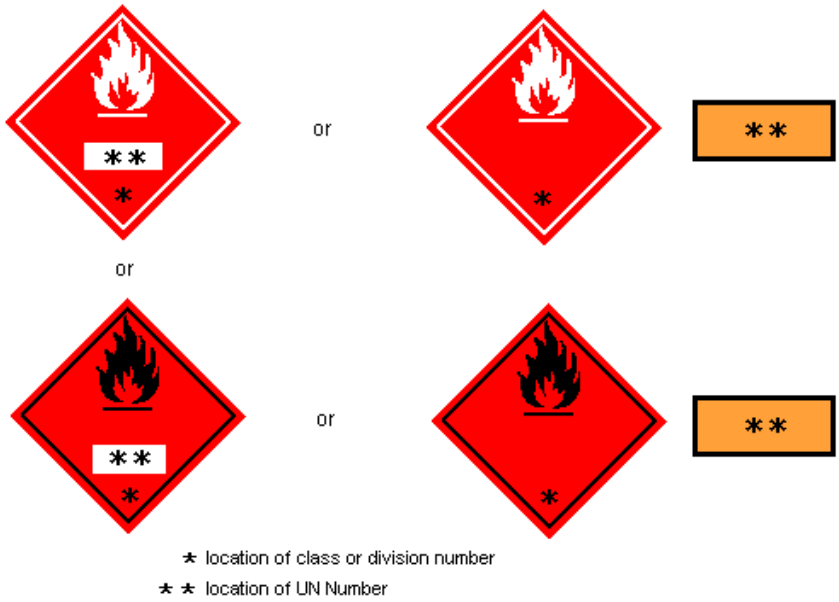
.3 packaged radioactive material with a single UN Number under exclusive use in or on a vehicle, or in a freight container.

4.4.1.5 The UN Number for the goods shall be displayed in black digits not less then 65 mm high, either:

.1 against a white background in the area below the pictorial symbol and above the class number and the compatibility group letter in a manner that does not obscure or detract from the other required label elements; or

.2 on an orange rectangular panel not less than 120 mm high and 300 mm wide, with a 10 mm black border, to be placed immediately adjacent to each placard or marine pollutant mark. When no placard or marine pollutant mark is required, the UN Number shall be displayed immediately adjacent to the Proper Shipping Name.

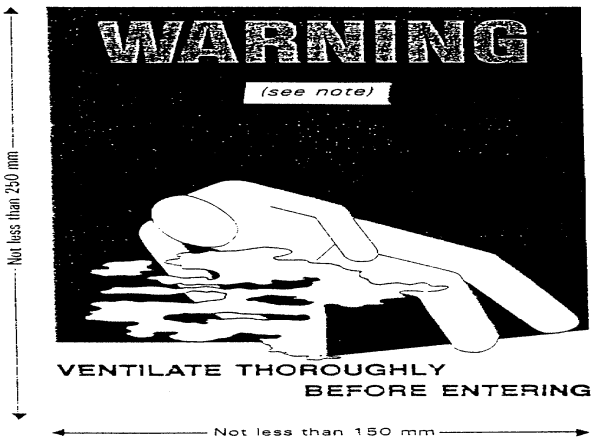
Example:



4.4.1.6 For radioactive materials special requirements.

4.4.1.7 When solid carbon dioxide (CO_2 – dry ice) or other expendable refrigerant is used for cooling purposes, a warning sign should be affixed to the outside of the doors so that it is clearly visible to any person operating the doors. The sign should warn of the possibility of an asphyxiating atmosphere. An example of such a warning sign is given below.

Warning label for dry ice or other expendable refrigerant used for cooling purposes



Note: The text under "WARNING" should refer to the refrigerant gas used.

4.4.1.8 When fumigants have been applied to the contents of a container, the marking of the proper shipping name (Fumigated cargo transport unit) and the UN number (UN 3359) are not required. However, if a fumigated unit is loaded with dangerous goods, any label, mark or sign required by the IMDG Code shall be marked on the fumigated cargo transport unit.

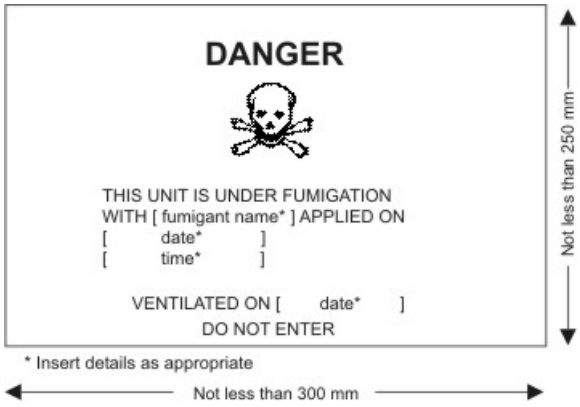
4.4.1.9 A fumigated cargo transport unit shall be marked with the warning mark, as specified in 4.4.1.10, affixed in a location where it will be easily seen by persons attempting to enter the interior of the unit. The marking, as required by this paragraph, shall remain on the unit until the following provisions are met:

.1 the fumigated cargo transport unit has been ventilated to remove harmful concentrations of fumigant gas; and

.2 the fumigated goods or materials have been unloaded.

4.4.1.10 The fumigation warning mark shall be rectangular and shall be not less than 300 mm wide and 250 mm high. The markings shall be in black print on a white background with lettering not less than 25 mm high. The mark should state the fumigant, the method of fumigation employed and the date and time when it took place. An illustration of this mark is given below:

Fumigation warning mark



4.4.2 Container/vehicle packing certificate

4.4.2.1 **When** dangerous goods are packed or loaded into any container or vehicle, the IMDG Code and other transport regulations require that those responsible for packing the container or vehicle shall provide a "container/vehicle packing certificate" specifying the container/vehicle identification number(s) and certifying that the operation has been carried out in accordance with the following conditions:

.1 the container/vehicle was clean, dry and apparently fit to receive the goods;

.2 packages which need to be segregated in accordance with applicable segregation requirements have not been packed together onto or in the container/vehicle (unless approved by the competent Authority concerned);

.3 all packages have been externally inspected for damage, and only sound packages have been loaded;

.4 drums have been stowed in an upright position, unless otherwise authorized by the competent Authority, and all goods have been properly loaded and, where necessary, adequately braced with securing material to suit the mode(s) of transport for the intended journey;

.5 for consignments including goods of class 1 other than division 1.4, the container/vehicle is structurally serviceable;

.6 the container/vehicle and packages are properly marked, labelled and placarded, as appropriate;

.7 when solid carbon dioxide (CO_2 – dry ice) is used for cooling purposes, the container/vehicle is externally marked or labelled in a conspicuous place, such as, at the door end, with the words: "DANGEROUS CO_2 (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING"; and

.8 a dangerous goods transport document has been received for each dangerous goods consignment loaded in the container/vehicle.

4.4.2.2 The information required in the dangerous goods transport document and the container/vehicle packing certificate may be incorporated into a single document; if not, these documents shall be attached into one another. If the information is incorporated into a single document, the document shall include a signed declaration such as "It is declared that the packing of the goods into the container/vehicle has been carried out in accordance with the applicable provisions". This declaration shall be dated and the person signing this declaration shall be identified on the document. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of such signatures.

4.4.3 If the doors of a cargo transport unit are locked, the means of locking shall be such that, in cases of emergency, the doors can be opened without delay."

5 ADVICE ON RECEIPT OF CARGO TRANSPORT UNITS

3 In paragraph 5.3, in the first sentence, the word "cargoes" is replaced by the word "goods".

4 In paragraph 5.5, in the third sentence, the word "MARINE POLLUTANT" is replaced by the word "ENVIRONMENTALLY HAZARDOUS SUBSTANCE (AQUATIC ENVIRONMENT".

5 In paragraph 5.7, in the second sentence, the word "cargoes" is replaced with the word "goods".

7 TRAINING IN PACKING OF CARGO IN CTUs

6 Add the following new sentence at the end of paragraph 7.5

7.5 In assistance to maritime institutes and their technical staff in organizing and introducing new training courses, or in enhancing, updating or supplementing existing training material reference is made to the IMO Model Course 3.18 – Safe Packing of Cargo Transport Units (CTUs).

ANNEX 2

LABELS, PLACARDS, MARKS AND SIGNS

7 Annex 2 of the Guidelines is deleted and annexes 3 to 6 are renumbered as annexes 2 to 5.

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ANNEX 11

DRAFT MSC-MEPC CIRCULAR

UNIFIED INTERPRETATIONS ON THE APPLICATION OF SOLAS, MARPOL AND LOAD LINE REQUIREMENTS TO CONVERSIONS OF SINGLE-HULL OIL TANKERS TO DOUBLE-HULL OIL TANKERS OR BULK CARRIERS

1 The Maritime Safety Committee at its eighty-ninth session (11 to 20 May 2011) and the Marine Environment Protection Committee at its [sixty-second session (11 to 15 July 2011)] approved the Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers, as set out in the annex to this circular. For interpretations on requirements not specified in unified interpretations approved by the Organization, the Administration concerned should be consulted.

2 Member Governments are invited to apply the annexed Unified interpretations, in accordance with paragraph 2 (Application) of the annex, in relation to conversions occurring on or after [*date of approval*], and bring them to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS ON THE APPLICATION OF SOLAS, MARPOL AND LOAD LINE REQUIREMENTS TO CONVERSIONS OF SINGLE-HULL OIL TANKERS TO DOUBLE-HULL OIL TANKERS OR BULK CARRIERS

1 General

The Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers were developed from a holistic point of view, in order to assist Member Governments and all parties concerned when applying the relevant regulations to major conversions. The unified interpretations of SOLAS, MARPOL and Load Line requirements are contained in appendices 1 to 3, respectively.

2 Application*

2.1 The date on which a conversion occurs for the purposes of determining the applicability of requirements for ships constructed on or after the date on which any relevant amendments enters into force should be:

.1 the date on which the contract is placed for the conversion; or

.2 in the absence of a contract, the date on which the work identifiable with the specific conversion begins; or

.3 the completion date of the conversion, if that occurs more than 3 years after the date specified in subparagraph .1 above or 30 months after the date specified in subparagraph .2 above, either as applicable.

2.2 As for paragraph 2.1 above, the following applies:

.1 Where the completion date of the conversion has been subject to delay beyond the period referred to in paragraph 2.1.3 above due to unforeseen circumstances beyond the control of the builder and the owner, the date on which contract is placed for the conversion or, if applicable, the date on which the work identifiable with the specific conversion begins may be accepted by the Administration in lieu of the completion date of the conversion. The treatment of such ships should be considered by the Administration on a case-by-case basis, bearing in mind the particular circumstances.

.2 It is important that ships accepted by the Administration under the provisions of subparagraph .1 above should also be accepted as such by port States. In order to ensure this, the following practice is recommended to Administrations when considering an application for such a ship:

* Refer to the Unified interpretation of the application of regulations governed by the building contract date, the keel laying date and the delivery date for the requirements of the SOLAS and MARPOL Conventions (MSC-MEPC.5/Circ.4).

.1 the Administration should thoroughly consider applications on a case-by-case basis, bearing in mind the particular circumstances. In doing so in the case of a ship converted in a foreign country, the Administration may require a formal report from the authorities of the country in which the ship was converted, stating that the delay was due to unforeseen circumstances beyond the control of the builder and the owner;

.2 when a ship is accepted by the Administration under the provisions of subparagraph .1 above, information on the conversion date annotated on the relevant certificates should be footnoted to indicate that the ship is accepted by the Administration under the unforeseen delay in completion of the conversion provisions of this interpretation; and

.3 the Administration should report to the Organization on the identity of the ship and the grounds on which the ship has been accepted under the unforeseen delay in the completion of the conversion provisions of this interpretation.

APPENDIX 1

UNIFIED INTERPRETATIONS ON THE APPLICATION OF SOLAS REQUIREMENTS TO CONVERSIONS OF SINGLE-HULL OIL TANKERS TO DOUBLE-HULL OIL TANKERS OR BULK CARRIERS

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

1 Regulation 1.3 − Application

For conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers, the following should apply:

.1 Conversions of single-hull oil tankers to double-hull oil tankers or bulk carriers should be regarded as modifications of a major character for the purposes of SOLAS chapter II-1.

.2 Repairs, alterations and modifications of a major character include:

.1 Substantial alteration of the dimensions of a ship, for example lengthening of a ship by adding a new midbody. The new midbody should comply with SOLAS chapter II-1.

.2 A change of ship type, for example an oil tanker converted to a bulk carrier. Any structure, machinery and systems that are added or modified should comply with SOLAS chapter II-1, taking into account the interpretation of SOLAS chapter II-1 regulations as contained herein.

2 Regulations 3-2.2 and 3-2.4 − Protective coatings of dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers

2.1 For single-hull oil tanker conversion into double-hull oil tanker, SOLAS regulation II-1/3-2 as adopted by resolution MSC.216(82) should apply to dedicated water ballast tanks if constructed with all structural members being entirely new. If converting existing spaces into water ballast tanks with part of the existing structural members remaining in place, revised SOLAS regulation II-1/3-2 (MSC.216(82)) need not be applied. However, dedicated sea water ballast tanks should have an efficient corrosion prevention system such as hard protective coatings or equivalent and be of light colour.

2.2 For single-hull oil tanker conversion into bulk carrier, SOLAS regulation II-1/3-2 as adopted by resolution MSC.216(82) should apply to dedicated water ballast tanks and double-side skin spaces of bulk carriers if constructed with all structural members being entirely new. If converting existing spaces into dedicated water ballast tanks or double-side skin space of bulk carriers with part of the existing structural members remaining in place, revised SOLAS regulation II-1/3-2 (MSC.216(82)) need not be applied. However, dedicated sea water ballast tanks should have an efficient corrosion prevention system such as hard protective coatings or equivalent and be of light colour.

3 Regulation 3-6 − Access to and within spaces in, and, forward of, the cargo area of oil tankers and bulk carriers

3.1 For single-hull oil tanker conversion into double-hull oil tanker

3.1.1 Permanent means of access contained in table 1 of the Technical provisions for means of access for inspections (resolution MSC.158(78)) need not apply. However, if, in the course of conversion, substantial new structures are added, these new structures should comply with the regulation.

3.1.2 The term "substantial new structures" means hull structures that are entirely renewed or augmented by new double bottom and/or double-side construction (e.g., replacing the entire structure within cargo area or adding a new double bottom and/or double-side section to the existing cargo area).

3.1.3 Additionally, an approved Ship Structure Access Manual should be provided.

3.2 For single-hull oil tanker conversion into bulk carrier

3.2.1 Permanent means of access contained in table 2 of the Technical provisions for means of access for inspections (resolution MSC.158(78)) need not apply. However, if, in the course of conversion, substantial new structures are added, these new structures should comply with the regulation.

3.2.2 The term "substantial new structures" means hull structures that are entirely renewed or augmented by new double bottom and/or double-side skin construction (e.g., replacing the entire structure within cargo area or adding a new double bottom and/or double-side section to the existing cargo area).

3.2.3 Additionally, an approved Ship Structure Access Manual should be provided.

4 Regulation 3-8 − Towing and mooring equipment

For single-hull oil tanker conversion into double-hull oil tanker or bulk carrier

This regulation should be applied when equipment and fittings for mooring/towing are replaced, modified or the safe working load of the existing equipment and fittings is known. Where the latter cannot be ascertained, alternative compliance with SOLAS regulation II-1/3-8 should be sought (e.g., the equipment should be replaced, tested or modified).

5 Part B − Subdivision and stability

5.1 For single-hull oil tanker conversion into double-hull oil tanker

Oil tankers complying with damage stability requirements contained in Annex I to MARPOL 73/78 (except for combination carriers with type B freeboards) may be excluded from the damage stability requirements contained in SOLAS chapter II-1, part B-1.

5.2 For single-hull oil tanker conversion into bulk carrier

5.2.1 A bulk carrier which is assigned a B reduced freeboard complying with damage stability requirements contained in regulation 27 of the 1966 Load Line Convention, and resolutions A.320(IX) and A.514(13); or regulation 27 of the 1988 Load Line Protocol, may be excluded from the damage stability requirements contained in SOLAS chapter II-1, part B-1.

5.2.2 For a bulk carrier which is assigned a B freeboard, SOLAS chapter II-1, Parts B and B-1 should be applied.

SOLAS CHAPTER II-2
CONSTRUCTION − FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

6 Regulation 1.3 − Repairs, alterations, modifications and outfitting

For single-hull oil tanker conversion into double-hull oil tanker or bulk carrier, new and converted parts should comply with the latest applicable requirements.

SOLAS CHAPTER III
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

7 Regulation 1.4.2 − Application

For single-hull oil tanker conversion into double-hull oil tanker or bulk carrier, this should be considered as an alteration or modification of a major character.

8 Regulation 31.1.8 − Survival craft and rescue boats

8.1 For single-hull oil tanker conversion into double-hull oil tanker, this regulation is not relevant.

8.2 For single-hull oil tanker conversion into bulk carrier, it is recommended that SOLAS regulation III/31.1.8 should be met as for new ships, except where the space available for fitting and/or launching a free-fall lifeboat in accordance with regulation III/31.1.2.1 is not adequate, in which case the existing arrangements for lifeboats are acceptable subject to compliance with SOLAS regulation III/1.4.2.

SOLAS CHAPTER V
SAFETY OF NAVIGATION

9 Regulation 22 − Navigation bridge visibility

For single-hull oil tanker conversion into double-hull oil tanker or bulk carrier, the level of visibility possessed by the ship prior to the conversion at the ballast loading condition should be maintained after the conversion. Where a conversion involves the modification of structural arrangements used to establish the minimum bridge visibility under the provisions of SOLAS regulation V/22 it should comply with this regulation.

SOLAS CHAPTER XII
ADDITIONAL SAFETY MEASURES FOR BULK CARRIERS

For single-hull oil tanker conversion into double-hull oil tanker, these regulations are not relevant.

For single-hull oil tanker conversion into bulk carrier, the provisions of chapter XII applicable for ships constructed on or after the date on which conversion occurs, should be applied as for a new ship to the entire bulk carrier, i.e. all new and existing parts and spaces, as follows.

10 Regulation 4 − Damage stability requirements applicable to bulk carriers

10.1 Regulation 4.1 should be applied.

10.2 Regulation 4.2 applies, based on the Unified interpretations of SOLAS regulations XII/4.2 and XII/5.2 (MSC.1/Circ.1178).

10.3 Regulation 4.3 should not be applied.

10.4 Regulation 4.4 should be applied.

10.5 Regulation 4.5 should not be applied.

10.6 Regulations 4.6 and 4.7 should be applied.

11 Regulations 5.1 and 5.2 − Structural strength of bulk carriers

Regulation 5.1 should apply. Regulation 5.2 should apply, based on the Unified interpretations of SOLAS regulations XII/4.2 and XII/5.2 (MSC.1/Circ.1178).

12 Regulation 6.1 − Structural and other requirements for bulk carriers

This regulation should not be applied.

13 Regulation 6.2 − Structural and other requirements for bulk carriers

This regulation should be applied.

14 Regulation 6.3 − Structural and other requirements for bulk carriers

This regulation should be applied.

15 Regulation 6.4 − Structural and other requirements for bulk carriers

This regulation should be applied.

16 Regulation 7.1 − Survey and maintenance of bulk carriers

This regulation should not be applied. However, SOLAS regulation XI-1/2 is applicable.

17 Regulation 7.2 − Survey and maintenance of bulk carriers

This regulation should be applied.

18 Regulation 8 − Information on compliance with requirements for bulk carriers

18.1 Regulation 8.1 should be applied.

18.2 Regulations 8.2 and 8.3 should not be applied.

19 Regulation 9 − Requirements for bulk carriers not being capable of complying with regulation 4.3 due to the design configuration of their cargo holds

This regulation should not be applied.

20 Regulation 10 − Solid bulk cargo density declaration

20.1 Regulation 10.1 should be applied.

20.2 Regulation 10.2 should not be applied.

21 Regulation 11 − Loading instrument

21.1 Regulation 11.1 should be applied.

21.2 Regulation 11.2 should not be applied.

21.3 Regulation 11.3 should be applied.

22 Regulation 12 − Hold, ballast and dry space water ingress alarms

22.1 Regulations 12.1 and 12.2 should be applied.

22.2 Regulation 12.3 should not be applied.

23 Regulation 13 − Availability of pumping systems

23.1 Regulations 13.1 should be applied.

23.2 Regulation 13.2 should not be applied.

24 Regulation 14 − Restrictions from sailing with any hold empty

This regulation should not be applied.

APPENDIX 2

UNIFIED INTERPRETATIONS ON THE APPLICATION OF MARPOL REQUIREMENTS TO CONVERSIONS OF SINGLE-HULL OIL TANKERS TO DOUBLE-HULL OIL TANKERS OR BULK CARRIERS

MARPOL ANNEX I

REGULATIONS FOR THE PREVENTION OF POLLUTION BY OIL

1 For single-hull oil tanker conversion into double-hull oil tanker

For the purpose of determining the application date for the requirements of regulation 20.4* of MARPOL Annex I, where an oil tanker has undergone a major conversion, as defined in regulation 1 of MARPOL Annex I, that has resulted in the replacement of the forebody, including the entire cargo carrying section, the major conversion completion date of the oil tanker shall be deemed to be the date of delivery of the ship referred to in regulation 20.4 of MARPOL Annex I, provided that:

.1 the oil tanker conversion was completed before 6 July 1996;

.2 the conversion included the replacement of the entire cargo section and forebody and the tanker complies with all the relevant provisions of MARPOL Annex I applicable at the date of completion of the major conversion; and

.3 the original delivery date of the oil tanker will apply when considering the 15 years of age threshold relating to the first CAS survey to be completed in accordance with regulation 20.6 of MARPOL Annex I.

2 For single-hull oil tanker conversion into bulk carrier

2.1 The relevant requirements of MARPOL Annex I should be applied to the entire bulk carrier.

2.2 With regard to conversions from single-hull oil tankers to bulk, regulation 12A of MARPOL Annex I should be applied to the entire bulk carrier, i.e. all new and existing fuel oil tanks.

* Refer to Unified Interpretation 37 to MARPOL Annex I – Major conversion in respect of regulation 20.4, adopted by MEPC 55.

APPENDIX 3

UNIFIED INTERPRETATIONS ON THE APPLICATION OF LOAD LINE REQUIREMENTS TO CONVERSIONS OF SINGLE-HULL OIL TANKERS TO DOUBLE-HULL OIL TANKERS OR BULK CARRIERS

INTERNATIONAL CONVENTION ON LOAD LINES, 1966

Article 10 – Repairs, alterations and modifications

1 For single-hull oil tankers converted to double-hull oil tankers:

.1 the ship should meet the requirements of the regulations contained in chapter III (Freeboards) of Annex I of the Load Line Convention in effect at the date of conversion. In cases where there are no changes to the parameters which result in a change of the minimum freeboard; and where there is no decrease in magnitude of freeboard assigned after conversion, using the Convention previously applicable to the ship in determining any change or decrease as mentioned above, the converted ship should continue to comply with at least the requirements previously applicable to the ship; and

.2 any structure and/or equipment such as doors, hatches, and cable lockers, etc., which is newly added, replaced, or modified is to comply with the requirements of the regulations contained in chapter II (Conditions of assignment of freeboard) of Annex I of the Convention in effect at the date of conversion.

2 For single-hull oil tankers converted to bulk carriers:

.1 any such conversion should be regarded as a modification of a major character and the ship should meet all the requirements of the regulations annexed to the Convention (including regulation 39) in effect at the date of conversion; and

.2 notwithstanding the above, the requirements of the regulations contained in chapter II (Conditions of assignment of freeboard) of Annex I of the Convention in effect at the date of conversion, should be applied only to the structure and/or equipment, which is newly added, replaced, or modified.

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ANNEX 12

RESOLUTION MSC.323(89)
(adopted on 20 May 2011)

ADOPTION OF AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70))

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.689(17) entitled "Testing of life-saving appliances", by which the Assembly, at its seventeenth session, adopted the Recommendation on testing of life-saving appliances,

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

NOTING resolution MSC.81(70), by which, at its seventieth session, it adopted the Revised recommendation on testing of life-saving appliances, recognizing the need to introduce more precise provisions for the testing of life-saving appliances based on the requirements of the International Life-Saving Appliances (LSA) Code,

RECOGNIZING the need to harmonize amendments to the Revised recommendation on testing of life-saving appliances as adopted by resolutions MSC.200(80) and MSC.226(82),

HAVING CONSIDERED, at its eighty-ninth session, proposed amendments to the Revised recommendation on testing of life-saving appliances, prepared by the Sub-Committee on Ship Design and Equipment at its fifty-fourth session,

1. ADOPTS amendments to the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), as amended, the text of which is set out in the Annex to the present resolution;

2. RECOMMENDS Governments to apply the annexed amendments when testing life-saving appliances.

ANNEX

AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70), AS AMENDED)

PART 1
PROTOTYPE TESTS FOR LIFE-SAVING APPLIANCES

2 – LIFEJACKETS

1 In paragraph 2.4, in the footnote, the term ":2006" is added after the referenced standard "ISO 12402-7".

2 Paragraph 2.10.4.1 is deleted and the following paragraphs are renumbered accordingly.

3 In the renumbered paragraph 2.10.4.1, the referenced ISO standards are amended as follows:

.1 ISO 2411:1991 is replaced by ISO 2411:2000;

.2 ISO 188 is replaced by ISO 188:2007;

.3 ISO 4674:1977 is replaced by ISO 4674-1:2003 and ISO 4674-2:1998;

.4 ISO 7854:1984 is replaced by ISO 7854:1995;

.5 ISO 1421:1977 is replaced by ISO 1421:1998;

.6 ISO 105-B02:1988 is replaced by ISO 105-B02:1994;

.7 ISO 105-X12:1995 is replaced by ISO 105-X12:2001; and

.8 ISO 105-E02:1978 may be replaced by ISO 105-E02:1994.

4 In the renumbered paragraph 2.10.4.3.2, in the fourth sentence, the word "show" is inserted after the word "should".

5 In the renumbered paragraph 2.10.4.5.1, the referenced standard "ISO 9227:1990" is replaced by the standard "ISO 9227:2006".

6 In the renumbered paragraph 2.10.4.6.1, in the sixth sentence, the word "points" is replaced by the words "be pointed".

7 In the renumbered paragraph 2.10.4.6.3, in the chapeau, the words "should be" are inserted after the word "lifejacket" and the word "access" is replaced by the word "assess".

3 – IMMERSION SUITS, ANTI-EXPOSURE SUITS AND THERMAL PROTECTIVE AIDS

8 The heading "*Flotation test*" is inserted before paragraph 3.1.7.

9 In paragraph 3.1.18:

.1 in the first sentence, the reference to paragraph number "2.6.1" is replaced by "2.5.1" and the words "to the parts other than the lifting loop" are added at the end; and

.2 the following new sentence is inserted between the existing first and second sentences:

"For the lifting loop strength test, a force of not less than 3200 N should be applied."

10 In paragraph 3.3.9, in the second sentence, the word "conductivity" is replaced by the word "conductance" and the term "0.25 W/(m·K)" is replaced by "7,800 W/(m^2·K)".

4 – PYROTECHNICS – ROCKET PARACHUTE FLARES, HAND FLARES AND BUOYANT SMOKE SIGNALS

11 In paragraph 4.8.3:

.1 in subparagraph 4.8.3.1, the word "blown" in the first sentence is replaced by the word "drawn" and the following sentence is inserted at the end of the subparagraph:

"Smoke density should be at least 70% throughout the minimum emission time.";

.2 in subparagraph 4.8.3.2 and in the Note to the paragraph, the term "8.75 YR 6/14" is replaced by "8.75 R 6/14".

