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第 二 副 刊
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目 錄

澳門特別行政區

行政長官辦公室：

SUMÁRIO

REGIÃO ADMINISTRATIVA ESPECIAL DE MACAU

Gabinete do Chefe do Executivo:

印務局，澳門官印局街。電話：2857 3822 • 傳真：2859 6802 • 電子郵件：info@io.gov.mo

Imprensa Oficial, Rua da Imprensa Nacional — Macau. *Tel.:* 2857 3822 • *Fax:* 2859 6802 • *E-mail:* info@io.gov.mo

網址*Website*: http://www.io.gov.mo

澳門特別行政區

行 政 長 官 辦 公 室

第 50/2015 號行政長官公告

中華人民共和國是國際海事組織的成員國及一九七四年十一月一日訂於倫敦的《國際海上人命安全公約》（下稱“公約”）的締約國；

國際海事組織海上安全委員會於一九九六年十二月五日透過第MSC.59（67）號決議通過了《國際散裝運輸液化氣體船舶構造和設備規則》（IGC規則）的修正案，該修正案自一九九九年十二月二十日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.59（67）號決議的中文及英文文本。

二零一五年五月六日發佈。

行政長官　崔世安

REGIÃO ADMINISTRATIVA ESPECIAL DE MACAU

GABINETE DO CHEFE DO EXECUTIVO

Aviso do Chefe do Executivo n.º 50/2015

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Salvaguarda da Vida Humana no Mar, concluída em Londres em 1 de Novembro de 1974, adiante designada por Convenção;

Considerando igualmente que, em 5 de Dezembro de 1996, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.59(67), adoptou emendas ao Código Internacional para a Construção e Equipamento de Navios que Transportam Gases Liquefeitos a Granel (Código IGC), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 20 de Dezembro de 1999;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.59(67), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 6 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*

第 MSC.59（67）號決議

（1996 年 12 月 5 日通過）

通過《國際散裝運輸液化氣體船舶構造和設備規則》

（IGC 規則）修正案

海上安全委員會，

憶及《國際海事組織公約》有關本委員會職責的第 28（b）條，

還憶及它據之通過《國際散裝運輸液化氣體船舶構造和設備規則》（《國際氣規》）的第 MSC.5（48）號決議，

又憶及經修正的《1974 年國際海上人命安全公約》（《安全公約》）有關《國際氣規》修正程序的正文第 VIII（b）條和附件第 VII/1l.l 條，

希望使《國際氣規》得到不斷更新，

在其第六十七次會議上**審議了**按《安全公約》正文第 VIII（b）（i）條提議和分發的該規則修正案，

1. 按照《安全公約》正文第 VIII（b）（iv）條**通過**該規則的修正案，其條文載於本決議附件中；

2. 按照本公約正文第 VIII（b）（vi）（2）（bb）條**決定**：這些修正案在 1998 年 1 月 1 日應視為已被接受，除非在該日期之前超過三分之一的《安全公約》締約政府或其綜合商船隊不少於世界商船隊總噸位 50%的締約政府作出了反對這些修正案的通知；

3. **請**各締約政府注意，按照《安全公約》正文第 VIII（b）（vii）（2）條，這些修正案在按上文第 2 段被獲得接受後，應於 1998 年 7 月 1 日生效；

4. **要求**秘書長按照《安全公約》正文第 VIII（b）（v）條將本決議及附件中所載修正案條文的核證副本分發給《安全公約》的所有締約政府；

5. **還要求**秘書長將本決議及其附件的副本分發給非屬《安全公約》締約政府的本組織會員。

附件

《國際散裝運輸液化氣體船舶構造和設備規則》

（IGC 規則）修正案

第 1 章－總則

1 在現有的第 1.3.30.2 款後加入下列新的第 1.3.30.3 款：

“1.3.30.3 經認可的標準係指主管機關可以接受的適用國際和國家標準或由某一組織制定和保持的、符合本組織通過的標準並獲主管機關認可的標準”。

第 2 章－船舶抗沉能力和液貨艙位置

2 在第 2.3.3 款中，刪去“應為主管機關可接受的型號並且”等字，在該款末尾加上“並且應符合經認可的標準”等字。

第 3 章－船舶佈置

3 在第 3.8.1 款中，刪去“經主管機關認可並且”等字。

第 4 章－貨物裝容

4 在第 4.2.4.2 款第一句中，將“Recognized Standards*（經認可的標準）”等字改為“recognized standards（經認可的標準）”，並刪去有關腳註。

5 在第 4.2.4.3 款第二句中，將“（重力試驗）”等字改為“（重力液艙）”。

6 在第 4.2.4.4 款中，將“鐵素鋼/馬氏體鋼為 55 牛頓/毫米 ^{2}”的表述改為“鐵素－珠光結構、馬氏體和奧斯體鋼為 55 牛頓/毫米 ^{2}。

7 在第 4.11.2 款導語中，刪去“經主管機關認可和”等字。

第 5 章－工藝壓力容器及液體、蒸氣和壓力管道系統

8 在第 5.2.2.1 款效率系數“e”的定義中，最後一句的現有條文由下列者取代：

“在其他情況下，按照經認可的標準，視製造工藝而定，可以要求少於 1.0 的效率系統。”

9 在第 5.2.4.4 款第一句中，將“主管機關可以接受的標準”等字改為“應符合經認可的標準”。在第二句句尾刪去“由主管機關”等字。

10 在第 5.4.1 款中，以下列條文取代第二句的現有條文：

“對於液艙內的管道和有開口端的管道，可按經認可的標準接受對這些要求的放寬。”

11 在第 5.4.2.2 款中，將“使主管機關感到滿意”等字改為“按照經認可的標準。”

12 在第 5.4.2.3 款中，將“主管機關可以接受的”等字改為“符合經認可的標準。”

13 在第 5.4.3.2 款中，將“主管機關可以接受的標準”等字改為“經認可的標準”。

14 在第 5.6.4 款第六句中，將“以 30 秒鐘的驅動”等字改為“在 30 秒鐘的驅動期間內”。

第 8 章－液貨艙透氣系統

15 在第 8.2.2 款中，將“使主管機關感到滿意”等字改為“符合經認可的標準”。

第 11 章－防火和滅火

16 在第 11.2.4 款第二句中，將“所有的管道、閥門噴嘴”等字改為“所有的管道、閥門、噴嘴”。

第 13 章－儀錶（錶計和氣體探測）

17 在第 13.3.1 款最後一句中，刪去“主管機關”一詞，將“港口當局”等字改為“港口國當局”。

18 在第 13.6.9 款中，將“h 欄”的表述改為“i 欄”。

第 14 章－人員保護

19 在第 14.4.1 款中，將“h 欄”的表述改為“i 欄”。

第 16 章－貨物用作燃料

20 在第 16.5.6 款第二句中，將“並且這些佈置應使主管機關感到滿意”等字刪去。

第 17 章－特別要求

21 在第 17.20.3.1 款第一句中，將“或主管機關可以接受的其他材料”等字改為“按照經認可的標準”。刪去第二句。

22 在第 17.20.14 款第一句中，將“充注限度”等字改為“裝載限度”。

第 19 章－最低要求摘要

23 在該表第 f 欄中，對產品“丁二烯”，將條目“F”改為條目“F+T”。

RESOLUTION MSC.59(67)
(adopted on 5 December 1996)

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

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.5(48) by which it adopted the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code),

RECALLING FURTHER article VIII(b) and regulation VII/11.1 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, concerning the procedure for amending the IGC Code,

BEING DESIROUS of keeping the IGC Code up to date,

HAVING CONSIDERED, at its sixty-seventh session, amendments to the Code proposed and circulated in accordance with article VIII(b)(i) of the SOLAS Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the SOLAS Convention, amendments to the 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 January 1998, unless, prior to that date, more than one third of the Contracting Governments to the SOLAS 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 SOLAS Convention, the amendments shall enter into force on 1 July 1998 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the SOLAS 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 SOLAS 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 SOLAS Convention.

ANNEX

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

CHAPTER 1 - GENERAL

1 The following new paragraph 1.3.30.3. is added after existing paragraph 1.3.30.2:

"1.3.30.3 *Recognized standards* are applicable international or national standards acceptable to the Administration or standards laid down and maintained by an organization which complies with the standards adopted by the Organization and which is recognized by the Administration."

CHAPTER 2 - SHIP SURVIVAL CAPABILITY AND LOCATION OF CARGO TANKS

2 In paragraph 2.3.3, the words "should be of a type acceptable to the Administration and" are deleted and the words "and should comply with recognized standards" are added at the and of the paragraph.

CHAPTER 3 - SHIP ARRANGEMENTS

3 In paragraph 3.8.1, the words "to the approval of the Administration and" are deleted.

CHAPTER 4 - CARGO CONTAINMENT

4 In paragraph 4.2.4.2, in the first sentence, the words "Recognized Standards*" are replaced by the words "recognized standards" and the related footnote is deleted.

5 In paragraph 4.2.4.3, in the second sentence, the words "(gravity tests)" are replaced by the words "(gravity tanks)".

6 In paragraph 4.2.4.4, the expression "55 N/mm^2 for ferritic/martensitic steel" is replaced by the expression "55 N/mm^2 for ferritic-perlitic, martensitic and austenitic steels".

7 In the introductory phrase of paragraph 4.11.2, the words "with the approval of the Administration and" are deleted.

CHAPTER 5 - PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR AND PRESSURE PIPING SYSTEMS

8 In paragraph 5.2.2.1, in the definition of the efficiency factor "e", the exisitng text of the last sentence is replaced by the following:

"In other cases an efficiency factor of less than 1.0, in accordance with recognized standards, may be required depending on the manufacturing process."

9 In the paragraph 5.2.4.4, in the first sentence, the words "be to a standard acceptable to the Administration" are replaced by the words "should comply with recognized standards" and at the end of the second sentence, the words "by the Administration" are deleted.

10 In paragraph 5.4.1, the existing text of the second sentence is replaced by the following:

"Relaxations from these requirements may be accepted, in accordance with recognized standards, for piping inside cargo tanks and open-ended piping."

11 In paragraph 5.4.2.2, the words "satisfactory to the Administration" are replaced by the words " in accordance with recognized standards".

12 In paragraph 5.4.2.3, the words "acceptable to the Administration" are replaced by the words "complying with recognized standards".

13 In paragraph 5.4.3.2, in the first sentence, the words "standards acceptable to the Administration" are replaced by the words "recognized standards".

14 In paragraph 5.6.4, in the sixth sentence, the words "with 30 s of actuation" are replaced by the words "within 30 s of actuation".

CHAPTER 8 - CARGO TANK VENT SYSTEMS

15 In paragraph 8.2.2, the words "to the satisfaction of the Administration" are replaced by the words "complying with recognized standards".

CHAPTER 11 - FIRE PROTECTION AND FIRE EXTINCTION

16 In paragraph 11.2.4, in the second sentence, the words "All pipes, valves nozzles" are replaced by the words "All pipes, valves, nozzles".

CHAPTER 13 - INSTRUMENTATION (GAUGING, GAS DETECTION)

17 In paragraph 13.3.1, in the last sentence, the word "Administration" is deleted and the words "port Administration" are replaced by the words "port State authority".

18 In paragraph 13.6.9, the expression "column h" is replaced by the expression "column i".

CHAPTER 14 - PERSONNEL PROTECTION

19 In paragraph 14.4.1, the expression "column h" is replaced by the expression "column i".

CHAPTER 16 - USE OF CARGO AS FUEL

20 In paragraph 16.5.6, in the second sentence, the words "and these arrangements should be to the satisfaction of the Administration" are deleted.

CHAPTER 17 - SPECIAL REQUIREMENTS

21 In paragraph 17.20.3.1, in the first sentence, the words "or other material acceptable to the Administration" are replaced by the words "in accordance with recognized standards," and the second sentence is deleted.

22 In paragraph 17.20.14, in the first sentence, the words "filling limits" are replaced by the words "loading limits".

CHAPTER 19 - SUMMARY OF MINIMUM REQUIREMENTS

23 In column f of the table, for the product "Butadiene", the entry "F" is replaced by the entry "F+T".

第 51/2015 號行政長官公告

中華人民共和國是國際海事組織的成員國及一九七四年十一月一日訂於倫敦的《國際海上人命安全公約》的締約國；

國際海事組織海上安全委員會於一九九四年五月二十三日透過第MSC.32（63）號決議通過了《國際散裝運輸液化氣體船舶構造和設備規則》（IGC規則）的修正案，且有關修正案自一九九九年十二月二十日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.32（63）號決議的中文及英文文本。

二零一五年五月六日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 51/2015

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Salvaguarda da Vida Humana no Mar, concluída em Londres em 1 de Novembro de 1974;

Considerando igualmente que, em 23 de Maio de 1994, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.32(63), adoptou emendas ao Código Internacional para a Construção e Equipamento de Navios que Transportam Gases Liquefeitos a Granel (Código IGC), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 20 de Dezembro de 1999;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.32(63), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 6 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.32（63）號決議

1994 年 5 月 23 日通過

通過《國際散裝運輸液化氣體船舶構造和設備規則》（IGC 規則）修正案

海上安全委員會，

憶及《國際海事組織公約》關於本委員會職責的第 28（b）條，

還憶及委員會據以通過《國際散裝運輸液化氣體船舶構造和設備規則》（《國際氣規》）的第 MSC.5（48）號決議，

又憶及經修正的《1974 年國際海上人命安全公約》（《安全公約》）關於《國際氣規》修正程序的第 VIII（b）條及第 VII/11.1 條，

希望使《國際氣規》跟上最新的發展需要，

在其第六十三次會議上審議了按照《安全公約》第 VIII（b）（i）條提議並分發的該規則的修正案，

1. 按照《安全公約》第 VIII（b）（iv）條通過該規則的修正案，其案文載於本決議的附件中；

2. 按照《安全公約》第 VIII（b）（vi）（2）（bb）條決定：這些修正案在 1998 年 1 月 1 日應視為已被接受，除非在該日期前，多於三分之一的《安全公約》締約政府或其合計商船隊不小於世界商船隊總噸位的百分之五十的締約政府已通知反對這些修正案；

3. 請締約政府注意，按照《安全公約》第 VIII（b）（vii）（2）條，這些修正案在按上述第 2 段被接受後，應於 1998 年 7 月 1 日生效；

4. 要求秘書長按照《安全公約》第 VIII（b）（v）條，將本決議和載於附件中的修正案案文的核證副本分發給《安全公約》的所有締約政府；

5. 還要求秘書長將本決議及其附件的副本分發給非屬《安全公約》締約政府的本組織會員。

附件

《國際散裝運輸液化氣體船舶構造和設備規則》

（IGC 規則）修正案

有關適用範圍的修正案

1 現有的第 1.1.2 和 1.1.3 款由下述者取代：

“1.1.2 除另有明文規定者外，本規則適用於在 1998 年 7 月 1 日或以後鋪放龍骨或處於下述階段的船舶：

.1 開始了可認同為船舶的建造；和

.2 該船業已開始的裝配量至少為 50 噸或所有結構材料估算質量的 1%，以少者為準；

1998 年 7 月 1 日前建造的船舶要符合 1983 年 6 月 17 日通過的第 MSC.5（48）號決議，但以 1992 年 12 月 11 日通過的第 MSC.30（61）號決議的修正案為準。

1.1.3 不論建造日期，凡在 1998 年 7 月 1 日或以後建造的氣體運輸船應作為從改建開始之日建造的氣體運輸船對待。”

有關存儲容量限度的修正案

2 現有的第 15 章由下述者取代：

“第 15 章

液貨艙的存儲容量限度

15.1 通則

15.1.1 除 15.1.3 所許可者外，任何液貨艙的存儲容量限度（FL）不得高於在基準溫度時的 98%。

15.1.2 液貨艙最大許可裝載限度（LL）應按下列公式來確定：

$$LL = FL\frac{\rho_R}{\rho_L}$$

式中：

LL = 以百分比表示的裝載限度，係指與液艙的裝載容積有關的最大允許液體容積；

FL = 在 15.1.1 或 15.1.3 中規定的存儲容量限度；

ρ_R = 基準溫度下的貨物相對密度；和

ρ_L = 裝載溫度和裝載壓力下的貨物相對密度。

15.1.3 主管機關可根據液艙的形狀、減壓閥的佈置；液位和溫度計量儀的精度和裝載溫度與相應於減壓閥設定壓力下的貨物蒸氣壓力的溫度之間的溫差，可允許在基準溫度下存儲容量限度高於 15.1.1 中所規定的 98%的限度，但應保持 8.2.17 中規定的狀況。

15.1.4 僅就本章而言，“基準溫度”係指：

.1 當未配備第 7 章所述的貨物蒸氣壓力/溫度控制器時：相應於在減壓閥設定的壓力下的貨物蒸氣壓力的溫度；

.2 當配備第 7 章所述貨物蒸氣壓力/溫度控制器時：裝貨終止時、運輸期間或卸貨時的貨物溫度，以最高者為準。如果該基準溫度會造成在貨物達到相應於在 8.2 所要求的減壓閥

設定壓力下的貨物蒸氣壓力的溫度之前液艙已裝滿液體，則應安裝符合 8.3 要求的額外減壓系統。

15.1.5 主管機關可允許 C 型液艙按下述公式裝載，但液艙透氣系統須按 8.2.18 得到核准：

$$LL = FL\frac{\rho_R}{\rho_L}$$

式中：

LL = 15.1.2 中規定的裝載限度；

FL = 15.1.1 或 15.1.3 中規定的存儲容量限度；

ρ_R = 在 7.1.2 中規定的環境設計溫度狀況下，在裝貨終止時、運輸期間或卸貨時，貨物可達到的最高溫度下的貨物相對密度；和

ρ_L = 同 15.1.2 中規定者。

本款不適用於需要求 1G 型船舶的物品。

15.2 向船長提供的資料

在由主管機關核准的清單上應註明對於可運輸的每種物品、可採用的每種裝貨溫度和可適用的最高基準溫度，每個液貨艙的最大許可裝載限度。在清單上還應註明減壓閥（包括 8.3 所求的那些閥門）已設的設定壓力。此清單的副本應由船長永久保存在船上。

15.3 第 15 章適用於不論何日建造的所有船舶。”

3 在現有 8.2.17 款末尾加上下述字樣：

“at the maximum allowable filling limit（FL）” ，

“在最大許可存儲容量限度（FL）” 。

4 在現有的 8.2.17 款後增加下述新的第 8.2.18 款：

“8.2.18 應使用本組織制訂的指南，證明按照 15.1.5 裝載的液艙上的透氣系統的適應性。就本款而言，透氣系統係指：

.1 液艙出口和減壓閥的管路；

.2 減壓閥；

.3 從減壓閥至向大氣進行排放的位置的管路，包括連接其他液艙的連接裝置和管路。

本款適用於不論何日建造的所有船舶。”

<u>有關液貨艙透氣系統的修正案</u>

5 現有第 8.2.3 款由下述者取代：

“8.2.3 一般而言，減壓閥的設定壓力不應高於在設計液艙時採用的蒸氣壓力。但當裝有兩個或更多減壓閥時，構成不超過總減壓能力 50%的閥門的設定壓力可比最大容許減壓設定值高 5%。”

6 在現有 8.2.4 款中增加下述句子：

“閥門應由熔點高於 925°C 的材料製作。如果其使用將對閥門的總體作業有重大改善，則應考慮內部部件和密封裝置使用低熔點材料。

7 現有 8.2.9 款由下述者取代：

“8.2.9 裝在液貨艙上的每一減壓閥應與透氣系統連接，該系統的構造應使氣體排放不受阻礙並在出口處使氣體垂直向上排放，且其佈置應使水和雪進入透氣系統的可能性減至最低程度。透氣出口在風雨甲板之上的高度不應小於 B/3 或 6 米，取其大者；在工作區域、縱向步橋、甲板貯放櫃和液貨管線之上的高度不小於 6 米。”

8 在 8.2.16 款中增加下述句子：

“從液艙至減壓閥出口的透氣管路中的壓降不應超過閥門設定壓力的 3%。對不平衡的減壓閥，當透氣管線遇到 8.5.2 中所述的火情時，排放管路中的背壓在減壓閥出口處不應超過表計壓力的 10%。”

RESOLUTION MSC.32(63)
adopted on 23 May 1994

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

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.5(48), by which the Committee adopted the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code),

RECALLING FURTHER article VIII(b) and regulation VII/11.1 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, concerning the procedure for amending the IGC Code,

BEING DESIROUS of keeping the IGC Code up to date,

HAVING CONSIDERED, at its sixty-third session, amendments to the Code proposed and circulated in accordance with article VIII(b)(i) of the SOLAS Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the SOLAS Convention, amendments to the 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 SOLAS Convention, that the amendments shall be deemed to have been accepted on 1 January 1998 unless, prior to that date, more than one third of the Contracting Governments to the SOLAS Convention, or Contracting Governments the combined merchant fleets of which constitute not less than fifty per cent 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 SOLAS Convention, the amendments shall enter into force on 1 July 1998 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the SOLAS 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 SOLAS Convention;

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

ANNEX

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

Amendments related to application

1 Existing paragraphs 1.1.2 and 1.1.3 are replaced by the following:

"1.1.2 Unless expressly provided otherwise, the Code applies to ships the keels of which are laid or which are at a stage at which:

.1 construction identifiable with the ship begins; and

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

on or after 1 July 1998. Ships constructed before 1 July 1998 are to comply with resolution MSC.5(48) adopted on 17 June 1983 subject to amendments by resolution MSC.30(61) adopted on 11 December 1992.

