

標題

MSC79 での審議結果の紹介

# ClassNK

## テクニカル インフォメーション

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各位

2004 年 12 月 1 日から 10 日にかけて開催された IMO 第 79 回海上安全委員会 (MSC79) の審議結果について次のとおりご紹介致します。

### 1. 条約等強制要件の採択～バルクキャリアの安全対策

1998 年から始まったバルクキャリアの安全性の議論は、6 年間の検討を経て今回の MSC79 で終了しました。バルクキャリアのための追加安全措置を規定する改正 SOLAS XII 章及び Free-fall Lifeboat の搭載を強制化する SOLAS III/31 規則改正が採択されました。発効は 2006 年 7 月 1 日を予定しています。

#### (1) SOLAS XII 章の改正 (添付 1 参照)

改正 SOLAS XII 章の主な改正点を以下に紹介します。

##### (i) バルクキャリアの定義の見直し(Reg.1)

SOLAS XII 章適用上のバルクキャリアの定義は、「鉱石運搬船及び兼用船を含む主として乾貨物をばら積みで運搬する船舶」となります。SOLAS IX 章でバルクキャリアとして定義されている Top side tank / Bilge hopper tank を有する「所謂バルクキャリア」だけでなく、断面形状に関わらず「主に乾貨物をばら積みで運搬する船舶」がバルクキャリアとして含まれました。

(備考)

これまで SOLAS XII 章の適用対象外であったが今回の規則改正によりバルクキャリアとして定義される船舶であっても 2006 年 7 月 1 日以前に建造された船舶(チップ船、オープンタイプバルクキャリア、一般貨物船等)は、改正 SOLAS XII 章を適用しなくても良い。

##### (ii) 二重船側バルクキャリアの復原性及び強度要件(Reg.4.2 & 5.2)

150m 以上で二重船側幅が B/5 又は 11.5m のうちどちらか小さい方未満の新造二重船側バルクキャリアは、比重 1,000kg/m<sup>3</sup> 以上の貨物を運送するために設計された場合、損傷時復原性要件及び損傷時強度要件が要求されます。

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#### NOTES:

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- (iii) 二重船側区画の要件(Reg.6.2 - 6.4)  
 150m 以上の新造二重船側バルクキャリアに対する二重船側区画の要件は以下のとおりです。
- (a) 二重船側の船側外板と内側板の最小幅は 1,000mm
  - (b) 二重船側内の最小クリアランスは交通性を考慮し 600mm
  - (c) フレームが横式／縦通式構造の場合フレーム間のクリアランスは 600mm／800mm 以上
  - (d) 二重船側スペース及び海水バラストタンクへの塗装
  - (e) 二重船側スペース内への貨物積載の禁止
- (iv) 構造強度の冗長性等(Reg.6.5)  
 二重船側の強制化はなくなったものの、構造強度の強化を図るべく、1 本の肋骨が損傷しても構造全体の損傷につながることはないように貨物倉の構造は設計されなければならないという冗長性の規定が新たに追加されました。比重 1,000kg/m<sup>3</sup> 以上のばら積み貨物を積載する長さ 150m 以上の新造バルクキャリアに要求されます。
- (v) ハッチカバーの点検及び保守(Reg.7.2)  
 バルクキャリアのハッチカバーの点検及び保守に関する船主のための基準が作成され、SOLAS 上強制決議として採択されました(決議 MSC.169(79) “Standards for Owners’ Inspection and Maintenance of Bulk Carrier Hatch Covers”)
- (vi) 復原性計算機(Reg.11.3)  
 150m 未満の新造バルクキャリアは、非損傷時復原性を計算できるコンピューターの搭載が要求されます。
- (vii) 隔倉積み禁止(Reg.14)  
 長さ150m 以上の密度1,780kg/m<sup>3</sup> 以上の固体ばら積み貨物を運送する現存単船側バルクキャリアは、「SOLAS XII/5.1 規則(浸水時強度要件)」及び「IACS UR S12(rev.2.1)又は UR S31(船側肋骨強度要件)」の両方に適合していなければ、船齢10 年以降、Deadweight の90%に相当する喫水以上において如何なる貨物倉を空倉状態で航行することが禁止されます。空倉状態とは、当該貨物倉の最大積付け重量の10%未満の積付け状態をいいます。  
 また、これに関連し、IACS UR S12(rev.2.1)及びUR S31 がIMO の決議として採択されました(決議 MSC.168(79) “Standards and Criteria for Side Structures of Bulk Carriers of Single-side Skin Construction”)
- (2) Free-fall Lifeboat の強制化(添付1 参照)  
 2006 年7 月1 日以降に建造される新造バルクキャリア(SOLAS IX 章で定義されるバルクキャリア)に Free-fall Lifeboat の搭載を強制化する SOLAS III/32 規則が今回採択されました。
- (3) バルクキャリア定義の新設(添付1 参照)  
 SOLAS XII 章のバルクキャリア定義の改正に関連して、SOLAS II-1 章に SOLAS XII 章と同様の定義が追加されました。