5 – LIFERAFTS – RIGID AND INFLATABLE

12 Paragraph 5.11 is replaced by the following:

"**5.11 Swamp test**

It should be demonstrated that the liferaft, when fully swamped, is capable of supporting its full equipment and the number of persons for which it is to be approved. It should also be demonstrated that the liferaft does not seriously deform in this condition."

13 In section 5.17, the referenced ISO standards are amended as follows:

.1 ISO 1421 is replaced by ISO 1421:1998;

.2 ISO 2411 is replaced by ISO 2411:2000;

.3 ISO 4892-4:1994 is replaced by ISO 4892-4:2004;

.4 ISO 4892-2 is replaced by ISO 4892-2:2006 with amendment 1:2009;

.5 ISO 4675 is replaced by ISO 4675:1990;

.6 ISO 7854 is replaced by ISO 7854:1995;

.7 ISO 5978 is replaced by ISO 5978:1990; and

.8 ISO 3011 is replaced by ISO 3011:1997.

6 – LIFEBOATS

14 In paragraph 6.2.2, the references to paragraph numbers "2.7" and "2.7.6.3" are replaced by "2.6" and "2.6.6.3", respectively.

15 In paragraph 6.2.5, the references to paragraph numbers "2.7.5" and "2.7.8" are replaced by "2.6.5" and "2.6.7", respectively.

7 – RESCUE BOATS AND FAST RESCUE BOATS

16 In paragraph 7.2.11, the words "full tank" are replaced by the words "fully filled fuel tank".

8 – LAUNCHING AND EMBARKATION APPLIANCES

17 In paragraph 8.2.3, the referenced standard "ISO 3768:1976" is replaced by "ISO 9227:2006 – Corrosion tests in artificial atmospheres – Salt spray tests".

10 – POSITION INDICATING LIGHTS FOR LIFE-SAVING APPLIANCES

18 In paragraph 10.1.2, the last sentence is amended to read as follows:

"The interior lights should provide an arithmetic mean luminous intensity of not less than 0.5 cd when measured over the entire upper hemisphere to permit reading of survival instructions and equipment instructions for a period of not less than 12 h."

19 In paragraph 10.2.2:

.1 in the first sentence, the word "and" after the term "-1°C" is deleted and the words ", and the other should be taken from ordinary room condition and operated immersed in fresh water at ambient temperature" are added at the end of the sentence; and

.2 at the beginning of the second sentence, the words "Both lights" are replaced by the words "All of the lights".

20 In section 10.4, the referenced standard "IEC 945: 3rd edition (November 1996)" is replaced by the standard "IEC 60945:2002".

13 – SEARCHLIGHTS FOR LIFEBOATS AND RESCUE BOATS

21 In paragraphs 13.1 to 13.3, the referenced standards "IEC 945" and "IEC 447" are replaced by the standards "IEC 60945:2002" and "IEC 60447:2004", respectively.

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ANNEX 13

DRAFT AMENDMENTS TO SOLAS REGULATION III/20.11.2

CHAPTER III
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

Regulation 20 – Operational readiness, maintenance and inspections

1 In paragraph 11.2, the following new subparagraph .4 is added after the existing subparagraph .3:

".4 notwithstanding subparagraph .3 above, the operational testing of free-fall lifeboat release systems shall be performed either by free-fall launch with only the operating crew on board or by a simulated launching carried out based on guidelines developed by the Organization*.

* Refer to Measures to prevent accidents with lifeboats (MSC.1/Circ.1206/Rev.1)."

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ANNEX 15

DRAFT AMENDMENTS TO SOLAS REGULATION XI-1/2

CHAPTER XI-1
SPECIAL MEASURES TO ENHANCE MARITIME SAFETY

Regulation 2 – Enhanced surveys

1 The words "the guidelines adopted by the Assembly of the Organization by resolution A.744(18)" are replaced by the words "the International Code on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, 2011 (2011 ESP Code), adopted by the Assembly of the Organization by resolution A.[…(27)]".

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ANNEX 16

GUIDELINES TO ASSIST COMPETENT AUTHORITIES IN THE IMPLEMENTATION OF PART B OF THE CODE OF SAFETY FOR FISHERMEN AND FISHING VESSELS, THE VOLUNTARY GUIDELINES FOR THE DESIGN, CONSTRUCTION AND EQUIPMENT OF SMALL FISHING VESSELS, AND THE SAFETY RECOMMENDATIONS FOR DECKED FISHING VESSELS OF LESS THAN 12 METRES IN LENGTH AND UNDECKED FISHING VESSELS

Contents

PREFACE

The need to address fishing vessel safety within the United Nations system was recognized as early as the 1950s by the Food and Agriculture Organization of the United Nations (FAO) and as a result of calls by naval architects, the marine community and fishermen; much work was undertaken in the design and safety of fishing vessels, especially smaller vessels. In the 1960s, in cooperation with the International Labour Organization (ILO) and the International Maritime Organization (IMO) and FAO, the Code of Safety for Fishermen and Fishing Vessels (hereinafter referred to as the Code) was developed. The Voluntary Guidelines for the Design and Equipment of Small Fishing Vessels (hereinafter referred to as the Voluntary Guidelines) were completed in 1982.

On adopting the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, the Conference recommended that there would be a need to review the Code. Consequently, IMO undertook a review and invited the participation of FAO and ILO, and also decided, at the same time, to review the Voluntary Guidelines.

Following the completion of the review of the Code and the Voluntary Guidelines, the revised texts were approved by the Maritime Safety Committee (MSC) at its seventy-ninth session (1 to 10 December 2004). Thereafter, at the Committee on Fisheries at its twenty-sixth session, in March 2005, FAO welcomed the revisions and recommended the early publication by IMO of these documents and later, the Governing Body of the ILO at its 293rd session, in June 2005, also approved the revised texts.

The MSC, at its seventy-ninth session, agreed with the proposal made by FAO to include in the work programme of the Sub-Committee on Stability and Load Lines and on Fishing Vessel Safety (SLF) a new high-priority item on "Safety of small fishing vessels", with the aim to develop safety recommendations for decked fishing vessels of less than 12 m in length and undecked fishing vessels, bearing in mind that the majority of fishing fatalities occur aboard such vessels.

Following completion, the Safety Recommendations for decked fishing vessels of less than 12 m in length and undecked fishing vessels (herein after referred to as the Safety Recommendations) were approved by the MSC, at its eighty-seventh session (12 to 21 May 2010). The Governing Body of the ILO approved the Safety Recommendations at its 309th session, in November 2010. Thereafter, at the Committee on Fisheries at its twenty-ninth session (31 January to 4 February 2011), FAO welcomed them and recommended their early publication by IMO.

In 2007 the ILO adopted the Work in Fishing Convention (No.188) and its accompanying recommendation No.199. These are comprehensive instruments covering many aspects of work on board fishing vessels, including issues such as medical certification, manning, hours of rest, crew accommodation, food and catering, occupational safety and health, medical care at sea, social security and liability for injury and death. They also emphasize the importance of consulting with fishing vessel owners and representatives of fishermen when developing laws, regulations and other measures concerning safety and health in the fisheries sector. The requirements concerning accommodation, in particular, will have a direct impact on the design and construction of new fishing vessels and on existing vessels where the accommodation is undergoing reconstruction or substantial alteration.

During the development of the Safety Recommendations, it was further recognized that there was a pressing need to provide assistance in their implementation. Consequently, the MSC, at its eighty-third session, approved the development of Guidelines to assist competent authorities in the implementation of the Code, the Voluntary Guidelines, and the Safety Recommendations into their domestic legislation and/or codes of safe practice, or other measures in consultation with all stakeholders in the industry.

FAO held an expert consultation on Best Practices for Safety at Sea in the Fisheries Sector, from 10 to 13 November 2008, with the participation of ILO and IMO, with the objective to develop a draft outline of Guidelines for such best practices. It was emphasized at the expert consultation that the Guidelines should ensure a holistic approach so that all factors influencing safety are comprehensively covered, and that awareness raising of safety issues should be accorded high-priority. The best practice guidelines would take into account the outcomes of FAO regional meetings on safety at sea as well as the instruments developed by FAO, ILO and IMO that relate to safety and health in the fisheries sector.

These Guidelines are intended for the attention of maritime, labour and fisheries ministries and any other relevant government ministry as and when it is decided to implement Part B of the Code and/or the Voluntary Guidelines and/or the Safety Recommendations. While the intention is not to provide a single prescription to improve safety, the Guidelines do seek to raise awareness and offer guidance on a broad range of issues which must be addressed in an effective and holistic manner. Furthermore, it is hoped that they will underline the need to provide an environment within which fishing communities, owners, operators and skippers can make use of the options and tools to improve safety at sea in the fisheries sector.

Following the completion of the Guidelines to assist competent authorities in the implementation of [*]Part B of the Code of Safety for Fishermen and Fishing Vessels, Voluntary Guidelines for the Design Construction and Equipment of Small Fishing Vessels, and Safety Recommendations for Decked Fishing Vessels of less than 12 metres in Length and Undecked fishing vessels (hereinafter referred to as the Implementation Guidelines) were approved by the MSC at its eighty-ninth session (11 to 20 May 2011). [Thereafter, at the Committee on Fisheries at its [... session in ...], FAO welcomed the Implementation Guidelines and recommended the early publication by IMO and, later, the Governing Body of the ILO approved them at its [... session in ...].]

[*] These are referred to as Part B of the Code, the Voluntary Guidelines and the Safety Recommendations.

INTRODUCTION

1 Fishing continues to be recognized as one, if not the most, hazardous occupation in the world. In 1999, it was estimated that there are 24,000 deaths annually, the large majority of these on board small vessels. At the time of the preparation of these Guidelines, it was also estimated that there are some 4 million fishing vessels operated globally, 1.3 million decked vessels of which probably 96% are less than 24 m in length and 2.7 million undecked vessels of which at least 1.7 million are not mechanically powered, indicating the importance of taking action to improve safety of these smaller vessels.

2 The fishing industry is characterized by the lack of a safety culture; there are many factors that have led to this, earnings only linked to the volume of the catch; training, education, poverty, outdated legislation and the perceived high cost of safety in an industry that is suffering declining catch rates and ever increasing higher input costs. The introduction of a regulatory framework is but one of the faucets to inculcate a safety culture; "the most effective and long lasting change will only occur when the industry itself embraces the need for a safety culture that has eluded it for so long".

3 Apart from having in place a regulatory framework, there are other actions that can be considered as part of an overall safety programme. For example, there should be both high-level and community-based safety seminars focussing on safety awareness, the raising of training and educational levels and addressing minimum levels of manning for different classes and types of fishing vessels.

4 The cooperation and coordination between maritime and fisheries administrations is important, particularly where the responsibilities for safety of fishing vessels are divided under relevant Acts. In addressing stock management issues, decisions made should also consider the possible resultant impact on the safety in the fisheries sector.

5 Valuable lessons on how to improve ergonomics can be gained from other sectors and from experts in occupational safety and health and related disciplines. The administration(s) responsible for improving vessel and crew safety should seek, where practicable, to draw upon such knowledge and experience when seeking to improve fishing vessel design and when overseeing installation of new equipment. The importance of making vessels not only safe but also healthy and tolerable for crews should not be overlooked.

6 Therefore, the purpose of these Guidelines is to assist maritime administrations and/or fisheries ministries to put in place, or refine, a regime that will give effect to Part B of the Code, the Voluntary Guidelines, and the Safety Recommendations, from a practical perspective. In order to ensure a holistic approach, these Guidelines include subjects such as operational safety and human element and the reader's attention is also drawn to the Code of Safety for Fishermen and Fishing Vessels, Part A. The Guidelines cover such areas as:

.1 development of a safety strategy;

.2 legal implications;

.3 administrative requirements;

.4 capacity-building;

.5 training of crew members;

.6 enforcement of regulations; and

.7 operational safety.

7 Any reference in these Guidelines to "the instruments" means the Code of Safety for Fishermen and Fishing Vessels, Part B, the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels and the Safety Recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels.

8 Terms used in these Guidelines have, in general, the same meaning as those used in the instruments. The following definitions are important for the purpose of these Guidelines and are included here. Therefore, unless provided otherwise:

8.1 *Approved* means approved by the competent Authority.

8.2 *Competent Authority* is the Government of the State whose flag the vessel is entitled to fly. The competent Authority may delegate certain of its duties to entities authorized by it and that it deems suitably qualified to undertake those duties.

8.3 *Crew* means the skipper and all persons employed or engaged in any capacity on board a vessel on the business of that vessel.

8.4 *Existing vessel* is a vessel which is not a new vessel.

8.5 *Fishing vessel* (hereto referred as vessel) means any vessel used commercially for catching fish, whales, seals, walrus or other living resources of the sea.

8.6 *Fishing Vessel Inspector* means a designated member of the staff of a maritime or fisheries administration regardless of the grade of that person.

8.7 *Inspection of a Fishing Vessel* means an inspection carried out to ensure compliance with the provisions of the shipping, labour and/or fisheries Acts.

8.8 *Length (L)* should be taken as 96% of the total length on a waterline at 85% of the least depth, or as the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that length is greater. In vessels designed with rake of keel the waterline on which this length is measured should be parallel to the designed waterline.

8.9 *Length overall (LOA)* should be taken as the distance in a straight line parallel to the design waterline between the foremost point of the bow and the after most point of the stern.

8.10 *New vessel* is a vessel the keel of which is laid, or which is at a similar stage of construction, on or after the date of adoption of the Instruments set out in chapter 1.

8.11 *Organization* means the International Maritime Organization.

8.12 *Owner* means any person or entity having assumed the responsibility for the operation of the vessel.

8.13 *Recognized Organization* means an organization which meets the relevant conditions set forth by the Guidelines for the authorization of organizations acting on behalf of the Administration (resolution A.739(18)).

8.14 *Skipper* means the person having command of a vessel.

8.15 *Surveyor*, in these Guidelines, means a staff member of a vessel classification society, a person appointed as a non-exclusive surveyor by a classification society, a person appointed by Lloyd's Agent or a person accredited by a professional body as a surveyor of vessels.

8.16 *Unseaworthy vessel* means a vessel whose hull, machinery, equipment or operational safety is substantially less than the provisions of the shipping and/or fisheries Acts in relation to standards of safety construction, safety equipment, equipment and operation of a fishing vessel.

CHAPTER 1

THE INSTRUMENTS

1.1 Purpose

These Guidelines are intended to assist competent authorities to give effect to the provisions of the Instruments (see paragraph 7 of the Introduction).

1.2 Part B of the Code

1.2.1 The purpose of Part B of the Code is to provide information on the design, construction, and equipment of fishing vessels with a view to promoting the safety of fishing vessels and safety and health of the crew. The Code is not a substitute for national laws and regulations nor is it a substitute for the provisions of international instruments in relation to safety of fishing vessels and crew although it may serve as a guide to those concerned with framing such national laws and regulations. It is voluntary and wider in scope than the 1993 Torremolinos Protocol* and only the minimum requirements to ensure the safety of fishing vessels and safety and health of the crew are given for fishing vessels of 24 m in length and over. Each competent Authority should take every possible measure to promote the safety of the vessels concerned.

1.2.2 It may be noted that certain sections of the Part B of the Code make reference to the minimum standards set out in the provisions of the 1993 Torremolinos Protocol. Consequently, where so referenced, these are considered to be the minimum standards acceptable in relation to the classes of vessels, as prescribed in the Protocol, and for the application of Part B of the Code.

1.2.3 Furthermore, it may also be noted, that regional uniform standards or guidelines that have been submitted to IMO as provided for under Article 3, paragraphs (4) and (5) of the Protocol for fishing vessels registered and operating in such regions, prevail over chapters IV, V, VII and IX of Part B of the Code. For all other fishing vessels of 24 m in length and over but less than 45 m in length that are registered in such regions but operate, or are intended for operation outside the region, the provisions of Part B of the Code should be addressed.

1.2.4 In addition, unless otherwise stated, the provisions of Part B of the Code are intended to apply to new decked fishing vessels of 24 m in length and over. However, even where not otherwise stated, the competent Authority should also apply these provisions, as far as reasonable and practicable, to existing decked fishing vessels.

1.2.5 The provisions of Part B of the Code do not apply to fishing vessels used for sport or recreation or to processing vessels.

1.2.6 Where operating experience has clearly shown that departure from the provisions of this part of the Code is justified, or in applying this part of the Code to any other equivalent area of operation for any vessel covered by this part of the Code, the competent Authority may permit adequate alterations or substitutions thereof.

* Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977.

1.3 The Voluntary Guidelines

1.3.1 The purpose of the Voluntary Guidelines is to provide information on the design, construction and equipment of small fishing vessels with a view to promoting the safety of the vessel and safety and health of the crew. They are not intended as a substitute for national laws and regulations, but may serve as a guide to those concerned with framing such national laws and regulations. Each competent Authority responsible for the safety of fishing vessels should ensure that the provisions of the Voluntary Guidelines are adapted to its specific requirements, having due regard to the size and type of vessels, their intended service and area of operation.

1.3.2 Unless otherwise stated, the provisions of the Voluntary Guidelines are intended to apply to new decked fishing vessels of 12 m in length and over, but less than 24 m in length. Nevertheless, even where not otherwise stated, the competent Authority should as far as reasonable and practical give consideration to the application of these provisions to existing decked fishing vessels. They do not, however, apply to fishing vessels used for sport or recreation or to processing vessels.

1.4 The Safety Recommendations

1.4.1 The purpose of the Safety Recommendations is to provide information on the design, construction, equipment, training and protection of the crew of small fishing vessels with a view to promoting the safety of the vessel and safety and health of the crew. They are not intended as a substitute for national laws and regulations, but may serve as a guide to those concerned with framing such national laws and regulations. Each competent Authority responsible for the safety of vessels should ensure that the provisions of these Safety Recommendations are adapted to its specific requirements, having due regard to the size and type of vessels, their intended service and area of operation. Furthermore, attention is drawn to Part A of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels, 2005.

1.4.2 Unless otherwise stated, the provisions of these Recommendations are intended to apply to new decked vessels of less than 12 m in length (L) and new undecked vessels intended to operate at sea. Nevertheless, even where not otherwise stated, the competent Authority should as far as reasonable and practical give consideration to the application of these provisions to existing vessels.

1.5 Mandatory and other voluntary instruments

1.5.1 In implementing a safety regime using the above mentioned instruments, references will be found in them to mandatory and other non-mandatory instruments given in annex 4, which a competent Authority would also need to consider when adopting a holistic approach to fishing vessel safety.

1.5.2 However, it must be understood that the provisions of a Convention, when in force and ratified by the State concerned, take precedence over non-mandatory instruments.

TABLES OF CONTENTS OF THE INSTRUMENTS AND EXAMPLES OF PERTINENT MANDATORY AND OTHER VOLUNTARY INSTRUMENTS

Table 1 – Contents of Part B of the Code

Chapter/Part	Contents
Chapter I	General provisions
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Chapter III	Stability and associated seaworthiness
Chapter IV	Machinery and electrical installations and periodically unattended machinery spaces
Part A	General
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Part C	Electrical installations
Part D	Periodically unattended machinery spaces
Chapter V	Fire protection, fire detection, fire extinction and fire fighting
Part A	General fire protection provisions
Part B	Fire safety measures in vessels of a length of 60 m and over
Part C	Fire safety measures in vessels of 45 m in length and over but less than 60 m
Part D	Fire safety measures in vessels of 24 m in length and over but less than 45 m
Chapter VI	Protection of the crew
Chapter VII	Life-saving appliances and arrangements
Part A	General
Part B	Vessel requirements
Part C	Life-saving appliance requirements
Chapter VIII	Emergency procedures, musters and drills
Chapter IX	Radio Communications
Part A	General
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Table 4 – Examples of pertinent mandatory and other voluntary instruments

Mandatory	International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, and Protocol. In part applicable to fishing vessels. (www.imo.org)
Mandatory	International Convention on Maritime Search and Rescue, 1979. (www.imo.org)
Mandatory	Convention on the International Regulations for Preventing Collisions at Sea (COLREGS), 1972. Applicable to all fishing vessels. (www.imo.org)
Mandatory	Torremolinos Protocol of 1993 relating to the Torremolinos International Convention on the Safety of Fishing Vessels, 1977. Not yet in force as at (date of printing). (www.imo.org)
Mandatory	International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995. Not yet in force as at (date of printing). (www.imo.org)
Mandatory	Work in Fishing Convention No. 188 and Recommendation No. 199, 2007. Not yet in force as at (date of printing). (www.ilo.org)
Voluntary	Part A of the Code of Safety for Fishermen and Fishing Vessels.
Voluntary	Document for Guidance on Standards of Training, Certification and Watchkeeping of Fishing Vessel Personnel, 2001. (www.imo.org)
Voluntary	Standard specifications for the marking and identification of fishing vessels, 1989. Voluntary. (www.fao.org)
Voluntary	Code of Conduct for Responsible Fisheries, 1995. (www.fao.org)

CHAPTER 2

ADMINISTRATIVE REQUIREMENTS

2.1 Assessment of national needs

2.1.1 A review of the relevant Act or Acts would identify the various elements that should be covered by an Administration concerned with the safety of fishing vessels. In parallel, an assessment of the fleet should be carried out that would cover all sectors to determine the extent of the requirements of the Administration to implement the provisions of the Instruments as and when incorporated in the Act or Acts. In particular, a census of the fishermen should be carried out and their distribution along the coast (beach landing sites, small harbours and ports) mapped from the point of view of safety services and implementation of the provision in legislation.

2.1.2 The servicing sector should also be assessed and that would include, but not necessarily limited to the:

.1 shipbuilding/boatbuilding sectors;

.2 training institutions;

.3 existing extension services; and

.4 the role of the Coast Guard.

2.1.3 On the basis of the above-mentioned assessments, the Administration should review its minimum requirements to carry out inspections/surveys on a long-term basis and to plan recruitment and training needs, bearing in mind the need for:

.1 a review of fishing vessel designs and construction methods in the country and the preparation of standards;

.2 broad-based training;

.3 institutional strengthening through the development of a long term strategy for the training and certification/accreditation of fishing vessel inspectors;

.4 fishing vessel measurement, outline specifications and plans;

.5 preparation of a model law for the incorporation of standards for fishing vessel construction; and

.6 a financial and economic feasibility analysis.

2.1.4 With regard to the parallel exercise to identify provisions in the principal legislation and regulations that need amendment, it is important to consider what should be covered in relation to the provisions of the Instrument regarding the construction of fishing vessels. In particular, to address conditions for watertight integrity and equipment, stability and associated seaworthiness, machinery and electrical installations, fire protection and fire fighting, protection of the crew, life-saving appliances, emergency procedures and safety training, radio communications, navigational equipment, crew accommodation, manning and training.

2.1.5 Thereafter, how the provisions of the instruments may be adapted to the specific requirements of the competent Authority should be examined, having due regard to the size and type of vessels, their intended mode and area of operation, and climatic conditions. For this reason careful consideration should be given with regard to which of the provisions in the Instruments are either necessary or unnecessary in the context of the domestic and high seas fisheries. In addition, particular attention should be paid to a situation where vessels registered and or licensed by the flag State are fishing or intending to fish in the exclusive economic zone of another State where more stringent safety regulations may be in place.

2.2 Communications with industry

2.2.1 It is important and essential for the competent Authority to communicate with all stakeholders in the industry on all issues before the introduction of the measures to implement the instruments.

2.2.2 Stakeholders are any person or body that has an involvement in the fishing industry, such as, employer and employee representatives, vessel builders, equipment suppliers, insurers, training institutions, fishermen's co-operatives, fishermen, vessel owners, fishermen's federations, etc.

2.3 Determination of linkages between ministries

2.3.1 In parallel with the process of reviewing, amending existing legislation or preparing new legislation on the basis of the provisions of the Instruments, the competent Authority should consult with appropriate ministries and apportion responsibilities for the implementation of such legislation.

2.3.2 Thereafter, the ministry elected to play the central role in formulating the measures to give effect to the revised or new legislation, which is often the agency responsible for the safety of vessels, in the context of stability, construction, machinery and electrical equipment, would identify the relevant ministries to consult when considering areas outside of its expertise, e.g., radio communications. Although the relevant ministries would differ in each country, such ministries may include, but not be limited to communications, equipment standards, training and certification, occupational health and safety, labour, etc. There should be a coordinated approach to setting standards and policies and the implementation of legislation, amended or new, to be promulgated on the basis of the Instruments.

2.4 Measures when amending or implementing new safety standards

2.4.1 Consideration should be given to the difficulties that may be encountered by the fishing industry when proposing new measures. This may include measures applicable to existing vessels, and consideration of whether a phasing-in period is necessary for certain requirements. For this reason, it is important and essential for the competent Authority to communicate with all stakeholders in the industry on all issues before the deciding on measures to implement the provisions of the Instruments; however the standards set should reflect the outcome of the Assessment of National Needs described above, and should not be lower than that of the instruments.

2.4.2 In addition, competent authorities may consider various stimulus packages to ensure early compliance with new measures, such as grants to replace older vessels or equipment, tax incentives, etc.

2.5 The competent Authority

2.5.1 The competent Authority should ensure that the delegated authority for fishing vessel safety should be comprised of units that are responsible for:

.1 policy and planning;

.2 administration, including internal training and qualification of staff;

.3 vessel Registration/Licensing for fish;

.4 technical standards;

.5 survey and enforcement;

.6 training, manning, certification, medical and labour standards;

.7 naval architecture/marine engineering; and

.8 legal aspects.

2.5.2 Assessment of the requirements for safety equipment and construction materials; the availability of spare parts and service centres.

2.5.3 In many countries, there are no manufacturers that produce safety equipment required when implementing the instruments. Fishing vessels therefore carry equipment that is imported. In accepting the use of imported safety equipment, the competent Authority should consider the suitability of the equipment against the guidance of the instruments and the availability of spares and replacements and also service centres.

2.5.4 The same consideration should be given to the materials and other equipment used in building the vessel.

2.6 Registration of fishing vessels

2.6.1 Fishing vessels should be registered as a matter of course and the requirement to do so should be in the principle legislation, as set out in chapter 3. It is recognized, however, that in many countries, emphasis is placed on the license to fish in the case of small fishing vessels rather than the registry process. Nevertheless, in such cases, the licence to fish should contain the same information as required for the register of a fishing vessel in relation to its particulars and ownership.

2.6.2 The competent Authority should ensure that appropriate arrangements are in place to adequately service the need to register a fishing vessel. In this regard, it is noted that often the larger fishing vessels fall under the registrar of ships while the task for small vessels lies with a fisheries management administration. Administrations should liaise with all stakeholders to ensure that all fishing vessels are registered and/or licensed to fish.

2.6.3 However, notwithstanding where the responsibility lies, the conditions for the register of a fishing vessel should have a common interpretation and should cover the requirements for new locally built vessels, existing vessels renewing the safety certificate on expiry and imported fishing vessels. Examples of conditions that may be applied are given in annex 1.

2.7 Casualty/incident investigation

2.7.1 In considering the action required to implement the measures to give effect to the instruments, it is important that a thorough understanding of accidents/incidents and their causes as expanded upon under the heading of the Development of a Safety Strategy that follows. It being understood that while these Guidelines seek to assist competent authorities implementing the instruments, casualty investigation should not be limited to design, construction and equipment issues; but take cognizance of other causal factors that fall outside the ambit of these instruments.