1.1.3 A ship, irrespective of the date of construction, which is converted to a gas carrier on or after 1 July 1998, should be treated as a gas carrier constructed on the date on which such conversion commences."

Amendments related to filling limits

2 The existing chapter 15 is replaced by the following:

"CHAPTER 15

FILLING LIMITS FOR CARGO TANKS

15.1 General

15.1.1 No cargo tanks should have a higher filling limit (FL) than 98% at the reference temperature, except as permitted by 15.1.3.

15.1.2 The maximum loading limit (LL) to which a cargo tank may be loaded should be determined by the following formula:

$$LL = FL \frac{\rho_R}{\rho_L}$$

where:

LL = loading limit expressed as a percentage, being the maximum allowable liquid volume relative to the tank volume to which the tank may be loaded;

FL = filling limit as specified in 15.1.1 or 15.1.3;

ρ_R = relative density of cargo at the reference temperature; and

ρ_L = relative density of cargo at the loading temperature and pressure.

15.1.3 The Administration may allow a higher filling limit (FL) than the limit of 98% specified in 15.1.1 at the reference temperature, taking into account the shape of the tank, arrangements of pressure relief valves, accuracy of level and temperature gauging and the difference between the loading temperature and the temperature corresponding to the vapour pressure of the cargo at the set pressure of the pressure relief valves, provided the conditions specified in 8.2.17 are maintained.

15.1.4 For the purposes of this chapter only, "reference temperature" means:

.1 the temperature corresponding to the vapour pressure of the cargo at the set pressure of the pressure relief valves when no cargo vapour pressure/temperature control as referred to in chapter 7 is provided;

.2 the temperature of the cargo upon termination of loading, during transport, or at unloading, whichever is the greatest, when a cargo vapour pressure/temperature control as referred to in chapter 7 is provided. If this reference temperature would result in the cargo tank becoming liquid full before the cargo reaches a temperature corresponding to the vapour pressure of the cargo at the set pressure of the relief valves required in 8.2, an additional pressure relieving system complying with 8.3 should be fitted.

15.1.5 The Administration may allow type C tanks to be loaded according to the following formula, provided that the tank vent system has been approved in accordance with 8.2.18:

$$LL = FL \frac{\rho_R}{\rho_L}$$

where:

LL = loading limit as specified in 15.1.2;

FL = filling limit as specified in 15.1.1 or 15.1.3;

ρ_R = relative density of cargo at the highest temperature which the cargo may reach upon termination of loading, during transport, or at unloading, under the ambient design temperature conditions described in 7.1.2; and

ρ_L = as specified in 15.1.2.

This paragraph does not apply to products requiring a type 1G ship.

15.2 Information to be provided to the master

The maximum allowable loading limits for each cargo tank should be indicated for each product which may be carried, for each loading temperature which may be applied and for the applicable maximum reference temperature, on a list to be approved by the Administration. Pressures at which the pressure relief valves, including those valves required by 8.3, have been set should also be stated on the list. A copy of the list should be kept permanently on board by the master.

15.3 Chapter 15 applies to all ships regardless of the date of construction."

3 The following words are added at the end of existing paragraph 8.2.17:

"at the maximum allowable filling limit (FL)".

4 The following new paragraph 8.2.18 is added after existing paragraph 8.2.17:

"8.2.18 The adequacy of the vent system fitted on tanks loaded in accordance with 15.1.5 is to be demonstrated using the guidelines developed by the Organization. A relevant certificate should be permanently kept on board the ship. For the purposes of this paragraph, vent system means:

.1 the tank outlet and the piping to the pressure relief valve;

.2 the pressure relief valve;

.3 the piping from the pressure relief valve to the location of discharge to the atmosphere and including any interconnections and piping which joins other tanks.

This paragraph may apply to all ships regardless of the date of construction."

Amendments related to cargo tank vent systems

5 The existing paragraph 8.2.3 is replaced by the following:

"8.2.3 In general, the setting of the pressure relief valves should not be higher than the vapour pressure which has been used in the design of the tank. However, where two or more pressure relief valves are fitted, valves comprising not more than 50% of the total relieving capacity may be set at a pressure up to 5% above MARVS."

6 The following sentences are added to existing paragraph 8.2.4:

"Valves should be constructed of materials with a melting point above 925°C. Consideration should be given to lower melting point materials for internal parts and seals if their use will yield a significant improvement in the general operation of the valve."

7 The existing paragraph 8.2.9 is replaced by the following:

"8.2.9 Each pressure relief valve installed on a cargo tank should be connected to a venting system, which should be so constructed that the discharge of gas will be unimpeded and directed vertically upwards at the exit, and so arranged as to minimize the possibility of water or snow entering the vent system. The height of vent exits should be not less than B/3 or 6 m, whichever is the greater, above the weather deck and 6 m above the working area, the fore and aft gangway, deck storage tanks and cargo liquid lines."

8 The following sentences are added to existing paragraph 8.2.16:

"The pressure drop in the vent line from the tank to the pressure relief valve inlet should not exceed 3% of the valve set pressure. For unbalanced pressure relief valves the back pressure in the discharge line should not exceed 10% of the gauge pressure at the relief valve inlet with the vent lines under fire exposure as referred to in 8.5.2."

第 52/2015 號行政長官公告

中華人民共和國是國際海事組織的成員國及一九七四年十一月一日訂於倫敦的《國際海上人命安全公約》（下稱“公約”）的締約國；

國際海事組織海上安全委員會於一九八三年六月十七日對公約第VII章作出修正時，將有關國際散裝運輸液化氣體船舶構造和設備規則的規定作為公約的強制性規定，並透過第MSC.5（48）號決議通過了《國際散裝運輸液化氣體船舶構造和設備規則》（IGC規則）；

國際海事組織海上安全委員會於一九九二年十二月十一日透過第MSC.30（61）號決議通過了上指規則的修正案，該修正案自一九九九年十二月二十日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.30（61）號決議的中文及英文文本。

二零一五年五月六日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 52/2015

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Salvaguarda da Vida Humana no Mar, concluída em Londres em 1 de Novembro de 1974, adiante designada por Convenção;

Considerando igualmente que, em 17 de Junho de 1983, o Comité de Segurança Marítima da Organização Marítima Internacional procedeu a emendas ao capítulo VII da Convenção para tornar as disposições relativas ao Código Internacional para a Construção e Equipamento de Navios que Transportam Gases Liquefeitos a Granel obrigatórias nos termos da Convenção, e que, através da sua resolução MSC. 5(48), adoptou o Código Internacional para a Construção e Equipamento de Navios que Transportam Gases Liquefeitos a Granel (Código IGC);

Considerando ainda que, em 11 de Dezembro de 1992, o Comité de Segurança Marítima da Organização Marítima Internacional, através da sua resolução MSC. 30(61), adoptou emendas ao referido Código, e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 20 de Dezembro de 1999;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC. 30(61), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 6 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.30（61）號決議

1992 年 12 月 11 日通過

通過國際散裝運輸液化氣體船舶構造和設備規則修正案（IGC 規則）

海上安全委員會，

憶及國際海事衛星組織公約關於本委員會職能的第 28（b）條，

還憶及委員會以第 MSC.5（48）號決議通過了國際散裝液化氣體船舶構造與設備規則（國際氣體規則），

進一步憶及經修正的關於修正氣體規則的程序的 1974 年國際海上人命安全公約（安全公約）第 VIII（b）條和規則 VII/11.1 條，

急切希望使氣體規則不斷更新，

在其第六十一屆會議上審議了根據安全公約第 VIII（b）（i）條規定提出並散發的對該規則的修正案，

1. 根據安全公約第 VIII（b）（iv）條，通過了該規則修正案，其文本載於本決議之附件；

2. 根據公約第 VIII（b）（vi）（2）（bb）條規定，決定該修正案將被視為於 1994 年 1 月 1 日被接受除非在此日期前，多於三分之一的安全公約締約國政府或其商船隊總噸位不少於世界商船隊總噸位百分之五十的締約國政府通知海事組織表明他們反對該修正案；

3. 邀請締約國政府注意，根據安全公約第 VIII（b）（vii）（2）條規定，該修正案在按照上述第 2 段的要求被接受後，將於 1994 年 7 月 1 日生效；

4. 要求秘書長，根據安全公約第 VIII（b）（v）條，將本決議及所附的修正案文本的核正無誤的副本散發給安全公約的所有締約國政府；

5. 進一步要求秘書長將該決議及其附件的副本散發給非安全公約締約國政府的本組織的成員國。

附件

國際散裝運輸液化氣體船舶構造和設備規則修正案

（IGC 規則）

（段落編號及所修正的文本援引國際氣體規則的英文正本）

1.1.2 用“1994 年 10 月 1 日”代替“1986 年 7 月 1 日”並增加下列內容：

“1994 年 10 月 1 日前建造的船舶必須符合 1983 年 6 月 17 日通過的第 MSC.5（48）號決議。”

2.7.8.1 將參考號改成 2.9.1.1。

2.7.8.2 將參考號改成 2.9.2.1。

2.9.2.1 第五行，用“m.rad”代替“m/rad”。

3.2.4 第二行，在“處所”與“和”之間加上“機器處所”。

第四行，在“長度”和“船舶的”之間加上“（L）”。

第四和五行，用“上層建築或甲板室”代替“艙室”。

第七行，用“上層建築或甲板室”代替“艙室”。

3.2.5 第二行，用“或甲板室應”代替“將”。

3.2.6 第三行，用“應”代替“將”。

3.8.4 第六行，用“上層建築或甲板室”代替“艙室”。

4.3.2 用“P_{eq}”，“P_{gd}”和“（P_{gd}）max”代替“h_{eq}”，“h_{gd}”和“（h_{gd}）$_{max}$”。

4.3.2.1 第一行，刪除“頭”

4.3.2.2 第三行，在“內部”後加上“液體”。

第四行，刪除“頭”

最後一段，第二行，在“加快”和“在裏面”之間增加“組成成分”；用“需要”代替“多種需要”。

用下列文字代替 Zß 定義的最後一句：

“當決定 Zß 時應考慮將艙圓頂作為所接受的艙總容量的一部分，除非艙圓頂 Vd 的總容量不超過下列值：

$$V_d = V_t \left(\frac{100 - FL}{FL} \right)$$

式中：

V_t = 無艙圓頂的艙容量

FL = 根據第 15 章的灌注限制

4.4.5.1 最後一段，在三個地方，用“分析”代替“多次分析”。

4.4.5.6 在 C_w 註解中，刪除“=”。

4.7.6.1 最後兩行，用“鄰近”代替“按照”。

4.8.1 第三行，用“設計”代替“工作”。

4.8.2 第四行，用“設計”代替“工作”。

4.9.9 最後一行，在“該”和“圍護”之間加上“貨物”。

4.10.9.1 將第二行改成“諸如失圓，局部偏移等工藝”。

4.10.9.2.1 最後一行，用“的”代替“或”。

4.10.18 最後一行，用“提升器”代替“提升”。

4.11.2 用下列文字代替 4.11.2：

“4.11.2 碳鋼或碳錳鋼製的大型受壓容器。進行熱處理有困難時，經主管機關批准並遵守下列條件，可以用充壓機械法應力消除過程代替熱處理：

.1 焊接受壓容器的複雜部件：例如帶噴管的貯槽或氣室連同其相鄰的殼板，在被焊接到受壓容器的較大部件以前，應進行熱處理。

.2 機械法應力消除過程最好是在 4.10.10.3 段要求的靜水壓力試驗期間採用高於 4.10.10.3.1 段要求的試驗壓力進行，加壓媒介應是水。

.3 關於水溫，第 4.10.10.3.2 段有規定。

.4 應力消除應在貨艙被正常的圓枕木或支撐結構保護時進行。當應力消除不能在船上進行時，使用的方法應能達到如同使用圓枕木或支撐結構時的同樣應力和壓力分佈。

.5 最大應力消除壓力應對每 25mm 厚度保持 2 個小時，但絕不允許少於 2 個小時。

.6 在應力消除時，所計算的應力水準的上限應為：

— 同等一般主薄膜應力：$0.9.R_e$

— 由主彎曲應力加上薄膜

應力組成的同等應力：$1.35.R_e$

R_e 係指具體的較低最小屈服應力或者是對艙所使用的鋼試驗溫度時驗證應力的 0.2%。

.7 對一系列相同的相繼建造的貨艙，通常應至少對第一個艙進行應變測量以確認這些限制。應變測量表應包括在按 4.11.2.14 規定提交的機械法應力消除程序中。

.8 試驗程序應表明，當壓力被再次升至設計壓力時，在應力消除過程結束時，壓力和應變之間的關係應是線性的。

.9 對諸如噴管和其他開口的幾何驟變高應力區域，應在機械法應力消除後，用染色滲透法或磁粒子檢查法檢查裂痕。應特別注意厚度超過 30mm 的板材。

.10 對鋼材，如果它們的屈服應力與最大抗張強度之比超過 0.8 時，一般不應用機械法進行應力消除。但是，如果用一種方法使鋼具有高延展性以提高屈服應力，對具體情況而言，稍高一些的比率也是可以接受的。

.11 如果冷成形度超過上述的熱處理所需要的限制，機械法應力消除不應被艙室的冷成形部件的熱處理代替。

.12 殼板和艙蓋的厚度不應超過 40mm。對某些用熱應力消除的部件，較高的厚度也是可以接受的。

.13 當艙和氣室使用環形頭時，要特別注意別出現局部彎曲。

.14 機械法應力消除程序應事先提交主管當局批准。”

5.2.1.1 第一行，用“5.2 至 5.5 節”代替“該節”。

5.2.3.2 最後一行，用“多個系統”代替“系統”。

5.4.6 標題，用“處理”代替“多次處理”。

5.4.6.2 第一行，用“處理”代替“多次處理”。

5.4.6.3.1 第二行，用“設計”代替“工作”在現有 5.4.6.3.1 後增加下列文字：

“當管道部分的此種對接焊接頭在管道製造車間被自動焊接程序焊好時，根據主管機關的特別許可，射線檢查的程度可被逐漸減少，但無論如何不能少於每個接頭的 10%。如發現有缺陷，則應進行 100%的檢查，其中還應包括以前已經被認可的管道。該特別許可只能在具有充分文件質量保證程序並有記錄以使主管機關能夠估計製造商生產合格的連續焊接的能力時才能授與。”

5.4.6.3.2 第一行，在“管道”後增加“未由 5.4.6.3.1 包括的”。

表 6.1　第 16 行，用“多塊板”代替“板”。

表 6.2　第 17 行，用“部件和鍛件”代替“部件”。

6.3.6.3　第一行，將參考條目改成“6.3.6.2.1”。

8.2.8.3　最後一行，在“保養”和”閥門”之間增加“備用”。

8.3.1.1　第一行，糾正“壓力”的拼法。

8.5.2　“D”的定義：用“k”代替“K”。

9.5.3　第四行，刪除“艙”。

10.2.5.2　第一和第二行：用“貨物”代替“貨物產品”。

11.1.1.1　將參考條目改成“56.6”。

11.3　在 11.3.5 後增加下列文字：

“11.3.6 遙控起動供應灑水系統水源的泵以及遙控操作任何本系統中正常關閉的閥門應被佈置在貨物處所以外，緊靠後住處所的合適的地點，以便隨時能進入。當保護地區發生火災時應能操作。

11.5　用下列文字代替 11.5：

“11.5 貨物壓縮機和泵室

11.5.1　任何船舶的貨物壓縮機和泵室均應根據經修正的 1974 年安全公約規則 II-2/5.1 及.2 提供二氧化硫系統。在控制部位應展示一個提示，說明由於靜電着火危險，系統只能用於滅火，而不能用於惰化的目的。1983 年修正案規則 II-2/5.1.6 條所提及的警報應能在可燃貨物蒸氣—空氣混

合物中安全使用。就本要求而言，所配備的滅火系統應能適用於機器處所。但所攜帶的二氧化碳氣量應足以能在任何情況下提供相當於貨物壓縮機和泵室總容量的 45%。

11.5.2 船舶的貨物壓縮機和泵室，如專門用來裝載有限數量的貨物，應用一種經主管機關批准的合適的滅火系統予以保護。”

11.6.1 在表中，刪除“2,000m^3 以下 2”

用“5,000m^3 及以下”代替“在 2,000m^3 和 5,000m^3 之間”。

第十二章 前言，用“替換”代替“代替”。

13.6.11 第六行，用“監測”代替“取樣和探測”。

14.2.3.1 第一行，在“沖入”和“空氣”之間加上“備用”。

14.3.2 用 “ **14.3.2”代替規則號碼並加上下列腳註：

“————————————

** 請參照用於涉及危險品事故的醫療急救指南（MFAG）。該指南包括由本規則涉及的產品的 MFAG 編號以及在發生事故時要遵循的應急程序。與由國際氣體船規則涉及的產品有關的 MFAG 編號載於最低要求一覽表（第 19 章）”。

14.4.2.1.1 用下列文字代替：

“.1.1 過濾器型呼吸保護是不可接受的” 。

15.1.2 第一行，用“可以”代替“應”。

15.1.4.2 倒數第二行，用“釋放系統”代替“釋放閥門”。

15.2 第一行，用“裝貨”代替“灌艙”。

第十六章 第 16 章現有文字由下列內容代替：

“16.1 總則

16.1.1 甲烷（液化天然氣）是一種唯一的，其蒸氣或者蒸發氣可用於 A 類的機器處所，而且在此類處所中僅可用於鍋爐，惰氣發生器，內燃機和氣輪機。

16.1.2 這些條款並不排除對在其他地點的輔助服務設施使用汽油，但這些其他服務和地點應以主管機關的特殊考慮為條件。

16.2 A 類機器處所的佈置

16.2.1 在使用汽油的處所應裝有一機械通風系統並應防止形成有害空間。此種通風應在可能發生火花的電氣設備和機器設備或者其他設備和機器的附近極為有效。此種通風系統應與用於其他處所的系統分開。

16.2.2 氣體探測器應配在這些處所，特別在空氣流通被降低的地區。氣體探測器應符合第 13 章的要求。

16.2.3 位於第 16.3.1 規定的雙牆管道式導管的電氣設備應該是本質安全型的。

16.3 氣體燃料供應

16.3.1 氣體燃料管路不應通過居住處所、服務處所或控制站。如

能滿足下列要求之一時，則氣體管路可通過或延伸至另外一些處所；

.1 氣體燃料管道應為氣體燃料儲存在內管中的雙層管系結構。在同心管之間的空間應用惰性氣體增壓力大於燃料壓力。應安裝適當的報警器以指示管子之間的惰性氣體壓力的損耗。