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## 2. 条約等強制要件の採択～その他

以下の SOLAS 条約、IBC Code、IGC Code 改正案等が採択されました。IBC コードの改正を除いて、発効は 2006 年 7 月 1 日を予定しています。

### (1) S-VDR の現存船適用(添付 1 参照)

2002 年 7 月 1 日以前に建造された現存貨物船に対する S-VDR(簡易型航海データ記録装置)搭載の義務付けする SOLAS V/20 規則改正案が採択されました。実施時期は以下のとおりとなっています。

- 20,000GT 以上の現存貨物船:

2006 年 7 月 1 日以降の最初の scheduled dry docking。ただし、2009 年 7 月 1 日まで。

- 3,000GT~20,000GT の現存貨物船:

2007 年 7 月 1 日以降の最初の scheduled dry docking。ただし、2010 年 7 月 1 日まで。

なお、2 年以内に廃船を予定している船舶については、主管庁免除の規定があります。

### (2) 電気設備関連(添付 1 参照)

油タンカー、ケミカルタンカー及びガスキャリアに対する電気設備の要件が見直され、SOALS II-1/45.11 規則、IBC コード 10 章、IGC コード 10 章の改正が採択されました。

改正内容は、IEC 60092-502:1999 'Electrical installations in ships-Tankers' の基準を引用するものとなっており、2007 年 1 月 1 日以降建造の新造船に適用されます。

なお、昨年 10 月に開催された MEPC52 で IBC コードの改正は採択されましたが、電気設備及びその他安全要件について今回の MSC79 で検討が行われ、IBC コードの全面改正が正式に採択されました。

### (3) 水密扉の水密試験(添付 1 参照)

旅客船及び貨物船の水密扉に対する水密試験方法として、プロトタイプ試験を認める SOLAS II-1/18 規則の改正案が採択され、船上での水圧試験要件が緩和されました。プロトタイプ試験は、水密扉が設置される箇所にかかる水圧と同等の水圧で試験を行う必要があります。

### (4) ジャイロコンパス(添付 1 参照)

主操舵場所において、操舵手がジャイロコンパス等を明確に読みとれるようにジャイロコンパスを配置するための SOLAS V/19.2.5 規則の改正案が採択されました。これは、SOLAS 2000 年改正で抜け落ちてしまったものを戻したものとなっています。

### (5) FTP コードの改正(添付 1 参照)

火災試験において発生する各種ガス濃度の限界値が定められている FTP Code/part 2, 2.6.2 規則について、床表面材の SO<sub>2</sub> ガス濃度の限界値(200ppm)を追加する改正案が採択されました。

### (6) 2000HSC コードの改正

損傷後の浮力区画に対する規定を定める 2000 HSC Code/第 2.2.1.1 規則の改正案が採択されました。

### (7) 証書様式の改正

証書様式が改正されました。

(i) 条約証書に登録検査若しくは前回の更新検査完了日を明示するために、全条証書の様式を改正

(ii) 「S-VDR」及び「IAMSAR Manual 第 3 巻」に関する条約改正が行われたことにより、貨物船安全証書及び貨物船安全設備証書の追補にこれら 2 項目を追加