2.7.2 Therefore a "marine accident investigation body" should be established by the competent Authority; which should operate independently of the delegated authority for fishing vessel safety.

2.7.3 Furthermore, whereas any marine safety investigation should be separate from, and independent of, any other form of investigation, other government agencies would be required to cooperate with a marine accident investigation body.

2.7.4 The results of investigations should be made public. This is part of the methodology used in heightening safety awareness.

2.8 Development of a safety strategy*

2.8.1 In order to develop a safety strategy, it is imperative to understand and document (as benchmarks) the type and incidence of accidents on board fishing vessels whether these occur at sea or in port. In this regard, as recommended above, consideration should be given at an early stage to establish a "marine accident investigation body". Due consideration should also be given to the structure of the existing fleet and their operational areas, number of fishers, status of available fish resources, the maritime and fisheries legislation and the ability of the competent Authority to enforce regulations.

2.8.2 Furthermore, the safety culture in the country and the socio-economic situation of the fishing sector has to be well understood and in particular, the fishers' perception of safety. Thus the stakeholders should be consulted and invited to contribute to the development of the safety strategy. The participation of the stakeholders is of utmost importance in order to have transparency in the process and to prepare realistic and attainable objectives in safety at sea.

2.8.3 In addition, since the strategy might have to extend beyond waters under the jurisdiction of a flag State due to sub-regional, regional and inter-regional agreements to which the flag State may be a party, the influence of these agreements should also be analysed.

2.8.4 An analysis of the information collected concerning accidents should identify key reasons that may include, among others:

.1 adverse weather;

.2 human element (inexperience, fatigue, poor training);

.3 collision;

* This subject is dealt with in great detail within the FAO Technical Report [...] Best Practices for Safety – [rest of agreed title].

.4 grounding;

.5 flooding;

.6 communication failures (ship to ship/ship to shore);

.7 mechanical defects (deck machinery, gear handling, running gear);

.8 unguarded moving parts of machinery;

.9 fishing operations (gear coming fast, safe retrieval of fishing gear);

.10 working aloft;

.11 lack of, or poorly maintained, survival equipment;

.12 unseaworthiness of the vessel;

.13 fire and failure of fire-fighting equipment;

.14 poor loading/unloading practices and fuel management affecting stability;

.15 operating area and distance from safe haven;

.16 bunkering and storing activities; and

.17 the pressure of fisheries management decisions.

2.8.5 The underlying contributing factors listed above are a direct reflection on the effectiveness/thoroughness of fishing vessel inspection services and owners or requirements for pre-sea training and the implementation of the provisions of STCW-F Convention in general (notwithstanding that a competent Authority may not have ratified that convention).

2.9 Refining the safety strategy

2.9.1 A basic approach, following an understanding of safety issues, would be further consultation with the main stakeholders, it being understood that there would be variations in the composition of the participants (of the stakeholders) depending upon the diversity of the national fleet.

2.9.2 Through such consultations, current impediments to improvements could be highlighted and solutions identified. It being understood that in most cases there would be a need for acceptance of responsibilities by stakeholders such as, owners, managers, skippers, the authorities delegated by the competent Authority (maritime and/or fisheries administration, SAR services and ministries concerned with safety and health issues) and certainly in the case of small scale fisheries, the local communities.

2.9.3 In parallel, an inventory should be taken with regard to existing services and capabilities within the country and where appropriate within a region, for comparison with perceived needs. Such an inventory should provide a comprehensive overview of all aspects of the fisheries sector including human resources as referred to in attendant chapters to these Guidelines.

2.9.4 The use of a methodology considering Hazard Analysis or Risk Evaluation should be considered to identify and mitigate potential dangers to fishermen and fishing vessels.

2.10 Procedures for investigating complaints

The competent Authority should put in place procedures for responding to complaints concerning issues that are covered by the Instruments, such as safety and crew accommodation.

2.11 Special requirements

It is recognized that external assistance may be required in some cases to overcome constraints to the development and implementation of a safety strategy and possibly technical and legal assistance in certain subjects. In particular in the understanding and use of analytical tools developed for a better understanding of safety issues. In this regard, there would be a need to identify sources of such assistance, for example the technical cooperation programmes of UN agencies or through regional cooperation arrangements.

CHAPTER 3

LEGAL IMPLICATIONS

3.1 Introduction

3.1.1 At the outset it should be kept in mind that the Instruments are not intended as a substitute for national laws and regulations but may serve as a guide to those concerned with framing such national laws and regulations.

3.1.2 The primary goal of this section of the Guidelines is to help competent authorities to build their own legislation and regulations or other measures for the safety of fishing vessels, and it is important that these regulations have a sound legal basis. This legislation could be drafted in various ways and at various levels, depending on the constitution and legal system of the country and could be in the form of laws, acts, codes, regulations and schedules. Therefore, the competent Authority should liaise with the legal ministry or the state law office to decide how the legislation should be drafted.

3.1.3 Although it may be seen to be outside the ambit of these Guidelines, competent Authorities are reminded of their obligations in terms of mandatory instruments with regard to fishing vessels.

3.2 Application

Unless otherwise stated, the provisions of the Instruments are intended to apply to new fishing vessels. Nevertheless, even where not otherwise stated, the competent Authority should as far as reasonable and practical give consideration to the application of these provisions to existing vessels, including vessels coming on to the register for a first time. They do not, however, apply to vessels used for sport and recreation fishing or to fish processing vessels.

3.3 Existing legislation

3.3.1 In the first instance, it is essential to identify provisions in the principal legislation be it in the Shipping Act and/or the Fisheries Act or other legislation, for example labour acts and regulations that need amendment and for that purpose propose necessary amendments, or draft new text where no legislation exists related to mandatory instruments to which the State is a Party. This review should also give consideration to the position of the competent Authority regarding mandatory instruments concerning the safety of fishing vessels and their operations that are under study with a view to deciding whether or not to ratify.

3.3.2 In carrying out the review of principal legislation, due note should be taken of the assessments carried out under chapter 2, in particular, the outcome of discussions with the industry.

3.3.3 Thereafter, the competent Authority should ensure that the provisions of the instruments are adapted to its specific requirements, having due regard to the size and type of vessels, their intended mode and area of operation, and climatic conditions. For this reason careful consideration should be given with regard to which of the provisions in the Instruments are either necessary or unnecessary, for example in the context of the domestic and high seas fisheries.

3.3.4 Where there are existing standards* related to fishing vessel design, construction, equipment or manning, amendments should be drafted to comply with the instruments.

3.3.5 When the competent Authority drafts a new set of rules, or amendments to existing standards, it is important for the competent Authority to decide what responsibilities vessel builders and fishing vessel owners should have.

3.4 No legislation

3.4.1 If the competent Authority has no existing legislation or regulations concerning fishing vessel safety, it could, on the basis of the various FAO, ILO and IMO instruments and guidelines, draft and build such legislation. Firstly, there should be a primary act for the legislation and regulations to statute authority for the legislation. Furthermore, there should be a description of the responsibilities of the competent Authority and vessel owners, related to design, construction, equipment, operation, manning and inspection of fishing vessels. Normally the primary objective will place the responsibility for compliance with the legislation on the fishing vessel owner or the skipper or a combination of both.

3.4.2 When the competent Authority is drafting legislation, information could be provided by others, particularly where intra-regional cooperation exists. In addition to this, various organizations such as the FAO, ILO and IMO, would be able to provide information and assistance to the competent Authority.

3.4.3 The following scheme may be adopted for drafting, at the national level, harmonized legislative provisions for setting requirements for construction of fishing vessels, registration and inspection:

.1 permission should be given by the fisheries authorities to contemplate registration/building before application is made to the competent Authority;

.2 set out the main requirements for registration and inspection and, in particular, standards for the construction of vessels and restate that no vessel shall be put to sea or be qualified for a licence to fish to be issued in respect of such vessel unless the vessel is constructed in the required manner and is registered and complies with the requirements as set out in the regulations;

.3 state that the standards are not in derogation of standards required to be met under other applicable laws and conventions;

.4 set the scope of the application of the regulations in particular in respect to types/categories of vessels;

.5 set out basic definitions;

.6 set out standards that apply generally and standards that are specific to a class or type of vessel to be constructed or in use; and to the subject or activity (i.e. construction, survey, registration, safety equipment, etc.); or

* Standard means a regulation a schedule or code that gives effect to the instruments or principal legislation.

.7 alternatively, most standards be set out in schedules under the regulations as rules or by reference to "guidelines, conventions, codes, standards", etc.;

.8 create offences and penalties for breach of standards (but that ultimate incentive for meeting standards would be the threat of non-registration and no licence to fish); and

.9 provide for exemption from application of prescribed standards/requirements relating to safety construction, safety equipment and qualifications for vessel/boat builders and fishermen until a specified date. All requests for exemptions should be carefully considered and only granted where compliance is not reasonable or practicable and in no way compromises the safety of the fishermen or vessel.

3.4.4 In the event that there is no requirement in legislation to register small fishing vessels, the requirement for inspection during construction and for seaworthiness should, nevertheless, be included in the regulations of the relevant Act and made a condition for the allocation of a licence to fish.

3.5 Register

3.5.1 The competent Authority should keep a record of the vessels that fly its flag or have a register of the vessels and this should be incorporated in the legislation as a requirement. This record or register should be combined with a database of the vessels that are licensed to fish.

3.5.2 Depending on the size of the vessels, area and type of operation, a competent Authority could have a requirement to group its fleet into different size categories providing that the standards are no less than given in the relevant instruments. Nevertheless, should the competent Authorities chose to differentiate on size, it is important to take in account the international formulae for vessel dimensions and tonnage measurements, and the unified interpretations on how these formulae should be used.

3.6 Safety certificate

3.6.1 The competent Authority should ensure that all vessels are inspected by an inspector or surveyor and found fit for intended service prior to the issue of a safety certificate.

3.6.2 Where a safety certificate is not required to be issued, the vessel should be inspected to demonstrate compliance with the standards.

3.6.3 The competent Authority may also introduce a system of self-assessment of their vessel(s) by vessel owners that would involve the skipper and crew, in an inspection of a vessel. Such a self-assessment report, signed by an owner and the skipper, would be returned to the government office responsible for the survey/inspection of fishing vessels. Although such a system would remain under the supervision of the competent Authority, it would have the added advantage of aiding owners and skippers to meet their responsibilities for compliance with the standards.

3.6.4 A licence to fish should not be issued to a vessel that is not safe.

3.6.5 Examples of a safety certificate and survey checklists are shown in annexes 2, 3 and 4.

3.7 Safety equipment

The competent Authority should have in place a regime for the approval of safety equipment. This may include a domestic approval process, recognition of approval by other flag States and recognized organizations. The approval procedures, including the approved sources, should be available to fishing vessel owners who have the responsibility of only purchasing approved safety equipment.

3.8 Survey resources

It is recognized that many competent Authorities may not have the resources or capacity to inspect all of the fishing vessels. An alternative could be that private entities including recognized organizations and nominated surveyor, on the behalf of the competent Authority, carry out surveys and approvals of the vessel and equipment. These entities should be accredited by the competent Authority and have been delegated the authority to undertake this work on behalf of the competent Authority. Furthermore, the limits of the entities' responsibilities and authority should be stated. The conditions of such an arrangement should be regulated by a written agreement between the competent Authority and the entity.

3.9 Exemptions

The competent Authority may exempt any vessel engaged solely in fishing near the coast of its country from any of the requirements of the instruments if it considers that the application is unreasonable and impracticable in view of the distance of the vessel's operating area from its base port in its own country, the type of vessel, the weather conditions and the absence of general navigational hazards, provided that it complies with safety requirements which, in the opinion of that competent Authority, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel and fishermen.

3.10 Special requirements for developing countries

3.10.1 Assistance may be required by developing countries to remove constraints to the development and implementation of the instruments.

3.10.2 It is also recognized that such assistance may extend beyond simply translating the requirement of the instruments into national languages and may also include, *inter alia,* technical and legal assistance.

3.10.3 Such assistance may be available through technical cooperation programmes and regional or sub-regional cooperative arrangements. Developing countries may seek advice from FAO, ILO, IMO or countries which have already established national laws, at least at the level of international standards, in relation to fishing vessel safety that incorporate the provisions of mandatory instruments and elements of the Instruments.

CHAPTER 4

CAPACITY-BUILDING

4.1 Manpower development programmes

4.1.1 Quite clearly, the size of a fishing fleet and the types and sizes of the vessels in the fleet would greatly influence manpower development in each of the sections such as, the fishing industry and the vessel and boat building sector and may go beyond the remit of maritime and fisheries administrations. Consideration could also be given to the number of foreign registered fishing vessels making use of the coastal State's ports; that may be subject to the port State control regime. It is, therefore, important to accept that cooperation between sections is essential and, that it may be prudent to look at the composition of a fleet in line with length or tonnage parameters as set out in other relevant instruments such as the 1993 Torremolinos Protocol, SOLAS and MARPOL.

4.1.2 Given the size and composition of a fleet of fishing vessels an assessment should be made of the capability of the competent Authorities to discharge their administrative and technical responsibilities on a continuing basis and how their strengths may be enhanced and maintained through recruitment and training. In this regard, there would be a need for an understanding of available service facilities, education and training facilities, survey and design offices, as well as, for example, the role of the national Coast Guard with regard to vessel inspection.

4.1.3 Whereas it is difficult to indicate a standard of qualification for all staff concerned, the fundamental requirement is that each grade should be capable of doing the job completely from time of appointment. Given the international nature of the fishing industry, this must involve comparison with similar appointments in the individual's own and other countries in the region and or where the fleet trades. With these points in mind it may be useful to consider qualification requirements for professional administrators, legal, and survey/technical staff.

4.2 Fleet composition

4.2.1 A complete understanding of the composition of the national fleet of fishing vessels would be composed of, together with the numbers of crew members:

.1 decked vessels of 24 m in length and over;

.2 decked vessel of 12 m in length and over but less than 24 m in length;

.3 decked vessels of less than 12 m in length;

.4 undecked, mechanically powered vessels, of any size; and

.5 undecked vessels of any size that are not mechanically powered.

4.2.2 In each case, the analysis should include the number of vessels in service, under construction as well as foreseen, the size groupings of vessel, vessel type, material of construction and fishing method as well as the degree of mechanization. The area of operation should be understood.

4.3 Numbers of crew members

Not all flag States have a requirement for crew members to be registered as such, particularly in artisanal and subsistence fisheries, the numbers, age profile and standard of training and education of the industry, however, it is desirable to have such a record.

4.4 Legal

Due to the complications that could arise due to a mixture of responsibilities assigned to those concerned with fisheries management, maritime matters and occupational safety and health, different specializations may have to be brought together to address legal issues and to ensure compatibility with requirements under, for example shipping and fisheries acts in relation to fishing vessels. It clearly requires the senior legal experts to be well qualified and likely to mean qualification in their own national law and in maritime and fisheries law to at least master's degree, together with qualifications in international law and have considerable experience.

4.5 Survey/inspection services

4.5.1 A requirement in law setting out standards for the design, construction, equipment and operation of fishing vessels, enforcement of the attendant regulations would call for a process of monitoring, control and certification. In this regard, the competent Authority would set the requirements for the inspection of fishing vessels and the qualifications to be held by inspectors as well as the experience they should have. The competent Authority should install an inspection system that would make use of appropriately qualified and experienced inspectors, and/or on a non-exclusive basis or even delegate surveys/inspections to recognized organizations, private entities or nominated surveyors. If a competent Authority elects to have its own exclusive inspection service, the line of command should be clear and each "inspector" should be readily identifiable by post description. In this regard, it may be deemed to be desirable as a consequence of the analysis of the needs, to appoint inspectors with specialization in specific fields, for example, an inspector of hulls, an inspector of machinery or, more generally, a hull and machinery inspector. These are discussed in detail in annex 1, it should be understood that short-term inputs in relation to, for example, naval architecture, could be obtained under contract with a technical/educational institution or specialized individual. The same may be the case for marine engineering, particularly where a high level of expertise is required in the event of investigations into mishaps leading to loss of life and or property.

4.5.2 Where an inspection service already exists, a thorough review should be made of possible needs for in-service training and to identify whether or not there would be a need to introduce a "grandfather" clause in any new regulations to protect the interest of existing (mature) staff of longstanding.

4.6 Infrastructure

4.6.1 Service facilities for construction and repair of fishing vessels should be analysed in relation to their capability/capacity. In this connection, a survey should be made of the labour force employed in that sector to identify numbers of persons employed and to establish the levels of skills available and how these skills are achieved.

4.6.2 It should also be established whether or not an accreditation scheme for fishing vessel builders, particularly small fishing boat builders, is in place and if so, how it compares to other industries.

4.7 Survey and design offices

A list should be established of appropriate surveyors, naval architects and marine engineers who are accredited by recognized organizations, insurance underwriters and or the salvage association. This type of information would normally be available from recognized organizations/Chamber of Commerce or Association of Professional Engineers. Note should be made of the familiarity or otherwise of these persons with fishing vessels and the fishing industry both from a domestic and international perspective, as appropriate. It may be necessary, however, to extend the investigation to other countries in the sub-region.

4.8 Education and training

4.8.1 Local professional engineering bodies should be sourced to obtain information in relation to entry into the various grades of membership (fellow, member, associate member and associate) as well as the educational institutions that issue acceptable awards for entry into such professional bodies.

4.8.2 Information should be obtained from education, training institutions and fisheries extension services in relation to the types of courses that are available (both diploma and non-diploma courses) for each of the following relevant disciplines:

.1 marine engineering;

.2 naval architecture; and

.3 nautical science.

4.8.3 This is likely to be the most organized sector coping, as it does, with a broad range of maritime applications and would include institutional requirements in response to the STCW and STCW-F Conventions. Thus, such a survey should include universities, technical colleges and fisheries academies.

4.9 Fishing vessel construction

It is likely that training and education would be at the level of polytechnic institutions, trades colleges and, in some cases, training centres sponsored by the industry in cooperation with the Government. In such cases, there would be a need to determine the "standing" of the qualifications given at completion of courses and to compare these with internationally accepted standards (see also annex 2). In certain areas where local designs are prevalent recognition should be given to inherited competencies in the construction of such vessels.

4.10 Fisheries science

The basic reason to look closely at this section is that safety is considered to be an integral part of fisheries management and to ensure that graduates have a clear understanding of how management decisions based on scientific recommendations might affect safety and health during fishing operations.

4.11 Fishing operations

4.11.1 The scope within this section is wide since it covers fishing vessels management as well as crew members. With regard to management, it is likely that the technical managers would have similar levels of education as required for surveyors and inspectors and in the larger companies, they would be considered as marine and engineer superintendents. Others might be considered in the manner as "works or production managers" in the case of the very large fishing vessels processing the catch on board and have their education and experience based on the food processing industry. In both cases, this is matter for the company owners to address on the basis of national legislation and should be addressed when developing a safety strategy for safety at sea.

4.11.2 With regard to crew members, there should be an inventory of all existing training/education institutions in the country and their capabilities in relation to current and future needs. In this regard, it is understandable that with regard to certificates of competence, as may be required by national law, examination is the responsibility of the competent Authority. In the case of national planning, administration and curricula development, competent authorities and such training institutions are well served by and may draw on the FAO/ILO/IMO Document for Guidance on Training and Certification of Fishing Vessel Personnel. Of note, however, is the need for an integrated approach involving Government, fishing vessel owners, fishermen's organizations, educational and fisheries research institutions and with other bodies having an intimate knowledge of the vocational training of crew members, as well as those concerned with occupational safety and health. Furthermore, special attention would have to be given to developing countries and the role of fisheries extension services.

4.12 Institution building

Every competent Authority should have adequate capacity to implement the provisions of the instruments and, taking into account the technological and operational situations of the domestic fishing vessels, should consider introducing the pertinent provisions of the instruments into domestic regulations, in particular:

.1 approval of building of fishing vessels;

.2 approval of equipment;

.3 approval of plans and stability;

.4 issue of various kinds of certificates;

.5 establishment of construction, machinery and fire-fighting standards, etc.;

.6 registration/licensing of vessels;

.7 establishment of regime and enforcement of safety and hull survey standards;

.8 training of fishermen;

.9 certification of fishermen; and

.10 establishment of medical fitness standards.

CHAPTER 5

ENSURING COMPLIANCE WITH NATIONAL REQUIREMENTS

5.1 The competent Authority should ensure that fishing vessels are built, maintained and manned in accordance with the national requirements. Competent Authorities should put in place a regime that ensures that owners and skippers maintain the vessel in a seaworthy condition, during the period of validity of a safety certificate or between surveys.

5.2 Where practicable, prior to the commencement of building, plans and stability calculations should be submitted to the competent Authority for approval. The competent Authority should refer to the size, length, area of operation, weather conditions, etc., that a vessel will operate in when deciding the degree of detail required in plans and/or stability calculations.

5.3 As appropriate the hull, machinery, equipment, and radio installations should be surveyed/inspected during construction, on completion and thereafter in such manner and at such intervals as the competent Authority may consider necessary in order to ensure that their condition is in all respects satisfactory.

5.4 The surveys/inspections should be such as to ensure that the arrangements material, and scantlings of the structure, boilers, and other pressure vessels and appurtenances, main and auxiliary machinery, electrical installations as well as crew accommodation, other equipment levels and manning are in all respects satisfactory for the service for which the fishing vessel is intended.

5.5 As part of the survey/inspection process consideration should be given to the areas the vessel is allowed to operate in, giving attention to any radio equipment required for that area and the climatic conditions likely to be encountered.

5.6 On satisfactory completion of the survey/inspection, the fishing vessel should be issued with a safety certificate or documentation for a period determined by the competent Authority. The competent Authority should consider at what vessel length limit safety certificates are issued.

5.7 When the fisheries administration is considering an application for a vessel to be given permission to undertake fishing activities, part of the approval process should require proof that the vessel meets the requirements of the relevant safety legislation.

5.8 It is important that inspectors behave in a professional manner towards the fishermen and the fishing vessel owner and apply the standards in a uniform manner. The competent Authority should develop a code of conduct for the inspectors. In this regard, the model given in annex 3 may be used as a guide.

5.9 The competent Authority should have a procedure that describes how complaints and litigation are to be handled, and this procedure should be in accordance with the system for legal complaints and litigation in the country.

5.10 Wherein there is a requirement for the position of a fishing vessel to be monitored either by radio or through the use of satellite systems for fisheries monitoring, control, surveillance and enforcement purposes, inspectors of fishing vessels should be fully aware of the technology adopted by the competent Authority and the need to address such instrumentation when inspections are carried out.[*]

[*] Refer to the FAO Technical Guidelines for Responsible Fisheries No.1, Fishing Operations and Supplement 1 Vessel Monitoring Systems.

CHAPTER 6

OPERATIONAL SAFETY

6.1 Onboard vessel safety management

6.1.1 Fishing varies from simple hand-line fishing to some very sophisticated trawling operations.

6.1.2 In all facets of its operation fishing is a very dangerous occupation. Not only is the environment in which fishermen work hostile, the operation itself is fraught with dangers that can only be guarded against by diligent awareness and safe practices.

6.2 Fishing vessel safety management regulations

6.2.1 Fishing vessel safety management regulations should introduce mandatory requirements for owners, managers and skippers that lay a legal basis for the introduction of a safety culture on board.

6.2.2 The regulations should cover, but not be limited to:

.1 definitions;

.2 application;

.3 duties of owners, managers safety officers and skippers;

.4 personal safety equipment to be provided;

.5 reporting and investigation of accidents;

.6 safe access;

.7 guarding of hatches and openings;

.8 lifting equipment;

.9 electrical equipment;

.10 lighting;

.11 safeguarding of machinery;

.12 safety officers;

.13 safety committees;

.14 record-keeping; and

.15 offences and penalties.

6.3 Safety codes

6.3.1 The purpose of a code of safe practices is to bring to the attention of all fishermen and those persons who are concerned with fishing as a means of making a livelihood, a set of standards and norms that should be used to create a safe working environment.

6.3.2 A code of safe practice can be introduced as a mandatory requirement by way of regulation.

6.3.3 A code of safe practices should not be written for the exclusive use of fishing vessel personnel. It is meant for any person who has a function to perform on board a fishing vessel and by those shore-based persons responsible for the management of fishing vessels. The language used in a code should be the everyday terminology used on board, so as to be easily understood, and not be written in legal terminology.

6.3.4 The code should be used as an educational tool. It deals with the fundamentals of safety for fishermen and provides safety principles that should become common knowledge and practice in the fishing industry.

6.3.5 The code should contain chapters covering:

.1 responsibilities of persons concerned with fishing;

.2 safety of the vessel, maintaining watertight integrity and stability;

.3 safety on deck, gangways, ladders, lighting, precautions against falling overboard, working with ropes and wires;

.4 safety during fishing operations, relative to the types of gear used;

.5 safety in machinery areas;

.6 personal safety;

.7 safety training and the maintenance of safety equipment;

.8 emergency training and procedures;

.9 fire precautions;

.10 lifting appliances;

.11 galley safety and food handling; and

.12 health and hygiene.

CHAPTER 7

COMMON UNDERSTANDING OF THE TECHNICAL PROVISIONS AND TERMINOLOGY OF THE INSTRUMENTS

7.1 Interpretation of terms and expressions

7.1.1 "Accepted by the competent Authority" may be interpreted as vessel features or equipment which meets the technical requirements and operating experience of the competent Authority.

7.1.2 "All reasonable steps" may be interpreted as measures not placing unmanageable constraints on the design, construction, operation or cost of the vessel.

7.1.3 "Alternative arrangements" may be interpreted as alternative vessel features or equipment which meets the technical requirements and operating experience of the competent Authority.

7.1.4 "Alternatives acceptable to the competent Authority" may be interpreted as vessel features or equipment which meets the technical requirements and operating experience of the competent Authority.

7.1.5 "Approved by the competent Authority" may be interpreted as vessel features or equipment which meet the technical requirements and operating experience of the competent Authority.

7.1.6 "Equivalent measure of safety" may be interpreted as vessel features or equipment as required by the recommendations which meet the technical requirements and operating experience of the competent Authority.

7.1.7 "Decked vessel" for the purpose of the instruments: a vessel is only considered to be decked if all of the following requirements are met:

.1 the deck covers the entire hull;

.2 the deck is of watertight construction;

.3 the flooding of any well or cockpit in the deck will not result in flooding of the vessel;

.4 if an enclosed superstructure covers a deck opening the superstructure should be of weathertight construction and have weathertight doors fitted to all access openings;

.5 doors leading to below deck spaces should have sills. For minimum heights refer to the appropriate instrument;

.6 hatches leading to below deck spaces should have coamings. For minimum heights refer to the appropriate instrument. Where a lower figure is used watertight hatch covers of a material other than wood should be fitted; and

.7 on vessels of design categories A, B and C the covers should be permanently attached and be capable of being closed or battened down.

7.1.8 Where a vessel does not meet all of these requirements, it should be considered as undecked.

7.1.9 "Efficient" may be interpreted as suitable for the intended operation of the vessel.

7.1.10 "Exempt or exempting" may be interpreted as allowing a vessel to be exempt from a requirement of the Recommendations because they place unreasonable and impractical constraints on the design, construction, operation or cost of the vessel.

7.1.11 "Significant wave height" is the average wave height (trough to crest) of the one-third largest waves. It is possible that waves encountered at sea may be as much as twice the significant wave height.