.2 氣體燃料管道應安裝在經通風的管道或導管內。氣體燃料管道與該管道或導管的內壁之間的空間應安裝能夠至少每小時換氣 30 次的機械排風設備。通風系統的佈置，應使壓力維持低於大氣的壓力。鼓風機馬達應置於通風管道或導管外面。通風出口應位於決不會點燃易燃氣體／空氣混合物的地方。當管道有氣體燃料時，通風應始終處於工作狀態。按照 16.3.10 應設有連續氣體檢測器以顯示氣體的泄漏，並切斷向機器處所供應氣體燃料。第 16.3.7 所要求的總氣體燃料供應閥，在所要求的空氣流動不能由排風系統建立和維持時，應能自動關閉。

16.3.2 如發生氣體泄漏，只有查明泄漏之處，並予以修復才能供應氣體燃料。就此內容的告示，應張貼在機器處所顯著的地方。

16.3.3 供氣體燃料管系用的雙層壁管系或通風管道或導管，應在按 16.3.4 所要求的通風罩或通風處殼處終止。

16.3.4 對法蘭、閥門等所在的位置以及用於氣體燃料管道的諸如

鍋爐、柴油機、燃氣輪機氣體利用裝置所在地，應設有通風罩或通風外殼。如果這種通風罩或通風外殼沒有使用16.3.1.2所規定的供通風管或導管使用的抽風機來抽風，則應裝備抽風系統，並按照16.3.10的規定設有連續的氣體探測裝置，以檢測泄漏並停止向機器處所供應氣體燃料。16.3.7所要求的總氣體燃料閥門應在所要求的空氣流動不能由抽風通風系統建立並維持時，能自動關閉。通風罩或通風外殼的安裝或架設，應使通風空氣橫掃氣體使用裝置，並在罩或外殼的頂部排出。

16.3.5 所要求的通風系統的通風的進／出應分別從一個安全位置吸進和排出。

16.3.6 每台氣體利用裝置應配備一套三隻自動閥。其中兩隻閥應串接在通向消耗燃料的設備的氣體燃料管道上。第三隻閥則應安裝在兩隻串接閥之間的氣體燃料管路的排氣管上，且應排向開敞大氣的安全位置。這些閥應佈置成當必要的強力通風失效、鍋爐燃燒器熄滅、氣體燃料供應管壓力不正常、或控制閥驅動介質失效時，能自動關閉兩隻串接的氣體燃料閥，並自動打開排氣閥。或者，兩隻串接閥中的一隻閥的功能與通風閥的功能組合成一隻閥體，其佈置應是：如發生上述情況之一時，能切斷氣體流向氣體利用裝置，並打開排氣口。這三個關閉式閥門應佈置為能人工重新調節。

16.3.7 應在貨物處所內裝設能在機器處所內予以關閉的氣體燃料主閥。閥的佈置應為當檢測出氣體泄漏，或是導管或通

風罩發生通風失效，或是發生雙層壁氣體燃料管系失壓時， 閥門能自動關閉。

16.3.8 機器處所的氣體燃料管道應儘可能地符合 5.2-5.5 節的要求。管道應儘實際的可能焊好接口。根據 16.3.1，氣體燃料管道的這些部分不是在經通風的管內或導管內，而是位於貨物處所外的露天甲板上，它們應有完全滲透的對接焊口並應進行全面的射線檢查。

16.3.9 應對機器處所內的氣體燃料管系提供惰化和氣體清除的設施。

16.3.10 根據 16.3.1 和 16.3.4 要求提供的氣體探測系統應符合 13.6.2 和 13.6.4 至 13.6.8 的要求，它們應該在燃燒下限值的 30%時，啓動報警器並在氣體濃度達到燃燒下限值的 60%前關閉 16.3.7 所述的總氣體燃料閥門。

16.4 氣體生成設備及相關的儲存艙

16.4.1 所有製造作為燃料使用的氣體設備（加熱器、壓縮機、過濾器等）及儲存氣體的艙室應按照 3.1.5.4 的規定位於貨物處所之內。如果設備位於圍蔽處所，該處所應按照規則第 12.1 節進行通風；按照 11.5 節安裝一個固定式滅火系統並根據 13.6 節裝備一個氣體探測系統。

16.4.2 壓縮機應能在一個經常並容易進去的位置，而且也能從機艙遙控關閉。此外，當吸入壓力達到基於貨艙的真空釋放閥門的一定值時，壓縮機應能自動關閉。壓縮機的自動關閉裝置應有手動重新設定功能。壓縮機應裝有排入壓縮機

吸管的壓力釋放閥門。壓力釋放閥門的規格的確認考慮，當饋閥門關閉時，最大壓力不能超過最大工作壓力的 10% 這個因素。

5.6.1.3 的要求適用於這些壓縮機。

16.4.3 如果用於氣體燃料蒸發器或加熱器的加熱媒介返回貨物處所以外的區域，媒介應首先通過一個去氣艙。去氣艙應位於貨物處所。應有設備以探測並報警艙內有氣體出現。通風出口應置於一個安全位置並裝有一個阻燃罩。

16.4.4 氣體燃料空調系統的管道與壓力容器應符合第 5 章的要求。

16.5 對主鍋爐的特別要求。

16.5.1 每一鍋爐必須有一個單獨的煙喉。

16.5.2 應提供一個合適的系統以保證鍋爐內的強力通風。此類系統的細節應滿足主管機關的要求。

16.5.3 鍋爐燃燒室的形式應合適，不得出現可能使氣體驟集的氣陷。

16.5.4 燃燒系統應是雙型的，適合於單獨燃燒油類燃料或氣體燃料或同時燃燒油和氣體燃料。當操縱船舶和進行港口操作時，只能使用油類燃料，除非有氣體至油類燃燒自動轉換性能，在這種情況下，燃燒油與氣體混合燃料或單獨燃燒氣體燃料應被許可，但此系統須滿足主管機關的要求。應該是可能既快又容易地從氣體燃料操作換成油類燃料操

作。氣體噴嘴的安裝應能使氣體燃料能被油類燃料燃燒器的火焰點燃。應安裝火焰探測器，其佈置應保證送給燃燒器的氣體流被切斷，除非已建立和維持滿意的點火。在每一氣體燃燒器管道上，應安裝一隻手動的關閉閥門。應提供設備，在這些燃燒器熄滅後，用惰性氣體或蒸氣對燃燒器的供氣管道進行淨化。

16.5.5 應安裝報警裝置以監測液態燃油壓力的可能下降或有關泵可能出現的故障。

16.5.6 應作出安排，當所有的氣體或油類或氣和油正在工作的燃燒器不能點火，鍋爐的燃燒室在重新點火前應能自動清除氣體。還應作出安排以使鍋爐能被人工清除氣體。這些安排應符合主管機關的要求。

16.6 燃氣內燃機和燃氣渦輪機的特別要求

燃氣內燃機和燃氣渦輪機的特別規定將由主管機關酌情考慮。

17.1 用“i”代替參照條目“h”欄。

17.2 用“i”代替參照條目“h”欄。

17.3 用下列文字代替國際氣體規則的第 17.13 節：

“17.13 氨

17.13.1 無水氨可能引起用碳錳鋼或鎳鋼製作的容器和處理系統的應力腐蝕裂縫。為將發生這種危險的可能性降至最小，應酌情採取第 17.13.2 至 17.13.8 所述的措施。

17.13.2 當使用碳錳鋼時，貨艙、處理壓力容器和貨物管道應用優質鋼製成，其規定的最小屈服強度不應超過 355 N/mm^2，實際屈服強度不超過 440 N/mm^2。還應採取下列構造性或操作性措施之一種：

.1 應使用規定最小抗拉強度不超過 410 N/mm^2 的較低強度材料；或

.2 對貨艙等，應進行焊接後熱應力消除；或

.3 運載溫度最好保持在接近貨物沸點的-33℃ 上，但決不能高於-20℃；或

.4 氨中應含有不少於 0.1% w/w 的水。

17.13.3 如果使用除 17.13.2 中規定的那些鋼材以外的具有更高屈服性質的碳錳鋼，則全部貨艙、管道等均應作焊接後的熱應力消除處理。

17.13.4 處理壓力容器和冷卻泵系統中冷凝部分的管道，如是用 17.13.1 提及的材料製成，則應進行焊接後熱應力消除處理。

17.13.5 焊接消耗材料的抗拉力和屈服性能按最小的實際數量應超過艙或管道材料的抗拉力和屈服性能。

17.13.6 含有高於 5%鎳的鎳鋼和不符合 17.13.2 和 17.13.3 要求的碳錳鋼特別容易受到氨應力腐蝕裂縫的影響，不應用於載運此種物質的容器和管道系統。

17.13.7 含有不足 5%鎳的鎳鋼可被使用，但載運溫度應符合

17.13.2.3 中的要求。

17.13.8 為了使氨應力腐蝕裂縫的危險減至最小，最好將溶解的氧含量保持低於 2.5 ppm/w/w。達到這個目的最好辦法是在液態氨被引入前，將艙中的平均氣氧量降至一個值。這個值與下表中運載溫度成函數關係：

T（°C）	O_2（% v/v）
-30℃ 和以下	0.90
-20	0.50
-10	0.28
0	0.16
10	0.10
20	0.05
30	0.03

中間溫度時的氧含量可用直接內插法求得”。

17.14.3.1 第一行，用“應該”代替“將”。

17.14.4.3.1 刪除“貨物”。

17.14.5.1 第四行，刪除“剩餘”。

17.16.5 用“17.20.5.3”代替“17.20.6.3”。

17.20.4 第二行，刪除“坑”。

17.20.13.1 第四行，用“這些產品”代替“該產品”。

17.20.13.3 第一行，修改成“在每一初次裝載這些貨物之前和在每次回到此種服務之前，.....”。

17.20.17 第八行，用“環境”代替“大氣” 。

在第三句後增加下列內容：

“應安排進行遙控人工操作，這樣，開啓供水灑水系統和遙控操作該系統中正常關閉的閥門能在貨物處所外，靠近居住處所的一個合適位置上進行，當保護區域發生火災時應能容易進入並進行操作”。

18.1.1.7 在“最小”和“內”之間加上“可允許的”。

18.2.1 第一行，用“特徵”代替“特性”。

最後一行，用“按照”代替“如果是這樣”。

第十九章 最低要求概述，修改最低要求一覽表以包括顯示醫療急救指南號碼的“h”新欄：

a 貨品名稱	h 醫療急救指南表號
乙醛	300
氨—無水的	725
丁二烯	310
丁烷	310
丁烷／丙烷混合物	310
丁烯	310
氯	740
乙醚	330
二甲基胺	320
乙烷	310
氯乙烷	340
乙烯	310
環氧乙烷	365

a 貨品名稱	h 醫療急救指南表號
環氧乙烷／氧化丙烯 混合物，但環氧乙烷含量 按重量計不超過 30%	365
異戊間二烯	310
異丙胺	320
甲烷（液化天燃氣）	620
甲基乙炔— 丙二烯混合物	310
溴甲烷	345
氯甲烷	340
乙胺	320
氮	620
丙烷	310
丙烯	310
氧化丙烯	365
製冷氣體（見註釋）	350
二氧化硫	635
氯乙烯	340
乙氧基乙烯	330
亞乙烯基氯	340

特殊要求欄改成“i”欄。

增加一個新的註釋：

“醫療急救指南號碼是用來在國際氣體規則所涉及的產品一旦發生事故時提供查找應急程序的資料。對任何低溫運輸的，可引起霜凍的產品，醫療急救指南 620 號均適用”。

第十九章　最低要求一覽表，在環氧乙烷—環氧乙烷／氧化丙烯混合物，但環氧乙烷含量按重量計不超過 30%的 “a”欄加—*。

在最低要求一覽表中增加下列內容；

a	b	c	d	e	f	g	h	i
戊烷（所有異構體）*	1265	2G／2PG	—	—	F	R	310	14.4.4, 17.10, 17.12
戊烯（所有異構體）*	1265	2G／2PG	—	—	F	R	310	14.4.4, 17.10, 17.12

刪除第 18.2.1 段後和第 13 頁頂部的對“第十九章”的參照。

附錄

證書規範格式，腳註 5，第 3 行，在“規則”和“必須”之間增加“或及其在艙設計限度內具有物理成分的可兼容的混合物”。

RESOLUTION MSC.30(61)
(adopted on 11 December 1992)

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

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution MSC.5(48), by which the Committee adopted the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code),

RECALLING FURTHER article VIII(b) and regulation VII/11.1 of the International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention), as amended, concerning the procedure for amending the IGC Code,

BEING DESIROUS of keeping the IGC Code up to date,

HAVING CONSIDERED, at its sixty-first session, amendments to the Code proposed and circulated in accordance with article VIII(b)(i) of the SOLAS Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the SOLAS Convention, amendments to the 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 SOLAS Convention, that the amendments shall be deemed to have been accepted on 1 January 1994 unless, prior to that date, more than one third of the Contracting Governments to the SOLAS Convention or Contracting Governments the combined merchant fleets of which constitute not less than fifty per cent 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 SOLAS Convention, the amendments shall enter into force on 1 July 1994 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the SOLAS 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 SOLAS Convention;

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

ANNEX

AMENDMENTS TO THE INTERNATIONAL CODE FOR

THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING

LIQUEFIED GASES IN BULK (IGC CODE)

(Paragraph numbers and amended text refer to the authentic text of the IGC Code in the English language)

1.1.2 Replace "1 July 1986" by "1 October 1994" and add the following:

"Ships constructed before 1 October 1994 are to comply with resolution MSC.5(48) adopted on 17 June 1983."

2.7.8.1 Amend reference to read 2.9.1.1.

2.7.8.2 Amend reference to read 2.9.2.1.

2.9.2.1 Fifth line, replace "m/rad." by "m.rad".

3.2.4 Second line, insert ", machinery spaces" between "spaces" and "and".

Fourth line, insert "(L)" between "length" and "of the ship". Fourth and fifth lines, replace "house" by "superstructure or deckhouse".

Seventh line, replace "houses" by "superstructures or deckhouses".

3.2.5 Second line, replace "are to" by "or deckhouse should".

3.2.6 Third line, replace "are to" by "should".

3.8.4 Sixth line, replace "house" by "superstructure or deckhouse".

4.3.2 Replace "h_{eq}", "h_{gd}" and "$(h_{gd})_{max}$" by "P_{eq}", "P_{gd}" and "$(P_{gd})_{max}$"

4.3.2.1 First line, delete "head"

4.3.2.2 Third line, insert "liquid" after "internal".

Fourth line, delete "head"

Last paragraph, second line, insert "components" between "acceleration" and "in"; replace "needs" with "need".

Replace the last sentence of the definition of $Z\beta$ by the following:

"Tank domes considered to be part of the accepted total tank volume should be taken into account when determining $Z\beta$ unless the total volume of tank domes V_d does not exceed the following value:

$$V_d = V_t \left(\frac{100 - FL}{FL}\right)$$

where:

V_t = tank volume without any domes
FL = filling limit according to chapter 15

4.4.5.1 Last paragraph, replace "analyses" by "analysis" in three places.

4.4.5.6 Note C_w, delete " = ".

4.7.6.1 Last two lines, replace "in way of" by "adjacent to".

4.8.1 Third line, replace "service" by "design".

4.8.2 Fourth line, replace "service" by "design".

4.9.9 Last line, insert "cargo" between "the" and "containment".

4.10.9.1 Amend the second line to read "and workmanship such as out-of-roundness, local deviations from the".

4.10.9.2.1 Last line, replace "or" by "of".

4.10.18 Last line, replace "rises" by "raisers".

4.11.2 Replace paragraph 4.11.2 by the following:

"4.11.2 In the case of large cargo pressure vessels of carbon or carbon-manganese steel for which it is difficult to perform the heat treatment, mechanical stress relieving by pressurizing may be carried out as an alternative to the heat treatment with the approval of the Administration and subject to the following conditions:

.1 Complicated welded pressure vessel parts, such as sumps or domes with nozzles, with adjacent shell plates should be heat treated before they are welded to larger parts of the pressure vessel.

.2 The mechanical stress relieving process should preferably be carried out during the hydrostatic pressure test required by 4.10.10.3, by applying a higher pressure than the test pressure required by 4.10.10.3.1. The pressurizing medium should be water.

.3 For the water temperature, 4.10.10.3.2 applies.

.4 Stress relieving should be performed while the tank is supported by its regular saddles or supporting structure or, when stress relieving cannot be carried out on board, in a manner which will give the same stresses and stress distribution as when supported by its regular saddles or supporting structure.

.5 The maximum stress relieving pressure should be held for two hours per 25 mm of thickness but in no case less than two hours.

.6 The upper limits placed on the calculated stress levels during stress relieving should be the following:

- equivalent general primary membrane stress: $0.9 \cdot R_e$
- equivalent stress composed of primary bending stress plus membrane stress: $1.35 \cdot R_e$

where R_e is the specific lower minimum yield stress or 0.2% proof stress at test temperature of the steel used for the tank.

.7 Strain measurements will normally be required to prove these limits for at least the first tank of a series of identical tanks built consecutively. The location of strain gauges should be included in the mechanical stress relieving procedure to be submitted in accordance with 4.11.2.14.

.8 The test procedure should demonstrate that a linear relationship between pressure and strain is achieved at the end of the stress relieving process when the pressure is raised again up to the design pressure.

.9 High stress areas in way of geometrical discontinuities such as nozzles and other openings should be checked for cracks by dye penetrant or magnetic particle inspection after mechanical stress relieving. Particular attention in this respect should be given to plates exceeding 30 mm in thickness.

.10 Steels which have a ratio of yield stress to ultimate tensile strength greater than 0.8 should generally not be mechanically stress relieved. If, however, the yield stress is raised by a method giving high ductility of the steel, slightly higher rates may be accepted upon consideration in each case.

.11 Mechanical stress relieving cannot be substituted for heat treatment of cold formed parts of tanks if the degree of cold forming exceeds the limit above which heat treatment is required.

.12 The thickness of the shell and heads of the tank should not exceed 40 mm. Higher thicknesses may be accepted for parts which are thermally stress relieved.

.13 Local buckling should be guarded against particularly when tori-spherical heads are used for tanks and domes.

.14 The procedure for mechanical stress relieving should be submitted beforehand to the Administration for approval."

5.2.1.1 First line, replace "this section" by "sections 5.2 to 5.5".

5.2.3.2 Last line, replace "system" by "systems".

5.4.6 Heading, replace "treatments" by "treatment".

5.4.6.2 First line, replace "treatments" by "treatment".

5.4.6.3.1 Second line, replace "service" by "design".

Add the following to existing paragraph 5.4.6.3.1:

"When such butt welded joints of piping sections are made by automatic welding procedures in the pipe fabrication shop, upon special approval by the Administration, the extent of radiographic inspection may be progressively reduced but in no case to less than 10% of each joint. If defects are revealed the extent of examination should be increased to 100% and should include inspection of previously accepted welds. This special approval can only be granted if well-documented quality assurance procedures and records are available to enable the Administration to assess the ability of the manufacturer to produce satisfactory welds consistently."

5.4.6.3.2 First line, after "pipes" add "not covered by 5.4.6.3.1".

Table 6.1 Line 16, replace "PLATE" by "PLATES".

Table 6.2 Line 17, replace "SECTIONS" by "SECTIONS AND FORGINGS".

6.3.6.3 First line, amend the reference to read "6.3.6.2.1".

8.2.8.3 Last line, insert "spare" between "maintained" and "valve".

8.3.1.1 First line, correct the spelling of "pressure".

8.5.2 Definition of "D": replace "K" with "k".

9.5.3 Fourth line, delete "tank".

10.2.5.2 First and second lines: replace "cargo products" with "cargoes".

11.1.1.1 Amend reference to read "56.6".

11.3 Add the following new paragraph after 11.3.5:

"11.3.6 Remote starting of pumps supplying the water spray system and remote operation of any normally closed valves in the system should be arranged in suitable locations outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected".

11.5 Replace 11.5 by the following:

"11.5 Cargo compressor and pump rooms

11.5.1 The cargo compressor and pump rooms of any ship should be provided with a carbon dioxide system as specified in regulation II-2/5.1 and .2 of the 1974 SOLAS Convention, as amended. A notice should be exhibited at the controls stating that the system is only to be used for fire-extinguishing and not for inerting purposes, due to the electrostatic ignition hazard. The alarms referred to in regulation II-2/5.1.6 of the 1983 SOLAS amendments should be safe for use in a flammable cargo vapour-air mixture. For the purpose of this requirement, an extinguishing system should be provided which would be suitable for machinery spaces. However, the amount of carbon dioxide gas carried should be sufficient to provide a quantity of free gas equal to 45% of the gross volume of the cargo compressor and pump-rooms in all cases.