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### 3. MSC80 に採択予定の条約規則改正

本年 5 月開催予定の MSC80 において採択が予定されている条約規則改正案が承認されました。

- (1) 損傷時復原性の要件を定める SOLAS II-1 章の改正案
- (2) 設計図等の船舶への搭載を強制化するための SOLAS II-1/3-7 規則案
- (3) 係船及び曳航装置の搭載を強制化する SOLAS II-1/3-8 規則案
- (4) バルクキャリア以外の単船側構造貨物倉を有する単船倉貨物船に対して浸水警報装置の設置を要求する SOLAS II-1/23-3 規則案。なお、本規則は現存船にも適用される。
- (5) AIS 情報を OOW(Officer On Watch)に対し与える SOLAS V/19.2.4.8 規則案。
- (6) ダブルハルタンカーの検査強化要件及び CAS(Condition Assessment Scheme)の要素を取り入れた IMO Resolution A.744(18)の改正案

### 4. BC コード改正

固体ばら積み貨物の安全運送を向上することを目的とする荷役及び運送中の手順及び注意を与える指針となる BC コード (Code of Safe Practice for Solid Bulk Cargoes) の全面改正案が今回の MSC79 で採択されました。

前回の MSC78 において、BC コードを強制化する方針が合意されており、BC コードのすべてを強制化するかある部分を強制化するかは今後 DSC 小委員会で審議を重ねて結論を出すことになっています。なお、強制化の時期については 2011 年 1 月を目標にスケジュールが組まれています。

なお、本件に関してご不明な点は、以下の部署にお問い合わせください。

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添付:

1. SOLAS 改正(決議 MSC.170(79))

## ANNEX

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

## CHAPTER II-1

**CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY, MACHINERY  
AND ELECTRICAL INSTALLATIONS**

**Regulation 2 - Definitions**

- 1 The following new paragraph 14 is added after existing paragraph 13:

“14 *Bulk carrier* means a bulk carrier as defined in regulation XII/1.1.”

**Regulation 18 – Construction and initial tests of watertight doors, sidescuttles, etc., in passenger ships and cargo ships**

- 2 Paragraph 2 of the regulation is replaced by the following:

“2 In passenger ships and cargo ships watertight doors shall be tested by water pressure to a head up to the bulkhead deck or freeboard deck respectively. Where testing of individual doors is not carried out because of possible damage to insulation or outfitting items, testing of individual doors may be replaced by a prototype pressure test of each type and size of door with a test pressure corresponding at least to the head required for the intended location. The prototype test shall be carried out before the door is fitted. The installation method and procedure for fitting the door on board shall correspond to that of the prototype test. When fitted on board, each door shall be checked for proper seating between the bulkhead, the frame and the door.”

**Regulation 45 - Precautions against shock, fire and other hazards of electrical origin**

- 3 After the heading the following words are added:

“(Paragraphs 10 and 11 of this regulation apply to ships constructed on or after 1 January 2007)”.

- 4 Existing paragraph 10 is replaced by the following:

“10 No electrical equipment shall be installed in any space where flammable mixtures are liable to collect, e.g. in compartments assigned principally to accumulator batteries, in paint lockers, acetylene stores or similar spaces, unless the Administration is satisfied that such equipment is:

- .1 essential for operational purposes;
- .2 of a type which will not ignite the mixture concerned;

- .3 appropriate to the space concerned; and
  - .4 appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered.”
- 5 The following new paragraph 11 is added after paragraph 10, as amended:
- “11 In tankers, electrical equipment, cables and wiring shall not be installed in hazardous locations unless it conforms with standards not inferior to those acceptable to the Organization.\* However, for locations not covered by such standards, electrical equipment, cables and wiring which do not conform to the standards may be installed in hazardous locations based on a risk assessment to the satisfaction of the Administration, to ensure that an equivalent level of safety is assured.”
- 6 Existing paragraph 11 is renumbered as paragraph 12.

### CHAPTER III

#### LIFE-SAVING APPLIANCES AND ARRANGEMENTS

##### Regulation 31 - Survival craft and rescue boats

- 7 The following new paragraph 1.8 is added after existing paragraph 1.7:
- “1.8 Notwithstanding the requirements of paragraph 1.1, bulk carriers as defined in regulation IX/1.6 constructed on or after 1 July 2006 shall comply with the requirements of paragraph 1.2.”