7.1.12 "Simple construction" may be interpreted as construction making use of simple artisanal (craft based) materials and construction techniques. Examples may include:

.1 vessels formed from dug-out logs;

.2 vessels formed by the lashing or tying materials together; and

.3 simple construction methods not represented by the construction standards given in annexes II, III, IV and V of the Safety Recommendations.

7.1.13 "Operating experience has shown justification" may be interpreted as demonstrated and documented safe operation of a fishing vessel in the conditions encountered in the area administered by the competent Authority. The documented period could be 5 years or more.

7.1.14 "Practicable" may be interpreted as not placing unreasonable and impractical constraints on the design, construction, operation or cost of the vessel.

7.1.15 "Proven historical design" may be interpreted as vessels with a long record of safe operation in the conditions encountered in the area administered by the competent Authority.

7.1.16 "Satisfaction of the competent Authority" may be interpreted as meeting the established technical requirements and proven operating experience of the administrators and surveyors employed by the competent Authority. Competent authorities may wish to have their own interpretation of this term.

7.1.17 "Sufficient strength" may be interpreted as suitable for the intended operation of the vessel and weather/watertight to the required degree. This may given by the construction standards or be equivalent to the surrounding structure if no other guidance exists.

7.1.18 "Undecked vessel": refer to "decked vessel".

7.1.19 "Watertight" means capable of preventing the passage of water through the structure in any direction under a head of water for which the surrounding structure is designed.

7.1.20 "Weathertight" means that in any sea conditions water will not penetrate into the vessel. Hatches, sidescuttles and windows should be equipped with weathertight closing devices. The same applies for doors and other openings on enclosed superstructures.

7.1.21 "Where appropriate" may be interpreted as measures not placing unreasonable and impractical constraints on the design, construction, operation or cost of the vessel.

CHAPTER 8

HUMAN ELEMENT ON BOARD

8.1 Human element – introduction

8.1.1 It is often said that over 80% of all accidents are caused by "human error". Human error is not always as a result solely of the actions of the fishermen alone, but may be as a result, in whole or in part, of poor design leading to excessive vibration, heat and noise levels, of poor ergonomic design, of inappropriate equipment, inappropriate working practices, lack of maintenance, fatigue and manning levels, of lack of appropriate training and preventive measures, of lack of awareness, etc. The competent Authority should consider these factors when, setting standards in design, construction and equipment of fishing vessels, approving plans, setting manning levels, introducing codes of safe practice and occupational health and safety legislation, training standards and safety awareness campaigns.

8.1.2 Considered in its wider sense, the "human element" is addressed in international instruments adopted by FAO, ILO and IMO, either in instruments adopted independently or through codes and other guidance jointly developed by the three Organizations.

8.1.3 Guidance for the implementation of certain "human element" issues are addressed in Part B of the Code, the Voluntary Guidelines and the Safety Recommendations.

8.1.4 The safety of the fishing vessel itself is perhaps the most important consideration for the safety and health of the crew. The greater part of Part B of the Code, of the Voluntary Guidelines and of the Safety Recommendations relate to the safety of the vessel, fire protection, fire-fighting and life-saving appliances and arrangements.

8.1.5 The three documents also provide guidance on such issues as protection of the crew and crew accommodation. These issues are also of great importance and require the attention of the competent Authority, including fishing vessel inspectors.

8.2 Human factors/ergonomic design

8.2.1 The way in which fishing vessels are designed and built, and even equipped, depends on a variety of factors. The result can be the design and construction of a vessel that takes into account, to the greatest extent possible, the safety and comfort of the crew or, conversely, results in a vessel that may be less habitable and designed and equipped in a manner that unintentionally leads to fatigue, accidents and even illness (and may also lead to conditions that have a negative impact on recruitment and retention).

8.2.2 One of the most obvious considerations is the stability of the vessel. A vessel with poor stability may lead to capsize. On the other hand, a vessel that is unnecessarily "stiff" will be extremely uncomfortable. Another consideration is noise and vibration. Lack of attention to these issues in the design of the vessel and in the selection and installation of equipment can seriously interfere with sleep, thus leading to fatigue, musculo-skeletal problems, loss of hearing, and accidents.

8.2.3 Adequately sized accommodation space for sleeping, eating and rest are also important considerations. Part B of the Code, the Voluntary Guidelines and the Safety Recommendations provide guidance on these issues. The competent Authority should also ensure that the vessel is built and equipped to the standards set out in the Work in Fishing Convention and Recommendation (see below and annex 4). If a vessel flies the flag of a State that has ratified the Convention, these standards will be mandatory. Failure to take these standards into account may also make it difficult to re-register the vessel under other flags. The competent Authority must ensure that all involved in vessel design and construction are provided with copies of these instruments.

8.2.4 Part B of the Code, the Voluntary Guidelines and the Safety Recommendations also provide guidance concerning the protection of the crew. This includes protection when working on deck and processing spaces. In addition to the guidance contained in these publications, and in the ILO Convention and Recommendation, the competent Authority should seek to ensure that, to the extent possible, human factor and ergonomic principles are taken into account during the design, construction and equipping of vessels. These should be taken into account early enough in the design stage and should be revisited during vessel construction. A proactive approach would be to seek the views of fishermen on vessels that are similarly designed and equipped even before detailed plans are prepared for a new vessel.

8.2.5 The issues of how to make the best possible living spaces and how to make working spaces, operations and equipment safe and convenient should be addressed at an early stage in the design process by including all stakeholders in the consultation process.

8.2.6 Standards or guidance could be given to designers and builders at the earliest possible stage. Studies could be made of existing vessels to draw "lessons learned" for new buildings. The views of fishing vessel owners and fishermen on how the vessel could be improved to make it more habitable and ergonomic (and perhaps even more productive) could be obtained even before the first study or proposed design is initiated.

8.2.7 Often, competent authorities may not have "in-house" specialization on human factors and ergonomics. Such knowledge can be brought in by liaison with ergonomics experts in occupational safety and health authorities, in classifications societies and by reviewing work already carried out in other countries (see bibliography).

8.3 Decent working conditions

8.3.1 Initiatives to improve safety can often become quite narrowly focused and fail to take a broad look at factors that contribute to safety and health problems. The impact of living and working conditions can sometimes be unintentionally neglected when, for example, there is focus only on specific safety issues.

8.3.2 Though the present publication focuses on implementation of Part B of the Code, the Voluntary Guidelines and the Safety Recommendations, it is obvious that the role of the competent Authority calls for it to take into account other aspects of the "human element". FAO, ILO and IMO have produced publications related to this matter, a list of these publications and a summary can be found in annex 5.

8.3.3 Further guidance on aspects involving the human element are provided in the FAO/ILO/IMO instruments:

Issue	The Code	The Voluntary Guidelines	The Safety Recommendations
Design	Part A, sections II and III Part B, chapters II, III, IV, VI and XI	Chapters II, III, IV, VI and XI	Chapters 2, 3, 4, 6 and 11
Fatigue	Part A, section I, appendix 2		Chapter 12
Manning			Chapter 12
Training	Part A, section I, chapter 3 Part B, chapter VIII	Chapter VIII	Chapters 8 and12
Awareness	Part A, section I, chapter 3		
Health	Part A, section I, chapter 4		

8.3.4 The FAO is currently developing guidelines on "Best Practices for safety at sea in the Fisheries Sector", which intends to give an umbrella covering all aspects in safety at sea including, maritime and fisheries ministries, fisheries resource managers and safety professionals.

8.3.5 The IMO places considerable emphasis on the contribution of the human element to maritime accidents. In this regard, it has adopted the Human element vision, principles and goals for the Organization (resolution A.947(23)).

8.3.6 The "human element vision, principles and goals" in resolution A.947(23) should also be considered by the competent Authority or authorities responsible for safety of fishing vessels and fishermen. Their vision, or aim, is "to significantly enhance maritime safety, security and the quality of the marine environment by addressing human element issues to improve performance in the fishing sector".

8.4 Fisheries management and its impact on vessel accommodation

Those involved in and concerned with the design of fishing vessels should inform those concerned with fisheries management about the impact of decisions (such as the decision to restrict a vessel to a certain length or gross tonnage) may have on conditions of the crew and even vessel safety. Consultations and coordination among all concerned may contribute to changing fisheries management decisions that lead to cramped space for crews, unstable vessels and other negative outcomes.

ANNEX 1

ASSESSMENT OF NEEDS FOR FISHING VESSEL SURVEY AND INSPECTION SERVICES

Introduction

1 This annex discusses some of the responsibilities of a flag State and offers suggestions concerning how inspections of fishing vessels may be arranged. In this regard, the need for a thorough analysis of the industry is stressed in order to have a clear perspective of the survey and inspection needs in both the short and long term. In particular, suggestions are made in relation to the qualifications and experienced that may be set as a requirement for the recruitment of inspectors of fishing vessels.

Part 1
Survey and inspection of fishing vessels

2 One of the basic principles in relation to the building of a fishing vessel is that it should be constructed in a manner that would facilitate regular maintenance so ensuring that the vessel is at all times and in all respects, satisfactory for the intended service of the vessel. In order to ensure that the principle is followed, the competent Authority should set requirements, for approval of plans prior to construction, for the inspection of a fishing vessel while it is under construction, refit and or modification as well as when it is in service.

3 The term "satisfactory" obviously includes safety, living and working conditions both from a construction and operational point of view and for a common understanding of the term, there has to be a set of standards below which a vessel would have to be classified unsatisfactory. In principle, therefore, satisfactory construction of a fishing vessel and its equipment as well as continued compliance with the rules and regulations should be a condition for entering or maintaining a fishing vessel on the register and/or the granting of an authorization to fish. That condition should apply equally to the flag State as well as the owner of a fishing vessel.

4 Since the safety of life and property at sea is paramount, it is evident that the responsibility level for setting regulations for the survey and inspection of fishing vessels is high. Similarly, the level of responsibility that would accrue to an individual inspector is unquestionably high. It should follow, that only a suitably qualified person, in all cases, should be allowed to carry out the actual survey or inspection and it must be done with the utmost integrity.

5 Whilst adhering to the above principles, it should also be noted that since surveys and inspections are required for such a variety of reasons, they do not always need the same level of technical knowledge or for that matter the same type of person to perform the work.

Fishing vessel survey and inspection services

6 In general, officers of the competent Authority should carry out the survey and inspection of fishing vessels in relation to the enforcement of the regulations to the vessel shipping/fisheries act, and the granting of any exemptions. Nevertheless, the competent Authority may, however, entrust the work either to surveyors or inspectors nominated for the purpose or to organizations (such as vessel classification societies) recognized by the competent Authority.

7 In this regard, it is customary that should a nominated surveyor/inspector or recognized organization determine that the condition of a fishing vessel or its equipment does not correspond substantially with the particulars of the certificate or is such that the fishing vessel is not fit to proceed to sea without danger to the vessel, or persons on board, such surveyor/inspector or organization should immediately ensure that corrective action is taken and should in due course notify the competent Authority. Where such corrective action is not taken by the owner the certificate should be withdrawn/suspended and the competent Authority notified immediately. Inspectors in the employ of a competent Authority should have the authority to prevent such vessels proceeding to sea.

Technical specifications and plans approval

8 Applications for permission to construct a fishing vessel or to substantially modify an existing fishing vessel should be accompanied by appropriate technical specifications and plans. The fishing vessel survey/inspection unit should be satisfied that the specifications and plans conform to acceptable standards and that they are complete enough for the purpose intended before giving approval.

Supervision of a vessel under construction or under refit

9 A programme of inspection should be agreed with the builder and the owner (and with a ship classification surveyor if the vessels is to be built to class) to allow the inspector to follow the construction and to carry out certain tests. Random checks may also be made on levels of humidity in materials and at the work site as the case may be (wood and GRP), evidence of wood decay and quality of welding.

10 It is important that the owner is informed of any recommendations made to the builder for any work in progress that does not meet with the specifications and or statutory regulations.

11 The inspector should supervise the inclining test of the vessel and the rolling test and the results of these tests should be to the satisfaction of the inspector before sea trials are authorized. This implies that in the case of small fishing vessels, the inspector has a better than elementary knowledge of naval architecture, in relation to stability.

Vessel registration

12 On completion of all trials and inspections the inspector would measure the vessel in accordance with the requirements of the regulations and ensure that all documentation and certificates that are required for the register of a vessel are in order for submission to the Registrar of Ships or Fishing Vessels as the case may be. On allocation of an official number, the inspector oversees the carving of the number in the main beam and prepares the "Carving Note" (without which, the Registrar would not normally finalize the entry in the register).

13 Wherein there is no requirement in national legislation to register a fishing vessel, as may be that case with domestic fleets, particularly of small fishing vessels, there is invariably a requirement for such vessels to have an "authorization to fish" to which conditions and warranties would normally be attached.

14 The inspector should ensure that appropriate documents are available on board the fishing vessel and that the owners and skipper(s) are aware of the schedule of inspections so required for a vessel in service.

Supervision of a vessel in service

15 When a vessel is in service, the vessel may be inspected at any time in relation to safety, crew accommodation and manning as well as at intervals laid down in the regulations for the revalidation of a safety certificate and other periodic inspections. After any inspection has been completed the inspector would file an appropriate report in the record of the vessel and ensure through subsequent surveys/inspections that no changes have been made in the structural arrangements, machinery, equipment, and radio installations as well as crew accommodation, covered by the survey that have not been approved by the competent Authority. Such periodic inspections should include, *inter alia*:

.1 annual safety equipment inspections;

.2 propeller shaft survey/inspection;

.3 periodic survey/inspection of hull and machinery;

.4 special survey/inspection of hull and machinery; and

.5 periodic survey of crew accommodation.

Qualifications and experience

16 For the larger fishing vessels, inspectors should be qualified to degree standard in one of the three professional disciplines of marine engineering, naval architecture or nautical sciences. This should be coupled with service at sea, or in vessel yards, to gain several years' practical experience. Principal inspectors should have considerable experience in the field of survey or inspection and well proven ability. In this area the requirements of the STCW and STCW-F Conventions should be recognized. Many inspectors are likely to be drawn from such qualified seafarers and fishermen and as they will be inspecting and surveying the work of fishermen, should be qualified and have experience equal to or above the level of the most senior fishermen they will meet in the course of their duties.

17 However, given the wide range of fishing vessel types and sizes covered by the instruments, the range of specialization of inspectors will also be wide, particularly in relation to the smaller fishing vessels where the actual requirements would vary greatly in relation to materials of hull construction. Thus alternatively, inspectors may have qualifications from an institution recognized by the competent Authority in a marine related field and have specialized training to ensure adequate competence and skill. Such persons may also be a qualified officer of the maritime/fisheries administration with an equivalent level of experience and training for performing surveys/inspections of the relevant operational requirements. It is understood, nevertheless, that in every case the inspector must have the competence to inspect safety equipment.

18 Whereas, the examples given below are for guidance, they are nevertheless, indicative of the type of structure that would be required for the establishment of a dedicated fishing vessel survey/inspection service, further guidance in relation to small vessels is given in part 2 below.

19 Flag State inspectors should have the following professional qualifications, wherever possible:

.1 a certificate issued under the relevant provisions of the STCW and STCW-F Convention, as amended, designating the holder as:

.1 master, qualified to command a vessel of 1,600 gross tonnage or more meeting the provisions of the Radio Regulations or holding an appropriate certificate related to the GMDSS; or as

.2 chief engineer, qualified to be in charge of machinery installed in a vessel powered by main propulsion machinery of 3,000 kW or more;

.2 a university degree or diploma as a naval architect, mechanical engineer, electrotechnology engineer, or other type of engineer whose professional education relates to the maritime industry; or

.3 not less than five years' service as an officer on board a vessel at sea, as a naval architect, or as an engineer in the maritime field; or

.4 a relevant university degree or diploma, augmented by completion of the following IMO model courses: 3.03 (Machinery), 3.04 (Electrical Installations), 3.05 (Fire Appliances and Provisions), 3.06 (Life-Saving Appliances), 3.07 (Hull), and 3.08 (Navigation) and relevant sea service of not less than six months.

20 While the above qualifications are highly desirable, it is recognized that some countries may not have available a sufficient number of individuals so qualified. Competent inspectors may originate from other backgrounds, but all must be grounded in the same basic skills, taught in classrooms and subsequently reinforced in the field under the guidance of qualified inspector approved by the flag State. The maritime Administration should develop and oversee the curriculum taught and the follow-up training for every inspector. In addition to developing courses specializing in IMO and relevant ILO conventions and in national laws and regulations for shipping, the maritime Administration is responsible for developing a policy to assist its field inspectors.

21 The flag State should ensure that individual inspectors have working knowledge and practical experience in those subject areas pertaining to their normal duties. Additionally, to assist individual inspectors in the conduct of duties outside of their normal assignments, the flag State should ensure ready access to expertise in the following areas, as necessary:

.1 all aspects of the relevant FAO, ILO and IMO conventions and other binding instruments;

.2 all aspects of national laws and regulations of the flag State;

.3 hull fit-up and repair;

.4 all aspects of ship and boat building techniques including safety at work;

.5 non-destructive testing;

.6 vessel construction, subdivision, stability, watertight integrity;

.7 vessel electrical and machinery systems;

.8 load line and tonnage assignment;

.9 safety equipment systems, plans, and equipment items;

.10 fire protection construction methods;

.11 navigation and communications equipment;

.12 fishing vessel operations and deck machinery;

.13 safety management systems; and

.14 evaluation of the effects of the human element.

22 During the first six months of employment within the flag State, inspectors should perform tasks under the supervision of an experienced person, in accordance with an approved practical training programme.

23 When inspectors are to be employed for tasks other than those within their field of expertise and experience, they should receive the necessary training and guidance for the new tasks and should perform them for a period of not less than one month, as appropriate, under the supervision of a person with experience in that field.

24 When performing tasks on board vessel, inspectors should carry an identification document issued by the flag State. This document should indicate their authority to conduct specific tasks on behalf of the flag State, and likewise indicate any limitations on that authority.

Part 2
Survey and inspection of small decked fishing vessels of less than 15 m in length and undecked fishing vessels

General

25 It should be clearly understood that the actual requirements would vary greatly across the wide range of vessels below that 15 m in length. Indeed, there may be a need to set intermediate reference points in assessing the actual requirements for individual flag States. For this reason the fleet analysis is very important since the inspection needs would differ as would the qualifications and experience of the inspectors as already mentioned in part A.

26 For the purpose of this document, the reference to City and Guilds of London Institute (CIG) certificates given below serves as an example only. Alternatives exist but if these are to be considered, the levels for adoption should not be less than the standard required for the CIG certificates. Such alternatives may include certain correspondence courses that lead to an approved diploma in the survey of small vessels or the survey of fishing vessels. However, higher-level diplomas in marine surveying, that could be a desired qualification for senior officers, cannot be obtained through the City and Guilds of London Institute or the equivalent thereof. Other qualifications so mentioned are specific and are readily compared with the STCW Convention.

27 Therefore, although the examples given below are for guidance, they are nevertheless, indicative of the type of structure that would be required for the establishment of a dedicated "fishing vessel inspection unit".

Hull inspectors

Wooden construction of decked vessels of less than 12 m in length and undecked vessels

28 If the basic fleet consists of vessels of wooden construction and the vessels are less than 12 m Loa, the main qualifications and experience should be related to wooden boat construction and repair, with an understanding of other materials. Thus:

Minimum qualifications

Intermediate Certificate in Wooden Boat Building
Level 1 in GRP Boat building
Level 1 in Steel Boat Building

Minimum experience

4 years' Apprenticeship/Vocational College
1 year Certificate of service under a Master Boat-builder, 1 year of which to be related to GRP and steel vessel construction or hull repairs

GRP construction and less than 12 m in length

29 If the basic fleet consists of vessels of GRP construction and the vessels are less than 12 m length, the main qualifications and experienced should be related to GRP vessel construction and repair with an understanding of other materials.

Minimum qualifications

Intermediate Certificate with bias towards GRP construction
Level 1 General construction methods (wood/steel)

Minimum experience

4 years' apprenticeship/vocational college
3 years with Certificate of Service under a Master Boat-builder in GRP construction and repair
1-year certificate of service under a master boat builder in the construction and repair of wooden and steel hulls

Steel construction of decked fishing vessels and less than 12 m length

30 If the basic fleet consists of vessels of steel construction and the vessels are less than 12 m length the main qualifications and experienced should be related to steel construction and repair. This could include general steel fabrication and repair. There should also be an understanding of other materials, particularly in relation to how other materials can be attached to steel.

Minimum qualifications

Intermediate Certificate in Boat building with emphasis on steel construction
Intermediate Certificate in Welding
Level 1 in General Construction Methods (Wood/GRP)

Minimum experience

4 years' apprenticeship/vocational college in steel construction of which a minimum of 3 years to be spent in steel boat building

1 year experience under a Master Boat-builder in wooden and GRP construction or repair

Hull inspectors for decked fishing vessels of 12 m in length and over but less than 15 m in length

Fishing vessels of wooden construction

31 If the basic fleet consists of vessels of wooden construction and the vessels are less than 15 m in length, such fleets tend to be made of from many different types, often using a combination of construction materials. Therefore, although the main qualifications and experience should be related to wooden vessel construction and repair, familiarity, with the requirements of classification societies would be an asset.

Minimum qualifications

Final Certificate in Wooden Boat Building
Intermediate Certificate in GRP Boat building
Intermediate Certificate in Steel Boat Building

Minimum experience

4 years' Apprenticeship/Vocational College
5 years' Certificate of service under a Master Boat-builder, 2 years of which to be related to GRP and steel vessel construction or hull repairs

Fishing vessels of GRP construction

32 If the basic fleet consists of vessels of GRP construction and the vessels are less than 15 m in length the main qualifications and experienced should be related to GRP construction and repair. The inspector should also have knowledge of wooden hull construction and be familiar with the requirements of classification societies would be an asset.

Minimum qualifications

Final Certificate with bias towards GRP construction
Intermediate Certificate/General construction methods (wood/steel)

Minimum experience

4 years' Apprenticeship/vocational college
3 years' Certificate of Service under a Master Boat-builder in GRP construction and repair
2 years' certificate of service under a master boat builder in the construction **or** repair of wooden and steel hulls

Fishing vessels of steel construction

33 If the basic fleet consists of vessels of steel construction and the vessels are less than 15 m in length, although the emphasis should be placed on knowledge of welding and metallurgy a fairly wide experience would be required in other materials, particularly wood. Familiarity with the requirements of classification societies would be an asset.

Minimum qualifications

Final Certificate in Boat building with emphasis on steel construction
Intermediate Certificate in Welding
Intermediate Certificate in General Construction Methods (Wood/GRP)

Minimum experience

4 years' apprenticeship/vocational college in steel construction of which a minimum of 3 years to be spent in steel vessel building
2 years' experience under a Master Boat-builder in wooden and GRP construction or repair

Machinery inspectors

Open vessels fitted with outboard engines

34 If the basic fleet is limited to open vessels fitted with outboard engines, the emphasis should be in relation to the different types of outboard engines and steering mechanisms. Practical experience in the "matching" of engine powers to hull forms should be a requirement.

Minimum qualifications

Final Certificate in Automotive Engineering
Level 1 Certificate in Welding
Intermediate Certificate in Automotive Electrics

Minimum experience

4 years' apprenticeship/vocational College
5 years' certificate of service as a service engineer and or with a service facility of which at least 3 years would have been spent on the installation and service of outboard engines (Diesel/Petrol)

Decked fishing vessels of less than 15 m in length and undecked fishing vessels

35 Where the basic fleet consists of decked fishing vessels of less than 15 m in length and undecked fishing vessels that are fitted with inboard diesel engines the inspection requirements could be quite demanding. Thus, the inspector should have a strong background in marine engineering.

Minimum qualifications

Second Class Certificate of Competence (Motor ship) or Equivalent Certificate issued by the Navy/Coast Guard (by examination) that includes elementary Naval Architecture and Electro-technology
Appropriate intermediate certificate in welding

Minimum experience

4 years' apprenticeship/vocational college of which 2 years must meet the requirements for entry into the Merchant Marine/Navy/Coast Guard
Sea service as required for application for examination for the Second Class Certificate (Motor ship) or equivalent
Plus a further 3 years' experience in the outfitting, repair and maintenance of marine machinery, including deck machinery

Hull and machinery inspectors

36 Where there is a mix of vessel types, construction materials and complexity of design, the requirements for the recruitment of a hull and machinery inspector must be well balanced between boat building and engineering.

Minimum qualifications

Second Class Certificate of Competency (Combined) or equivalent level of certificate issued by the Navy/Coast Guard (by examination) that includes Intermediate Naval Architecture and Electro technology
Intermediate Certificate in welding
Diploma in fishing vessel construction methods with credits in steel, wood and GRP construction

Minimum experience

4 years' apprenticeship coupled with off the job training in marine engineering and ship/boat construction and or design
5 years' service in the Merchant Marine/Navy/Coast Guard with not less than 2 years experience in rank as Second Engineer or equivalent
3 years' experience as a hull and or machinery inspector or similar experience with an approved company of ship surveyors or, as a surveyor of ships or small vessels for an insurance company

Senior hull and machinery inspectors for decked fishing vessels of less than 15 m in length and undecked fishing vessels

37 In the case of large fleets, the inspection service may have to include a mixture of dedicated hull inspectors, machinery inspectors and hull and machinery inspectors. In all probability, the service would have to be managed by a Senior Hull and Machinery Inspector. The knowledge and experience required must include maritime law, naval architecture, electro-technology and applied electronics.

Minimum qualifications

First Class Certificate of Competency (Motor ship) or equivalent issued by the Navy/Coast Guard (by examination); and:
Diploma in Naval Architecture and Electro-technology; or:
Professional qualification in Ship Construction, Naval Architecture or Engineering accepted by a Classification Society or a Lloyd's Agent for accreditation as a surveyor of ships (Hull and Machinery)

Desired qualifications

A recognized diploma in ship surveying

Minimum experience

Minimum of 4 years' apprenticeship in an industry accepted for pre-sea practical experience required for entry into the Merchant Marine/Navy/Coast Guard;
7 years' seagoing experience 3 of which should be at the rank of not less than Second Engineer Officer or equivalent; or
5 years' experience in the design, construction/repair of ships/fishing vessels following award of relevant qualifications; or
3 years' experience as a Marine or Assistant Marine Superintendent; and
3 years' experience in the inspection of fishing vessels (hull and machinery) or in the survey of ships (hull and machinery).

General

38 It should also be kept in mind that Inspectors of fishing vessels, no matter what their size, should have had at least an introduction to welding that should include:

.1 welding technology;

.2 arc welding inspection and quality control;

.3 fundamentals of visual inspection;

.4 liquid penetrants and magnetic particle inspection; and

.5 weldability of metals: ferrous and nonferrous.

ANNEX 2

EXAMPLE OF A SAFETY CERTIFICATE

TV5/340 B

Port / Hawe No._____

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF TRANSPORT

REPUBLIEK VAN SUID AFRIKA
DEPARTEMENT VAN VERVOER

LOCAL GENERAL SAFETY CERTIFICATE

(Including, in the case of a licenced small vessel, the Licence)

MERCHANT SHIPPING ACT, 1951 (NO 57 OF 1951) SECTIONS 68(1), 72a(2), 194(1)

PLAASLIKE ALGEMENE VEILIGHEIDSERTIFIKAAT

(Insluitende in geval van 'n gelisensieerde klein vaartuig, die Lisensie.)