11.5.2 Cargo compressor and pump-rooms of ships which are dedicated to the carriage of a restricted number of cargoes should be protected by an appropriate fire-extinguishing system approved by the Administration."

11.6.1 In the table, delete "below 2,000 m^3 2" replace "between 2,000 m^3 and 5,000 m^3" by "5,000 m^3 and below".

Chapter 12 Preamble, replace "replace" with "should be substituted for".

13.6.11 Sixth line, replace "sampling and detecting" by "monitoring".

14.2.3.1 First line, insert "spare" between "charged" and "air".

14.3.2 Replace the regulation number by "** 14.3.2" and add a reference at the foot of the page as follows:

"

** Reference is made to the Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG) which includes the MFAG numbers of products covered by the Code and the emergency procedures to be applied in the event of an incident. MFAG numbers related to products covered by the IGC Code are given in the table of minimum requirements (chapter 19)".

14.4.2.1.1 Replace by the following:

".1.1 filter type respiratory protection is unacceptable".

15.1.2 First line, replace "should" by "may".

15.1.4.2 Penultimate line, replace "relief valve" by "relieving system".

15.2 First line, replace "tank filling" by "loading".

Chapter 16 The existing text of chapter 16 is replaced by the following:

"16.1 General

16.1.1 Methane (LNG) is the only cargo whose vapour or boil-off gas may be utilized in machinery spaces of category A and in such spaces may be utilized only in boilers, inert gas generators, combustion engines and gas turbines.

16.1.2 These provisions do not preclude the use of gas fuel for auxiliary services in other locations, provided that such other services and locations should be subject to special consideration by the Administration.

16.2 Arrangement of machinery spaces of category A

16.2.1 Spaces in which gas fuel is utilized should be fitted with a mechanical ventilation system and should be arranged in such a way as to prevent the formation of dead spaces. Such ventilation should be particularly effective in the vicinity of electrical equipment and machinery or of other equipment and machinery which may generate sparks. Such a ventilation system should be separated from those intended for other spaces.

16.2.2 Gas detectors should be fitted in these spaces, particularly in the zones where air circulation is reduced. The gas detection system should comply with the requirements of chapter 13.

16.2.3 Electrical equipment located in the double wall pipe or duct specified in 16.3.1 should be of the intrinsically safe type.

16.3 Gas fuel supply

16.3.1 Gas fuel piping should not pass through accommodation spaces, services spaces, or control stations. Gas fuel piping may pass through or extend into other spaces provided they fulfil one of the following:

.1 the gas fuel piping should be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes should be pressurized with inert gas at a pressure greater than the gas fuel pressure. Suitable alarms should be provided to indicate a loss of inert gas pressure between the pipes; or

.2 the gas fuel piping should be installed within a ventilated pipe or duct. The air space between the gas fuel piping and inner wall of this pipe or duct should be equipped with mechanical exhaust ventilation having a capacity of at least 30 air changes per hour. The ventilation system should be arranged to maintain a pressure less than the atmospheric pressure. The fan motors should be placed outside the ventilated pipe or duct. The ventilation outlet should be placed in a position where no flammable gas-air mixture may be ignited. The ventilation should always be in operation when there is gas fuel in the piping. Continuous gas detection should be provided to indicate leaks and to shut down the gas fuel supply to the machinery space in accordance with 16.3.10. The master gas fuel valve required by 16.3.7 should close automatically, if the required air flow is not established and maintained by the exhaust ventilation system.

16.3.2 If a gas leak occurs, the gas fuel supply should not be restored until the leak has been found and repaired. Instructions to this effect should be placed in a prominent position in the machinery spaces.

16.3.3 The double wall piping system or the ventilated pipe or duct provided for the gas fuel piping should terminate at the ventilation hood or casing required by 16.3.4.

16.3.4 A ventilation hood or casing should be provided for the areas occupied by flanges, valves, etc., and for the gas fuel piping, at the gas fuel utilization units, such as boilers, diesel engines or gas turbines. If this ventilation hood or casing is not served by the exhaust ventilation fan serving the ventilated pipe or duct as specified in 16.3.1.2, then it should be equipped with an exhaust ventilation system and continuous gas detection should be provided to indicate leaks and to shut down the gas fuel supply to the machinery space in accordance with 16.3.10. The master gas fuel valve required by 16.3.7 should close automatically if the required air flow is not established and maintained by the exhaust ventilation system. The ventilation hood or casing should be installed or mounted to permit the ventilating air to sweep across the gas utilization unit and be exhausted at the top of the ventilation hood or casing.

16.3.5 The ventilation inlet and discharge for the required ventilation systems should be respectively from and to a safe location.

16.3.6 Each gas utilization unit should be provided with a set of three automatic valves. Two of these valves should be in series in the gas fuel pipe to the consuming equipment. The third valve should be in a pipe that vents, to a safe location in the open air, that portion of the gas fuel piping that is between the two valves in series. These valves should be arranged so that failure of the necessary forced draught, loss of flame on boiler burners, abnormal pressure in the gas fuel supply line, or failure of the valve control actuating medium will cause the two gas fuel valves which are in series to close automatically and the vent valve to open automatically. Alternatively, the function of one of the valves in series and the vent valve can be incorporated into one

valve body so arranged that, when one of the above conditions occurs, flow to the gas utilization unit will be blocked and the vent opened. The three shut-off valves should be arranged for manual reset.

16.3.7 A master gas fuel valve that can be closed from within the machinery space should be provided within the cargo area. The valve should be arranged so as to close automatically if leakage of gas is detected, or loss of ventilation for the duct or casing or loss of pressurization of the double wall gas fuel piping occurs.

16.3.8 Gas fuel piping in machinery spaces should comply with sections 5.2-5.5 as far as found applicable. The piping should, as far as practicable, have welded joints. Those parts of the gas fuel piping which are not enclosed in a ventilated pipe or duct according to 16.3.1 and are on the open deck outside the cargo area should have full penetration butt welded joints and should be fully radiographed.

16.3.9 Provision should be made for inerting and gas-freeing that portion of the gas fuel piping system located in the machinery space.

16.3.10 Gas detection systems provided in accordance with the requirements of 16.3.1 and 16.3.4 should comply with 13.6.2 and 13.6.4 through 13.6.8 as applicable; they should activate the alarm at 30% of the lower flammable limit and shut down the master gas fuel valve referred to in 16.3.7 before the gas concentration reaches 60% of the lower flammable limit.

16.4 Gas make-up plant and related storage tanks

16.4.1 All equipment (heaters, compressors, filters, etc.) for making up the gas for its use as fuel, and the related storage tanks should be located in the cargo area in accordance with 3.1.5.4. If the equipment is in an enclosed space, the space should be ventilated according to section 12.1 of the Code and be equipped with a fixed fire-extinguishing system according to section 11.5 and with a gas detection system according to section 13.6, as applicable.

16.4.2 The compressors should be capable of being remotely stopped from a position which is always and easily accessible, and also from the engine-room. In addition, the compressors should be capable of automatically stopping when the suction pressure reaches a certain value depending on the set pressure of the vacuum relief valves of the cargo tanks. The automatic shut-down device of the compressors should have a manual resetting. Volumetric compressors should be fitted with pressure relief valves discharging into the suction line of the compressor. The size of the pressure relief valves should be determined in such a way that, with the delivery valve kept closed, the maximum pressure does not exceed by more than 10% the maximum working pressure. The requirements of 5.6.1.3 apply to these compressors.

16.4.3 If the heating medium for the gas fuel evaporator or heater is returned to spaces outside the cargo area it should first go through a degassing tank. The degassing tank should be located in the cargo area. Provisions should be made to detect and alarm the presence of gas in the tank. The vent outlet should be in a safe position and fitted with a flame screen.

16.4.4 Piping and pressure vessels in the gas fuel conditioning system should comply with chapter 5.

16.5 Special requirements for main boilers

16.5.1 Each boiler should have a separate uptake.

16.5.2 A system suitable to ensure the forced draught in the boilers should be provided. The particulars of such a system should be to the satisfaction of the Administration.

16.5.3 Combustion chambers of boilers should be of suitable form such as not to present pockets where gas may accumulate.

16.5.4 The burner systems should be of dual type, suitable to burn either oil fuel or gas fuel alone or oil and gas fuel simultaneously. Only oil fuel should be used during manoeuvring and port operations unless automatic transfer from gas to oil burning is provided in which case the burning of a combination of oil and gas or gas alone may be permitted provided the system is demonstrated to the satisfaction of the Administration. It should be possible to change over easily and quickly from gas fuel operation to oil fuel operation. Gas nozzles should be fitted in such a way that gas fuel is ignited by the flame of the oil fuel burner. A flame scanner should be installed and arranged to assure that gas flow to the burner is cut off unless satisfactory ignition has been established and maintained. On the pipe of each gas burner a manually operated shut-off valve should be fitted. An installation should be provided for purging the gas supply piping to the burners by means of inert gas or steam, after the extinguishing of these burners.

16.5.5 Alarm devices should be fitted in order to monitor a possible decrease in liquid fuel oil pressure or a possible failure of the related pumps.

16.5.6 Arrangements should be made such that, in case of flame failure of all operating burners for gas or oil or for a combination thereof, the combustion chambers of the boilers are automatically purged before relighting. Arrangements should also be made to enable the boilers to be manually purged and these arrangements should be to the satisfaction of the Administration.

16.6 Special requirements for gas-fired internal combustion engines and gas-fired turbines

Special provisions for gas-fuelled internal combustion engines and for gas turbines will be considered by the Administration in each case".

17.1 Replace reference to column "h" by "i".

17.2 Replace reference to column "h" by "i".

17.3 Replace present section 17.13 of the IGC Code by the following:

"17.13 Ammonia

17.13.1 Anhydrous ammonia may cause stress corrosion cracking in containment and process systems made of carbon manganese steel or nickel steel. To minimize the risk of this occurring, measures detailed in 17.13.2 to 17.13.8 should be taken as appropriate.

17.13.2 Where carbon manganese steel is used, cargo tanks, process pressure vessels and cargo piping should be made of fine grained steel with a specified minimum yield strength not exceeding 355 N/mm^2 and with an actual yield strength not exceeding 440 N/mm^2. One of the following constructional or operational measures should also be taken:

.1 lower strength material with a specified minimum tensile strength not exceeding 410 N/mm^2 should be used; or

.2 cargo tanks, etc., should be post-weld stress-relief heat treated; or

.3 carriage temperature should be maintained preferably at a temperature close to the product's boiling point of -33°C but in no case at a temperature above -20°C; or

.4 the ammonia should contain not less than 0.1% w/w water.

17.13.3 If carbon manganese steels with higher yield properties are used other than those specified in 17.13.2, the completed cargo tanks, piping, etc. should be given a post-weld stress-relief heat treatment.

17.13.4 Process pressure vessels and piping of the condensate part of the refrigeration system should be given a post-weld stress-relief heat treatment when made of materials mentioned in 17.13.1.

17.13.5 The tensile and yield properties of the welding consumables should exceed those of the tank or piping material by the smallest practical amount.

17.13.6 Nickel steel containing more than 5% nickel and carbon manganese steel not complying with the requirements of 17.13.2 and 17.13.3 are particularly susceptible to ammonia stress corrosion cracking and should not be used for containment and piping systems for the carriage of this product.

17.13.7 Nickel steel containing not more than 5% nickel may be used provided the carriage temperature complies with the requirements specified in 17.13.2.3.

17.13.8 In order to minimize the risk of ammonia stress corrosion cracking, it is advisable to keep the dissolved oxygen content below 2.5 ppm/w/w. This can best be achieved by reducing the average oxygen content in the tanks prior to the introduction of liquid ammonia to less than the values given as a function of the carriage temperature T in the table below:

T (°C)	O_2(%v/v)
-30 and below	0.90
-20	0.50
-10	0.28
0	0.16
10	0.10
20	0.05
30	0.03

Oxygen percentages for intermediate temperatures may be obtained by direct interpolation".

17.14.3.1 First line, replace "are to" by "should".

17.14.4.3.1 Delete "cargo".

17.14.5.1 Fourth line, delete "remainder of the".

17.16.5 Replace "17.20.6.3" by "17.20.5.3".

17.20.4 Second line, delete "pit".

17.20.13.1 Fourth line, replace "the product" by "these products".

17.20.13.3 First line, amend to read "Before each initial loading of these products and before every subsequent return to such service, ...".

17.20.17 Eighth line, replace "atmospheric" by "ambient".

Insert the following after the third sentence:

"Remote manual operation should be arranged such that remote starting of pumps supplying water spray system and remote operation of any normally closed valves in the system can be carried out from a suitable location outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected".

18.1.1.7 Insert "allowable" between "minimum" and "inner".

18.2.1 First line, replace "character" by "characteristics".
Last line, replace "if so" by "as".

Chapter 19 Summary of minimum requirements, revise the table of minimum requirements to include a new column "h" showing MFAG numbers, as follows:

a Product name	h MFAG table No.
Acetaldehyde	300
Ammonia, anhydrous	725
Butadiene	310
Butane	310
Butane-propane mixtures	310
Butylenes	310
Chlorine	740
Diethyl ether	330
Dimethylamine	320
Ethane	310
Ethyl chloride	340
Ethylene	310
Ethylene oxide	365
Ethylene oxide-propylene oxide mixtures with ethylene oxide content of not more than 30% by weight	365
Isoprene	310
Isopropylamine	320
Methane (LNG)	620
Methyl acetylene-propadiene mixtures	310
Methyl bromide	345
Methyl chloride	340
Monoethylamine	320
Nitrogen	620
Propane	310
Propylene	310
Propylene oxide	365
Refrigerant gases (see notes)	350
Sulphur dioxide	635
Vinyl chloride	340
Vinyl ethyl ether	330
Vinylidene chloride	340

Special requirements column becomes "i".

Add a new explanatory note:

"MFAG numbers are provided for information on the emergency procedures to be applied in the event of an incident with the products covered by the IGC Code. Where any of the products listed are carried at low temperature from which frostbite may occur MFAG No.620 is also applicable".

Chapter 19 Table of minimum requirements, insert an asterisk in column "a" for Ethylene oxide - propylene oxide mixtures with ethylene oxide content of not more than 30% by weight.

Add the following to the table of the summary of minimum requirements:

a	b	c	d	e	f	g	h	i
Pentanes (all isomers)*	1265	2G/2PG	-	-	F	R	310	14.4.4, 17.10, 17.12
Pentene (all isomers)*	1265	2G/2PG	-	-	F	R	310	14.4.4, 17.10, 17.12

Delete the reference to "Chapter 19" after paragraph 18.2.1 and at the top of page 13.

Appendix

Model form of certificate, footnote 5, third line, insert "or their compatible mixtures having physical proportions within the limitations of tank design" between "Code" and "should".

第 53/2015 號行政長官公告

中華人民共和國是國際海事組織的成員國及一九七四年十一月一日訂於倫敦的《國際海上人命安全公約》（下稱“公約”）的締約國；

國際海事組織大會於一九九三年十一月四日透過第A.744（18）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》；

國際海事組織海上安全委員會於一九九六年六月四日透過第MSC.49（66）號決議通過了上指指南的修正案，該修正案自一九九九年十二月二十日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.49（66）號決議的中文及英文文本。

二零一五年五月十一日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 53/2015

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Salvaguarda da Vida Humana no Mar, concluída em Londres em 1 de Novembro de 1974, adiante designada por Convenção;

Considerando igualmente que, em 4 de Novembro de 1993, a Assembleia da Organização Marítima Internacional, através da resolução A.744(18), adoptou as Directrizes relativas ao Programa Reforçado de Inspecções no âmbito das Vistorias a Graneleiros e Petroleiros;

Mais considerando que, em 4 de Junho de 1996, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.49(66), adoptou emendas às referidas Directrizes, e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 20 de Dezembro de 1999;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.49(66), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 11 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.49（66）號決議

（1996 年 6 月 4 日通過）

通過《散貨船和油輪檢驗期間的強化檢查方案指南》

（第 A.744（18）號決議）的修正案

海上安全委員會，

憶及《國際海事組織公約》關於本委員會職責的第 28（b）條，

還憶及第 A.744（18）號決議，大會以該決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》，

進一步憶及經修正的《1974 年海上人命安全公約》（《安全公約》）關於上述指南修正程序的第 VIII（b）條和規則第 XI/2 條，

注意到第十八次大會在通過第 A.744（18）號決議時，要求海上安全委員會和海上環境保護委員會在應用該指南所取得的經驗的基礎上保持對其進行審查並作出必要的更新，

在其第 66 次會議上**審議了**按照《安全公約》第 VIII（b）（i）條所建議和分發的該指南的修正案，

1. 按照《安全公約》第 VIII（b）（iv）條，**通過了**該指南的修正案，其條文載於本決議的附件中；

2. 按照《安全公約》第 VIII（b）（vi）（2）（bb）條，**決定**該修正案應於 1998 年 1 月 1 日視為已被接受，除非在此日期之前，超過三分之一的《安全公約》締約政府或合計商船總噸位不少於世界商船總噸位 50%的締約政府通知其反對該修正案；

3. **請**締約政府注意，按照《安全公約》第 VIII（b）（vii）（2）條，該修正案應在其按照上述第 2 款被接受後於 1998 年 7 月 1 日生效；

4. **要求**秘書長依照《安全公約》第 VIII（b）（v）條將本決議和附件中的修正案文本的核證副本發送給《安全公約》的所有締約政府；

5. **進一步要求**秘書長將本決議及其附件的副本發送給非《安全公約》締約政府的本組織會員。

附件

《散貨船和油輪檢驗期間的強化檢查方案指南》

（第 A.744（18）號決議）的修正案

散貨船檢驗期間的強化檢查方案指南（第 A.744（18）號決議，附件 A）

1 在目錄中，以“5.1 檢驗方案”代替“5.1 計劃”。

2 在目錄的末尾增加下列條文：

“附件 9－強化散貨船檢驗計劃的相關技術評定指南。”

3 以“檢驗方案”代替第 5.1 段的小標題“計劃”。

4 在第 5.1.1 段加上下列一句：

“檢驗方案應為書面形式。”

5 以下列條文代替現有第 5.1.2 段：

“5.1.2 在制定檢驗方案時，應收集並查閱下列文件以選擇要檢查的液艙、貨艙、區域和結構構件：

－ 檢驗狀況和基本船舶信息；

－ 第 6.2 和 6.3 段所述的船上文件；

－ 主結構平面圖（總結構圖），包括有關高抗拉鋼材（HTS）的使用信息；

— 船級社和船東以前的有關檢驗和檢查報告；

— 有關船舶貨艙和液艙的使用、典型貨物的信息和其他有關資料；

— 有關新船防腐水平的信息；

— 關於營運期間有關維護水平的信息。”

6 將現有第 5.1.3 段重新編號為第 5.1.4 段。

7 刪去現有第 5.1.4 段。

8 增加下列新第 5.1.3 段：

“5.1.3 提交的檢驗方案要考慮到並至少符合附件 1 和 2 及第 2.7 段分別對細節檢驗、厚度測量和液艙測試的要求，還要包括至少以下方面的信息：

— 基本船舶信息和細節；

— 主結構平面圖（總結構圖），包括有關高抗拉鋼材（HTS）的使用情況；

— 貨艙和液艙平面圖；

— 帶有關於塗層的使用、保護和狀況信息的貨艙和液艙清單；

— 檢驗條件（例如：關於洗艙、除氣、通風和照明等的信息）；

— 進入結構物的規定和方法；

— 檢驗設備；

— 作細節檢驗的貨艙、液艙和區域的確定（附件 1 各項）；

— 作厚度測量部分的確定（附件 2 各項）；

— 作液艙測試的液艙確定（第 2.7 段各項）；和

— 與相關船舶有關的損壞經歷。”