### CHAPTER V

#### SAFETY OF NAVIGATION

##### Regulation 19 – Carriage requirements for shipborne navigational systems and equipment

- 8 In paragraph 2.5, the existing text of subparagraph .1 is replaced by the following:
- “.1 a gyro compass, or other means, to determine and display their heading by shipborne non-magnetic means, being clearly readable by the helmsman at the main steering position. These means shall also transmit heading information for input to the equipment referred in paragraphs 2.3.2, 2.4 and 2.5.5;”

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\* Refer to the standards published by the International Electrotechnical Commission, IEC 60092-502:1999 ‘Electrical installations in ships – Tankers’.

## **Regulation 20 – Voyage data recorders**

9 The following new paragraph 2 is added after existing paragraph 1:

“2 To assist in casualty investigations, cargo ships, when engaged on international voyages, shall be fitted with a VDR which may be a simplified voyage data recorder (S-VDR)\*\* as follows:

- .1 in the case of cargo ships of 20,000 gross tonnage and upwards constructed before 1 July 2002, at the first scheduled dry-docking after 1 July 2006 but not later than 1 July 2009;
- .2 in the case of cargo ships of 3,000 gross tonnage and upwards but less than 20,000 gross tonnage constructed before 1 July 2002, at the first scheduled dry-docking after 1 July 2007 but not later than 1 July 2010; and
- .3 Administrations may exempt cargo ships from the application of the requirements of subparagraphs .1 and .2 when such ships will be taken permanently out of service within two years after the implementation date specified in subparagraphs .1 and .2 above.”

10 Existing paragraph 2 is renumbered as paragraph 3.

## **CHAPTER VII**

### **CARRIAGE OF DANGEROUS GOODS**

#### **Regulation 10 – Requirements for chemical tankers**

11 The following sentence is deleted from paragraph 1 of the regulation:

“For the purpose of this regulation, the requirements of the Code shall be treated as mandatory.”

## **CHAPTER XII**

### **ADDITIONAL SAFETY MEASURES FOR BULK CARRIERS**

12 The existing text of chapter XII is replaced by the following:

#### **“Regulation 1**

##### **Definitions**

For the purpose of this chapter:

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\*\* Refer to resolution MSC.163(78) – Performance standards for shipborne simplified voyage data recorders (S-VDRs).

1 *Bulk carrier* means a ship which is intended primarily to carry dry cargo in bulk, including such types as ore carriers and combination carriers\*.

2 *Bulk carrier of single-side skin construction* means a bulk carrier as defined in paragraph 1, in which:

- .1 any part of a cargo hold is bounded by the side shell; or
- .2 where one or more cargo holds are bounded by a double-side skin, the width of which is less than 760 mm in bulk carriers constructed before 1 January 2000 and less than 1,000 mm in bulk carriers constructed on or after 1 January 2000 but before 1 July 2006, the distance being measured perpendicular to the side shell.

Such ships include combination carriers in which any part of a cargo hold is bounded by the side shell.

3 *Bulk carrier of double-side skin construction* means a bulk carrier as defined in paragraph 1, in which all cargo holds are bounded by a double-side skin, other than as defined in paragraph 2.2.

4 *Double-side skin* means a configuration where each ship side is constructed by the side shell and a longitudinal bulkhead connecting the double bottom and the deck. Hopper side tanks and top-side tanks may, where fitted, be integral parts of the double-side skin configuration.

5 *Length* of a bulk carrier means the length as defined in the International Convention on Load Lines in force.

6 *Solid bulk cargo* means any material, other than liquid or gas, consisting of a combination of particles, granules or any larger pieces of material, generally uniform in composition, which is loaded directly into the cargo spaces of a ship without any intermediate form of containment.