HANDELSKEEPVAARTWET, 1951 (NO 57VAN 1951) ARTIKELS 68(1), 72a(2), 194(1)

NOTE: One copy of this Certificate shall be displayed in a conspicuous place on the vessel for the information of all on board.
LET WELL: Een afskrif van hierdie Sertifikaart moet vir die inligting van almal aan boord, op 'n opvallende plek op die vaartuig, vertoon word.

Certificate No: 16299

PARTICULARS OF VESSEL

Name of vessel: Naam van vaartuig:	Port of Registry or operation: Registrasie of bedryfshawe:	Category: Kategorie:
Name and address of owner: Naam en adres van eienaar:	Official number or registration number: Amptelike of registrasienommer:	Number of crew (including skipper): getal bemanningslede (skipper inbegrepe):
	Description of voyage or operations: Beskrywing van reis of bedrywighede:	
Length: Lengte:		

I, the undersigned
Ek, die ondertekende _____ Certify that the above mentioned vessel has been duly inspected in accordance with
Sertifiseer dat bogenoemde vaartuid behoorlik ondersoek is ooreenkomstig die

(a) the provisions of the Merchant Shipping (Small Vessel Safety) Regulations, 2002, and the Collision and Distress Regulations, 1996, as far as these provisions apply thereto. The inspections showed that the vessel is constructed and equipped in accordance with the relative Regulations.

bepalings van die Handskeepvaart (Klein Vaartuig Veiligheid) Regulasies, 2002, en die Botsing en Noodseineregulasies, 1996, vir sover hierdie bepalings daarop van toepassing is. Die ondersoek het getoon dat die vaartuig gebou en toegerus is ooreenkomstig die betrokke Regulasies.

OR / OF

(b) the provisions of the Regulations for the use of vessels of less than three metres in length.
die bepalings van die Regulasies vir die gebruik van vaartuie van minder as drie meter lank.

This certificate will remain in force until the
Hierdie sertifikaart bly van krag tot _____

Issued at _____ this _____ day of _____ 20_____
Uitgereik _____ op hierdie _____ dag van _____ 20_____

_____
Signature and designation
Handtekening en ampstitel

omvat

ANNEX 3

EXAMPLES OF SURVEY CHECKLISTS

Engine survey of ships of up to 15 m in length overall

	Periodical survey	Additional survey			Ship registration No.	

Name: _____ District No.:_____
Length overall: _____m Place of inspection:_____ Report No.: 001
Date of survey: _____ Validity of survey: _____ Meter No.: _____

No.	Item inspected	0	1	2	3	Remark	No.	Item inspected	0	1	2	3	Remark	No.	Item inspected	0	1	2	3	Remark
2000	**Engine**						**2350**	**Cool. water equip**						**2700**	**Aux. engine**					
2010	Eng. accrd. ship reg						2360	Cool. water piping						2710	Auxiliary engine					
2020	Engine is functional						2370	Seaw. piping to eng.						2720	Gauges					
2030	Water leaks						2380	Seawater intake						2730	Oil leaks					
2040	Oil leaks						**2400**	**Seawater/bilges**						**2800**	**Electric equipment**					
2050	Met.: Rpm/lub/heat						2410	Hand pumps qty:						2810	Gen. cond. el equip					
2060	Met:Exh.gas.pr.gear						2420	El. pumps qty:						2820	Gauges, fuse mark.					
2070	Engine controls						2430	Eng. pumps qty:						2830	Generator 1 charg.					
2080	Propeller gear						2440	Bilge piping/valves						2840	Generator 2 charg.					
2090	Engine fastenings						2450	Alarm seawater in engine						2850	Special survey demanded					
2100	Engine pads						2460	Bilge filters						**2900**	**Engine room**					
2110	Flexible junctions						2470	Seaw pump/deck						2910	El. illumination					
2120	U-joint						2480	Bottom valves						2920	Orderliness					
2130	Steering engine						2490	Seawater piping						2930	Floors/soles					
2200	**Fuel equipment**						**2500**	**Fire/see equipm.**						2940	Servicing arrangement					
2210	Fuel filters						**2550**	**Exhaust piping**						2950	Safety covers					
2220	Fuel piping						2560	Seawater cooling						2960	Side valves					
2230	Fuel separator						2570	Isolation						2990	Other					
2240	Oil tank valves						2580	Position												
2250	Quantity gauges						**2600**	**Spares and tools**												
2260	Glass valves						2610	Belts												
2270	Quick closing valve						2620	Hoses												
2300	**Air ducts**						2630	Lubrication filter												
2310	Air ducts to engine						2640	Fuel filter												
2320	Air duct closures						2650	Tools												
2330	Height and position																			

Survey results

	0 No remarks		1 Rectification Corrective action within 30 days		2 To be surveyed again before: _____200__	☒ ☐	3 Detention

Remarks _____ entered into: Inspection book _____-____200____

Ship Book of remarks _____-____200____ surveyor No.___

Verification by customer that survey has taken place Computer _____-____200____

Equipment survey of ships of under 15 m in registered length

	Periodical survey	Additional survey			Ship registration No.	

Name:_____ District No._____

Registered length: _____m Place of survey:_____ Report No. 001

Date of survey:_____ Validity of survey:_____ Meter No.:_____

No. 3100	Items Remarks Equipment	0	1	2	3	Date	Type	No.
3513	Inflatable liferaft							
3513	Inflatable liferaft							
3519	Release mechanism for liferaft							
3510	Immersion suits							
3523	Floatation work suits							
3511	Lifejackets							

No.	Items	Date	Qty.	0	1	2	3	No.	Items	0	1	2	3
3101	Certificate of Measurem							3430	Torch light				
3202	Magnetic compass							3401	Binoculars				
3206	Medicine chest							3413	National flag				
3204	Fire alarm							3406	Almanac				
3108	Telecomm. equipment							3405	Charts				
3501	Hand flares							3426	Nautical instruments				
3502	Rocket parachutes							3431	Fog signalling apparatus				
3212	Fire extinguishers							3419	Whistle and bell				
3205	Fire-extinguishing syst.							3209	Inspection book				
3302	Markings							3211	Stability information, date:				
3424	Navigation lights							3908	Instruction cards				
3425	Fishing lights							3914	Ventilation				
3515	Fixed painter for life rafts							3904	Stove - fire prot. and fuse				
3516	Inflatable liferaft handle							3909	Lavatories				
3303	Safety colour							3706	Watertight door				
3504	Lifebuoys							3524	Rescue quoit				
1390	Means for securing weathertightness							3990	Other				
3718	Anchor-chain and rope												
3726	Drop anchor												
3702	Net winch safety equipment												
3715	Freeing ports												
3604	Emergency steering												
3712	Fixed rescue ladder												

Survey results

__	0 No remarks	__	1 Rectification Corrective action within 30 days	__	2 To be surveyed again before: _____200__	__	3 Detention

Remarks entered into: _____ Inspection book _____-____200____

Ship Book of remarks _____-____200____ surveyor No.___

_____

Verification by customer that survey has taken place Computer _____-____200____

Hull survey of ships of up to 15 m in length

	Periodical survey	Additional survey			Ship registration No.	

Name: _____District No.:_____
Length overall: _____m Place of inspection: _____Report No.: 001
Date of survey: _____Validity of survey: _____Meter No.: _____

Hull type:	**Wood**		**Fibre**		**Aluminium**		**Steel**	

No.	**Item inspected**	**Remark**				**No.**	**Item inspected**	**Remark**			
1000	**Hull**	**0**	**1**	**2**	**3**		**Hull**	**0**	**1**	**2**	**3**
1010	Outer shell/planking					1260	Deck crane				
1020	Gel coat					1270	Emergency exit				
1030	Stem					1280	Sole				
1040	Keel					1290	Drain holes				
1050	Bilge keel					1300	Deck				
1060	Stem /wing					1310	Hatches				
1070	Hull weldings					1320	Box covers				
1080	Spikes/fastenings					1330	Freeing ports				
1090	Caulking					1340	Deck frame and stanchions				
1100	Stern box/board					1350	Frames				
1110	Rescue ladder					1360	Divisions/bulkheads				
1120	Rudder					1370	Engine casing				
1130	Rudder stop					1380	Hatch cover and coaming				
1140	Propeller					1390	Means for securing weathertightness				
1150	Axle and bearings					1400	Transom flaps				
1160	Outboard drive					1410	Fastening device/bollards				
1170	Balance flaps					1420	Securing of fishing gear				
1180	Transducer					1430	Air pipes to tanks				
1190	Load lines					1440	Tank filling equipment				
1200	Superstructure					1450	Corrosion				
1210	Bulwark					1460	Engine foundations				
1220	Bulwark planking					1990	Other				
1230	Guard rails/handles										
1240	Ladders										
1250	Mast, boom, goose neck										

Survey results

	0 No remarks		1 Rectification Corrective action within 30 days		2 To be surveyed again before: _____200__		3 Detention	

Remarks entered into: _____ Inspection book _____-____200____
Ship Book of remarks _____-____200____ surveyor No.___
_____
Verification by customer that survey has taken place Computer _____-____200____

Explanatory Notes for survey report

Generally, there are four options in giving a remark when filling out the survey report of the Icelandic Maritime Administration, notably 0, 1, 2 or 3. Remarks are given by putting an "X" in the relevant column for a specific item number.

A shaded box for a certain item number means that a remark is not allowed with regard to that particular item number. E.g., for item number 3430, remarks 2 and 3 are not allowed.

No.	Items	0	1	2	3
3430	Torch light				

If a certain item number is not relevant, e.g., due to the type and use of the boat in question, it should be indicated by putting a "-" in the column for remark 0.

- Definition of remarks:

Remark	Definition	
0	The item in question is in good working condition, as required in accordance with the relevant regulation, does not require repair / renewal / rectification.	
1	The item in question is not fully functional, as required in accordance with the relevant regulation, requires repair / renewal / rectification – does not constitute a hazard for ship / crew.	Corrective action within 30 days by owner.
2	The item in question is not in good working condition or fully as required in accordance with the relevant regulation, requires repair / renewal / rectification - is not fully functional but in working order – does not constitute a hazard for ship / crew.	To be repaired, rectified and surveyed again after max 3 months.
3	The item in question is not in good working condition or as required in accordance with the relevant regulation, requires repair / renewal / rectification, is not functional or a limited functionality – is hazardous for ship / crew.	Detained.

ANNEX 4

EXAMPLE OF AN INSPECTION CHECKLIST

Example of inspection checklist with Explanatory Notes for vessels of design categories C & D of up to 7 m LOA

(Note: Numbering and annexes refer to the Safety Recommendations for decked fishing vessels of less than 12 metres length and undecked fishing vessels)

CHAPTER 1 – GENERAL PROVISIONS				Remarks/ Notes
1.1	**Purpose and scope**			
	Is the vessel covered by the scope of the recommendations?			
1.2.14	In which design category is the vessel assessed to be operating in?			
	Design category C		**OR** Design category D	

CHAPTER 2 – CONSTRUCTION, WATERTIGHT INTEGRITY AND EQUIPMENT				
Part 1	**General**			
	Are the general requirements met?			
2.2	**Construction, material and structure**			
	What is hull construction material?		Superstructure?	
2.2.1	Is the construction of the hull and other structures sufficient to withstand all conditions of intended service? Note: See Annexes II, III, IV and V.			
2.3	**Inlets and discharges**			
2.3.1	Are sea inlets fitted with valves?			
2.3.2	Are discharges passing through the hull fitted with non-return valves?			
2.3.6	Are penetrations prone to damage protected?			
2.4	**Drainage of partial decks**			
2.4.1	Are partial decks adequately drained?			
2.5	**Securing of heavy items**			
2.5.1	Are heavy items of equipment secured in position?			
2.6	**Anchor and mooring equipment**			
2.6.1	Is anchor and mooring equipment designed for quick and safe operation?			
	List size and weight of anchor and mooring equipment:			
	Is anchor and mooring equipment suitably sized?			
	Note: See Annex VI.			
Part 3	**Decked vessels**			
2.7	**Construction**			
	Are bulkheads fitted?		How many?	
	Is a collision bulkhead fitted?			
2.9	**Weathertight doors**			
2.9.1	Are openings in superstructures fitted with weathertight doors?			
2.9.2	Are sills in doorways and companionways at least 380 mm in height?			
2.9.3	Note: Heights may be reduced to 150 mm. And in design category D to 50 mm.			
2.10	**Hatchways**			
2.10.1	Are hatch coamings on the deck at least 300 mm in height?			
2.10.2	Note: Coamings may be reduced or omitted.			
2.10.3	Are covers fitted with clamping and gaskets? Note: Design category C only.			
	Note: See Annex VII.			

2.12	**Other deck openings**	
2.12.1	Note: If essential for fishing operations, flush deck covers may be fitted. These should be capable of being closed watertight.	
2.13	**Ventilators**	
2.13.1	Are coamings of ventilators at least 450 mm? Note: This may be reduced.	
2.14	**Air pipes**	
2.14.2	Is the height of air pipes at least 450 mm? Note: This may be reduced provided a non return arrangement is fitted.	
2.17	**Freeing ports**	
2.17.1	Are freeing ports fitted? Note: Closing devices should not be lockable.	
2.17.3	Are freeing ports sufficient to drain water from exposed deck?	
	Note: See Annex VIII.	
2.18.1	See 2.6.	

CHAPTER 3 – STABILITY AND ASSOCIATED SEAWORTHINESS		
3.1	**General**	
	Are the general requirements met?	
3.2, 3.3, 3.4	**Stability criteria**	
	Which stability criterion is to be applied to the vessel?	
	Does vessel meet the applicable stability criterion?	
	Note: See Annex XII.	
3.7	**Particular fishing methods**	
3.7.1	Is the vessel engaged in fishing methods where additional forces are imposed on during fishing operations?	
	Does the vessel meet the increased stability criterion?	
3.10	**Inclining test for decked vessels**	
	Is an inclining test required?	
3.11	**Built-in buoyancy for undecked vessels**	
3.11.1	Is vessel fitted with buoyancy compartments?	
	Are compartments filled with solid buoyancy material?	
	Is buoyancy demonstrated by a calculation and/or by a practical test?	
	Note: See Annex XIII.	
3.12	**Stability information**	
3.12.1	Is stability information available to the skipper?	
3.12.2	Is stability information posted on board?	

CHAPTER 4 – MACHINERY AND ELECTRICAL INSTALLATIONS				
4.1	**General**			
	Are the general requirements met?			
4.1.8	Are sufficient tools and parts carried as follows?			
Spare Parts	Motor:	Outboard	Inboard	
Manual for engine and other major equipment		X	X	
Parts for waterpump (impeller, gasket, etc.)		X	X	
Sparkplug		X		
Shearpin for propeller		X		
Split pins for propeller nuts		X		
Starting rope		X		
Propeller		X		
Stern gland packing			X	
Belts for alternators and pumps			X	

Lub oil filter			X	
Fuel oil filter (or cartridge) and filter spanner			X	
Water repellent oil/spray		X	X	
Engine oil, gear oil and grease			X	
Bolts, nuts, washers, screws, hoses and clamps to suit		X	X	
Glues, electrical tape, electrical wire, electrical connectors		X	X	
Ropes and twine of varying types and diameters		X	X	
Bulbs and fuses for lights including navigation and torches		X	X	
Spare batteries for torches, radio equipment, etc.		X	X	
Parts for bilge pump(s).		X	X	
Tools	Motor:	Outboard	Inboard	
Spanners		X	X	
Socket set			X	
Adjustable spanners			X	
Spark plug spanner		X		
Pliers		X	X	
Screwdrivers		X	X	
Knife		X	X	
Multi tester			X	
Hydrometer			X	
Hammer			X	
Wire cutters			X	
Hacksaw and spare blades			X	
Cold chisel			X	
Pipe wrench			X	
Torch		X	X	
Bailer		X	X	

4.2	**Propulsion machinery and stern gear**	
	How many engines are fitted?	
	What is installed power of engine(s)?	
	Is engine inboard or outboard?	
	Is engine petrol or diesel? Note: Diesel is recommended for inboards.	
4.2.5	Is there a means of securing the outboard engine to the transom?	
	For outboard engines over 15 kW is there a well draining overboard?	
	Is there an alternative means of propulsion such as oars, paddles or sails?	
4.3	**Shaft and propeller**	
4.3.2	Does the shaft diameter meet the requirements?	
4.4	**Engine starting**	
	ote: Not required for engines with hand starting.	
4.6	**Steering gear**	
4.6.3	Does the vessel have an alternative means of steering? Note: This may be a steering oar.	
	Note: See Annex XV.	
4.7	**Pumping and piping systems**	
4.7.1	Is a level gauge fitted on the fuel tank(s)?	
	Are both filling and air pipes fitted on the fuel tank(s)?	
	Is a valve fitted on the fuel line? Note: This should be fitted on the tank and be closable from outside the engine-room.	
	Is the tank fitted with a drain valve?	
4.7.4	Is the portable petrol tank(s) for the outboard motor secured in place?	

4.7.5	How many cooling water inlets for machinery are there? Note: Preferred is one on either side of the hull or just one.	
	Is a strainer fitted after the sea inlet valve?	
	Are branch pipes fitted with isolating valves?	
4.7.6	Is a bilge pumping arrangement fitted? Note: Required for decked vessels.	
4.7.8	Where no pumps are fitted is there a means of manual bailing? Note: 1) Applies to undecked vessels. 2) This may be a bucket, bailer or hand pump?	
4.7.9	Is a hand bilge pump fitted? Note: Decked vessels require at least one hand bilge pump.	
4.7.15	**Exhaust systems**	
	See also Annex XVI	
	Are exhausts discharging through the hull fitted with a non-return device?	
	Is a part of exhaust pipes at least 350 mm above waterline?	
	Are exhaust outlets at least 100 mm above the load waterline?	
4.8	**Ventilation of engine room**	
4.8.1	Are engine air intakes of adequate size? Note: See manufacturer's specifications.	
4.10	**Emergency source of electrical power**	
4.10.1	Is an emergency battery fitted? Notes: Required – 1) To supply emergency lights, radio and navigation lights for at least three hours. 2) For vessels operating more than 20 nautical miles from a safe haven.	
4.12	**Electrical systems**	
4.12.7	Are batteries fitted in enclosed boxes with covers, and sufficient ventilation? Note: Batteries in accommodation should be sealed and ventilated to open air.	
4.12.8	Is battery or bank fitted with isolation switch?	
4.12.9	Is there a means of checking the charge of the batteries?	
4.12.10	Are batteries secured to avoid movement due to motion of the vessel?	
4.12.12	Are the batteries used for engine starting separate from the batteries used for other services? Note: Starter batteries should be capable of starting the engine at least six times without recharging.	
	Note: see annex XVII.	

CHAPTER 5 – FIRE PROTECTION AND FIRE FIGHTING					
Part 1	**General**				
	Are the general requirements met?				
5.7	**Number of fire-fighting appliances – undecked vessels**				
	Are the required fire-fighting appliances supplied/fitted?				
	Propulsion	No engine	Outboard	Inboard	
	Fire Extinguisher	0	0	1 [c)]	
	Fire Bucket or bailer	0 [a)]	1 [b)]	1 [b)]	
	a) Not required where other water container (e.g., bailer) is carried. b) Not required where two or more extinguishers are carried. c) The smallest vessels may be exempt from this requirement.				
5.8	**Number of fire-fighting appliances – decked vessels**				
5.8.1	Are two fire extinguishers fitted? Note: 1) One should be located near the machinery space. 2) If two fire extinguishers are provided a bucket for fire-fighting should also be carried.				
5.8.2	Note: Vessels with outboard engines may have only one fire extinguisher.				

CHAPTER 6 – PROTECTION OF THE CREW				
6.1	**General protective measures**			
	Are the general requirements met?			
6.2	**Deck openings and doors**			
	Are the requirements met?			
6.3	**Bulwarks, rails and guards**			
6.3.1	Are bulwarks, guardrails or gunwales fitted? Note: these should be 1 m unless this would interfere with fishing operations.			
6.10	**Medical services**			
6.10.1	Are medical supplies, equipment and instructions provided?			
Basic first aid kit		Essential	Recommended	
	Bandage, Band aids, Sterile dressings	X		
	Sterile gauze, Adhesive tape	X		
	Scissors	X		
	Safety pins	X		
	Antiseptic cream	X		
	Tweezers	X		
	Liquid antiseptic		X	
	Pain killing tablets		X	
	Sunscreen		X	
	Eyewash		X	
	First Aid Book		X	
6.10.2	Are medical guide and instructions provided?			
6.10.4	Are Instructions including medical contact details provided? Note: To enable the crew to consult with medical services ashore.			
6.11.10	Is a sun and weather shelter provided? Note: The shelter may also be used to collect rainwater or as an emergency sail.			

CHAPTER 7 – LIFE-SAVING APPLIANCES				
Part 1	**General**			
	Are the general requirements met?			
7.12	**Recommendations for design categories**			
	Are the required Life-saving appliances supplied/fitted?			
Distance from safe haven:		≤ 5 nm	≤ 20 nm	≤ 100 nm
Liferaft				C ▪ D ■
Buoyant apparatus			C1♣ D♣	
Lifejacket ♥		C♦ D♦♣	C♦ D♦♣	C1♦ D♦♣
Distress signals: 2 hand flares		C D	C D	C D
Hand rails or capsize rope		C D	C D	C D
Whistle, mirror and torch		C D	C D	C D
Means of recovering persons from the water		C D	C D	C D
Wheelhouse top painted in visible colour and with identification marks		C D	C D	C D
▪ The liferaft may be substituted with a buoyant apparatus. ♣ Recommended. ♥ For every person on board. ♦ Life jacket may be substituted with a personal floatation device.				
7.11.4	Is a handrail or capsize rope fitted? Note: To allow persons to hold on to capsized vessel?			

CHAPTER 9 – RADIO COMMUNICATIONS		
Part 1	**General**	
	Are the general requirements met?	
9.9	**Equipment requirement for design categories C & D**	
	Is the required radio communications equipment supplied/fitted?	
	VHF or handheld VHF	
	Mobile (cellular) telephone. Note: In lieu of other requirements but only where local circumstances justify and for vessels exclusively within the coverage of a mobile telephone network.	
	Radio receiver to receive weather forecasts.	
	Note: See Annex XXVI.	

CHAPTER 10 – NAVIGATIONAL EQUIPMENT		
10.1	**Navigational equipment**	
10.1.1	Is a compass fitted? Note: this may be hand held.	
10.1.5	Is a means for determining the depth of water fitted?	
10.1.6	Is a radar reflector fitted?	
	Note: See Annex XXIX.	
10.3	**Signalling equipment and Navigation lights**	
10.3.1	Does the vessel comply with the requirements of the International Regulations for Preventing Collisions at Sea?	
	Note: See Annex XXX Rule 23 (d).	
	What lights and equipment are fitted?	
10.5.1	Does deck lighting impair the visibility of navigation and signal lights required in 10.3?	

Notes/Recommendations

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Signature	Date of inspection	

ANNEX 5

VESSEL AND BOAT BUILDING SECTORS

Introduction

1 This annex addresses factors that often have an adverse effect on safety construction and quality in general and presents arguments for the need to have a common approach to accreditation of boat builders. It also considers contractual arrangements between a buyer and a builder as well as the obligations of a builder. In particular, proposals are made for the assessment of training needs within the boat building sector.

Builders

2 The larger steels hulled vessels are usually constructed in reasonable to excellent vessel building facilities and in most cases national rules and regulations draw on the construction standards developed by vessel classification societies. Furthermore, many of these larger fishing vessels are built to classifications standards and enter into class. Consequently, in order for the vessel builders to comply with the standards so set, these vessel builders have to put in place related standards of training of the workforce.

3 Unfortunately, the same cannot be said for the small fishing vessels where the building facilities vary greatly from beach and backyard sites to well appointed workshops, likewise, the standards of construction vary. A common issue is that there are few, if any, associations of boat builders that require or encourage the membership to follow recognized business practices and to meet acceptable technical standards for the design and construction of small fishing vessels. In addition, few if any of the small fishing vessel builders are members of professional engineering institutions or for that matter, members of Chambers of Commerce. As a consequence, there are, in many instances, no formal contracts between the builder and the buyer and no drawings or specifications are available for scrutiny by fishing vessel inspection services. Thus, when a request for registration is received on completion of a vessel it is a case of "*fait accompli*". This would not be the case if a fishing vessel were to be built under the supervision of a vessel classification society whether or not it is the intention for the vessel to enter into class on completion.

4 There is also no requirement in national legislation in many developing countries for a boat builder or boat building company to be accredited by a government body or a Government-approved non-governmental institution. Furthermore, there is no common approach to the approval of a boat builder by a competent Authority and the instructions to fisheries officers and maritime authorities, as the case may be, are often too vague.

5 A more reasoned approach is obviously required if standards of safety construction of fishing vessels are to be improved through the application of the provisions of the instruments developed by FAO/ILO/IMO. Boat builders must also meet acceptable standards and that means a structured approach to training, better business practices, more informed government officers and compliance by the industry as a whole.

Contractual arrangements

6 Safety construction may also be improved through a more formal agreement between the buyer and a builder. Such contracts should reflect the requirements in regulations to the shipping/fisheries act, as the case may be, in relation to the procedures to be followed by both parties to the contract. A key point being that no construction should commence prior to the approval of the competent Authority. In relation to the construction

and final presentation of the complete vessel for registration, the interests of the buyer should be assured through a commitment by the builder to performance control by inspectors of the competent Authority and any surveyor who may be appointed by the buyer.

Assessment

7 If standards of construction are to be improved and if there is to be an obligation in law for fishing vessels builders to comply, a system of technical education and training has to be in place. To do this, however, a complete assessment of the long-term needs must be carried out nationally and the results collated and analysed, possibly with the needs of a sub-region in mind. The influence of vessel classification societies should also be assessed since they place demands on vessel and boat builders to meet levels of skills that a society requires of the trades involved. Some classification societies actually test individuals, usually on site, and issue clearance for the individuals to carry out certain tasks.

8 However, even if a vessel is not built to class or maintained in class, an inspector may rule that a boat builder or repairer does not have the expertise to carry out certain types of work and in an extreme case, the boat builder may have to look elsewhere, even abroad, for assistance.

9 It is fairly clear that the scope of the assessment procedure would be quite wide and although the tendency may be to investigate forms of institutional training, it should be borne in mind that traditional forms of training, such as apprenticeship schemes must not be discounted.

Training[*]

10 Traditionally, vessel and boat builders have adopted apprenticeship schemes, often coupled with "off the job" classroom instruction leading to diploma and degree levels. This is common in the so called shipbuilding sector that also builds reasonably large fishing vessels and the products of the training schemes often lead to persons that have the experience and qualifications looked for by the ship classification societies and competent authorities in relation to meeting their needs for fishing vessel inspectors, as indicated in annex 1.

11 However, this is not always the case in the small scale fisheries sector where skills are often passed on through family members and formal instruction is less common. Furthermore, although wooden hulls may remain the backbone of the small fishing vessel sector, other materials, such as GRP, aluminium and the use of other composite materials is now wide spread, all placing additional calls for training within the sector and being able to retain the title of accredited boat builder.

12 Therefore, if they are expected to meet better standards of construction and equipment (including servicing) it is reasonably clear that in the long term, training would have to be more structured and the needs determined when developing the safety strategy, as set out in chapter 2. In general, however, instruction should be available in:

[*] The European Federation of National Engineering Associations (FEANI) maintains an Index of courses at higher education institutions in its member countries. These courses are recognized by FEANI as fulfilling the education requirements for the EUR ING title. The Index also contains brief descriptions of the education systems of these countries. The Index contains approximately 14,000 engineering courses, each of which details its title, award and duration and can be viewed on the FEANI website (www.feani.org).