9 增加下列新第 5.1.5 和 5.1.6 段：

“5.1.5 主管機關應通知船東適用於該船的最大可接受結構腐蝕減少量。

5.1.6 還可以利用附件 9 中所列的強化散貨船檢驗計劃的相關技術評定指南。這些指南是個建議的工具，如果主管機關認為必要且適當，可以在準備所要求的檢驗方案時自行援用。”

10 增加下列新附件 9：

“附件 9

強化散貨船檢驗計劃的相關技術評定指南

定期檢驗

1 前言

本指南包含可在強化散貨船特殊檢驗計劃時採用的有關技術評定信息和建議。如附件 A 第 5.1.6 段所指出的，本指南是個建議的工具，如果主管機關認為必要且適當，可以在準備所要求的檢驗方案時自行援用。

2 目的和原則

2.1 目的

本指南所述技術評定的目的在於幫助確定臨界結構區域、指定可疑區域和集中注意可能特別易損耗或損壞，或顯示有易損耗或損壞歷史的結構構件或結構構件區域。此信息可能有助於為厚度測量、細節檢驗和液艙測試指定位置、區域、貨艙和液艙。

2.2 最低要求

本指南不能用於降低附件 1 和 2 及附件 A 第 2.7 段分別對細節檢驗、厚度測量和液艙測試的要求，這些要求在所有情況下都應作為最低要求予以遵守。

2.3 時間安排

與檢驗計劃的其他方面一樣，本指南所述的技術評定應遠在定期檢驗開始前，即在開始檢驗前並通常至少在檢驗預定完成日期的 12 至 15 個月前，由船東或船舶經營人與主管機關合作完成。

2.4 要考慮的方面

對某一船舶下列方面的技術評定（可包括與可能的老化有關的風險的數量或質量評估），可用作指定要檢驗的貨艙、液艙和區域的基礎：

— 設計特徵，諸如各種結構構件的應力水平、設計細節和高抗拉鋼材的使用範圍；

— 該船及類似船舶（如有的話）有關腐蝕、裂縫、彎曲、凹陷和維修的歷史；和

— 與載運貨物的類型、液艙的保護及貨艙和液艙的塗層（如有的話）狀況有關的信息。

各種結構構件和區域的易損壞或易老化的有關風險的技術評定，應以經認可的原則和做法（諸如可在參考材料 3 中找到者）加以判別和確定。

3 技術評定

3.1 總則

有三種基本類型的可能損壞可能成為與檢驗計劃相關的技術評定對象：腐蝕、裂縫和彎曲。檢驗計劃一般不包括接觸性破損，因為凹陷通常記錄在備忘錄中，並被認為需由驗船師作為例行工作加以處理。

檢驗計劃過程中進行的技術評定原則上應如圖 1 所示；該圖簡略地描繪了在制定檢驗計劃過程中如何進行技術評定。該方法係以基本與下述兩點有關的經驗和知識的評估為基礎：

.1 設計；和

.2 腐蝕。

設計應考慮到由於震動、高應力水平或疲勞而可能容易彎曲或裂縫的有關結構細節。

腐蝕與老化過程有關，且與新造時的防腐質量和在使用壽命期間的後續維護密切相關。腐蝕也可導致裂縫和/或彎曲。

3.2 方法

3.2.1 設計細節

與該船或類似船舶有關的破損經歷（如有的話），是計劃過程中所使用的主要信息來源。此外，還應包括從設計圖紙中選擇的結構細節。

需要考慮的典型破損經歷包括：

— 裂縫的數目、範圍、位置和頻率；和

— 彎曲的位置。

此信息可以在檢驗報告和/或船東的檔案，包括船東自己檢查的結果中找到。對這些缺陷應予分析、記錄並標在草圖上。

此外，還應利用一般經驗。例如，圖 2 給出了經驗表明散貨船上可能易受結構破損的典型位置。還應參閱載有各種散貨船結構細節典型破損和建議維修方法一覽表的參考資料 3。

這些圖應結合審查主結構圖使用，以便與實際結構相比較並查出可能易受破損的類似細節。圖 3 給出了一個例證。

對主結構圖的審查，除使用上面提到的圖以外，還應包括核查經歷過裂縫的典型設計細節。對導致破損的因素應予以仔細研究。

高抗拉鋼材（HTS）的使用是一個重要因素。使用普通、低碳鋼材一直處於良好工作狀態的詳情表明，在採用高抗拉鋼材及其較高的相關應力時，可能更容易破損。高抗拉鋼材廣泛用於甲板和船底結構的縱向材料，且對其使用一般有良好的經驗。在其他位置，如船側結構，動態應力可能較高，使用高抗拉鋼材則不夠有利。

在這一點上，按有關方法對典型和重要構件及細節進行應力計算可能是有益的，並應予以考慮。

應記錄下在此過程中確定的選擇結構區域，並把它們標在將納入檢驗方案的結構圖上。

3.2.2 腐蝕

為了評估有關的腐蝕危險，通常要考慮以下信息：

- 液艙、貨艙和處所的使用
- 塗層狀況
- 陽極狀況
- 清洗程序
- 先前的腐蝕破損
- 貨艙壓載的使用和時間
- 貨艙和壓載艙的腐蝕危險
- 與加熱燃油艙相鄰的壓載艙位置。

參考材料 2 通過使用典型狀況圖片，給出了可用於判定和描述塗層狀況的明確範例。

對於散貨船，應把參考材料 3 與船齡和從為準備檢驗方案而收集的信息中取得的有關船舶狀況預測信息作為評估的基礎。

應將各種液艙、貨艙和處所與相應指定的腐蝕危險一併列出。

3.2.3 細節檢驗和厚度測量的位置

在腐蝕危險和設計經驗評估表的基礎上，可以指定初次細節檢驗和厚度測量（部分）的位置。

須進行厚度測量的部分通常應指定在腐蝕危險被判定為最高的液艙、貨艙和處所。

對需進行細節檢驗的液艙、貨艙和處所的指定，最初應以最高腐蝕危險為基礎，並應始終包括壓載艙。選擇的原則應為：船齡越大範圍越大，或者，信息不充分或不可靠的地方範圍增加。

參考材料

1 油輪結構合作論壇：《油輪結構檢驗和狀況評估指導手冊，1986》；

2 油輪結構合作論壇：《油輪結構狀況評估和維護，1992》；

3 國際船級社協會：《散貨船：船殼結構檢驗、評估和維護指南，1994》。

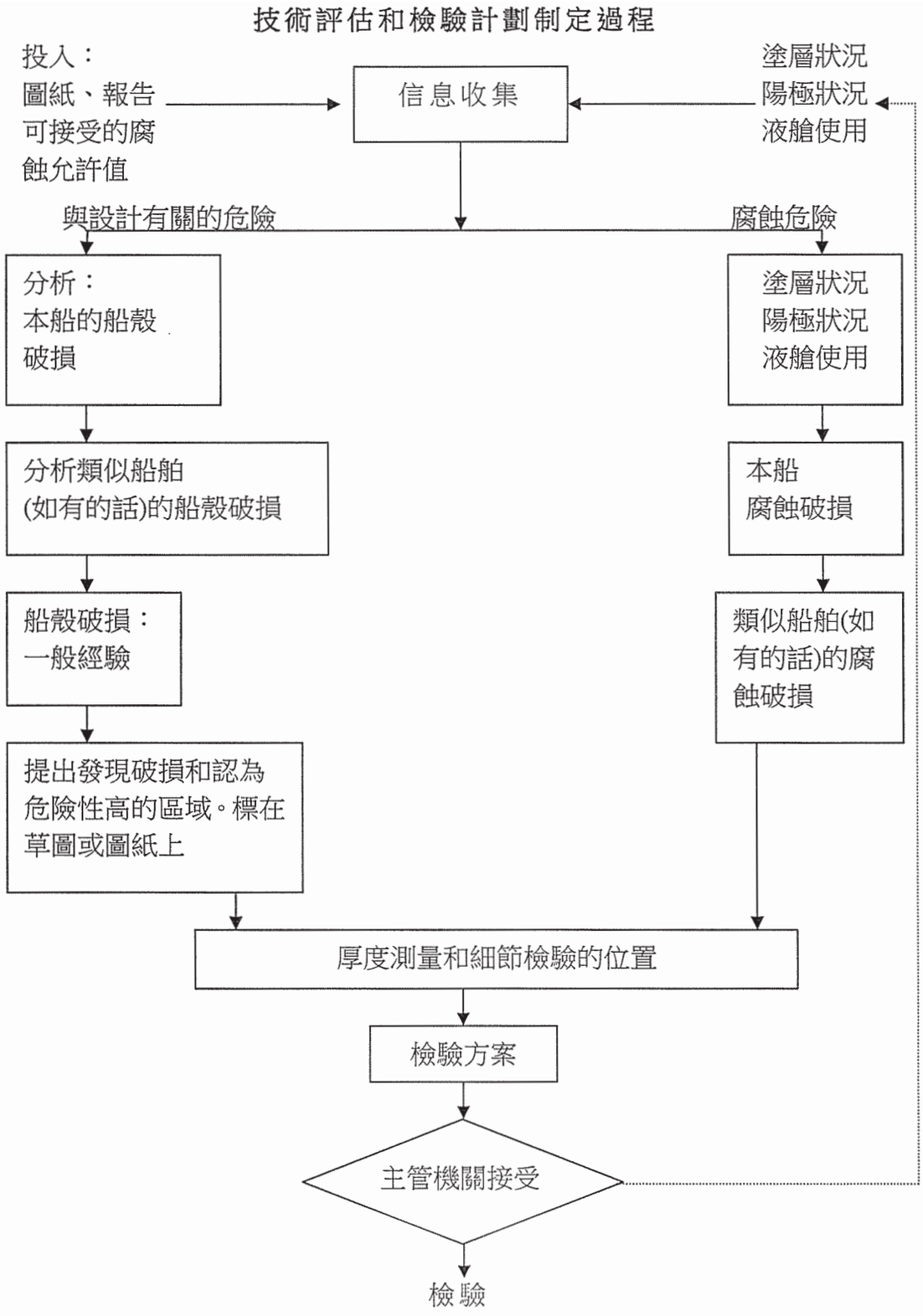


圖 1：計劃制定過程－技術評估和檢驗

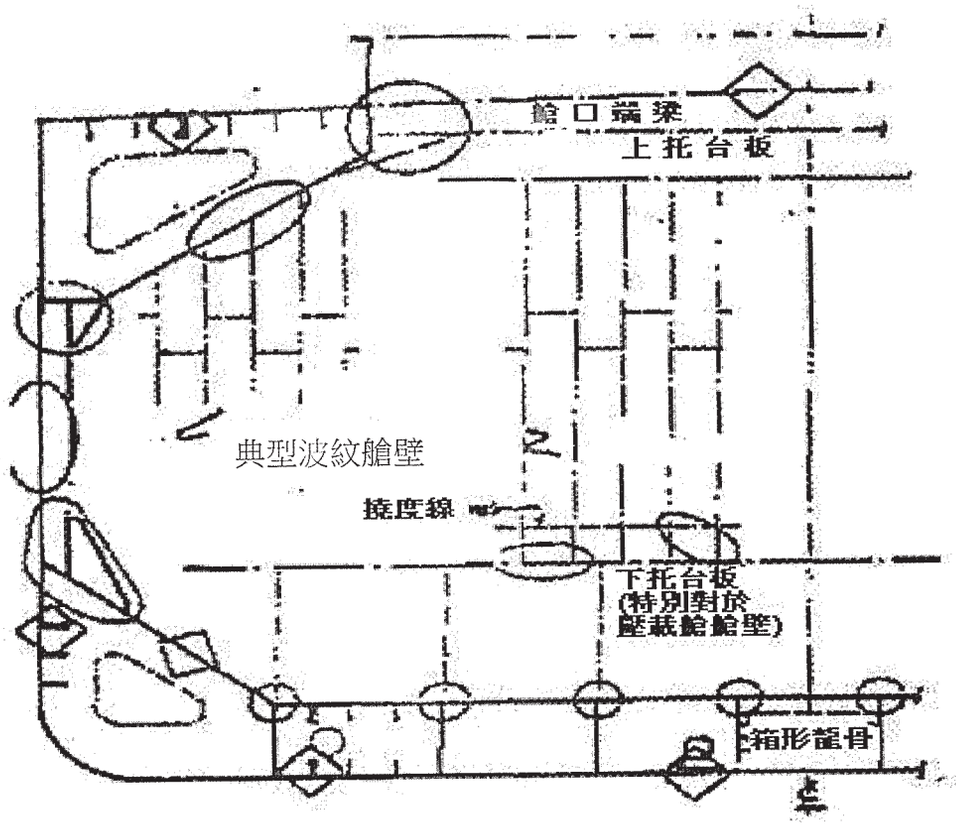


圖 2：易受結構破損或腐蝕的典型位置

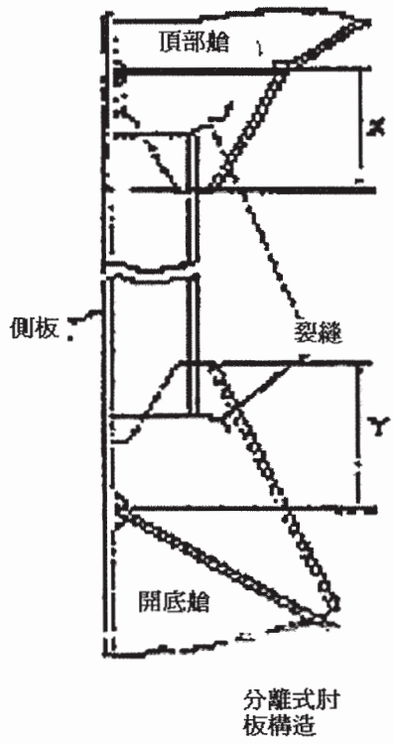
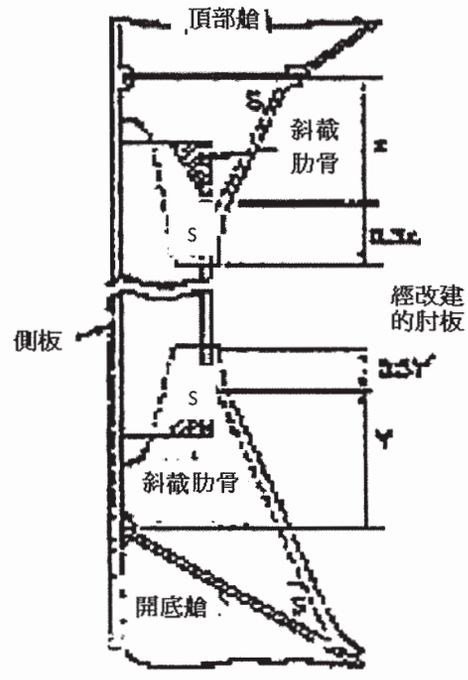
區域 1	結構項目	船殼側肋骨和端肘板（分離式肘板構造）	例 1
破損細節		肋骨末端肋板裂縫	
破損情況草圖  分離式肘板構造		修理草圖  S = 被斜截的端頭	
破損的可能原因/修理記錄 1 此類破損是由於應力集中。 2 對於小裂縫，如髮狀裂縫，可以沿裂縫刻出“V”形槽，熔焊後磨平，再通過無損探傷進行檢查。 3 對於較大/顯著裂縫，應考慮進行切割並部分/全部更新肋骨肘板。如更新肘板，肋骨端部可定形為能使其變軟。 4 為謹慎起見，連接邊艙的肘板邊緣要加焊低硬度焊趾。 5 注意邊艙延伸肘板臂結構，即在沿肘板臂的方向提供了加強板。			

圖 3：典型破損和維修舉例（引自參考材料 3）

油輪檢驗期間的強化檢查方案指南（第 A.744（18）號決議，附件 B）

11 在目錄中，以“5.1 檢驗方案”代替“5.1 計劃”。

12 在目錄的結尾增加下列條文：

“附件 11－制定強化油輪檢驗計劃的相關技術評定指南”。

13 以“檢驗方案”代替第 5.1 段的小標題“計劃”。

14 在第 5.1.1 段加上下列一句：

“檢驗方案應為書面形式。”

15 以下列條文代替現有第 5.1.2 段：

“5.1.2 在制定檢驗方案時，應收集並查閱下列文件以選擇要檢查的液貨艙、區域和結構構件：

－ 檢驗狀況和基本船舶信息；

－ 第 6.2 和 6.3 段所述的船上文件；

－ 主結構平面圖（總結構圖），包括有關高抗拉鋼材（HTS）的使用情況；

－ 船級社和船東以前的有關檢驗和檢查報告；

－ 有關船舶液貨艙的使用信息、典型貨物和其他有關資料；

－ 有關新船防腐水平的信息；和

－ 關於營運期間有關維護水平的信息。”

16 將現有第 5.1.3 段重新編號為第 5.1.4 段。

17 刪去現有第 5.1.4 段。

18 增加以下新第 5.1.3 段：

“5.1.3 提交的檢驗方案要考慮到並至少符合附件 1、2 和 3 分別對細節檢驗、厚度測量和液艙測試的要求，還要包括至少以下方面的有關信息：

－ 基本船舶信息和細節；

－ 主結構平面圖（總結構圖），包括有關高抗拉鋼材（HTS）的使用情況；

－ 液貨艙平面圖；

－ 帶有關於塗層的使用、保護和狀況信息的液貨艙清單；

－ 檢驗條件（例如：關於洗艙、除氣、通風和照明等的信息）；

－ 進入結構物的規定和方法；

－ 檢驗設備；

－ 作細節檢驗的液貨船和區域的確定（附件 1 的各項）；

－ 作厚度測量的部分的確定（附件 2 的各項）；

－ 作液艙測試的液艙的確定（附件 3 的各項）；和

－ 與相關船舶有關的破損經歷。”

19 增加下列新第 5.1.5 和 5.1.6 段：

“5.1.5 主管機關應通知船東適用於該船的最大可接受結構腐蝕減少量。

5.1.6 還可以利用附件 11 中所列的制定強化油輪檢驗計劃的相關技術評定指南。這些指南是個建議的工具，如果主管機關認為必要且適當，可以在準備所要求的檢驗方案時自行援用。”

20 增加下列新附件 11：

“附件 11

強化油輪檢驗計劃的技術評定指南

定期檢驗

1 前言

本指南包含可在強化油輪特殊檢驗計劃時採用的有關技術評定信息和建議。如附件 B 第 5.1.6 段所指出的，本指南是個建議的工具，如果主管機關認為必要且適當，可以在準備所要求的檢驗方案時自行援用。

2 目的和原則

2.1 目的

本指南所述技術評定的目的在於幫助確定臨界結構區域、指定可疑區域和集中注意可能特別易損耗或損壞，或顯示有易損耗或損壞歷史的結構構件或結構構件區域。此信息可能有助於為厚度測量、細節檢驗和液艙測試指定位置、區域和液貨艙。

2.2 最低要求

本指南不能用於降低附件 1、2 和 3 分別對細節檢驗、厚度測量和液艙測試的要求，這些要求在所有情況下都應作為最低要求予以遵守。

2.3 時間安排

與檢驗計劃的其他方面一樣，本指南所述的技術評定應遠在定期檢驗開始前，即在開始檢驗前並通常至少在檢驗預定完成日期的 12 至 15 個月前，由船東或船舶經營人與主管機關合作完成。

2.4 要考慮的方面

對某一船舶下述方面的技術評定（可包括與可能的老化有關的風險的數量或質量評估），可用作指定要檢驗的液貨艙和區域的基礎：

— 設計特徵，諸如各種結構構件的應力水平、設計細節和高抗拉鋼材的使用範圍；

— 該船及類似船舶（如有的話）有關腐蝕、裂縫、彎曲、凹陷和維修的歷史；和

— 與載運貨物的類型、使用不同的液艙裝貨/壓載、液艙的保護及塗層狀況（如有的話）有關的信息。

各種結構構件和區域的易壞和老化的有關風險的技術評定，應以經認可的原則和做法（經認可參考材料 1 和 2 中找到者）加以判別和確定。

3 技術評定

3.1 總則

有三種基本類型的可能損壞可能成為與檢驗計劃相關的技術評定對象：腐蝕、裂縫和彎曲。檢驗計劃一般不包括接觸性破損，因為凹陷通常記錄在備忘錄中並被認為需由驗船師作為例行工作加以處理。