7 *Bulk carrier bulkhead and double bottom strength standards* means "Standards for the evaluation of scantlings of the transverse watertight vertically corrugated bulkhead between the two foremost cargo holds and for the evaluation of allowable hold loading of the foremost cargo hold" adopted by resolution 4 of the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea, 1974 on 27 November 1997, as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the

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\* Reference is made to:

- .1 For ships constructed before 1 July 2006, resolution 6, Interpretation of the definition of "bulk carrier", as given in chapter IX of SOLAS 1974, as amended in 1994, adopted by the 1997 SOLAS Conference.
- .2 The Interpretation of the provisions of SOLAS chapter XII on Additional safety measures for bulk carriers, adopted by the Maritime Safety Committee of the Organization by resolution MSC.79(70).
- .3 The application provisions of Annex 1 to the Interpretation of the provisions of SOLAS chapter XII on Additional safety measures for bulk carriers, adopted by the Maritime Safety Committee of the Organization by resolution MSC.89(71).



provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I.

8 *Bulk carriers constructed* means bulk carriers the keels of which are laid or which are at a similar stage of construction.

9 *A similar stage of construction* means the stage at which:

- .1 construction identifiable with a specific ship begins; and
- .2 assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.

10 *Breadth (B)* of a bulk carrier means the breadth as defined in the International Convention on Load Lines in force.

## **Regulation 2**

### **Application**

Bulk carriers shall comply with the requirements of this chapter in addition to the applicable requirements of other chapters.

## **Regulation 3**

### **Implementation schedule**

Bulk carriers constructed before 1 July 1999 to which regulations 4 or 6 apply shall comply with the provisions of such regulations according to the following schedule, with reference to the enhanced programme of inspections required by regulation XI-1/2:

- .1 bulk carriers, which are 20 years of age and over on 1 July 1999, by the date of the first intermediate survey or the first periodical survey after 1 July 1999, whichever comes first;
- .2 bulk carriers, which are 15 years of age and over but less than 20 years of age on 1 July 1999, by the date of the first periodical survey after 1 July 1999, but not later than 1 July 2002; and
- .3 bulk carriers, which are less than 15 years of age on 1 July 1999, by the date of the first periodical survey after the date on which the ship reaches 15 years of age, but not later than the date on which the ship reaches 17 years of age.

## Regulation 4

### Damage stability requirements applicable to bulk carriers

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, designed to carry solid bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above, constructed on or after 1 July 1999 shall, when loaded to the summer load line, be able to withstand flooding of any one cargo hold in all loading conditions and remain afloat in a satisfactory condition of equilibrium, as specified in paragraph 4.

2 Bulk carriers of 150 m in length and upwards of double-side skin construction in which any part of longitudinal bulkhead is located within B/5 or 11.5 m, whichever is less, inboard from the ship's side at right angle to the centreline at the assigned summer load line, designed to carry solid bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above, constructed on or after 1 July 2006 shall, when loaded to the summer load line, be able to withstand flooding of any one cargo hold in all loading conditions and remain afloat in a satisfactory condition of equilibrium, as specified in paragraph 4.

3 Bulk carriers of 150 m in length and upwards of single-side skin construction, carrying solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above, constructed before 1 July 1999 shall, when loaded to the summer load line, be able to withstand flooding of the foremost cargo hold in all loading conditions and remain afloat in a satisfactory condition of equilibrium, as specified in paragraph 4. This requirement shall be complied with in accordance with the implementation schedule specified in regulation 3.

4 Subject to the provisions of paragraph 7, the condition of equilibrium after flooding shall satisfy the condition of equilibrium laid down in the annex to resolution A.320(IX) - Regulation equivalent to regulation 27 of the International Convention on Load Lines, 1966, as amended by resolution A.514(13). The assumed flooding need only take into account flooding of the cargo hold space to the water level outside the ship in that flooded condition. The permeability of a loaded hold shall be assumed as 0.9 and the permeability of an empty hold shall be assumed as 0.95, unless a permeability relevant to a particular cargo is assumed for the volume of a flooded hold occupied by cargo and a permeability of 0.95 is assumed for the remaining empty volume of the hold.

5 Bulk carriers constructed before 1 July 1999, which have been assigned a reduced freeboard in compliance with regulation 27(7) of the International Convention on Load Lines, 1966, as adopted on 5 April 1966, may be considered as complying with paragraph 3 of this regulation.