.1 wood working skills, including knowledge of suitable boat building timbers, their treatment and storage;

.2 GRP construction including building conditions and storage and safe disposal of materials;

.3 steel construction skills, material selection, welding and testing; and

.4 aluminium construction skills, material composition, welding and inspection/testing.

13 Due to varied materials and the latest developments of materials used in vessel construction special attention should be given to training. Nevertheless, the objective should be to ensure that the needs of the competent Authority and the boat building industry are satisfied. In particular, training Programmes should cover, *inter alia*:

.1 welding*, steel and aluminium;

.2 GRP and FRP; and

.3 timber.

14 At the technical level, the training should be designed to provide for those involved in overseeing welding operations/quality control (and fishing vessel inspectors) who need a practical working knowledge of welding.

15 Courses should be available to provide either a generalized background – or to target specific areas related to welding.

16 European Federation of National Engineering Associations (FEANI) maintains an index of courses at higher education institutions in its member countries.

Curriculum development

17 In order to assess whether or not training can be obtained nationally or within a region or sub-region, an understanding of the kind of training that is needed for each of the trades may require an exercise to be carried out in relation to curriculum development once the training needs mentioned above have been determined.

Accreditation

18 Some of the reasons for the lack of a formal approach to the accreditation of boat builders, as opposed to large vessel builders, are mentioned in the background above. For example, if as mentioned earlier, a vessel were to be built under the supervision of a ship classification society, a certain seal of approval may be seen to accrue to the builder. In much the same way, when a request for approval to build a fishing vessel or significantly modify an existing vessel is submitted to a competent Authority and where the proposed builder is so mentioned, subsequent approval for the work to be carried out may imply that the builder is competent.

* www.welding.org.

19 One approach would be for competent authorities to maintain a record of boat builders that have been "approved" by the process mentioned above. Thereafter, the assessment of an inspection carried out whether for new construction or refit and modification would be entered in the record. The information contained in the record of "approved" boat builders may also be shared within a sub-region.

20 Given the introduction of standards for the construction and survey of small fishing vessels, there should be no need for a "grandfather clause" since any boat builder involved in carrying out work on a fishing vessel to which the standards apply would have to be "approved" through the inspection process or otherwise rejected.

21 Recalling that any standards of construction so adopted would also apply to vessels imported, there could be an argument to partition the record to list the builders of imported vessel, but not to assign a seal of "approval" as such to the builder. It would, however, imply that the vessel met with the prescribed standards.

22 It should also be kept in mind that the approach to accreditation could be linked to requirements for inspectors of fishing vessels and, in particular, small fishing vessels since the assessment, as required for inspectors, would overlap with the assessment for boat builders since the former may be drawn from the ranks of the latter.

23 The purpose of Welding Skill Training should be to teach the welding techniques and manipulative skills required for each major welding process. Technique should be stressed since the trainees must be able to meet the welding performance required by the competent Authority. Consequently, less time would be allocated to theory.

ANNEX 6

CODE FOR THE CONDUCT OF AN INSPECTOR OF SMALL FISHING VESSELS

Introduction

1 This annex gives guidance in relation to the conduct of a person authorized to carry out an inspection of a fishing vessel of less than 24 m in length. It offers a set of basic principles that could be given legal substance as and when a fishing vessel inspection service is determined to be necessary.

Due diligence

2 With regard to all stakeholders, there must be a clear understanding that diligence has to be exercised by the owner and or managers of a fishing vessel in relation to its maintenance and manning and to ensure that it is in a seaworthy condition when it puts to sea. A repairer, employed by the owner must also exercise due diligence and, notwithstanding pressure by the owner, to carry out repairs in a sound and proper manner. A person authorized to inspect fishing vessels on the other hand has to be diligent at all times in the discharge of their duties in order to ensure that they would not be held negligent.

3 Whereas this proposed code of conduct is intended to give guidance to inspectors of small fishing vessels of less than 24 m in length, the general principles can be applied to the inspection of larger fishing vessels.

Basic principles

4 No local fishing vessel should be used for fishing or related activities unless there is in existence a valid certificate of seaworthiness issued in respect of that vessel.

5 The competent Authority may at any time and without notice cause any fishing vessel to be inspected for the purpose of determining whether the vessel is seaworthy and fit for the purpose of fishing.

6 Any person authorized by the competent Authority to inspect a small fishing vessel for seaworthiness should have appropriate qualifications and experience.

7 No person authorized by the competent Authority to inspect a small fishing vessel should discriminate in form or in fact against classes of fishing vessels, ports of operation or builders of fishing vessels.

Ethics

8 Such persons so authorized by the competent Authority to survey/inspect a fishing vessel for seaworthiness should demonstrate a high level of personal and professional integrity.

9 In the exercise of professional skills, such persons so authorized by the competent Authority to inspect a small fishing vessel must recognize that meeting the demands of the fishing industry requires ability and commitment often without regard for personal convenience. They must be diligent in the performance of their work on behalf of the competent Authority.

Purpose of the Code of Conduct for the Inspection of a Small Fishing Vessel

10 That all fishing vessels are built maintained and operated in accordance with minimum acceptable standards.

11 That the survey/inspection of a fishing vessel is conducted in a professional manner, consistent with high standards of integrity and fairness.

Conduct of inspections

12 It is recommended that a "fishing vessel inspector" be issued with a document of authority to inspect a fishing vessel.

13 Any inspection of an existing fishing vessel should be carried out in the presence of the skipper and or owner.

14 In the case of a fishing vessel under construction, the inspection should be carried out in the presence of the builder. The buyer should be advised when an inspection is planned in order that he or she may also be present.

15 In scheduling inspections the "fishing vessel inspector" should take care to ensure that satisfaction and or dissatisfaction is expressed at key stages of construction. In particular, dissatisfaction should be expressed as soon as the fishing vessel inspector has any doubt to avoid the builder continuing with work that might have to be undone at a later stage and to avoid dispute between builder and buyer.

16 When a "fishing vessel inspector" lacks the required expertise for a particular inspection he or she can be assisted by any person with the required expertise acceptable to the competent Authority.

17 The "fishing vessel inspector" and any person assisting should have no commercial interest in the vessels under inspection.

18 In the event that "fishing vessel inspectors" attend the technical trials of a vessel and or an inclining experiment or any other test, they should not assume command of the vessel.

19 Where a "fishing vessel inspector" is not totally satisfied with the state of a fishing vessel that is otherwise seaworthy, conditions may be entered in the record of the fishing vessel requiring the owners to take action within a limited time scale but not later than the next scheduled periodic survey.

20 Wherein a fishing vessel is deficient and the deficiency cannot be put right at the place of inspection a "fishing vessel inspector", having considered prevailing weather conditions, may allow the fishing vessel to proceed, providing the deficiency is not clearly hazardous to the safety of the vessel, its crew and the environment, to another place where the deficiency can be rectified subject to any appropriate conditions determined by him or her as a consequence of the inspection.

21 Where, following any inspection the vessel is found to be not seaworthy or is not fit for the purpose of fishing, the "fishing vessel inspector", without delay, should recommend that the certificate of seaworthiness issued in respect of that vessel should be withdrawn and the vessel prevented from going to sea.

Issue of certificates

22 A "fishing vessel inspector" should make a report of all inspections made and should give his or her signature in recommending that a certificate may be issued. Likewise his or her signature should be given and the reasons so stated if the issue of a certificate is not recommended.

23 A fishing vessel inspector may be called upon to investigate the loss or destruction of a vessel, or its decommissioning as a fishing vessel and may be required to recover the certificate of registration issued in respect of that vessel.

Advice given by the inspector

24 A fishing vessel inspector may be consulted from time to time by boat builders, boat repairers, fishermen and or owners of fishing vessels and may give technical advice in this respect with regard to an Act, its regulations and schedules. Due diligence must be exercised and the limitations of the fishing vessel inspector should be recognized and where doubt exists, the request should be referred to a more competent person.

25 Where advice is given in relation to types of vessels, machinery and equipment, the "fishing vessel inspector" should not have a financial interest in the business of the manufacturer(s) so recommended.

26 A fishing vessel inspector should not give technical advice that is inconsistent with the approved safety construction standards and safety equipment standards, set out in the regulations and or schedules to the appropriate Act.

Litigation

27 Unless there are provisions in national law stating otherwise, a fishing vessel inspector may be called as a "Witness of Fact" or as an "Expert Witness". Since oral examination is the only means by which the testimony and the bona fides of the witness can be challenged without resorting to endless correspondence, the fishing vessel inspector must demonstrate:

.1 knowledge;

.2 integrity;

.3 rationality;

.4 communicability; and

.5 decisiveness.

28 A witness may be required to submit written reports. The fishing vessel inspector must be able to prepare such reports in a concise and accurate manner and should not use terms that may convey more than one meaning. Similarly, photographic evidence must be composed in such a manner that it is aligned with and clearly illustrates the point or points so stressed in the report.

29 Where national law provides for the "Doctrine of Privilege" and in the event that legal proceedings could arise or be imminent, a fishing vessel inspector so concerned in the matter may submit a report to legal counsel (to the agency responsible for inspections of fishing vessels) for the purpose of receiving legal advice.

ANNEX 7

EXAMPLES OF RELEVANT INTERNATIONAL AGREEMENTS, BOTH BINDING AND VOLUNTARY

1 The following examples of international conventions and other legal instruments, agreements or arrangements having a bearing on those engaged in fishing and the design and construction of vessels as well as their operations, are also supported by many resolutions and recommendations.

Standard specifications for the marking and identification of fishing vessels (FAO, 1989) (voluntary)

2 The purpose is to provide an aid to fisheries management and safety at sea through the marking of fishing vessels for their identification on the basis of the International Radio Call Signs (IRCS) system. The said marks should be visible on both sides of a vessel (hull or sail as the case may be) and on a horizontal surface. The word "vessel" in the specifications refers to any vessel intending to fish or engaged in fishing or ancillary activities operating, or likely to operate, in waters of States other than those of the flag State.

Code of Conduct for Responsible Fisheries (FAO, 1995) (voluntary)

3 One of the objectives of the Code is to ensure the long-term sustainability of living marine resources so that these can be harvested by generations to come, thus making a substantial contribution to world food security and employment opportunities. Article 8 of the Code of Conduct (see annex 1) further develops the provision regarding fishing operations.

Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972

4 The Convention establishes principles and rules concerning lights and shapes to be displayed by vessels as well as establishing traffic rules at sea.

International Convention for the Safety of Life at Sea (SOLAS), 1974, and Protocols

5 The Convention promotes safety at sea by establishing a common agreement, uniform principles and rules. Whereas the regulations do not apply to fishing vessels, unless expressly provided otherwise, chapter V (Safety of navigation) has to be addressed in the case of fishing vessels (except for those navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St Lambert Lock at Montreal in the Province of Quebec, Canada).

International Convention on Maritime Search and Rescue, 1979

6 The Convention establishes an international maritime search and rescue (SAR) plan covering the needs for vessel reporting systems, SAR services and the rescue of persons in distress at sea.

Torremolinos International Convention on the Safety of Fishing Vessels, 1977 and the Torremolinos Protocol of 1993 relating thereto (not in force)

7 These provide uniform principles and rules concerning construction, equipment, stability, radio communications and other safety aspects of fishing vessels.

Code of Safety for Fishermen and Fishing Vessels, Part A (as revised) (voluntary)

8 The purpose of Part A of the Code is to provide information with a view to promoting the safety and health of crew members on board fishing vessels. It may also serve as a guide for those concerned with framing measures for the improvement of safety and health on board fishing vessels but it is not a substitute for national laws and regulations. It addresses decked and undecked fishing vessels of all sizes and recognizes the important role of fisheries management in relation to fishing vessel and crew safety. Part A of the Code is amply supported by 20 relevant appendixes with regard to operational safety and health.

International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995 (not in force)

9 In establishing, by common agreement, international standards of training, certification and watchkeeping for personnel on board fishing vessels, the Convention desires to help promote the safety of life at sea and the protection of the marine environment. It makes provisions for personnel serving on fishing vessels of 24 m in length and above for skippers and officers in charge of a navigational watch and for chief and second engineer officers where the main propulsion machinery of a fishing vessel is 750 kW or more.

10 The International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (1995) complements the Torremolinos Protocol by setting the regulatory framework for the training and certification of fishing vessel personnel.

11 The STCW-F Convention addresses training and certification standards for skippers and watchkeepers on fishing vessels of more than 24 m, for engineers on vessels of more than 750 kW and for crew in charge of radio communication. Importantly, it also requires basic (pre-sea) safety training for all fishing vessel personnel.

12 The Convention embraces the concept of competency-based training but does not deal with manning levels. While the Convention specifically relates to large fishing vessels, the IMO encourages national competent authorities to address the training and certification standards for crews of smaller vessels through relevant domestic laws.

13 Training is an obvious essential factor for improving safety. Training includes not only training that should take place before the fishermen steps aboard the vessel, but also awareness training, life-saving and fire drills, and training focused on the particular equipment and operations on a specific vessel. As noted above, the basic international standard for the training of fishermens is the IMO's International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995, provides international standards for such training.

Document for Guidance on Training and Certification of Fishing Vessel Personnel (voluntary)

14 This makes provisions for training for personnel serving on fishing vessels of all sizes.

15 The FAO, ILO and IMO have also prepared the Document for Guidance on Training and Certification of Fishing Vessel Personnel, which covers training and certification of crew members on small and large fishing vessels and fishing on an industrial scale. It is intended to provide guidance for those developing, establishing or reviewing national training schemes for training and certification programmes for crew members. The IMO has also developed several "model courses" to assist in the implementation of the STCW-F Convention.

International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

16 Detailed regulations covering the various sources of pollution are contained in five annexes to the Convention. Annex V (Prevention of pollution by garbage from vessels) has a bearing on safety at sea whether or not the garbage comes from a vessel or a fishing vessel. In the case of fishing vessels, accidentally lost, discarded and otherwise abandoned fishing gear may be a hazard to the safety of navigation.

International Convention on Tonnage Measurement of Ships,1969

17 Applicable to vessels of 24 m and over.

18 The Convention provides for gross and net tonnages, both of which are calculated independently. The rules apply to all ships built on or after 18 July 1982 – the date of entry into force – while ships built before that date were allowed to retain their existing tonnage for 12 years after entry into force, or until 18 July 1994.

19 Gross tonnage forms the basis for manning regulations, safety rules and registration fees.

20 Both gross and net tonnages are used to calculate port dues.

Work in Fishing Convention No. 188 and Recommendation No. 199

21 The Work in Fishing Convention (No. 188) addresses living and working conditions on board fishing vessels. The Convention is flexible, so that it is relevant to all types of commercial fishing and can be implemented by Governments around the world, whatever their particular circumstances. Convention No. 188 has the objective to ensure that fishermen have decent conditions of work on board fishing vessels with regard to minimum requirements for work on board; conditions of service; accommodation and food; occupational safety and health protection; medical care and social security.

22 The Convention addresses the following subject areas:

.1 the responsibilities of fishing vessel owners and skippers for the safety of the fishermen on board and the safety of the vessels;

.2 minimum age for work on board fishing vessels and for assignment to certain types of activities;

.3 medical examination and certification required for work on fishing vessels, with the possibility of exceptions for smaller vessels or those at sea for short periods;

.4 manning and hours of rest;

.5 crew lists;

.6 fishermens' work agreements;

.7 repatriation;

.8 recruitment and placement of fishermen, and use of private employment agencies;

.9 payment of fishermen;

.10 onboard accommodation and food;

.11 medical care at sea;

.12 occupational safety and health;

.13 social security; and

.14 protection in the case of work-related sickness, injury or death.

23 The Convention is supplemented by the Work in Fishing Recommendation, 2007 (No. 199), which provides additional guidance.

24 Those involved in the design and construction of fishing vessels (including fishing vessel owners) should in particular be familiar with Part V of the Convention (Articles 24 to 28), which concerns Accommodation and Food, and the related (mandatory) Annex III. Annex III provides, *inter alia*, in the section entitled "Planning and control". That the competent Authority shall satisfy itself that, on every occasion when a vessel is newly constructed or the crew accommodation of a vessel has been reconstructed, such vessel complies with the requirements of the Annex (which contains Design and construction standards concerning: headroom; noise and vibration; ventilation; heating and air conditioning: lighting; sleeping rooms (size, equipment); persons per sleeping room; mess rooms; tubs, showers, toilets and washbasins; facilities for sick and injured fishers; recreational facilities; galley and food storage facilities; food and potable water; and clean and habitable conditions). The competent Authority is also, to the extent practicable, require compliance, crew accommodation of a vessel is substantially altered and, for a vessel that changes the flag it flies to the flag of the Member State. For vessels of 24 metres in length and over, detailed plans and information concerning accommodation shall be required to be submitted for approval to the competent Authority, or an entity authorized by it. Furthermore, for vessels of 24 metres in length and over, the competent Authority is to inspect the accommodation for compliance with the requirements of the Convention on every occasion when the crew accommodation of the fishing vessel has been reconstructed or substantially altered, and when the vessel changes the flag it flies to the flag of the State. The competent Authority may carry out additional inspections of crew accommodation at its discretion.

25 Other parts of the Convention, for example, those provisions concerning medical care on board, also will have an impact on the equipping of vessels (e.g., with medical supplies, communications equipment, etc.).

26 Even if a State has not ratified the Convention, it should be taken into account in order to ensure vessels have no difficulty operating in foreign waters, visiting foreign ports or being, at some future date, sold abroad and/or registered in other States.

ANNEX 8

ANNOTATED LIST OF PERTINENT PUBLICATIONS

FAO (**www.fao.org**)

FAO Technical Guidelines for Responsible Fisheries – Fishing Operations

The technical guidelines are given in support of the implementation of the Code of Conduct for Responsible Fisheries in relation to fishing operations. They are addressed to States, international organizations, fisheries management bodies, owners, managers and charterers of vessels, and Fishermen and their organizations.

FAO Safety at sea as an integral part of fisheries management

This document provides a comprehensive overview of sea safety issues, and concludes that safety at sea should be integrated into fisheries management.

Report of the FAO/SPC regional expert consultation on sea safety in small vessels. Suva, Fiji, 9 to 13 February 2004

The Consultation was held in Suva from 9 to 13 February 2004. Discussions focused in particular on the significance of good sea accident data, mandatory requirements for vessel registration, vessel inspection and crew certification, enforcement of regulations in remote locations and training requirements for improving safety in small fishing vessels. This report lists a number of recommendations together with considerations relating to their implementation.

Aspects of sea safety in the fisheries of Pacific Island countries

This publication is the report of a survey of fisheries-related sea safety in the Pacific Islands region undertaken by FAO in 2003. It is intended to assist in sensitizing fisheries managers that sea safety is a legitimate and important objective of fisheries management, focus more attention on small vessel safety and lead to improved systems for recording/analysing sea accident data and making use of the results. It will also serve as a discussion document at a meeting which is to be attended by motivated people from several relevant disciplines, focused on challenging issues, oriented to small vessels, having the objective of producing results with a positive effect on regional and national sea safety programmes.

Sub-Regional Workshop on Artisanal Safety at Sea, Banjul, the Gambia, 26 to 28 September 1994

A sub-regional workshop organized by the IDAF on safety at sea was held in Banjul, the Gambia from 26 to 28 September 1994. The objectives of the workshop were: to review the results of the national accidents survey; to identify the fundamental problems and examine information on the status of safety at sea activities in the different countries and to prepare a draft proposal for a sub-regional project on safety at sea.

Safety Guide for Small Fishing Boats

The purpose of this safety guide is to present simple measures to ensure that new boats will satisfy internationally accepted safety standards. The guide deals mainly with small boats of less than 15 metres in length; which from experience are most prone to accidents.

Final report of project TCP/RLA/0069-Development of standards for the construction and inspection of small fishing vessels

ILO (www.ilo.org)

The majority of the publications mentioned below are available on the ILO website, in particular at http://www.ilo.org/public/english/protection/safework/index.htm.

Guidelines on occupational safety and health management systems (ILO-OSH 2001)

The Guidelines aim to contribute to the protection of workers from hazards and to the elimination of work-related injuries, ill-health, diseases, incidents and deaths. They provide guidance for the national and enterprise level, and can be used to establish the framework for occupational safety and health management systems.

Risks and dangers in small-scale fisheries: An overview. By M. Ben-Yami. Working paper

The working paper provides a comprehensive overview of the risks and dangers in small-scale and artisanal fisheries including working conditions, safety approaches in developed and developing countries, accidents associated with the marine environment, navigation and fishing operations, problems associated with boat design and construction as well as other risks and dangers.

Other ILO codes of practice of possible interest to the fishing sector:

Safety and health in ports, 2005

Ambient factors in the workplace, 2001

HIV/AIDS and the world of work, 2001

Technical and ethical guidelines for workers' health surveillance, 1998

Recording and notification of occupational accidents and diseases, 1996

Safety in the use of chemicals at work, 1993

Safety in the use of asbestos, 1984

Protection of workers against noise and vibration in the working environment, 1977

Safety and health in vessel building and vessel repairing, 1974

SafeWork training manuals

ILO's SafeWork has prepared a number of documents that could be used as teaching manuals and/or as teachers' guides for occupational safety and health courses organized by employers, workers' organizations or educational institutions. Though not specifically aimed at the fishing sector, these documents may be very useful for addressing such issues as noise and vibration, ergonomics, controlling hazards and AIDS.

Ergonomic checkpoints

A collection of practical, easy-to-use ergonomic solutions for improving working conditions. This fully illustrated easy-to-use manual is an extremely useful tool for everyone who wants to improve their working conditions for better safety, health and efficiency. Each of the 128 checkpoints has been developed to help the user look at various workplaces and identify practical solutions which can be made applicable under local conditions. Developed jointly with the International Ergonomics Association, 1996.

International Hazard Datasheets on Occupation, Diver, indigenous fishers

An International Hazard Datasheets on Occupations is a multipurpose information resource containing information on the hazards, risks and notions of prevention related to a specific occupation. These datasheets are intended for those professionally concerned with health and safety at work including: occupational physicians and nurses, safety engineers, hygienists, education and information specialists, inspectors, employers' representatives, workers' representatives, safety officers and other competent persons.

WHO (www.who.int/en/org)

International Medical Guide for Vessels

Guide to vessel sanitation, (as amended)

Others

European Union Council Directive 92/29/EEC on minimum safety and health requirements for improved medical treatment on board vessels

IEC Publication 60079

Nordic Boat Standard, 1991 (www.sigling.is)

Possible Framework for a Model Maritime Administration. Hubbard and Hope

Maritime Occupational Safety Regulations, 1994. Chapters I & IV. (www.samsa.org.za)

Code of Safe Working Practice for Fishing Vessel. (www.samsa.org.za)

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ANNEX 17

DRAFT AMENDMENT TO SOLAS REGULATION II-1/8-1

Regulation 8-1 – System capabilities after a flooding casualty on passenger ships

"The existing regulation II-1/8-1 is replaced by the following:

"**Regulation 8-1 – System capabilities and operational information after a flooding casualty on passenger ships**

1 Application

Passenger ships having a length, as defined in regulation II-1/2.5, of 120 m or more or having three or more main vertical zones shall comply with the provisions of this regulation.

2 Availability of essential systems in case of flooding damage*

A passenger ship constructed on or after 1 July 2010 shall be designed so that the systems specified in regulation II-2/21.4 remain operational when the ship is subject to flooding of any single watertight compartment.

3 Operational information after a flooding casualty

For the purpose of providing operational information to the Master for safe return to port after a flooding casualty, passenger ships constructed on or after [1 January 2014] shall have:

.1 onboard stability computer; or

.2 shore-based support,

[in accordance with] guidelines developed by the Organization**."

***

* Refer to the Performance standards for the systems and services to remain operational on passenger ships for safe return to port and orderly evacuation and abandonment after a casualty (MSC.1/Circ.1214).

** Refer to the Guidelines on operational information for Masters of passenger ships for safe return to port by own power or under tow (MSC.1/Circ.1400).

ANNEX 18

DRAFT AGREEMENT ON THE IMPLEMENTATION OF THE 1993 PROTOCOL RELATING TO THE 1977 TORREMOLINOS CONVENTION ON THE SAFETY OF FISHING VESSELS

The Parties to this Agreement,

RECOGNIZING the significant contribution to maritime safety in general and that of fishing vessels which can be made by the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977 (hereinafter referred to as "the 1993 Torremolinos Protocol"),

ACKNOWLEDGING, HOWEVER, that certain provisions of the 1993 Torremolinos Protocol have given rise to difficulties in their implementation by a number of States having substantial fishing fleets under their flags and that this has prevented the entry into force of the 1993 Torremolinos Protocol and, consequently, the implementation of the regulations contained therein,

DESIRING to establish by common agreement the highest practicable standards for the safety of fishing vessels that can be implemented by all the States concerned,

CONSIDERING that this objective may best be achieved by the conclusion of an Agreement relating to the implementation of the 1993 Torremolinos Protocol,

HAVE AGREED as follows:

Article 1
General obligations

(1) The Parties to the present Agreement shall give effect to the provisions of:

(a) the articles of the present Agreement; and

(b) the regulations contained in the annex to the 1993 Torremolinos Protocol, subject to the modifications set out in the annex to the present Agreement.

(2) The articles of the present Agreement and the regulations of the annex to the 1993 Torremolinos Protocol shall, subject to the modifications set out in the annex to the present Agreement, be read and interpreted as a single instrument.

(3) The annex to the present Agreement shall constitute an integral part of the Agreement and a reference to the present Agreement shall constitute at the same time a reference to the annex thereto.

(4) In the event of any inconsistency between the present Agreement and the 1993 Torremolinos Protocol, the provisions of the present Agreement shall prevail.

Article 2
Application of the 1993 Torremolinos Protocol

Articles 2 to 8 inclusive and articles 11 to 14 inclusive of the 1993 Torremolinos Protocol shall apply to the present Agreement as they apply to the 1993 Torremolinos Protocol.

Article 3
Signature and establishment of consent to be bound by the present Agreement

(1) The present Agreement shall remain open for signature at the Headquarters of the Organization from … to … and shall thereafter remain open for accession.

(2) All States may become Parties to the present Agreement by expressing their consent to be bound by the Agreement.

(3) States shall express their consent to be bound by the present Agreement by:

(a) Signature without reservation as to ratification, acceptance or approval; or

(b) Signature subject to ratification, acceptance or approval followed by ratification, acceptance or approval; or

(c) Signature subject to the procedure set out in paragraph (5) of this Article; or

(d) Accession.

(4) Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General.

(5) A State which has deposited before the date of the adoption of the present Agreement an instrument of ratification, acceptance, approval of or accession to the 1993 Protocol and which has signed the present Agreement in accordance with paragraph (3)(c) of this Article shall be deemed to have expressed its consent to be bound by the present Agreement [12] months after the date of the adoption of the present Agreement unless that State notifies the depositary in writing before that date that it is not availing itself of the simplified procedure set out in this paragraph.

Article 4
Entry into force

(1) The present Agreement shall enter into force 12 months after the date on which not less than [15][20][30] States [the aggregate number of whose fishing vessels of 24 metres in length and over is not less than [3,000][1,800] have expressed their consent to be bound in accordance with Article 3 of the present Agreement.

(2) For a State which deposits an instrument of ratification, acceptance, approval or accession in respect of the present Agreement after the requirements for entry into force thereof have been met but prior to the date of entry into force, the ratification, acceptance, approval or accession shall take effect on the date of entry into force of the present Agreement or three months after the date of deposit of the instrument, whichever is the later date.