檢驗計劃過程中進行的技術評定原則上應如圖 1 所示；該圖簡略地描繪了在制定檢驗計劃過程中如何進行技術評定。該方法係以基本與下述兩點有關的經驗和知識的評估為基礎：

.1 設計；和

.2 腐蝕。

設計應考慮到由於震動、高應力水平或疲勞而可能容易彎曲或裂縫的有關結構細節。

腐蝕與老化過程有關，且與新造時的防腐質量和在使用壽命期間的後續維護密切相關。腐蝕也可導致裂縫和/或彎曲。

3.2 方法

3.2.1 設計細節

與該船或類似船舶有關的破損經歷（如有的話），是計劃過程中所使用的主要信息來源。此外，還應包括從設計圖紙中選擇的結構細節。

需要考慮的典型破損經歷包括：

— 裂縫的數目、範圍、位置和頻率；和

— 彎曲的位置。

此信息可以在檢驗報告和/或船東的檔案，包括船東自己檢查的結果中找到。對這些缺陷應予分析、記錄並標在草圖上。

此外，還應利用一般經驗，例如，應參閱參考資料 1，它收錄了各種油輪結構細節典型破損和建議維修方法一覽表。

這些圖應結合審查主結構圖使用，以便與實際結構相比較並查出可能易受破損的類似細節。圖 2 給出了一個例證。

對主結構圖的審查，除使用上面提到的圖以外，還應包括核查經歷過裂縫的典型設計細節。對導致破壞的因素應予以仔細研究。

高抗拉鋼材（HTS）的使用是一個重要因素。使用普通、低碳鋼材一直處於良好工作狀態的詳情表明，在採用高抗拉鋼材及其較高的相關應力時，可能更容易破損。高抗拉鋼材廣泛用於甲板和船底結構的縱向材料，且對其使用一般有良好的經驗。在其他位置，如船側結構，動態應力可能較高，使用高抗拉鋼材則不夠有利。

在這一點上，按有關方法對典型和重要構件及細節進行應力計算可能是有益的，並應予以考慮。

應記錄下在此過程中確定的選擇結構區域，並把它們標在將納入檢驗方案的結構圖上。

3.2.2 腐蝕

為了評估有關的腐蝕危險，通常要考慮以下信息：

－ 液貨艙和處所的使用

－ 塗層狀況

－ 陽極狀況

－ 清洗程序

－ 先前的腐蝕破損

－ 貨艙壓載的使用和時間

— 腐蝕危險計劃（見參考材料 2，表 3.1）

— 加熱艙的位置。

參考材料 2 通過使用典型狀況圖片，給出了可用於判定和描述塗層狀況的明確範例。

腐蝕危險評估應以參考材料 2 中的信息與船齡和從為準備檢驗方案而收集的信息中取得的有關船舶狀況預測的信息為基礎。

應將各種液貨艙和處所應與相應指定的腐蝕危險一併列出。

3.2.3 確定細節檢驗和厚度測量的位置

在腐蝕危險和設計經驗評估表的基礎上，可以指定初次細節檢驗和厚度測量（部分）的位置。

須進行厚度測量的部分通常應指定在腐蝕危險判定為最高的液貨艙和處所。

對需進行細節檢驗的液貨艙和處所的指定，最初應以最高腐蝕危險為基礎，並應始終包括壓載艙。選擇的原則應為：船齡越大範圍越大，或者，信息不充分或不可靠的地方範圍增加。

參考材料

1 油輪結構合作論壇：《油輪結構檢驗和狀況評估指導手冊，1986》；

2 油輪結構合作論壇：《油輪結構狀況評估和維護，1992》。

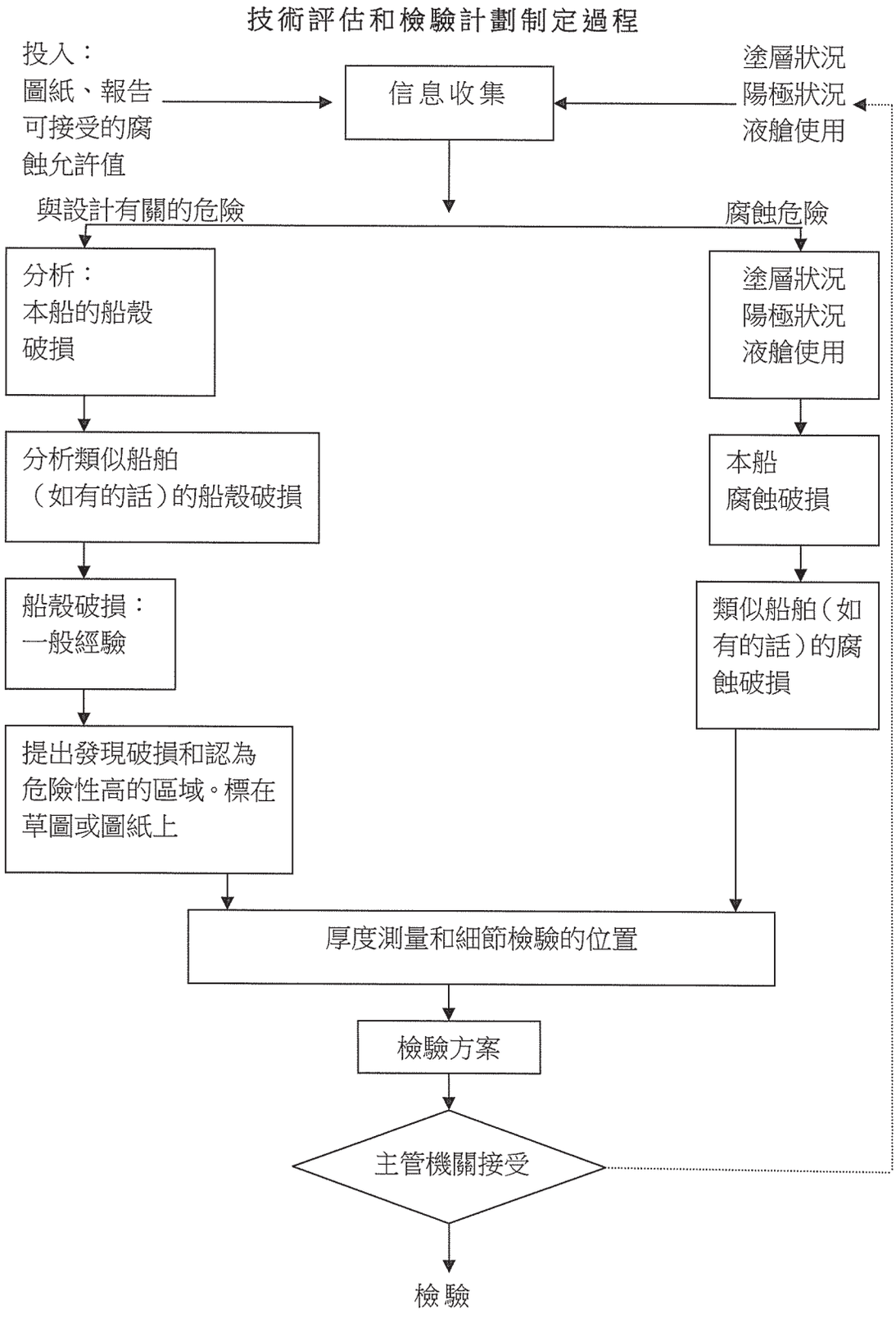
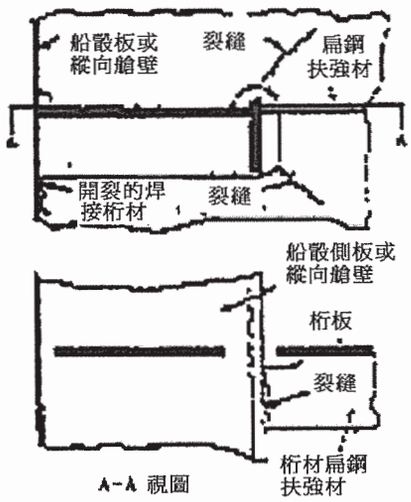
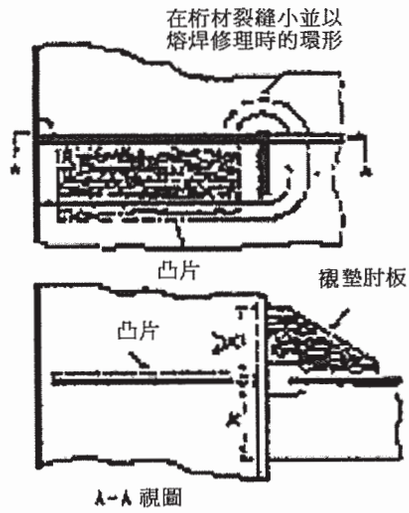


圖 1：計劃制定過程－技術評估和檢驗

位置： 縱樑與橫桁材的連接

例 1： 縱向扶強材連接切口處桁材和扁鋼裂縫

典型破損	建議的維修
 註：可能出現一條或多條裂縫	 經剪切並部分更新或代之以焊接桁材和扁鋼

造成破損的因素

1 扁鋼扶強材的非對稱連接造成的扶強材底緣在疲勞負載下出現的高峰值應力。

2 縱樑與桁材板的連接面積不夠。

3 板的厚度周圍的繞焊有缺陷。

4 應力集中區域的高度局部腐蝕，如扁鋼扶強材板連接處、縱樑切口角和切口處桁材至船殼的連接處。

5 橫向桁材的高剪切應力。

6 動態航行負載/船舶運動。

圖	油輪結構合作論壇	圖
1	內容：構造細節分類	1

圖 2：典型破損和維修舉例（引自參考材料 1）

RESOLUTION MSC.49(66)
(adopted on 4 June 1996)

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

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.744(18) by which the Assembly adopted Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers,

RECALLING FURTHER article VIII(b) and regulation XI/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, concerning the procedure for amending the aforementioned Guidelines,

NOTING that the Assembly, at its eighteenth session, when adopting resolution A.744(18), requested the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

HAVING CONSIDERED, at its sixty-sixth session, amendments to the Guidelines proposed and circulated in accordance with article VIII(b)(i) of the SOLAS Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the SOLAS Convention, amendments to the Guidelines 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 January 1998, unless, prior to that date, more than one third of the Contracting Governments to the SOLAS 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 SOLAS Convention, the amendments shall enter into force on 1 July 1998 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the SOLAS 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 SOLAS 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 SOLAS Convention.

ANNEX

AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS (resolution A.744(18), Annex A)

1 In the contents, "5.1 Planning" is replaced by "5.1 Survey programme"

2 In the contents, the following text is added at the end:

"Annex 9 - Guidelines for technical assessment in conjunction with the planning of enhanced surveys for bulk carriers".

3 In paragraph 5.1, sub-heading "Planning" is replaced by "Survey programme".

4 The following sentence is added to paragraph 5.1.1:

"The survey programme should be in a written format."

5 Existing paragraph 5.1.2 is replaced by the following text:

"5.1.2 In developing the survey programme, the following documentation should be collected and consulted with a view to selecting tanks, holds, areas and structural elements to be examined:

- survey status and basic ship information;
- documentation on board, as described in 6.2 and 6.3;
- main structural plans (scantlings drawings), including information regarding use of high tensile steels (HTS);
- relevant previous survey and inspection reports from both the classification society and the owner;
- information regarding the use of the ship's holds and tanks, typical cargoes and other relevant data;
- information regarding corrosion protection level on the new building; and
- information regarding the relevant maintenance level during operation."

6 Existing paragraph 5.1.3 is renumbered as a new paragraph 5.1.4.

7 Existing paragraph 5.1.4 is deleted.

8 The following new paragraph 5.1.3 is added:

"5.1.3 The submitted survey programme is to account for and comply, as a minimum, with the requirements of annexes 1 and 2 and paragraph 2.7 for close-up survey, thickness measurement and tank testing, respectively, and is to include relevant information including at least:

- basic ship information and particulars;
- main structural plans (scantling drawings), including information regarding use of high tensile steels (HTS);
- plan of holds and tanks;
- list of holds and tanks with information on use, protection and condition of coating;
- conditions for survey (e.g., information regarding tank cleaning, gas freeing, ventilation, lighting, etc.);
- provisions and methods for access to structures;
- equipment for surveys;
- nomination of holds and tanks and areas for close-up survey (per annex 1);
- nomination of sections for thickness measurement (per annex 2);
- nomination of tanks for tank testing (per paragraph 2.7); and
- damage experience related to the ship in question."

9 The following new paragraphs 5.1.5 and 5.1.6 are added:

"5.1.5 The Administration will advise the owner of the maximum acceptable structural corrosion diminution levels applicable to the ship.

5.1.6 Use may also be made of the Guidelines for technical assessment in conjunction with the planning of enhanced surveys for bulk carriers, contained in annex 9. These guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme."

10 The following new annex 9 is added:

"ANNEX 9

GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH THE PLANNING OF ENHANCED SURVEYS FOR BULK CARRIERS

PERIODICAL SURVEY

1 INTRODUCTION

These guidelines contain information and suggestions concerning technical assessments which may be of use in conjunction with the planning of enhanced special surveys of bulk carriers. As indicated in paragraph 5.1.6 of Annex A, the guidelines are a recommended tool which may be invoked at the discretion of an Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

2 PURPOSE AND PRINCIPLES

2.1 Purpose

The purpose of the technical assessments described in these guidelines is to assist in identifying critical structural areas, nominating suspect areas and in focusing attention on structural elements or areas of structural elements which may be particularly susceptible to, or evidence a history of, wastage or damage. This information may be useful in nominating locations, areas, holds and tanks for thickness measurement, close-up survey and tank testing.

2.2 Minimum requirements

These guidelines may not be used to reduce the requirements of annexes 1 and 2 and paragraph 2.7 of Annex A for close-up survey, thickness measurement and tank testing, respectively, which are, in all cases, to be complied with as a minimum.

2.3 Timing

As with other aspects of survey planning, the technical assessments described in these guidelines should be completed out by the owner or operator in co-operation with the Administration well in advance of the commencement of the periodical survey, i.e. prior to commencing the survey and normally at least 12 to 15 months before the survey's completion due date.

2.4 Aspects to be considered

Technical assessments, which may include quantitative or qualitative evaluation of relative risks of possible deterioration, of the following aspects of a particular ship may be used as a basis for the nomination of holds, tanks and areas for survey:

- design features such as stress levels on various structural elements, design details and extent of use of high tensile steel;

- former history with respect to corrosion, cracking, buckling, indents and repairs for the particular ship as well as similar vessels, where available; and

- information with respect to types of cargo carried, protection of tanks, and condition of coating, if any, of holds and tanks.

Technical assessments of the relative risks of susceptibility to damage or deterioration of various structural elements and areas should be judged and decided on the basis of recognized principles and practices, such as may be found in reference 3.

3 TECHNICAL ASSESSMENT

3.1 General

There are three basic types of possible failure which may be the subject of technical assessment in connection with planning of surveys; corrosion, cracks and buckling. Contact damages are not normally covered by the survey plan since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

Technical assessments performed in conjunction with the survey planning process should, in principle, be as shown schematically in figure 1 which depicts, schematically, how technical assessments can be carried out in conjunction with the survey planning process. The approach is based on an evaluation of experience and knowledge basically related to.

.1 design; and

.2 corrosion.

The design should be considered with respect to structural details which may be susceptible to buckling or cracking as a result of vibration, high stress levels or fatigue.

Corrosion is related to the ageing process, and is closely connected with the quality of corrosion protection at newbuilding, and subsequent maintenance during the service life. Corrosion may also lead to cracking and/or buckling.

3.2 Methods

3.2.1 Design details

Damage experience related to the ship in question and similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings should be included.

Typical damage experience to be considered will consist of:

- number, extent, location and frequency of cracks; and
- location of buckles.

This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analysed, noted and marked on sketches.

In addition, general experience should be utilized. For example, figure 2 shows typical locations in bulk carriers which experience has shown may be susceptible to structural damage. Also, reference should be made to reference 3 which contains a catalogue of typical damages and proposed repair methods for various bulk carrier structural details.

Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details which may be susceptible to damage. An example is shown in figure 3.

The review of the main structural drawings, in addition to using the above-mentioned figures, should include checking typical design details where cracking has been experienced. The factors contributing to damage should be carefully considered.

The use of high tensile steel (HTS) is an important factor. Details showing good service experience where ordinary, mild steel has been used may be more susceptible to damage when HTS, and its higher associated stresses, are utilized. There is extensive and, in general, good experience, with the use of HTS for longitudinal material in deck and bottom structures. Experience in other locations, where the dynamic stresses may be higher, is less favourable, e.g. side structures.

In this respect, stress calculations of typical and important components and details, in accordance with relevant methods, may prove useful and should be considered.

The selected areas of the structure identified during this process should be recorded and marked on the structural drawings to be included in the survey programme.

3.2.2 Corrosion

In order to evaluate relative corrosion risks, the following information is generally to be considered:

- usage of tanks, holds and spaces
- condition of coatings
- condition of anodes
- cleaning procedures
- previous corrosion damage
- ballast use and time for cargo holds
- risk of corrosion in cargo holds and ballast tanks
- location of ballast tanks adjacent to heated fuel oil tanks.

Reference 2 gives definitive examples which can be used for judging and describing coating condition, using typical pictures of conditions.

For bulk carriers, reference 3 should be used as the basis for the evaluation, together with the age of the ship and relevant information on the anticipated condition of the ship as derived from the information collected in order to prepare the survey programme.

The various tanks, holds and spaces should be listed with the corrosion risks nominated accordingly.

3.2.3 Locations for close-up survey and thickness measurement

On the basis of the table of corrosion risks and the evaluation of design experience, the locations for initial close-up survey and thickness measurement (sections) may be nominated.

The sections subject to thickness measurement should normally be nominated in tanks, holds and spaces where corrosion risk is judged to be the highest.

The nomination of tanks, holds and spaces for close-up survey should, initially, be based on highest corrosion risk, and should always include ballast tanks. The principle for the selection should be that the extent is increased by age or where information is insufficient or unreliable.