6 Bulk carriers which have been assigned a reduced freeboard in compliance with the provisions of paragraph (8) of the regulation equivalent to regulation 27 of the International Convention on Load Lines, 1966, adopted by resolution A.320(IX), as amended by resolution A.514(13), may be considered as complying with paragraphs 1 or 2, as appropriate.

7 On bulk carriers which have been assigned reduced freeboard in compliance with the provisions of regulation 27(8) of Annex B of the Protocol of 1988 relating to the International Convention on Load Lines, 1966, the condition of equilibrium after flooding shall satisfy the relevant provisions of that Protocol.

### **Regulation 5**

#### **Structural strength of bulk carriers**

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, designed to carry solid bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above constructed on or after 1 July 1999, shall have sufficient strength to withstand flooding of any one cargo hold to the water level outside the ship in that flooded condition in all loading and ballast conditions, taking also into account dynamic effects resulting from the presence of water in the hold, and taking into account the recommendations adopted by the Organization.\*

2 Bulk carriers of 150 m in length and upwards of double-side skin construction, in which any part of longitudinal bulkhead is located within B/5 or 11.5 m, whichever is less, inboard from the ship's side at right angle to the centreline at the assigned summer load line, designed to carry bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above constructed on or after 1 July 2006, shall comply with the structural strength provisions of paragraph 1.

### **Regulation 6**

#### **Structural and other requirements for bulk carriers**

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, carrying solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above, constructed before 1 July 1999, shall comply with the following requirements in accordance with the implementation schedule specified in regulation 3:

- .1 The transverse watertight bulkhead between the two foremost cargo holds and the double bottom of the foremost cargo hold shall have sufficient strength to withstand flooding of the foremost cargo hold, taking also into account dynamic effects resulting from the presence of water in the hold, in compliance with the Bulk carrier bulkhead and double bottom strength standards. For the purpose of this regulation, the Bulk carrier bulkhead and double bottom strength standards shall be treated as mandatory.
- .2 In considering the need for, and the extent of, strengthening of the transverse watertight bulkhead or double bottom to meet the requirements of 1.1, the following restrictions may be taken into account:

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\* Refer to resolution 3, Recommendation on compliance with SOLAS regulation XII/5, adopted by the 1997 SOLAS Conference.

- .1 restrictions on the distribution of the total cargo weight between the cargo holds; and
  - .2 restrictions on the maximum deadweight.
  - .3 For bulk carriers using either of, or both, the restrictions given in 1.2.1 and 1.2.2 above for the purpose of fulfilling the requirements of 1.1, these restrictions shall be complied with whenever solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above are carried.
- 2 Bulk carriers of 150 m in length and upwards constructed on or after 1 July 2006, in all areas with double-side skin construction shall comply with the following requirements:
- .1 Primary stiffening structures of the double-side skin shall not be placed inside the cargo hold space.
  - .2 Subject to the provisions below, the distance between the outer shell and the inner shell at any transverse section shall not be less than 1,000 mm measured perpendicular to the side shell. The double-side skin construction shall be such as to allow access for inspection as provided in regulation II-1/3-6 and the Technical Provisions referring thereto.
    - .1 The clearances below need not be maintained in way of cross ties, upper and lower end brackets of transverse framing or end brackets of longitudinal framing.
    - .2 The minimum width of the clear passage through the double-side skin space in way of obstructions such as piping or vertical ladders shall not be less than 600 mm.
    - .3 Where the inner and/or outer skins are transversely framed, the minimum clearance between the inner surfaces of the frames shall not be less than 600 mm.
    - .4 Where the inner and outer skins are longitudinally framed, the minimum clearance between the inner surfaces of the frames shall not be less than 800 mm. Outside the parallel part of the cargo hold length, this clearance may be reduced where necessitated by the structural configuration, but, in no case, shall be less than 600 mm.
    - .5 The minimum clearance referred to above shall be the shortest distance measured between assumed lines connecting the inner surfaces of the frames on the inner and outer skins.
- 3 Double-side skin spaces and dedicated seawater ballast tanks arranged in bulk carriers of 150 m in length and upwards constructed on or after 1 July 2006 shall be

coated in accordance with the requirements of regulation II-1/3-2 and also based on the Performance standards for coatings\* to be adopted by the Organization.