(3) For a State which deposits an instrument of ratification, acceptance, approval or accession in respect of the present Agreement after the date on which it enters into force, the present Agreement shall become effective [three] months after the date of deposit of the instrument.

(4) After the date on which an amendment to the present Agreement is deemed to have been accepted under article 11 of the 1993 Torremolinos Protocol, any instrument of ratification, acceptance, approval or accession deposited shall apply to the present Agreement as amended.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments for that purpose, have signed the present Agreement.

DONE AT …… this ….. day of …… two thousand and .....

ANNEX

DRAFT AMENDMENTS TO THE 1993 TORREMOLINOS PROTOCOL

CHAPTER I
GENERAL PROVISIONS

Regulation 1 – Application

1 The existing text of regulation 1 is replaced by the following:

"(1) Unless expressly provided otherwise, the provisions of this annex shall apply to new vessels.

(2) For the purpose of this Protocol, the Administration may decide to use the following gross tonnage in place of length (L) as the basis for measurement for all chapters:

(a) a gross tonnage of 300 GT shall be considered equivalent to a length (L) of 24 metres;

(b) a gross tonnage of 950 GT shall be considered equivalent to a length (L) of 45 metres;

(c) a gross tonnage of 2,000 GT shall be considered equivalent to a length (L) of 60 metres; and

(d) a gross tonnage of 3,000 GT shall be considered equivalent to a length (L) of 75 metres.

(3) Each Party, which avails itself of the possibility afforded in paragraph (2), shall communicate to the Organization the reasons for that decision.

(4) Where it is not immediately possible for a Party to implement all of the measures provided for in this Protocol owing to special problems of a substantial nature in the light of insufficiently developed infrastructure or institutions, the Party may, in accordance with a plan, progressively implement the provisions of chapter IX of the Annex to the Protocol.

(5) Each Party which avails itself of the possibility afforded in paragraph (4) shall in its first communication to the Organization:

(a) indicate the provisions of the Protocol to be progressively implemented;

(b) explain the reasons for the decision taken under paragraph (4);

(c) describe the plan for progressive implementation, which shall not be scheduled for more than 10 years; and

(d) in subsequent communications on the application of this Protocol, describe measures taken with a view to giving effect to the provisions of the Protocol and progress made in line with the timeframe established.

(6) The Administration may exempt a vessel from annual surveys, as specified in regulations 7(1)(d) and 9(1)(d), if it considers that the application is unreasonable and impracticable in view of the vessel's operating area and the type of vessel."

Regulation 2 – Definitions

2 The existing definition (14) is deleted and the existing paragraphs (15) to (22) are renumbered as (14) to (21), and the following new paragraphs (22) to (24) are added:

"(22) *Gross tonnage* means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurement of Ships, 1969, or any instrument amending or replacing it.

(23) *Anniversary date* means the day and the month of each year which will correspond to the date of expiry of the relevant certificate.

"(24) *A common fishing zone*, for the purposes of this Agreement means a specified area within the marine areas under the jurisdiction of neighbouring coastal States that is designated by means of an agreement between such States wherein fishing vessels entitled to fly the flag of those States or other authorized vessels may have access and fish in accordance with the terms and conditions set in such an agreement. Such an agreement establishing a common fishing zone shall be be consistent with international law and may include such measures and conditions as may be required:

.1 to ensure the proper management and sustainable development of the fisheries resources in the common fishing zone; and

.2 for the protection of the marine environment, the safety of human life and arrangements for search and rescue.

The specified area shall not extend beyond the limits of the marine areas under the jurisdiction of such States."

Regulation 3 – Exemptions

3 The existing paragraphs (3) and (4) are replaced by the following:

"(3) The Administration may exempt any vessel entitled to fly its flag from any of the requirements of this annex if it considers that the application is unreasonable and impracticable in view of the type of vessel, the weather conditions and the absence of general navigational hazards, provided:

.1 the vessel complies with safety requirements which, in the opinion of that Administration, are adequate for the service for which it is intended and are such as to ensure the overall safety of the vessel and persons on board;

.2 the vessel is engaged solely in fishing in (a) a common fishing zone or (b) the exclusive economic zone of the State of the flag it is entitled to fly, or, if that State has not established such a zone, in an area beyond and adjacent to the territorial sea of that State determined by that State in accordance with international law and

extending not more than 200 nautical miles from the baselines from which the breadth of its territorial sea is measured;

.3 the vessel is not engaged in fishing more than 200 nautical miles from the baselines of the State of the flag it is entitled to fly;

.4 the vessel is not engaged in fishing within waters which are subject to the jurisdiction of another State unless authorized pursuant to an agreement relating to a common fishing zone referred to in subparagraph .2; and

.5 the Administration notifies the Secretary-General of the terms and conditions on which the exemption is granted under this paragraph.

(4) The Administration which allows any exemption under this regulation, except for exemptions granted under paragraph (3), shall communicate to the Organization particulars of the same to the extent necessary to confirm that the level of safety is adequately maintained and the Organization shall circulate such particulars to the Parties for their information."

4 The existing regulations 6 to 11 are replaced by the following new regulations 6 to 17:

"**Regulation 6 – Inspection and survey**

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

(2) An Administration nominating surveyors or recognizing organizations to conduct inspections and surveys as set forth in paragraph (1) shall as a minimum empower any nominated surveyor or recognized organization to:

(a) require repairs to a vessel; and

(b) carry out inspections and surveys if requested by the appropriate authorities of a port State.

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

(3) When a nominated surveyor or recognized organization determines that the condition of the vessel or its equipment does not correspond substantially with the particulars of the certificate or is such that the vessel is not fit to proceed to sea without danger to the vessel, or persons on board, such surveyor or organization shall immediately ensure that corrective action is taken and shall in due course notify the Administration. If such corrective action is not taken the relevant certificate should be withdrawn and the Administration shall be notified immediately; and, if the vessel is in the port of another Party, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration,

a nominated surveyor or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation. When applicable, the Government of the port State concerned shall ensure that the vessel shall not sail until it can proceed to sea, or leave port for the purpose of proceeding to the appropriate repair yard, without danger to the vessel or persons on board.

(4) In every case, the Administration shall fully guarantee the completeness and efficiency of the inspection and survey, and shall undertake to ensure the necessary arrangements to satisfy this obligation.

Regulation 7 – Surveys of life-saving appliances and other equipment

(1) The life-saving appliances and other equipment as referred to in paragraph (2)(a) shall be subject to the surveys specified below:

(a) an initial survey before the vessel is put in service;

(b) a renewal survey at intervals specified by the Administration but not exceeding 5 years, except where regulation 13(2), (5), and (6) is applicable;

(c) a periodical survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the International Fishing Vessel Safety Certificate which shall take the place of one of the annual surveys specified in paragraph (1)(d). Alternatively, the Administration may decide that the periodical survey shall be carried out within three months before the second anniversary date and three months after the third anniversary date of the International Fishing Vessel Safety Certificate;

(d) an annual survey within three months before or after each anniversary date of the International Fishing Vessel Safety Certificate; and

(e) an additional survey either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in regulation 10, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory, and that the vessel complies in all respects with the provisions of the present regulations and of the International Regulations for Preventing Collisions at Sea in force, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration.

(2) The surveys referred to in paragraph (1) shall be carried out as follows:

(a) the initial survey shall include a complete inspection of the fire safety systems and appliances, life-saving appliances and arrangements except radio installations, the shipborne

navigational equipment, pilot transfer arrangements and other equipment to which chapters II, III, IV, V, VI, VII, VIII and X apply to ensure that they comply with the requirements of the present regulations, are in satisfactory condition and are fit for the service for which the vessel is intended. The fire control plans, nautical publications, lights, shapes, means of making sound signals and distress signals shall also be subject to the above-mentioned survey for the purpose of ensuring that they comply with the requirements of the present regulations and, where applicable, the International Regulations for Preventing Collisions at Sea in force;

(b) the renewal and periodical surveys shall include an inspection of the equipment referred to in paragraph (2)(a) to ensure that it complies with the relevant requirements of the present regulations and the International Regulations for Preventing Collisions at Sea in force, is in satisfactory condition and is fit for the service for which the vessel is intended; and

(c) the annual survey shall include a general inspection of the equipment referred to in paragraph (2)(a) to ensure that it has been maintained in accordance with regulation 10(1) and that it remains satisfactory for the service for which the vessel is intended.

(3) The periodical and annual surveys referred to in paragraphs (1)(c) and (1)(d) shall be endorsed on the International Fishing Vessel Safety Certificate.

Regulation 8 – Surveys of radio installations

(1) The radio installations, including those used in life-saving appliances, of vessels to which chapters VII and IX apply shall be subject to the surveys specified below:

(a) an initial survey before the vessel is put in service;

(b) a renewal survey at intervals specified by the Administration but not exceeding five years, except where regulations 13(2), (5) and (6) are applicable;

(c) a periodical survey within three months before or after each anniversary date of the International Fishing Vessel Safety Certificate; or a periodical survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the International Fishing Vessel Safety Certificate; Alternatively, the Administration may decide that the periodical survey shall be carried out within three months before the second anniversary date and three months after the third anniversary date of the International Fishing Vessel Safety Certificate; and

(d) an additional survey either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in regulation 10, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been

effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory, and that the vessel complies in all respects with the provisions of the present regulations and of the International Regulations for Preventing Collisions at Sea in force, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration.

(2) The surveys referred to in paragraph (1) shall be carried out as follows:

(a) the initial survey shall include a complete inspection of the radio installations, including those used in life-saving appliances, to ensure that they comply with the requirements of the present regulations; and

(b) the renewal and periodical surveys shall include an inspection of the radio installations, including those used in life-saving appliances, to ensure that they comply with the requirements of the present regulations.

(3) The periodical surveys referred to in paragraph (1)(c) shall be endorsed on the International Fishing Vessel Safety Certificate.

Regulation 9 – Surveys of structure, machinery and equipment

(1) The structure, machinery and equipment (other than items in respect of regulations 7 and 8) as referred to in paragraph (2)(a) shall be subject to the surveys and inspections specified below:

(a) an initial survey including an inspection of the outside of the vessel's bottom before the vessel is put in service;

(b) a renewal survey at intervals specified by the Administration but not exceeding 5 years, except where regulation 13(2), (5), and (6) is applicable;

(c) an intermediate survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the International Fishing Vessel Safety Certificate, which shall take the place of one of the annual surveys specified in paragraph (1)(d); Alternatively, the Administration may decide that the intermediate survey shall be carried out within three months before the second anniversary date and three months after the third anniversary date of the International Fishing Vessel Safety Certificate;

(d) an annual survey within three months before or after each anniversary date of the International Fishing Vessel Safety Certificate;

(e) a minimum of two inspections of the outside of the vessel's bottom during any five-year period, except where regulation 13(5) is applicable. Where regulation 13(5) is applicable, this five-year period may be extended to coincide with the extended period of validity of the certificate. In all cases the interval between any two such inspections shall not exceed 36 months; and

(f) an additional survey either general or partial, according to the circumstances, shall be made after a repair resulting from investigations prescribed in regulation 11, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory, and that the vessel complies in all respects with the provisions of the present regulations and of the International Regulations for Preventing Collisions at Sea in force, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration.

(2) The surveys and inspections referred to in paragraph (1) shall be carried out as follows:

(a) the initial survey shall include a complete inspection of the structure, machinery and equipment. This survey shall be such as to ensure that the arrangements, materials, scantlings and workmanship of the structure, boilers and other pressure vessels, their appurtenances, main and auxiliary machinery including steering gear and associated control systems, electrical installation and other equipment comply with the requirements of the present regulations, are in satisfactory condition and are fit for the service for which the vessel is intended and that the required stability information is provided;

(b) the renewal survey shall include an inspection of the structure, machinery and equipment as referred to in paragraph (2)(a) to ensure that they comply with the requirements of the present regulations, are in satisfactory condition and are fit for the service for which the vessel is intended;

(c) the intermediate survey shall include an inspection of the structure, boilers and other pressure vessels, machinery and equipment, the steering gear and the associated control systems and electrical installations to ensure that they remain satisfactory for the service for which the vessel is intended;

(d) the annual survey shall include a general inspection of the structure, machinery and equipment referred to in paragraph (2)(a), to ensure that they have been maintained in accordance with regulation 10(1) and that they remain satisfactory for the service for which the vessel is intended; and

(e) the inspection of the outside of the vessel's bottom and the survey of related items inspected at the same time shall be such as to ensure that they remain satisfactory for the service for which the vessel is intended.

(3) The intermediate and annual surveys and the inspections of the outside of the vessel's bottom referred to in paragraphs (1)(c), (1)(d) and (1)(e) shall be endorsed on the International Fishing Vessel Safety Certificate.

Regulation 10 – Maintenance of conditions after survey

(1) The condition of the vessel and its equipment shall be maintained to conform with the provisions of the present regulations to ensure that the vessel in all respects will remain fit to proceed to sea without danger to the vessel or persons on board.

(2) After any survey of the vessel under regulation 7, 8, or 9 has been completed, no change shall be made in the structural arrangements, machinery, equipment and other items covered by the survey, without the sanction of the Administration.

(3) Whenever an accident occurs to a vessel or a defect is discovered, either of which affects the safety of the vessel or the efficiency or completeness of its life-saving appliances or other equipment, the master or owner of the vessel shall report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the relevant certificate, who shall cause investigations to be initiated to determine whether a survey, as required by regulation 7, 8, or 9, is necessary. If the vessel is in a port of another Party, the skipper or owner shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such a report has been made.

Regulation 11 – Issue or endorsement of certificates

(1) (a) a certificate called an International Fishing Vessel Safety Certificate shall be issued, except for vessels exempted under paragraph (3) of regulation 3, after an initial or renewal survey to a fishing vessel which complies with the relevant requirements of chapters II, III, IV, V, VI, VII, VIII, IX and X and any other relevant requirements of the present regulations;

(b) the International Fishing Vessel Safety Certificate, referred to in subparagraph (a), shall be supplemented by a Record of Equipment;

(c) when an exemption is granted to a vessel under and in accordance with the provisions of the present regulations, except for vessels exempted under paragraph (3) of regulation 3, a certificate called an International Fishing Vessel Exemption Certificate shall be issued in addition to the certificate prescribed in this paragraph; and

(d) the certificates referred to in this regulation shall be issued or endorsed either by the Administration or by any person or organization authorized by it. In every case, that Administration assumes full responsibility for the certificates.

Regulation 12 – Issue or endorsement of certificates by another Party

A Party may, at the request of the Administration, cause a vessel to be surveyed and, if satisfied that the requirements of the present regulations are complied with, shall issue or authorize the issue of certificates to the vessel and, where appropriate, endorse or authorize the endorsement of certificates on the vessel in

accordance with the present regulations. Any certificate so issued shall contain a statement to the effect that it has been issued at the request of the Government of the State the flag of which the vessel is entitled to fly, and it shall have the same force and receive the same recognition as a certificate issued under regulation 11.

Regulation 13 – Duration and validity of certificates

(1) An International Fishing Vessel Safety Certificate shall be issued for a period specified by the Administration which shall not exceed five years. An International Fishing Vessel Exemption Certificate shall not be valid for longer than the period of the certificate to which it refers.

(2) (a) notwithstanding the requirements of paragraph (1), when the renewal survey is completed within three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate;

(b) when the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate; and

(c) when the renewal survey is completed more than three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

(3) If a certificate is issued for a period of less than five years, the Administration may extend the validity of the certificate beyond the expiry date to the maximum period specified in paragraph (1), provided that the surveys referred to in regulations 7, 8 and 9 applicable when a certificate is issued for a period of 5 years are carried out as appropriate.

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

(5) If a vessel at the time when a certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only for the purpose of allowing the vessel to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than three months, and a vessel to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing certificate before the extension was granted.

(6) In special circumstances, as determined by the Administration, a new certificate need not be dated from the date of expiry of the existing certificate as required by paragraph (2)(b) or (5). In these special circumstances, the new certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

(7) If an annual, intermediate or periodical survey is completed before the period specified in the relevant regulations then:

(a) the anniversary date shown on the relevant certificate shall be amended by endorsement to a date which shall not be more than three months later than the date on which the survey was completed;

(b) the subsequent annual, intermediate or periodical survey required by the relevant regulations shall be completed at the intervals prescribed by these regulations using the new anniversary date; and

(c) the expiry date may remain unchanged provided one or more annual, intermediate or periodical surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by the relevant regulations are not exceeded.

(8) A certificate issued under regulation 11 or 12 shall cease to be valid in any of the following cases:

(a) if the relevant surveys and inspections are not completed within the periods specified under regulations 7(1), 8(1) and 9(1);

(b) if the certificate is not endorsed in accordance with the present regulations; and

(c) upon transfer of the vessel to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the vessel is in compliance with the requirements of regulations 10(1) and (2). In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Government of the State whose flag the vessel was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the certificates carried by the vessel before a transfer and, if available, copies of the relevant survey reports.

Regulation 14 – Forms of certificates and records of equipment

The certificates and records of equipment shall be drawn up in the form corresponding to the models given in the appendix to the annex to the present Protocol. If the language used is neither English nor French, the text shall include a translation into one of these languages.*

* Refer to resolution A.561(14) on Translation of the text of certificates.

Regulation 15 – Availability of certificates

The certificates issued under regulations 11 and 12 shall be readily available on board for examination at all times.

Regulation 16 – Acceptance of certificates

Certificates issued under the authority of a Party shall be accepted by the other Party for all purposes covered by the present Protocol. They shall be regarded by the other Party as having the same force as certificates issued by them.

Regulation 17 – Privileges

The privileges of the present Protocol may not be claimed in favour of any vessel unless it holds appropriate valid certificates."

Chapter V

FIRE PROTECTION, FIRE DETECTION, FIRE EXTINCTION AND FIRE FIGHTING

PART A – GENERAL

Regulation 1 – General

The existing text of regulation 1 is replaced by the following:

"(1) Unless expressly provided otherwise, this chapter shall apply to new vessels of 45 metres in length and over.

(2) One of the following methods of protection shall be adopted in accommodation and service spaces:

(a) Method IF – The construction of all internal divisional bulkheads of non-combustible "B" or "C" Class divisions generally without the installation of a detection or sprinkler system in the accommodation and services spaces; or

(b) Method IIF – The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restrictions on the type of internal divisional bulkheads; or

(c) Method IIIF – The fitting of an automatic fire alarm and detection system in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheads, except that in no case shall the area of any accommodation space or spaces bounded by an "A" or "B" Class division exceed 50 square metres. However, the Administration may increase this area for public spaces.

The requirements for use of non-combustible materials in construction and insulation of the boundary bulkheads of machinery spaces, control stations, etc., and the protection of stairway enclosures and corridors shall be common to all three methods."

Chapter VII

LIFE-SAVING APPLIANCES AND ARRANGEMENTS

PART B – VESSEL REQUIREMENTS

Regulation 5 – Number and types of survival craft and rescue boats

After the existing paragraph (4), new paragraphs (5), (6) and (7) are inserted as follows:

"(5) Where the arrangement required in paragraph (3)(a) would interfere with the normal operation of the vessel, the Administration may decide, in lieu of meeting the requirements, that vessels carry survival craft capable of being launched from only one side of the vessel. These survival craft shall be of sufficient aggregate capacity to accommodate at least twice the total number of persons on board, provided that the survival craft of sufficient capacity to accommodate the total number of persons on board can be easily transferred to the other side of the vessel, where they can be launched safely and rapidly.

(6) In the event of any one survival craft being lost or rendered unserviceable, there shall be sufficient survival craft available for use on either side, including those which are stowed in a position to be transferred to the other side, to accommodate the total number of persons on board. The transfer shall be easy to do, at a single open deck level, and all craft must be free of obstacles to avoid entrapment and facilitate easy deployment.

(7) Where the arrangement required in paragraph (3)(b) would interfere with the normal operation of the vessel, the Administration may decide, in lieu of meeting the requirements, that vessels carry other equivalent appliances for rescuing persons from the water, taking into account the vessel's navigational area and operational condition."

The existing paragraphs (5) and (6) are subsequently renumbered as (8) and (9).

Chapter IX

RADIOCOMMUNICATIONS

PART A – APPLICATION AND DEFINITIONS

Regulation 1 – Application

At the end of the existing paragraph (2), the following new sentence is added:

"Notwithstanding the provisions of paragraph (1), the Administration may permit the existing radiocommunication system to be continued to be used on board existing fishing vessels, providing the Administration is satisfied that it is equivalent to the requirements of this chapter."

Appendix

CERTIFICATES AND RECORD OF EQUIPMENT

The existing text of the Appendix is replaced by the following:

"**1 Form of Safety Certificate for Fishing Vessels**

INTERNATIONAL FISHING VESSEL SAFETY CERTIFICATE

This Certificate shall be supplemented by a
Record of Equipment

(Official seal) (State)

Issued under the provisions of the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977

under the authority of the Government of

_____
(name of the State)

by

_____
(person or organization authorized)

Particulars of vessel[1]

Name of vessel .....

Distinctive number or letters .....

Port of registry .....

Length (L) (regulation I/2(5))/
Gross tonnage (regulation I/2(23))[2] .....

Sea areas in which vessel is certified to operate (regulation IX/2) .....

Date of building or major conversion contract .....

Date on which keel was laid or vessel was at a similar stage of construction in accordance with regulation I/2(1)(c)(ii) or (1)(c)(iii) .....

Date of delivery or completion of major conversion .....

(1) Alternatively, the particulars of the vessel may be placed horizontally in boxes.

(2) Delete as appropriate.

THIS IS TO CERTIFY:

1.1 That the vessel has been surveyed in accordance with the requirements of regulations I/7, I/8 and I/9 of the Protocol.

1.2 That the vessel is/is not[2] subject to annual surveys required in regulations I/7(1)(d) and I/9(1)(d) of the Protocol.

2 That the survey showed that:

2.1 the condition of the structure, machinery and equipment as defined in regulation I/9 was satisfactory and the vessel complied with the relevant requirements of chapters II, III, IV, V and VI of the Protocol (other than those relating to fire safety systems and appliances and fire control plans);

2.2 the last two inspections of the outside of the vessel's bottom took place on

. . . . . and . . . . . .
(dates)

2.3 the vessel complied with the requirements of the Protocol as regards fire safety systems and appliances and fire control plans;

2.4 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Protocol;

2.5 the vessel was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Protocol;

2.6 the vessel complied with the requirements of the Protocol as regards radio installations;

2.7 the functioning of the radio installations used in life-saving appliances complied with the requirements of the Protocol;

2.8 the vessel complied with the requirements of the Protocol as regards shipborne navigational equipment, means of pilot transfer arrangements and nautical publications;

2.9 the vessel was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Protocol and the International Regulations for Preventing Collisions at Sea in force;

2.10 in all other respects the vessel complied with the relevant requirements of the Protocol.

3 That an International Fishing Vessel Exemption Certificate has/has not[2] been issued.

[2] Delete as appropriate.

This certificate is valid until . . . . . [(3)] subject to the annual, intermediate and periodical surveys and inspections of the outside of the vessel's bottom in accordance with regulations I/7, I/8 and I/9 of the Protocol.

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

. . . . . .
(Date of issue)

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

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

(3) Insert the date of expiry as specified by the Administration in accordance with regulation I/13(1) of the Protocol. The day and the month of this date correspond to the anniversary date as defined in regulation I/2([…]) of the Protocol, unless amended in accordance with regulation I/13(7).

Endorsement for annual and intermediate surveys relating to structure, machinery and equipment referred to in paragraph 2.1 of this certificate

THIS IS TO CERTIFY that, at a survey required by regulation I/9 of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

Annual survey:

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

(Seal or stamp of the authority, as appropriate)

Annual/Intermediate[(2)] survey:

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

(Seal or stamp of the authority, as appropriate)

Annual/Intermediate[(2)] survey:

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

(Seal or stamp of the authority, as appropriate)

Annual survey:

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

(Seal or stamp of the authority, as appropriate)

Annual/intermediate survey in accordance with regulation I/13(7)(c)

THIS IS TO CERTIFY that, at an annual/intermediate[(2)] survey in accordance with regulations I/9 and I/13(7)(c) of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

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

(Seal or stamp of the authority, as appropriate)

(2) Delete as appropriate.

Endorsement for inspections of the outside of the vessel's bottom[4]

THIS IS TO CERTIFY that, at an inspection required by regulation I/9 of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

First inspection:

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

(Seal or stamp of the authority, as appropriate)

Second inspection:

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

(Seal or stamp of the authority, as appropriate)

Endorsement for annual and periodical surveys relating to life-saving appliances and other equipment referred to in paragraphs 2.3, 2.4, 2.5, 2.8 and 2.9 of this certificate

THIS IS TO CERTIFY that, at a survey required by regulation I/7 of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

Annual survey:

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

(Seal or stamp of the authority, as appropriate)

Annual/Periodical[2] survey:

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

(Seal or stamp of the authority, as appropriate)

Annual/Periodical[2] survey:

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

(Seal or stamp of the authority, as appropriate)

Annual survey:

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

(Seal or stamp of the authority, as appropriate)

(4) Provision may be made for additional inspections.

(2) Delete as appropriate.

Annual/periodical survey in accordance with regulation I/13(7)(c)

THIS IS TO CERTIFY that, at an annual/periodical[2] survey in accordance with regulations I/7 and I/13(7)(c) of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

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

(Seal or stamp of the authority, as appropriate)

Endorsement for periodical surveys relating to radio installations referred to in paragraphs 2.6 and 2.7 of this certificate

THIS IS TO CERTIFY that, at a survey required by regulation I/8 of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

Periodical survey:

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

(Seal or stamp of the authority, as appropriate)

Periodical survey:

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

(Seal or stamp of the authority, as appropriate)

Periodical survey:

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

(Seal or stamp of the authority, as appropriate)

Periodical survey:

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

(Seal or stamp of the authority, as appropriate)

[2] Delete as appropriate.

Periodical survey in accordance with regulation I/13(7)(c)

THIS IS TO CERTIFY that, at a periodical survey in accordance with regulations I/8 and I/13(7)(c) of the Protocol, the vessel was found to comply with the relevant requirements of the Protocol.

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

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the certificate if valid for less than 5 years where regulation I/13(3) applies

The vessel complies with the relevant requirements of the Protocol, and this certificate shall, in accordance with regulation I/13(3) of the Protocol, be accepted as valid until . . . . . .
. . . . . .

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

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and regulation I/13(4) applies

The vessel complies with the relevant requirements of the Protocol, and this certificate shall, in accordance with regulation I/13(4) of the Protocol, be accepted as valid until . . . . . .
. . . . . .

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

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/13(5) applies

The certificate shall, in accordance with regulation I/13(5) of the Protocol, be accepted as valid until . . . . . .

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

(Seal or stamp of the authority, as appropriate)

Endorsement for advancement of anniversary date where regulation I/13(7) applies

In accordance with regulation I/13(7) of the Protocol, the new anniversary date is . . . . . .

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

(Seal or stamp of the authority, as appropriate)

In accordance with regulation I/13(7) of the Protocol, the new anniversary date is . . . . . .

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

(Seal or stamp of the authority, as appropriate)

2 Form of Exemption Certificate

INTERNATIONAL FISHING VESSEL EXEMPTION CERTIFICATE

(Official seal) (State)

Issued under the provisions of the
Torremolinos Protocol of 1993 relating to the
Torremolinos International Convention for the Safety of Fishing Vessels, 1977

under the authority of the Government of
.....
(name of the State)

by .....
(person or organization authorized)

Particulars of vessel[1]

Name of vessel .....
Distinctive number or letters .....
Port of registry .....
Length (L)/ Gross tonnage[2] .....