REFERENCES

1 TSCF "Guidance Manual for the Inspection and Condition Assessment of Tanker Structures, 1986."

2 TSCF "Condition Evaluation and Maintenance of Tanker Structures, 1992."

3 IACS "Bulk Carriers: Guidelines for Surveys, Assessment and Repair of Hull Structures,1994."

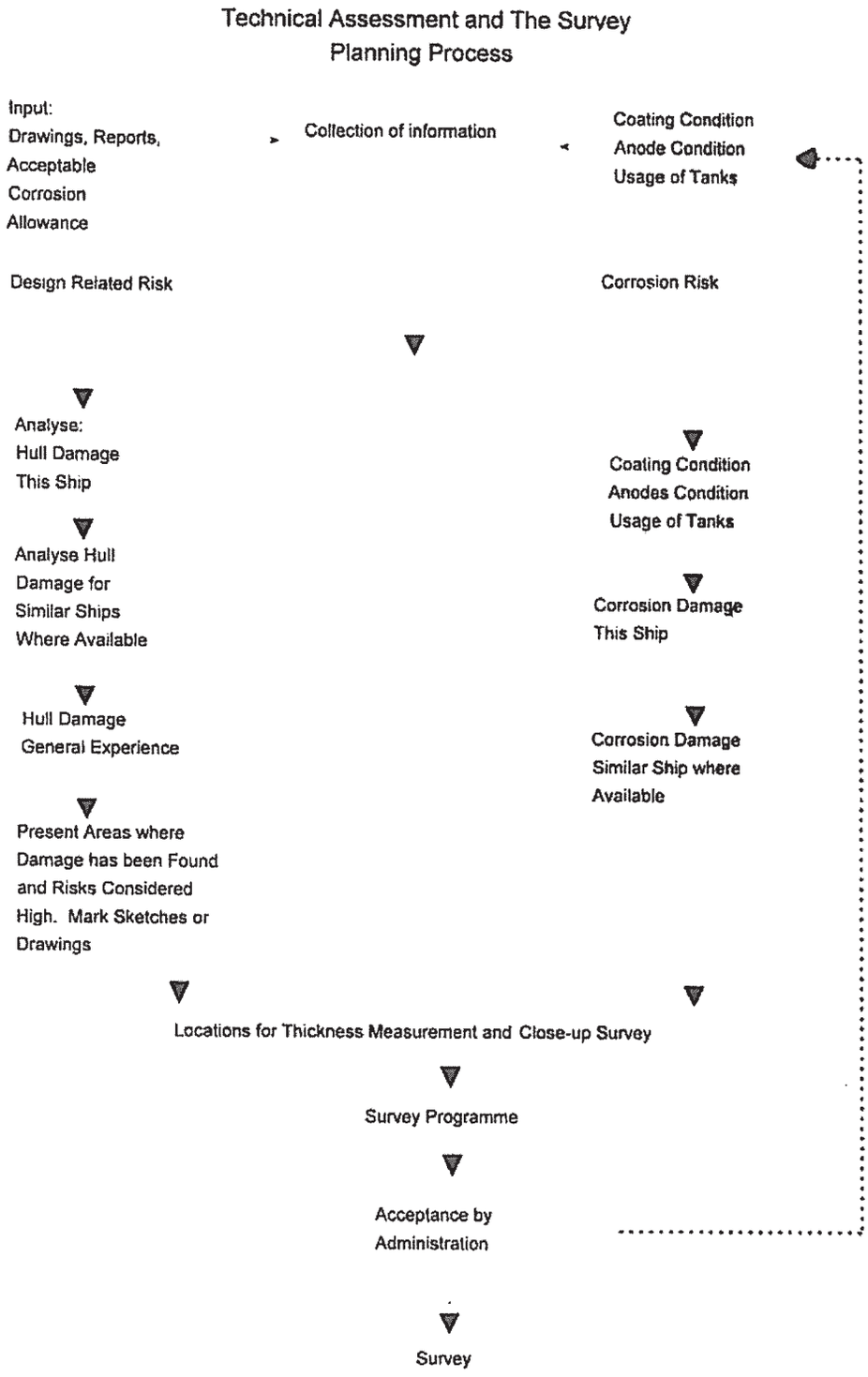


Figure 1: Planning Process
Technical Assessment and The Survey

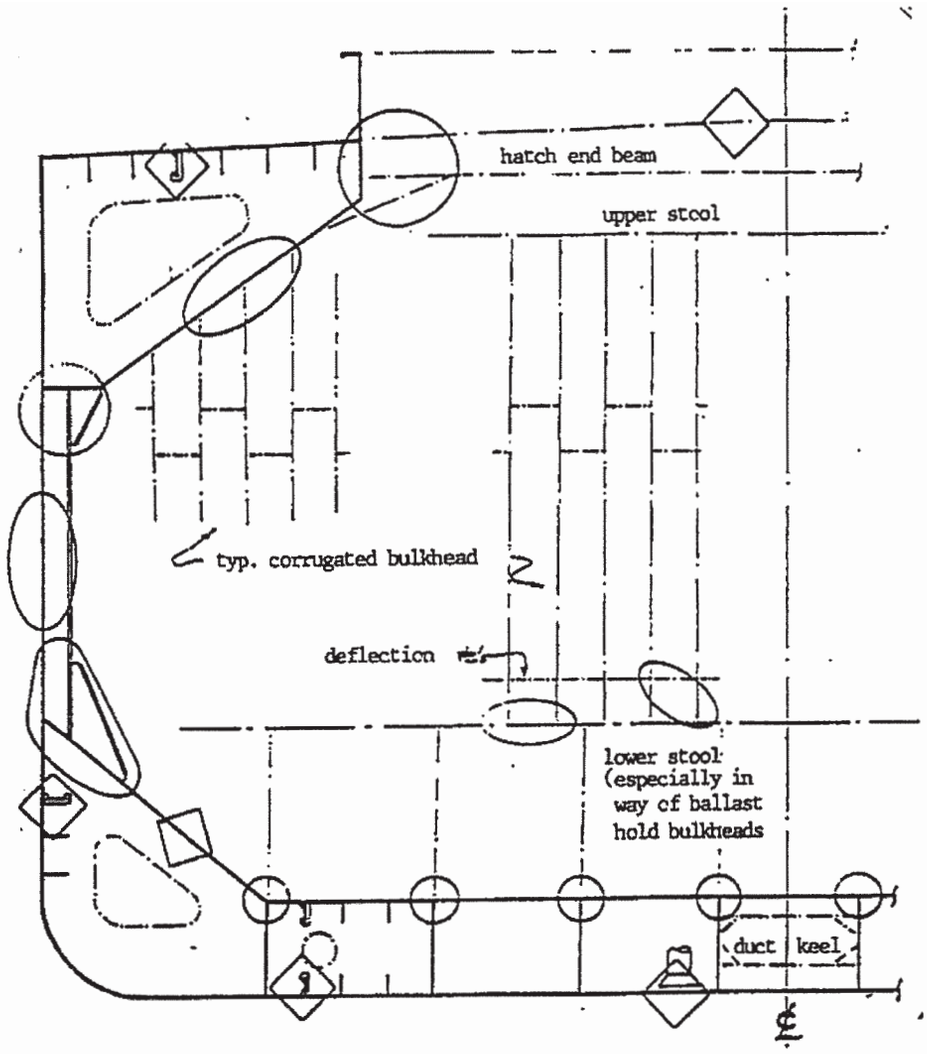
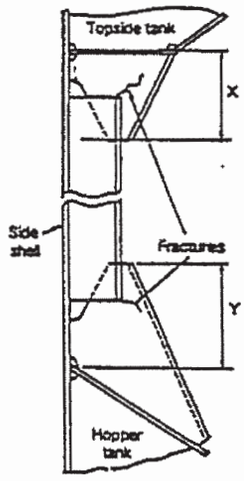


Figure 2: Typical locations susceptible to structural damage or corrosion

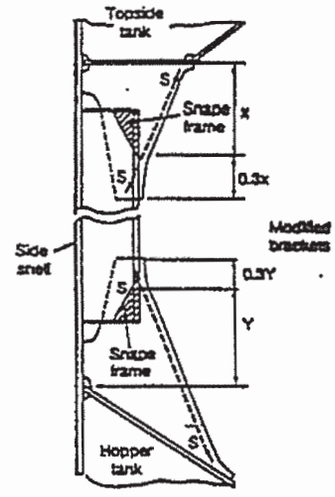
AREA 1	Structural item	Side shell frames and end brackets (Separate bracket configuration)	EXAMPLE 1
Detail of damage		Fractures on brackets at termination of frame	

Sketch of damage



Separate Bracket Configuration

Sketch of repair



S = Snaped end

Notes on possible cause of damage/repair

1	This type of damage is due to stress concentration.
2	For small fractures, e.g. hairline fractures, the fracture can be 'veed' out, welded up, ground and examined by NDT for fractures
3	For larger/significant fractures consideration is to be given to cropping and partly renewing/renewing the frame brackets. If renewing the brackets, ends of frames can be shaped to soften them.
4	If felt prudent, soft toes are to be incorporated at the boundaries of the bracket to the wing tanks.
5	Attention to be given to the structure in wing tanks in way of the extended bracket arm i.e. reinforcement provided in line with the bracket arm.

Figure 3: Typical damage and repair example
(reproduced from ref.3)."

GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF OIL TANKERS (resolution A.744(18), annex B)

11 In the contents, "5.1 Planning" is replaced by "5.1 Survey programme."

12 In the contents, the following text is added at the end:

"Annex 11 - Guidelines for technical assessment in conjunction with the planning of enhanced surveys for oil tankers".

13 In paragraph 5.1, sub-heading "Planning" is replaced by "Survey programme".

14 The following sentence is added to paragraph 5.1.1:

"The survey programme should be in a written format "

15 Existing paragraph 5.1.2 is replaced by the following text:

"5.1.2 In developing the survey programme, the following documentation should be collected and consulted with a view to selecting tanks, areas, and structural elements to be examined:

- survey status and basic ship information;
- documentation on board, as described in 6.2 and 6.3;
- main structural plans (scantlings drawings), including information regarding use of high tensile steels (HTS);
- relevant previous survey and inspection reports from both the classification society and the owner;
- information regarding the use of the ship's tanks, typical cargoes and other relevant data;
- information regarding corrosion protection level on the new building; and
- information regarding the relevant maintenance level during operation."

16 Existing paragraph 5.1.3 is renumbered as a new paragraph 5.1.4.

17 Existing paragraph 5.1.4 is deleted.

18 The following new paragraph 5.1.3 is added.

"5.1.3 The submitted survey programme is to account for and comply, as a minimum, with the requirements of annexes 1, 2 and 3 for close-up survey, thickness measurement and tank testing, respectively, and is to include relevant information including at least:

- basic ship information and particulars;
- main structural plans (scantling drawings), including information regarding use of high tensile steels (HTS);

- plan of tanks;
- list of tanks with information on use, protection and condition of coating;
- conditions for survey (e.g., information regarding tank cleaning, gas freeing, ventilation, lighting, etc.);
- provisions and methods for access to structures;
- equipment for surveys;
- nomination of tanks and areas for close-up survey (per annex 1);
- nomination of sections for thickness measurement (per annex 2);
- nomination of tanks for tank testing (per annex 3); and
- damage experience related to the ship in question."

19 The following new paragraphs 5.1.5 and 5.1.6 are added:

"5.1.5 The Administration will advise the owner of the maximum acceptable structural corrosion diminution levels applicable to the ship.

5.1.6 Use may also be made of the Guidelines for technical assessment in conjunction with the planning of enhanced surveys for tankers, contained in annex 11. These guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme."

20 The following new annex 11 is added:

"ANNEX 11

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

PERIODICAL SURVEY

1 INTRODUCTION

These guidelines contain information and suggestions concerning technical assessments which may be of use in conjunction with the planning of enhanced special surveys of oil tankers. As indicated in paragraph 5.1.6 of Annex B, the guidelines are a recommended tool which may be invoked at the discretion of an Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

2 PURPOSE AND PRINCIPLES

2.1 Purpose

The purpose of the technical assessments described in these guidelines is to assist in identifying critical structural areas, nominating suspect areas and in focusing attention on structural elements or areas of structural elements which may be particularly susceptible to, or evidence a history of, wastage or damage. This information may be useful in nominating locations, areas and tanks for thickness measurement, close-up survey and tank testing.

2.2 Minimum requirements

These guidelines may not be used to reduce the requirements of annexes 1, 2 and 3 for close-up survey, thickness measurement and tank testing, respectively, which are, in all cases, to be complied with as a minimum.

2.3 Timing

As with other aspects of survey planning, the technical assessments described in these guidelines should be completed out by the owner or operator in co-operation with the Administration well in advance of the commencement of the periodical survey, i.e., prior to commencing the survey and normally at least 12 to 15 months before the survey's completion due date.

2.4 Aspects to be considered

Technical assessments, which may include quantitative or qualitative evaluation of relative risks of possible deterioration, of the following aspects of a particular ship may be used as a basis for the nomination of tanks and areas for survey:

- design features such as stress levels on various structural elements, design details and extent of use of high tensile steel;

- former history with respect to corrosion, cracking, buckling, indents and repairs for the particular ship as well as similar vessels, where available; and

- information with respect to types of cargo carried, use of different tanks for cargo/ballast, protection of tanks and condition of coating, if any.

Technical assessments of the relative risks of susceptibility to damage or deterioration of various structural elements and areas should be judged and decided on the basis of recognized principles and practices, such as may be found in references 1 and 2.

3 TECHNICAL ASSESSMENT

3.1 General

There are three basic types of possible failure which may be the subject of technical assessment in connection with planning of surveys; corrosion, cracks and buckling. Contact damages are not normally covered by the survey plan since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

Technical assessments performed in conjunction with the survey planning process should, in principle be as shown schematically in figure 1 which depicts, schematically, how technical assessments can be carried out in conjunction with the survey planning process. The approach is based on an evaluation of experience and knowledge basically related to:

.1 design; and

.2 corrosion.

The design should be considered with respect to structural details which may be susceptible to buckling or cracking as a result of vibration, high stress levels or fatigue.

Corrosion is related to the ageing process, and is closely connected with the quality of corrosion protection at newbuilding, and subsequent maintenance during the service life. Corrosion may also lead to cracking and/or buckling.

3.2 Methods

3.2.1 Design details

Damage experience related to the ship in question and similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings should be included.

Typical damage experience to be considered will consist of:

- number, extent, location and frequency of cracks; and

- location of buckles.

This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analysed, noted and marked on sketches.

In addition, general experience should be utilized. For example, reference should be made to reference 1, which contains a catalogue of typical damages and proposed repair methods for various tanker structural details.

Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details which may be susceptible to damage. An example is shown in figure 2.
The review of the main structural drawings, in addition to using the above-mentioned figures, should include checking for typical design details where cracking has been experienced. The factors contributing to damage should be carefully considered.

The use of high tensile steel (HTS) is an important factor. Details showing good service experience where ordinary, mild steel has been used may be more susceptible to damage when HTS, and its higher associated stresses, are utilized. There is extensive and, in general, good experience, with the use of HTS for longitudinal material in deck and bottom structures. Experience in other locations, where the dynamic stresses may be higher, is less favourable, e.g. side structures.

In this respect, stress calculations of typical and important components and details, in accordance with relevant methods, may prove useful and should be considered.

The selected areas of the structure identified during this process should be recorded and marked on the structural drawings to be included in the survey programme.

3.2.2 Corrosion

In order to evaluate relative corrosion risks, the following information is generally to be considered:

- usage of tanks and spaces
- condition of coatings
- condition of anodes
- cleaning procedures
- previous corrosion damage
- ballast use and time for cargo tanks
- corrosion risk scheme (see reference 2, table 3.1)
- location of heated tanks.

Reference 2 gives definitive examples which can be used for judging and describing coating condition, using typical pictures of conditions.

The evaluation of corrosion risks should be based on information in reference 2, together with the age of the ship and relevant information on the anticipated condition as derived from the information collected in order to prepare the survey programme.

The various tanks and spaces should be listed with the corrosion risks nominated accordingly.

3.2.3 Locations for close-up survey and thickness measurement

On the basis of the table of corrosion risks and the evaluation of design experience, the locations for initial close-up survey and thickness measurement (sections) may be nominated.

The sections subject to thickness measurement should normally be nominated in tanks and spaces where corrosion risk is judged to be the highest.

The nomination of tanks and spaces for close-up survey should, initially, be based on highest corrosion risk, and should always include ballast tanks. The principle for the selection should be that the extent is increased by age or where information is insufficient or unreliable.

REFERENCES

1. TSCF "Guidance Manual for the Inspection and Condition Assessment of Tanker Structures, 1986."

2. TSCF "Condition Evaluation and Maintenance of Tanker Structures, 1992."

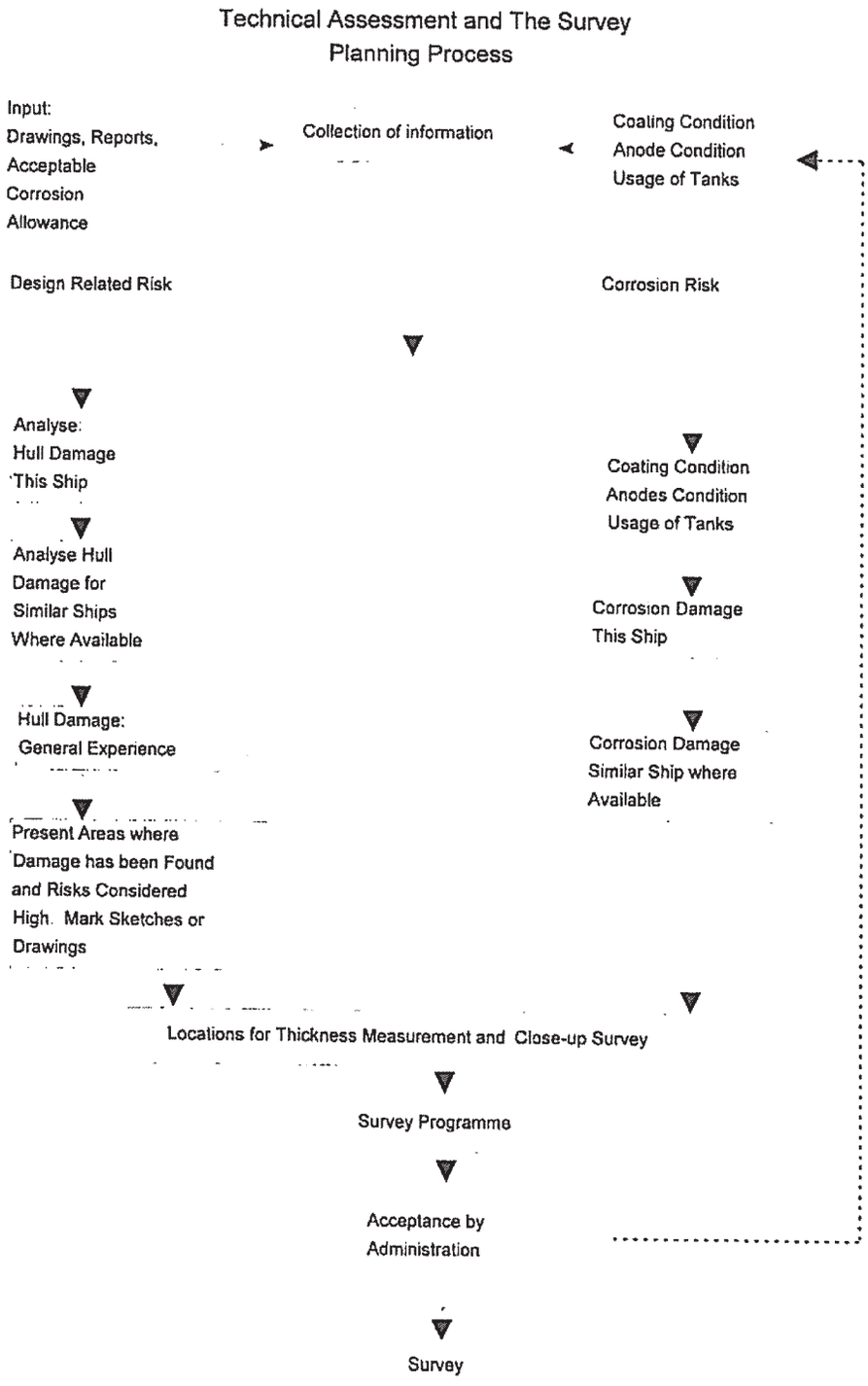
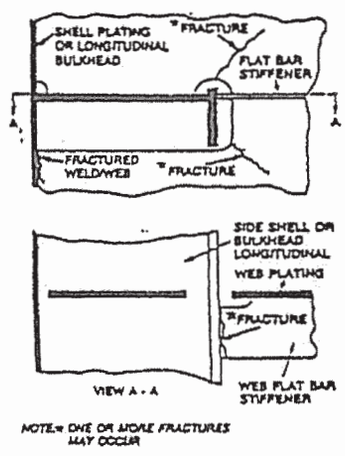
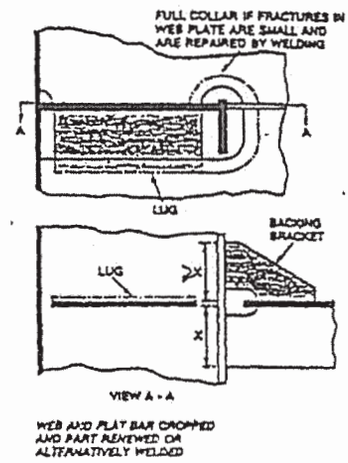


Figure 1: Planning Process
Technical Assessment and The Survey

LOCATION: Connection of longitudinals to transverse webs

EXAMPLE NO.1 Web and flat bar fractures at cut-outs for longitudinal stiffener connections

TYPICAL DAMAGE	PROPOSED REPAIR
	

FACTORS CONTRIBUTING TO DAMAGE

1 Asymmetrical connection of flat bar stiffener resulting in high peak stresses at the heel of the stiffener under fatigue loading.

2 Insufficient area of connection of longitudinal to web plate.

3 Defective weld at return around the plate thickness.

4 High localized corrosion at areas of stress concentration such as flat bar stiffener connections, corners of cut-out for the longitudinal and connection of web to shell at cut-outs.