4 The double-side skin spaces, with the exception of top-side wing tanks, if fitted, shall not be used for the carriage of cargo.

5 In bulk carriers of 150 m in length and upwards, carrying solid bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above, constructed on or after 1 July 2006:

- .1 the structure of cargo holds shall be such that all contemplated cargoes can be loaded and discharged by standard loading/discharge equipment and procedures without damage which may compromise the safety of the structure;
- .2 effective continuity between the side shell structure and the rest of the hull structure shall be assured; and
- .3 the structure of cargo areas shall be such that single failure of one stiffening structural member will not lead to immediate consequential failure of other structural items potentially leading to the collapse of the entire stiffened panels.

## **Regulation 7**

### **Survey and maintenance of bulk carriers**

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, constructed before 1 July 1999, of 10 years of age and over, shall not carry solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above unless they have satisfactorily undergone either:

- .1 a periodical survey, in accordance with the enhanced programme of inspections during surveys required by regulation XI-1/2; or
- .2 a survey of all cargo holds to the same extent as required for periodical surveys in the enhanced programme of inspections during surveys required by regulation XI-1/2.

2 Bulk carriers shall comply with the maintenance requirements provided in regulation II-1/3-1 and the Standards for owners' inspection and maintenance of bulk carrier hatch covers, adopted by the Organization by resolution MSC.169(79), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I.

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\* Refer to the standards acceptable to the Administration until such time that Performance standards for coating, to be adopted by the Organization, will be made mandatory by suitably modifying the above requirements.

## Regulation 8

### Information on compliance with requirements for bulk carriers

- 1 The booklet required by regulation VI/7.2 shall be endorsed by the Administration or on its behalf, to indicate that regulations 4, 5, 6 and 7, as appropriate, are complied with.
- 2 Any restrictions imposed on the carriage of solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above in accordance with the requirements of regulations 6 and 14 shall be identified and recorded in the booklet referred to in paragraph 1.
- 3 A bulk carrier to which paragraph 2 applies shall be permanently marked on the side shell at midships, port and starboard, with a solid equilateral triangle having sides of 500 mm and its apex 300 mm below the deck line, and painted a contrasting colour to that of the hull.

## Regulation 9

### Requirements for bulk carriers not being capable of complying with regulation 4.3 due to the design configuration of their cargo holds

For bulk carriers constructed before 1 July 1999 being within the application limits of regulation 4.3, which have been constructed with an insufficient number of transverse watertight bulkheads to satisfy that regulation, the Administration may allow relaxation from the application of regulations 4.3 and 6 on condition that they shall comply with the following requirements:

- .1 for the foremost cargo hold, the inspections prescribed for the annual survey in the enhanced programme of inspections during surveys required by regulation XI-1/2 shall be replaced by the inspections prescribed therein for the intermediate survey of cargo holds;
- .2 are provided with bilge well high water level alarms in all cargo holds, or in cargo conveyor tunnels, as appropriate, giving an audible and visual alarm on the navigation bridge, as approved by the Administration or an organization recognized by it in accordance with the provisions of regulation XI-1/1; and
- .3 are provided with detailed information on specific cargo hold flooding scenarios. This information shall be accompanied by detailed instructions on evacuation preparedness under the provisions of section 8 of the International Safety Management (ISM) Code and be used as the basis for crew training and drills.

## **Regulation 10**

### **Solid bulk cargo density declaration**

1 Prior to loading bulk cargo on bulk carriers of 150 m in length and upwards, the shipper shall declare the density of the cargo, in addition to providing the cargo information required by regulation VI/2.

2 For bulk carriers to which regulation 6 applies, unless such bulk carriers comply with all relevant requirements of this chapter applicable to the carriage of solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> and above, any cargo declared to have a density within the range 1,250 kg/m<sup>3</sup> to 1,780 kg/m<sup>3</sup> shall have its density verified by an accredited testing organization.\*

## **Regulation 11**

### **Loading instrument**

(Unless provided otherwise, this regulation applies to bulk carriers regardless of their date of construction)

1 Bulk carriers of 150 m in length and upwards shall be fitted with a loading instrument capable of providing information on hull girder shear forces and bending moments, taking into account the recommendation adopted by the Organization.\*\*

2 Bulk carriers of 150 m in length and upwards constructed before 1 July 1999 shall comply with the requirements of paragraph 1 not later than the date of the first intermediate or periodical survey of the ship to be carried out after 1 July 1999.