THIS IS TO CERTIFY:

That the vessel is, under the authority conferred by regulation .....
exempted from the requirements of .....
.....

Conditions, if any, on which the Exemption Certificate is granted:
.....
.....

This certificate is valid until ..... subject to the International Fishing Vessel Safety Certificate, to which this certificate is attached, remaining valid.

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

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

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

(1) Alternatively, the particulars of the ship may be placed horizontally in boxes.
(2) Delete as appropriate.

Endorsement to extend the certificate if valid for less than 5 years where regulation I/13(3) applies

This certificate shall, in accordance with regulation I/13(3) of the Protocol, be accepted as valid until . . . . . subject to the International Fishing Vessel Safety Certificate, to which this certificate is attached, remaining valid.

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

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and regulation I/13(4) applies

This certificate shall, in accordance with regulation I/13(4) of the Protocol, be accepted as valid until . . . . . subject to the International Fishing Vessel Safety Certificate, to which this certificate is attached, remaining valid.

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

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation I/13(5) applies

The certificate shall, in accordance with regulation I/13(5) of the Protocol, be accepted as valid until . . . . . subject to the . . . . . Certificate, to which this certificate is attached, remaining valid.

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

(Seal or stamp of the authority, as appropriate)

3 Form of Supplement to the International Fishing Vessel Safety Certificate

RECORD OF EQUIPMENT FOR THE INTERNATIONAL FISHING VESSEL SAFETY CERTIFICATE

This Record shall be permanently attached to the International Fishing Vessel Safety Certificate

RECORD OF EQUIPMENT FOR COMPLIANCE WITH THE TORREMOLINOS PROTOCOL OF 1993 RELATING TO THE TORREMOLINOS INTERNATIONAL CONVENTION FOR THE SAFETY OF FISHING VESSELS, 1977

1 Particulars of vessel

Name of vessel .....

Distinctive number or letters .....

Port of registry .....

Length (L)/ Gross tonnage[1] .....

2 Details of life-saving appliances

1	Total number of persons for whom life-saving appliances are provided	.....	
		Port side	Starboard side
2	Total number of lifeboats	.....	.....
2.1	Total number of persons accommodated by them	.....	.....
2.2	Number of partially enclosed lifeboats (regulation VII/18)	.....	.....
2.3	Number of totally enclosed lifeboats (regulation VII/19)	.....	.....

(1) Delete as appropriate.

3	Number of rescue boats	.....
3.1	Number of boats which are included in the total lifeboats shown above	.....
4	Liferafts	.....
4.1	Those for which approved launching appliances are required	.....
4.1.1	Number of liferafts	.....
4.1.2	Number of persons accommodated by them	.....
4.2	Those for which approved launching appliances are not required	.....
4.2.1	Number of liferafts	.....
4.2.2	Number of persons accommodated by them	.....
5	Number of lifebuoys	.....
6	Number of lifejackets	.....
7	Immersion suits	.....
7.1	Total number	.....
7.2	Number of suits complying with the requirements for lifejackets	.....
8	Number of thermal protective aids[(2)]	.....
9	Radio installations used in life-saving appliances	.....
9.1	Number of radar transponders	.....
9.2	Number of two-way VHF radiotelephone apparatus	.....

[(2)] Excluding those required by regulations VII/17(8)(xxxi), VII/20(5)(a)(xxiv) and VII/23(2)(b)(xiii).

3 Details of radio facilities

	Item	Actual provision
1	Primary systems	
1.1	VHF radio installation:	
1.1.1	DSC encoder	.....
1.1.2	DSC watch receiver	.....
1.1.3	Radiotelephony	.....
1.2	MF radio installation:	
1.2.1	DSC encoder	.....
1.2.2	DSC watch receiver	.....
1.2.3	Radiotelephony	.....
1.3	MF/HF radio installation:	
1.3.1	DSC encoder	.....
1.3.2	DSC watch receiver	.....
1.3.3	Radiotelephony	.....
1.3.4	Direct-printing radiotelegraphy	.....
1.4	INMARSAT ship earth station	.....
2	Secondary means of alerting	.....
3	Facilities for reception of maritime safety information	
3.1	NAVTEX receiver	.....
3.2	EGC receiver	.....
3.3	HF direct-printing radiotelegraph receiver	.....
4	Satellite EPIRB	
4.1	COSPAS-SARSAT	.....
4.2	INMARSAT	.....
5	VHF EPIRB	.....
6	Vessel's radar transponder	.....

4	Methods used to ensure availability of radio facilities (regulation IX/14)	
4.1	Duplication of equipment	.....
4.2	Shore-based maintenance	.....
4.3	At-sea maintenance capability	.....

THIS IS TO CERTIFY that this Record is correct in all respects

Issued at .....
(Place of issue of the Record)

....
(Date of issue) (Signature of duly authorized official issuing the Record)

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

***

ANNEX 19

DRAFT ASSEMBLY RESOLUTION

ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

THE ASSEMBLY,

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

NOTING proposed amendments to shift the Winter Seasonal Zone off the southern tip of Africa further southward by 50 miles,

NOTING ALSO that the Maritime Safety Committee, at its [ninetieth session], adopted the proposed amendments in accordance with article 29(3)(a) of the International Convention on Load Lines, 1966 (1966 LL Convention),

HAVING CONSIDERED the proposed amendments to regulation 47 of the 1966 LL Convention,

1. ADOPTS, in accordance with article 29(3)(b) of the 1966 LL Convention, the amendments to regulation 47 set out in the Annex to the present resolution;

2. REQUESTS the Secretary-General, in accordance with article 29(3)(b) of the 1966 LL Convention, to transmit certified copies of the present resolution and its annex to all Contracting Governments to the said Convention, for consideration and acceptance, and also to transmit copies to all Members of the Organization;

3. URGES all Governments concerned to accept the amendments at the earliest possible date;

4. RESOLVES that, should the entry into force of the aforementioned amendments take place following their unanimous acceptance in accordance with article 29(2) of the 1966 LL Convention, prior to entry into force based on their acceptance as requested by this resolution, this resolution shall become invalid.

ANNEX

AMENDMENTS TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

ANNEX II
Zones, areas and seasonal periods

Regulation 47 – Southern Winter Seasonal Zone

The existing text of regulation 47 is replaced by the following:

"The northern boundary of the Southern Winter Seasonal Zone is

the rhumb line from the east coast of the American continent at Cape Tres Puntas to the point latitude 34° S, longitude 50° W, thence the parallel of latitude 34° S to longitude 16° E, thence the rhumb line to the point latitude 36° S, longitude 20° E, thence the rhumb line to the point latitude 34° S, longitude 30° E, thence along the rhumb line to the point latitude 35° 30' S, longitude 118° E, and thence the rhumb line to Cape Grim on the north-west coast of Tasmania; thence along the north and east coasts of Tasmania to the southernmost point of Bruny Island, thence the rhumb line to Black Rock Point on Stewart Island, thence the rhumb line to the point latitude 47° S, longitude 170° E, thence along the rhumb line to the point latitude 33° S, longitude 170° W, and thence the parallel of latitude 33° S to the west coast of the American continent.

Seasonal periods:

WINTER: 16 April to 15 October
SUMMER: 16 October to 15 April"

***

ANNEX 20

DRAFT AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

ANNEX II
Zones, areas and seasonal periods

Regulation 47 – Southern Winter Seasonal Zone

The existing text of regulation 47 is replaced by the following:

"The northern boundary of the Southern Winter Seasonal Zone is

the rhumb line from the east coast of the American continent at Cape Tres Puntas to the point latitude 34° S, longitude 50° W, thence the parallel of latitude 34° S to longitude 16° E, thence the rhumb line to the point latitude 36° S, longitude 20° E, thence the rhumb line to the point latitude 34° S, longitude 30° E, thence along the rhumb line to the point latitude 35° 30' S, longitude 118° E, and thence the rhumb line to Cape Grim on the north-west coast of Tasmania; thence along the north and east coasts of Tasmania to the southernmost point of Bruny Island, thence the rhumb line to Black Rock Point on Stewart Island, thence the rhumb line to the point latitude 47° S, longitude 170° E, thence along the rhumb line to the point latitude 33° S, longitude 170° W, and thence the parallel of latitude 33° S to the west coast of the American continent.

Seasonal periods:

WINTER: 16 April to 15 October
SUMMER: 16 October to 15 April"

***

ANNEX 21

REVISED TERMS OF REFERENCE FOR THE STW SUB-COMMITTEE

1 Under the direct instructions of the Maritime Safety Committee and as may be requested by the Marine Environment Protection Committee, the Sub-Committee on Standards of Training and Watchkeeping (STW) will consider matters related to the following subjects, including the development of any necessary amendments to relevant conventions and other mandatory and non-mandatory instruments, as well as the preparation of new mandatory and non-mandatory instruments, guidelines and recommendations, taking into account the role of such measures in the protection of the marine environment, for consideration by the Committees, as appropriate:

.1 minimum international standards for training and certification of seafarers;

.2 principles of safe watchkeeping;

.3 minimum international standards for training and certification of fishing vessel personnel;

.4 maritime safety, security, and environmental protection culture in all ship operations;

.5 review of the principles of safe manning of ships and training issues related to the human element taking into account technological, organizational and social developments;

.6 promotion of awareness of lessons learnt from the analysis of accident and incident reports and information;

.7 review, updating and revision of IMO model courses;

.8 promotion and implementation of the Organization's human element strategy, including the chain(s) of responsibility in maritime safety, security and environmental protection;

.9 coordination with relevant UN bodies, IGOs and NGOs on international standards related to the training and certification of seafarers;

.10 revision/development of relevant guidelines relating to training of seafarers issues, such as maritime safety, security and protection of the marine environment; and

.11 any other relevant issues referred to it by the Maritime Safety Committee, the Marine Environment Protection Committee and their subsidiary bodies, as authorized or directed by these Committees.

2 The conventions and other mandatory instruments referred to above include, as a minimum:

.1 1978 STCW Convention;

.2 1995 STCW-F Convention;

.3 1974 SOLAS Convention and associated Codes (as appropriate) and the 1988 Protocol relating thereto;

.4 MARPOL 73/78 (as appropriate);

.5 1977 Torremolinos International Convention for the Safety of Fishing Vessels, as modified by the 1993 Protocol relating thereto; ~~and~~

.6 STCW Code;

.7 1966 Load Line Convention and the 1988 Protocol relating thereto; and

.8 1969 Tonnage Convention.

3 The non-mandatory instruments, which the Sub-Committee may be called upon to review, include, as a minimum:

.1 Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code); and

.2 Principles of Safe Manning.

***

ANNEX 22

DRAFT AMENDMENTS TO SOLAS CHAPTER VI

CHAPTER VI

CARRIAGE OF CARGOES

Regulation 5-2

1 The following new regulation 5-2 is added after existing regulation 5-1:

"**Regulation 5-2**
Prohibition of the blending of bulk liquid cargoes during the sea voyage

1 The physical blending of bulk liquid cargoes during a sea voyage is prohibited. Physical blending refers to the process whereby the ship's cargo pumps and pipelines are used to internally circulate two or more different cargoes with the intent to achieve a cargo with a new product designation. This prohibition does not preclude the master from undertaking cargo transfers for the safety of the ship or protection of the marine environment.

2 The above prohibition does not apply to the blending of products for use in the search and exploitation of sea-bed mineral resources on board ships used to facilitate such operations."

***

ANNEX 23

DRAFT ASSEMBLY RESOLUTION

ADOPTION OF THE REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

THE ASSEMBLY,

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

RECALLING ALSO that it adopted, by resolution A.864(20), the Recommendations for entering enclosed spaces aboard ships, incorporating therein recommendations for entering cargo spaces, tanks, pump-rooms, fuel tanks, cofferdams, duct keels, ballast tanks and similar enclosed spaces,

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

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

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its eighty-ninth session,

1. ADOPTS the Revised Recommendations for entering enclosed spaces aboard ships, set out in the Annex to the present resolution;

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

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

4. REVOKES resolution A.864(20).

ANNEX

REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

PREAMBLE

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

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

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

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

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

1 INTRODUCTION

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

2 DEFINITIONS

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

.1 limited openings for entry and exit;

.2 inadequate ventilation; and

.3 is not designed for continuous worker occupancy,

and includes, but is not limited to, cargo spaces, double bottoms, fuel tanks, ballast tanks, cargo pump-rooms, cargo compressor rooms, cofferdams, chain lockers, void spaces, duct keels, inter-barrier spaces, boilers, engine crankcases, engine scavenge air receivers, sewage tanks, and adjacent connected spaces. This list is not exhaustive and a list should be produced on a ship-by-ship basis to identify enclosed spaces.

2.2 *Adjacent connected space* means a normally unventilated space which is not used for cargo but which may share the same atmospheric characteristics with the enclosed space such as, but not limited to, a cargo space accessway.

2.3 *Competent person* means a person with sufficient theoretical knowledge and practical experience to make an informed assessment of the likelihood of a dangerous atmosphere being present or subsequently arising in the space.

2.4 *Responsible person* means a person authorized to permit entry into an enclosed space and having sufficient knowledge of the procedures to be established and complied with on board, in order to ensure that the space is safe for entry.

2.5 *Attendant* means a person who is suitably trained within the safety management system, maintains a watch over those entering the enclosed space, maintains communications with those inside the space and initiates the emergency procedures in the event of an incident occurring.

3 SAFETY MANAGEMENT FOR ENTRY INTO ENCLOSED SPACES

3.1 The safety strategy to be adopted in order to prevent accidents on entry to enclosed spaces should be approached in a comprehensive manner by the company.

3.2 The company should ensure that the procedures for entering enclosed spaces are included among the key shipboard operations concerning the safety of the personnel and the ship, in accordance with paragraph 7 of the International Safety Management (ISM) Code.

3.3 The company should elaborate a procedural implementation scheme which provides for training in the use of atmospheric testing equipment in such spaces and a schedule of regular onboard drills for crews.

3.3.1 Competent and responsible persons should be trained in enclosed space hazard recognition, evaluation, measurement, control and elimination, using standards acceptable to the Administration.

3.3.2 Crew members should be trained, as appropriate, in enclosed space safety, including familiarization with onboard procedures for recognizing, evaluating and controlling hazards associated with entry into enclosed spaces.

3.4 Internal audits by the company and external audits by the Administration of the ship's safety management system should verify that the established procedures are complied with in practice and are consistent with the safety strategy referred to in paragraph 3.1.

4 ASSESSMENT OF RISK

4.1 The company should ensure that a risk assessment is conducted to identify all enclosed spaces on board the ship. This risk assessment should be periodically revisited to ensure its continued validity.

4.2 In order to ensure safety, a competent person should always make a preliminary assessment of any potential hazards in the space to be entered, taking into account previous cargo carried, ventilation of the space, coating of the space and other relevant factors. The competent person's preliminary assessment should determine the potential for the presence of an oxygen deficient, oxygen enriched, flammable or toxic atmosphere. The competent person should bear in mind that the ventilation procedures for an adjacent connected space may be different from the procedures for the ventilation of the enclosed space itself.

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

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

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

.3 a risk to health or life is identified.

4.4 Where the preliminary assessment indicates minimal risk to health or life or potential for a risk to arise during the course of work in the space, the precautions described in sections 5, 6, 7 and 8 should be followed, as appropriate.

4.5 Where the preliminary assessment identifies a risk to life or health, if entry is to be made, the additional precautions specified in section 9 should also be followed.

4.6 Throughout the assessment process, there should be an assumption that the space to be entered is considered to be hazardous until positively proved to be safe for entry.

5 AUTHORIZATION OF ENTRY

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

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

6 GENERAL PRECAUTIONS

6.1 Entry doors or hatches leading to enclosed spaces should at all times be secured against entry, when entry is not required.

6.2 A door or hatch cover which is opened to provide natural ventilation of an enclosed space may, wrongly, be taken to be an indication of a safe atmosphere and therefore, an attendant may be stationed at the entrance or the use of a mechanical barrier, such as a rope or chain positioned across the opening with an attached warning sign, could prevent such accidental entry.

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

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

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

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

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

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

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

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

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

.9 a permit has been issued, authorizing entry.

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

6.4 Only trained personnel should be assigned the duties of entering, functioning as attendants or functioning as members of rescue teams. Ships' crews with rescue and first aid duties should be drilled periodically in rescue and first aid procedures. Training should include as a minimum:

.1 identification of the hazards likely to be faced during entry into enclosed spaces;

.2 recognition of the signs of adverse health effects caused by exposure to hazards during entry; and

.3 knowledge of personal protective equipment required for entry.

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

7 TESTING THE ATMOSPHERE

7.1 Appropriate testing of the atmosphere of a space should be carried out with properly calibrated equipment by persons trained in the use of the equipment. The manufacturers' instructions should be strictly followed. Testing of the space should be carried out before any person enters the space and at regular intervals thereafter until all work is completed. Where appropriate, the testing of the space should be carried out at as many different levels as is necessary to obtain a representative sample of the atmosphere in the space. In some cases it may be difficult to test the atmosphere throughout the enclosed space without entering the space (e.g., the bottom landing of a stairway) and this should be taken into account when assessing the risk to personnel entering the space. The use of flexible hoses or fixed sampling lines, which reach remote areas within the enclosed space, may allow for safe testing without having to enter the space.

7.2 For entry purposes, steady readings of all of the following should be obtained:

.1 21% oxygen by volume by oxygen content meter;

Note: National requirements may determine the safe atmosphere range.

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

.3 not more than 50% of the occupational exposure limit (OEL)* of any toxic vapours and gases.

If these conditions cannot be met, additional ventilation should be applied to the space and re-testing should be conducted after a suitable interval.

7.3 Any gas testing should be carried out with ventilation to the enclosed space stopped, and after conditions have stabilized, in order to obtain accurate readings.

7.4 Where the preliminary assessment has determined that there is potential for the presence of toxic gases and vapours, appropriate testing should be carried out, using fixed or portable gas or vapour detection equipment. The readings obtained by this equipment should be below the occupational exposure limits for the toxic gases or vapours given in accepted national or international standards, in accordance with paragraph 7.2. It should be noted that testing for flammability or oxygen content does not provide a suitable means of measuring for toxicity, nor *vice versa*.

7.5 It should be emphasized that the internal structure of the space, cargo, cargo residues and tank coatings may also present situations where oxygen deficient areas may exist, and should always be suspected, even when an enclosed space has been satisfactorily tested as being suitable for entry. This is particularly the case for spaces where the path of the supply and outlet ventilation is obstructed by structural members or cargo.

8 PRECAUTIONS DURING ENTRY

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

8.2 Persons entering enclosed spaces should be provided with calibrated and tested multi-gas detectors that monitor the levels of oxygen, carbon monoxide and other gases as appropriate.

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

8.4 Particular care should be exhibited when working on pipelines and valves within the space. If conditions change during the work, increased frequency of testing of the atmosphere should be performed. Changing conditions that may occur include increasing

* It should be noted that the term Occupational Exposure Limit (OEL) includes the Permissible Exposure Limit (PEL), Maximum Admissible Concentration (MAC) and Threshold Limit Value (TLV) or any other internationally recognized terms.

ambient temperatures, the use of oxygen-fuel torches, mobile plant, work activities in the enclosed space that could evolve vapours, work breaks, or if the ship is ballasted or trimmed during the work.

8.5 In the event of an emergency, under no circumstances should the attending crew member enter the space before help has arrived and the situation has been evaluated to ensure the safety of those entering the space to undertake rescue operations. Only properly trained and equipped personnel should perform rescue operations in enclosed spaces.

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

9.1 Spaces that have not been tested should be considered unsafe for persons to enter. If the atmosphere in an enclosed space is suspected or known to be unsafe, the space should only be entered when no practical alternative exists. Entry should only be made for further testing, essential operation, safety of life or safety of a ship. The number of persons entering the space should be the minimum compatible with the work to be performed.

9.2 Suitable breathing apparatus, e.g., of the air-line or self-contained type, should always be worn, and only personnel trained in its use should be allowed to enter the space. Air-purifying respirators should not be used as they do not provide a supply of clean air from a source independent of the atmosphere within the space.

9.3 Persons entering enclosed spaces should be provided with calibrated and tested multi-gas detectors that monitor the levels of oxygen, carbon monoxide and other gases as appropriate.

9.4 Rescue harnesses should be worn and, unless impractical, lifelines should be used.

9.5 Appropriate protective clothing should be worn, particularly where there is any risk of toxic substances or chemicals coming into contact with the skin or eyes of those entering the space.

9.6 The advice in paragraph 8.5 concerning emergency rescue operations is particularly relevant in this context.

10 HAZARDS RELATED TO SPECIFIC TYPES OF SHIPS OR CARGO

10.1 Dangerous goods in packaged form

10.1.1 The atmosphere of any space containing dangerous goods may put at risk the health or life of any person entering it. Dangers may include flammable, toxic or corrosive gases or vapours that displace oxygen, residues on packages and spilled material. The same hazards may be present in spaces adjacent to the cargo spaces. Information on the hazards of specific substances is contained in the International Maritime Dangerous Goods (IMDG) Code, the Emergency Procedures for Ships Carrying Dangerous Goods (EMS) and Material Safety Data Sheets (MSDS)[*]. If there is evidence or suspicion that leakage of dangerous substances has occurred, the precautions specified in section 9 should be followed.

[*] Refer to the Recommendations for material safety data sheets (MSDS) for MARPOL Annex I oil cargo and oil fuel (resolution MSC.286(86)).

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

10.2 Liquid bulk

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

10.3 Solid bulk

On ships carrying solid bulk cargoes, dangerous atmospheres may develop in cargo spaces and adjacent spaces. The dangers may include flammability, toxicity, oxygen depletion or self-heating, as identified in the shipper's declaration. For additional information, reference should be made to the International Maritime Solid Bulk Cargoes (IMSBC) Code.

10.4 Use of Nitrogen as an inert gas*

Nitrogen is a colourless and odourless gas that, when used as an inert gas, causes oxygen deficiency in enclosed spaces and at exhaust openings on deck during purging of tanks and void spaces and use in cargo holds. It should be noted that one deep breath of 100% nitrogen gas will be fatal.

10.5 Oxygen-depleting cargoes and materials

A prominent risk with such cargoes is oxygen depletion due to the inherent form of the cargo, for example, self-heating, oxidation of metals and ores or decomposition of vegetable oils, fish oils, animal fats, grain and other organic materials or their residues. The materials listed below are known to be capable of causing oxygen depletion. However, the list is not exhaustive. Oxygen depletion may also be caused by other materials of vegetable or animal origin, by flammable or spontaneously combustible materials and by materials with a high metal content, including, but not limited to:

.1 grain, grain products and residues from grain processing (such as bran, crushed grain, crushed malt or meal), hops, malt husks and spent malt;

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

.3 copra;

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

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

.6 fish, fishmeal and fishscrap;

* Refer to the Guidelines on tank entry for tankers using nitrogen as an inerting medium (MSC.1/Circ.1401).

.7 guano;

.8 sulphidic ores and ore concentrates;

.9 charcoal, coal, lignite and coal products;

.10 direct reduced iron (DRI);

.11 dry ice;

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

.13 scrap metal.

10.6 Fumigation

When a ship is fumigated, the detailed recommendations contained in the Recommendations on the safe use of pesticides in ships (MSC.1/Circ.1358) should be followed. Spaces adjacent to fumigated spaces should be treated as if fumigated.

11 CONCLUSION

Failure to observe simple procedures can lead to persons being unexpectedly overcome when entering enclosed spaces. Observance of the principles and procedures outlined above will form a reliable basis for assessing risks in such spaces and for taking necessary precautions.

APPENDIX

EXAMPLE OF AN ENCLOSED SPACE ENTRY PERMIT

This permit relates to entry into any enclosed space and should be completed by the master or responsible person and by any persons entering the space, e.g., competent person and attendant.

GENERAL

Location/name of enclosed space

Reason for entry .....

This permit is valid from:_____hrs Date .....
to:_____hrs Date .....
(See Note 1)

SECTION 1 – PRE-ENTRY PREPARATION

(To be checked by the master or nominated responsible person)

	Yes	No
• Has the space been thoroughly ventilated by mechanical means?	.....	.....
• Has the space been segregated by blanking off or isolating all connecting pipelines or valves and electrical power/equipment?	.....	.....
• Has the space been cleaned where necessary?	.....	.....
• Has the space been tested and found safe for entry? (See note 2)	.....	.....
• Pre-entry atmosphere test readings:		
- oxygen .....% vol (21%)* By:		
- hydrocarbon .....% LFL (less than 1%)		
- toxic gases ..... ppm (less than 50% OEL of the specific gas) Time: (See note 3)		
• Have arrangements been made for frequent atmosphere checks to be made while the space is occupied and after work breaks?	.....	.....
• Have arrangements been made for the space to be continuously ventilated throughout the period of occupation and during work breaks?	.....	.....
• Are access and illumination adequate?	.....	.....

* Note that national requirements may determine the safe atmosphere range.

	Yes	No
• Is rescue and resuscitation equipment available for immediate use by the entrance to the space?	"	"
• Has an attendant been designated to be in constant attendance at the entrance to the space?	"	"
• Has the officer of the watch (bridge, engine-room, cargo control room) been advised of the planned entry?	"	"
• Has a system of communication between all parties been tested and emergency signals agreed?	"	"
• Are emergency and evacuation procedures established and understood by all personnel involved with the enclosed space entry?	"	"
• Is all equipment used in good working condition and inspected prior to entry?	"	"
• Are personnel properly clothed and equipped?	"	"

SECTION 2 – PRE-ENTRY CHECKS
(To be checked by each person entering the space)

	Yes	No
• I have received instructions or permission from the master or nominated responsible person to enter the enclosed space	"	"
• Section 1 of this permit has been satisfactorily completed by the master or nominated responsible person	"	"
• I have agreed and understand the communication procedures	"	"
• I have agreed upon a reporting interval of ..... minutes	"	"
• Emergency and evacuation procedures have been agreed and are understood	"	"
• I am aware that the space must be vacated immediately in the event of ventilation failure or if atmosphere tests show a change from agreed safe criteria	"	"

SECTION 3 – BREATHING APPARATUS AND OTHER EQUIPMENT
(To be checked jointly by the master or nominated responsible person and the person who is to enter the space)

	Yes	No
• Those entering the space are familiar with any breathing apparatus to be used	.....	.....
• The breathing apparatus has been tested as follows:		
- gauge and capacity of air supply	.....	.....
- low pressure audible alarm if fitted	.....	.....
- face mask – under positive pressure and not leaking	.....	.....
• The means of communication has been tested and emergency signals agreed	.....	.....
• All personnel entering the space have been provided with rescue harnesses and, where practicable, lifelines	.....	.....

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

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

Attendant ..... Date ..... Time

Person entering the space..... Date ..... Time

SECTION 4 – PERSONNEL ENTRY
(To be completed by the responsible person supervising entry)

Names .....

Time in ..... Time out .....

SECTION 5 – COMPLETION OF JOB
(To be completed by the responsible person supervising entry)

• Job completed	Date	Time .....
• Space secured against entry	Date	Time .....
• The officer of the watch has been duly informed	Date	Time.....

Signed upon completion of sections 4 and 5 by:

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

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

Notes:

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

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

3 Tests for specific toxic contaminants, such as benzene or hydrogen sulphide, should be undertaken depending on the nature of the previous contents of the space.

_____