3 Bulk carriers of less than 150 m in length constructed on or after 1 July 2006 shall be fitted with a loading instrument capable of providing information on the ship's stability in the intact condition. The computer software shall be approved for stability calculations by the Administration and shall be provided with standard conditions for testing purposes relating to the approved stability information.\*\*\*

## **Regulation 12**

### **Hold, ballast and dry space water ingress alarms**

(This regulation applies to bulk carriers regardless of their date of construction)

1 Bulk carriers shall be fitted with water level detectors:

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\* In verifying the density of solid bulk cargoes, reference should be made to the Uniform method of measurement of the density of bulk cargoes (MSC/Circ.908).

\*\* Refer to the Recommendation on loading instruments, adopted by resolution 5 of the 1997 SOLAS Conference.

\*\*\* Refer to the relevant parts of the appendix to the Guidelines for the on-board use and application of computers (MSC/Circ.891).

- .1 in each cargo hold, giving audible and visual alarms, one when the water level above the inner bottom in any hold reaches a height of 0.5 m and another at a height not less than 15% of the depth of the cargo hold but not more than 2 m. On bulk carriers to which regulation 9.2 applies, detectors with only the latter alarm need be installed. The water level detectors shall be fitted in the aft end of the cargo holds. For cargo holds which are used for water ballast, an alarm overriding device may be installed. The visual alarms shall clearly discriminate between the two different water levels detected in each hold;
  - .2 in any ballast tank forward of the collision bulkhead required by regulation II-1/11, giving an audible and visual alarm when the liquid in the tank reaches a level not exceeding 10% of the tank capacity. An alarm overriding device may be installed to be activated when the tank is in use; and
  - .3 in any dry or void space other than a chain cable locker, any part of which extends forward of the foremost cargo hold, giving an audible and visual alarm at a water level of 0.1 m above the deck. Such alarms need not be provided in enclosed spaces the volume of which does not exceed 0.1% of the ship's maximum displacement volume.
- 2 The audible and visual alarms specified in paragraph 1 shall be located on the navigation bridge.
- 3 Bulk carriers constructed before 1 July 2004 shall comply with the requirements of this regulation not later than the date of the annual, intermediate or renewal survey of the ship to be carried out after 1 July 2004, whichever comes first.

### **Regulation 13**

#### **Availability of pumping systems\***

(This regulation applies to bulk carriers regardless of their date of construction)

1 On bulk carriers, the means for draining and pumping ballast tanks forward of the collision bulkhead and bilges of dry spaces any part of which extends forward of the foremost cargo hold shall be capable of being brought into operation from a readily accessible enclosed space, the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks. Where pipes serving such tanks or bilges pierce the collision bulkhead, valve operation by means of remotely operated actuators may be accepted, as an alternative to the valve control specified in regulation II-1/11.4, provided that the location of such valve controls complies with this regulation.

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\* Refer to the Interpretation of SOLAS regulation XII/13 (MSC/Circ.1069).  
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2 Bulk carriers constructed before 1 July 2004 shall comply with the requirements of this regulation not later than the date of the first intermediate or renewal survey of the ship to be carried out after 1 July 2004, but, in no case, later than 1 July 2007.

## **Regulation 14**

### **Restrictions from sailing with any hold empty**

Bulk carriers of 150 m in length and upwards of single-side skin construction, carrying cargoes having a density of 1,780 kg/m<sup>3</sup> and above, if not meeting the requirements for withstanding flooding of any one cargo hold as specified in regulation 5.1 and the Standards and criteria for side structures of bulk carriers of single-side skin construction, adopted by the Organization by resolution MSC.168(79), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I, shall not sail with any hold loaded to less than 10% of the hold's maximum allowable cargo weight when in the full load condition, after reaching 10 years of age. The applicable full load condition for this regulation is a load equal to or greater than 90% of the ship's deadweight at the relevant assigned freeboard.”