5 High shear stress in the web of the transverse.

6 Dynamic sea way loads/ship motions.

FIGURE 1	TANKER STRUCTURE CO-OPERATIVE FORUM	FIGURE 1
	SUBJECT: CATALOGUE OF STRUCTURAL DETAILS	

Figure 2: Typical damage and repair example
(reproduced from ref.1)".

第 54/2015 號行政長官公告

中華人民共和國是國際海事組織的成員國及一九七四年十一月一日訂於倫敦的《國際海上人命安全公約》（下稱“公約”）的締約國；

公約締約政府會議於一九九七年十一月二十七日透過決議2通過了《散貨船和油輪檢驗期間的強化檢查方案指南》（第A.744（18）號決議）修正案，該修正案自一九九九年十二月二十日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的締約政府會議決議2的中文及英文文本。

二零一五年五月十一日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 54/2015

Considerando que a República Popular da China é um Estado Membro da Organização Marítima Internacional e um Estado Contratante da Convenção Internacional para a Salvaguarda da Vida Humana no Mar, concluída em Londres em 1 de Novembro de 1974, adiante designada por Convenção;

Considerando igualmente que, em 27 de Novembro de 1997, a Conferência dos Governos Contratantes da Convenção, através da sua resolução n.º 2, adoptou emendas às Directrizes relativas ao Programa Reforçado de Inspecções no âmbito das Vistorias a Graneleiros e Petroleiros (resolução A.744(18)), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 20 de Dezembro de 1999;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução n.º 2 da Conferência dos Governos Contratantes da Convenção que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 11 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*.

《1974 年國際海上人命安全公約》

締約政府會議決議 2

1997 年 11 月 27 日通過

通過《散貨船和油輪檢驗期間的強化檢查方案指南》

（第 A.744（18）號決議）修正案

會議，

憶及《1974 年國際海上人命安全公約》（以下簡稱“本公約”）關於由締約政府會議修正本公約的程序的第 VIII（c）條，

還憶及國際海事組織（海事組織）以第 A.744（18）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案》，

進一步憶及本公約正文第 VIII（b）條和附件第 XI/2 條關於修正上述指南的程序，

注意到海事組織大會在其第十八次會議通過上第 A.744（18）號決議時要求海事組織海上安全委員會和海上環境保護委員會根據其應用中取得的經驗，不斷審查該指南並視必要對其加以更新，

還注意到海上安全委員會按照本公約正文第 VIII 條和附件第 XI/2 條通過的用以修正第 A.744（18）號決議的第 MSC.49（66）號決議，

認識到進一步改進運載固體散貨的船舶的安全標準的緊迫必要性，

審議了按照本公約第 VIII 條提議和分發的上述指南的修正案，

1. 按照本公約第 VIII（c）（ii）條，**通過**《散貨船和油輪檢驗期間的強化檢查方案指南》修正案，其條文載於本決議的附件中；

2. 按照本公約第 VIII（b）（vi）（2）（bb）條，**決定**本修正案應於 1999 年 1 月 1 日視為已被接受，除非在該日期前超過三分之一的本公約締約政府或其合計的商船隊不少於世界商船隊總噸位百分之五十的締約政府通知海事組織秘書長其反對該修正案；

3. **請**締約政府注意，按照本公約第 VIII（b）（vii）（2）條，本修正案應在其按照上述第 2 款被接受後於 1999 年 7 月 1 日生效。

附 件

《散貨船和油輪檢驗期間的強化檢查方案指南》（第 A.744（18）號決議）修正案

散貨船檢驗期間的強化檢查方案指南

（第 A.744（18）號決議，附件 A）

1 在“目錄”末尾增加下列條文：

“附件 10—大量鏽蝕區域的厚度測量範圍要求。散貨船貨物區域內的定期檢驗。”

2 以下列條文代替現有第 1.2.10 條：

“1.2.10 *防鏽系統*通常被認為是：

.1 全面的硬塗層；或

.2 以陽及補充的全面的硬塗層

保護性塗層通常應為環氧樹脂塗層或等效物。如果按照廠家說明施用和維護，也可考慮接受以其他塗層系統作為替代物。

如施用軟塗層，應為驗船師提供可能包括現場清除塗層在內的驗證該塗層效果和評定內部結構情況的安全辦法。如不能夠提供安全辦法，則應清除軟塗層。”

3 第 2.3 節的標題“液艙防鏽系統”改為“處所保護”。

4 以下列條文代替現有第 2.3.1 款：

“2.3.1 如裝有防鏽系統，應對壓載艙防鏽系統的狀況進行檢查。對除雙層底艙之外的壓載艙，如發現塗層為 1.2.11 所定義的**不良**狀況，並且未予更新，或者如施用了軟塗層，或者未施用塗層，則有關艙的檢查應以年度為間隔期。當發現雙層底壓載艙中的塗層損壞，或者施用了軟塗層，或者未施用塗層時，則有關艙的檢查可以年度為間隔期。當驗船師認為必要，或者有廣泛的鏽蝕存在時，應進行厚度測量。如貨艙中塗有保護性塗層並發現狀況良好，則可對細節檢驗和厚度測量的範圍予以特別考慮*。”

說明：

在通篇中，以“當驗船師認為必要，或者有廣泛的鏽蝕存在時，應進行厚度測量”，代替“如驗船師認為必要，應進行厚度測量”一句。

在發現“特別考慮”一詞時，加提下列腳註：

* 作為最低含義，“特別考慮”一詞需理解為係指進行充分的細節檢查和厚度測量，以確認塗層下結構的實際平均狀況。

5 在第2.4.2款中，刪去“抽”字使“抽查”變成“檢查”，並在“機械操作的”之前插入“所有”一詞。

6 在第 2.6.3 款後增加下列一句：

“1.2.9 中所定義的大量鏽蝕的區域的擴大測量的規定載於附件 10。”

7 在第 2.6.4 款後增加下列一句：

“如貨艙中塗有保護性塗層並發現狀況**良好**，則可對細節檢驗和厚度測量的範圍予以特別考慮。”

8 在第 3.3.2 款中，在“艙蓋”一詞後插入“，包括艙蓋板的細節檢驗”。

9 在第 3.3.3 款中，在“鋼質箱形艙蓋”一詞後插入“，包括艙蓋板的細節檢驗”。

10 增加下列新的第 3.3.5 和 3.3.6 款：

“3.3.5 應進行艙口圍板及其扶強材合格狀況的檢查，包括細節檢驗。

3.3.6 應對機械操作的艙蓋的合格運作進行抽查，包括：

.1 在打開情況下的積載和繫固；

.2 在關閉情況下的密封適當性和效果；

.3 液壓和電力部件、鋼絲繩、鏈和聯桿傳動裝置的操作性試驗。”

11 以下列條文代替現有第 3.4.1 和 3.4.2 款：

“3.4.1 對 10 年以上船齡的散貨船，應進行：

.1 所有貨艙的全面檢驗。如貨艙塗有保護性塗層並發現狀況**良好**，可對細節檢驗和厚度測量的範圍予以特別考慮；

.2 足夠範圍的細節檢查，至少為肋骨的 25%，以確定船艏貨艙船殼肋骨下部區域，包括船殼側板的

邊肋骨和邊肋骨端部附件及相連殼板下部大約三分之一長度的狀況。如這一水平的檢驗顯示需要採取補救措施，則檢驗應擴展至包括該貨艙所有船殼肋骨及相連殼板的細節檢驗以及所有其餘貨艙的足夠範圍的細節檢驗；

.3 當驗船師認為必要時，將進行厚度測量。如厚度測量的結果顯示發現大量鏽蝕，則應按附件 10 增加厚度測量範圍。

3.4.2 對 15 年以上船齡的散貨船，應進行：

.1 所有貨艙的全面檢驗。如貨艙塗有保護性塗層並發現狀況**良好**，可對細節檢驗和厚度測量的範圍予以特別考慮；

.2 足夠範圍的細節檢查，至少為肋骨的 25%，以確定船艏貨艙和另一選定貨艙船殼肋骨下部區域，包括船殼側板的邊肋骨和邊肋骨端部附件及相連殼板下部大約三分之一長度的狀況。如這水平的檢驗顯示需要採取補救措施，則檢驗應擴展至包括該貨艙所有船殼肋骨及相連殼板的細節檢驗以及所有其餘貨艙的足夠範圍的細節檢驗；

.3 當驗船師認為必要時，應進行厚度測量。如厚度測量的結果顯示發現大量鏽蝕，則應按附件 10 增加厚度測量範圍。”

12 增加如下新的第 3.4.2.4 款：

“.4 貨艙中的所有管路和穿透物，包括舷外管路，均應予以檢查。”

13 以下列條文代替現有第 3.5.1 款：

“3.5.1 當定期檢驗和中期強化檢驗的結果表明有需要時，應進行壓載艙檢查。當驗船師認為必要時，應進行厚度測量。如厚度測量顯示發現大量鏽蝕，則應按附件 10 增加厚度測量範圍。”

14 以下列條文代替第 4.2.3 款：

“4.2.3 對除雙層底艙之外的壓載艙，如發現塗層為第 1.2.11 所定義的不良狀況並且未予更新，或者如施用了軟塗層，或者未施用塗層時，則有關艙的檢查應以年度為間隔期。當發現雙層底壓載艙中的塗層損壞，或者施用了軟塗層，或者未施用塗層時，則有關艙的檢查可以年度為間隔期。當驗船師認為必要，或者有廣泛的鏽蝕存在時，應進行厚度測量。”

15 以下列條文代替第 4.3.1 和 4.3.2 款：

“4.3.1 對 5 年以上船齡的散貨船，應進行：

.1 所有貨艙的全面檢驗，包括足夠範圍的細節檢驗，至少為肋骨的 25%，以確定下列者的狀況：

— 船艏貨艙和另一選定貨艙的船殼肋骨，包括其上下端部附件、相鄰船殼板和橫向艙壁；

— 在先前的定期檢驗中按照第 1.2.8 發現的可疑區域；和

.2 作為 4.3.1.1 所述全面和細節檢驗的結果，如驗船師認為必要，檢驗應擴展至包括該貨艙的所有船殼肋骨和相鄰殼板的細節檢驗以及所有其餘貨艙的足夠範圍的細節檢驗。

4.3.2 對 10 年以上船齡的散貨船，應進行：

.1 所有貨艙的全面檢驗，包括足夠範圍的細節檢驗，至少為肋骨的 25%，以確定下列者的狀況：

— 所有貨艙的船殼肋骨，包括其上下端部附件、相鄰殼板和橫向艙壁；

— 在先前的定期檢驗中按照第 1.2.8 章發現的可疑區域；和

.2 作為 4.3.2.1 所述全面和細節檢驗的結果，如驗船師認為必要，檢驗將擴展至包括所有貨艙的所有船殼肋骨和相鄰船殼板的細節檢驗。”

16 增加下列新的第 4.3.3 款：

“4.3.3 對 15 年以上船齡的散貨船，應進行：

.1 所有貨艙的全面檢查，包括細節檢查，以確定下列者的狀況：

— 所有貨艙的所有船殼肋骨，包括其上下端部附件、相鄰船殼板和橫向艙壁；和

— 在先前的定期檢驗中按照 1.2.8 發現的可疑區域。”

17 在第 4.4.1 款後增加下列各句：

“中期加強檢驗時厚度測量的最低要求為先前的定期檢驗中按照 1.2.8 發現的可疑區域。如發現 1.2.9 中所定義的大量鏽蝕，則應按附件 10 的要求增加厚度測量範圍。”

18 增加下列新的第 4.4.3 款：

“4.4.3 如貨艙塗有保護性塗層並發現狀況**良好**，可對細節檢驗和厚度測量的範圍予以特別考慮。”

19 將現有第 6、7 和 8 節重新編號為第 7、8 和 9 節，包括各款在內，並插入下列的第 6 節：

“**6 貨艙損壞和損耗的散貨船的迅速和徹底修理**

6.1 綜述

6.1.1 船殼側板肋骨、其端部附件和／或相鄰殼板，以及影響船殼結構強度或完整性的艙口、水密艙壁和艙蓋及艙口圍壁之間的甲板結構和鋼甲板的超出允許限制的任何損壞或過度損耗，均需迅速和徹底修理。

“迅速”定義為在檢驗時不加延誤地進行。“徹底”定義為全面和永久地令人滿意。

6.1.2 在不能立即得到足夠的修理設施的地方，可考慮允許船舶直接開往有修理設施處。為了進行擬議中的航行，可能需要加以卸貨和／或進行臨時修理。

6.1.3 執行驗船師認為上述區域內的損壞或過度損耗尚不屬於立即影響船舶結構或水密完整性的性質時，可進行限制期內的臨時修理。”

20 在現有第 7.1.1.2 款後增加下列一句：

“在所有情況下，不論何種形式，厚度測量的範圍應足以反映鋼板的實際平均狀況。”

21 以下列表格代替現有附件 1：

“附件 1

定期檢驗時的細節檢驗要求

船齡≤5	5<船齡≤10	10<船齡≤15	船齡>15
1	2	3	4
（A）船艏貨艙中有代表性位置處的 25%的船殼肋骨。 其餘貨艙中經選定的肋骨。	（A）所有貨艙中包括上、下端部附件和相鄰船殼板的 25%的船殼板。	（A）船艏貨艙中的所有船殼肋骨和其餘貨艙中 25%的肋骨，包括上、下端部附件和相鄰船殼板。	（A）所有貨艙中的所有船殼肋骨，包括上、下端部附件和相鄰船殼板。
（B）每種類型（即頂邊艙、漏斗形邊艙或邊艙）的二個代表性壓載水艙中一個橫向桁材及相關板材和縱桁。	（B）在每個壓載水艙（即頂邊艙、漏斗形邊艙或邊艙）中一個橫向桁材及相關板材和縱桁。	（B）在每個壓載水艙（即頂邊艙、漏斗形邊艙或邊艙）中的所有橫向桁材及相關板材和縱桁。	（B）至（E）點參照第 3 欄。
（C）兩個經選定的貨艙橫向艙壁，包括上、下托座的內部結構（如裝有）。	（B）在一個壓載水邊艙中船艏和船尾橫向艙壁，包括加強系統。	（B）壓載水艙中所有橫向艙壁，包括加強系統。	

（D）所有貨艙蓋和圍壁。	（C）每個貨艙中一個橫向艙壁，包括上、下托座的內部結構（如裝有）。 （D）所有貨艙蓋和圍板。 （E）貨艙艙口間艙口開口線之內的選定區域的鋼甲板。	（C）所有貨艙的橫向艙壁，包括上、下托座的內部結構（如裝有）。 （D）所有貨艙艙蓋和圍板。 （E）貨艙艙口間艙口開口線之內的所有鋼甲板。	

（A）— 貨艙橫向肋骨。

（B）— 壓載水艙中的橫向桁材肋骨或水密橫向艙壁。

（C）— 貨艙橫向艙壁板材，加強筋和桁材。

（D）— 貨艙艙蓋和圍板。

（E）— 貨艙艙口間艙口開口線之內的鋼甲板。

註：橫向艙壁的細節檢驗分四級進行：

（a）級—對無下座板的船舶而言，緊靠內底的上面和緊靠角撐板（如裝有）及頂料器的線上。

（b）級—緊靠下座板殼板的上面和下面（對裝有下座板的船舶而言），和緊靠頂料板的線上。

（c）級—約為艙壁的中等高度位置。

（d）級—緊靠上甲板鋼板的下面和緊連上邊艙，以及對裝有上座板的船舶而言緊靠上座板殼板的下面，或緊靠船舷頂艙的下面。”

22 在附件 A 的附件 8—“厚度測量的推薦程序”綜述中，在第 2 段末尾增加下列文字：

“並應說明最大允許減少。”

23 在附件 A 的附件 8 附錄 2—“厚度測量報告”中，增加標題為“最大允許減少（mm）”的新的一欄。

24 增加下列新的附件 10：

“附件 10

大量鏽蝕區域的厚度測量範圍要求

散貨船貨物區域的定期檢驗

殼板		
結構構件	**測量範圍**	**測量方式**
1. 船底和船側殼板 2. 船底／船側殼板縱桁	a. 可疑板材，另加四塊相連板材	a. 縱桁間每一鑲板 5 點方式
	b. 參見液艙和貨艙測量細節的其他表格	在跨桁材的一條直線上測量 3 次
	可疑區域中，至少三塊縱桁	在法蘭上測量 3 次

貨艙中橫向艙壁		
結構構件	**測量範圍**	**測量方式**
1. 下座板	a. 與內底連接的焊接頭的 25mm 之內的橫向區域。	a. 在扶強材間 1m 的長度上 5 點方式
	b. 與隔板連接的焊接頭的 25mm 之內的橫向區域。	b. 同上
2. 橫向艙壁	a. 在大約中高位置的橫向區域。	a. 在板材的 1m²上 5 點方式
	b. 在與上甲板相鄰或上座板隔板下面（對裝有上座板的船舶而言）的艙壁的部分橫向區域。	b. 在板材的 1m²上 5 點方式

包括交叉板條、主貨艙口、艙蓋、艙口圍板和船舷頂艙在內的甲板結構		
結構構件	測量範圍	測量方式
1. 橫貫甲板條形板	可疑的橫貫甲板條形板	a. 在甲板下扶強材間 1m 的長度上 5 點方式
2. 甲板下扶強材	a. 橫向構件 b. 縱向構件	a. 在每端和跨中 5 點方式 b. 在桁材和法蘭上均 5 點方式
3. 艙蓋	a. 邊緣，每側和兩端，3 個位置 b. 3 個縱向區域，舷外列板（2）和中線列板（1）	a. 在每個位置上 5 點方式 b. 在每個區域 5 點測量
4. 艙口圍板	圍板每側和每端，一個區域為圍板下 1/3，一個區域為圍板上 2/3	每個區域即端圍板或側圍板 5 點測量
5. 頂側水壓載艙	a. 水密橫向艙壁 i. 艙壁的下 1/3 ii. 艙壁的上 2/3 iii. 扶強材 b. 2 個代表性緩衝橫向艙壁 i. 艙壁的下 1/3 ii. 艙壁的上 2/3 iii. 扶強材 c. 斜板的 3 個代表性底板 i. 液艙的下 1/3 ii. 液艙的上 2/3 d. 可疑和相鄰的縱桁	 i. 在板材的 1m²上 5 點方式 ii. 在板材的 1m²上 5 點方式 iii. 在 1m 的長度上 5 點方式 i. 在板材的 1m²上 5 點方式 ii. 在板材的 1m²上 5 點方式 iii. 在 1m 的長度上 5 點方式 c. i. 在板材的 1m²上 5 點方式 ii. 桁材和法蘭的 1m²長度上均 5 點方式 d. 桁材和法蘭的 1m 長度上均 5 點方式
6. 主甲板	可疑的板和相鄰處（4）	板材的 1m²上 5 點方式
7. 主甲板縱桁	被測量的板材處，最少 3 個縱桁	桁材和法蘭的 1m 長度上均 5 點方式
8. 加強肋骨／橫樑	可疑板	1m²上 5 點方式

雙層底和漏斗式結構		
結構構件	**測量範圍**	**測量方式**
1. 內／雙層底板	可疑板加所有相鄰板	1m 長度上的縱桁之間的每一鑲板 5 點方式
2. 內／雙層底縱桁	被測量板的 3 個縱桁	在跨桁材的一條直線上，測量 3 次，並在法蘭上測量 3 次
3. 縱向桁材或橫向肋板	b. 可疑板	b. 在大約 1m²上 5 點方式
4. 水密艙壁（水密肋板）	a. 液艙的下 1/3 b. 液艙的上 2/3	a. 板的 1m²上 5 點方式 b. 間隔板的 1m²上 5 點方式
5. 加強肋骨	可疑板	板的 1m²上 5 點方式
6. 船底／船側殼板縱桁	可疑區域中最少 3 個縱桁	在跨桁材的一條直線上測量 3 次，在法蘭上測量 3 次

貨艙		
結構構件	測量範圍	測量方式
1. 船側殼板肋骨	可疑肋骨及每一相鄰處	a. 在每端和跨中：桁材和法蘭上均5點方式 b. 在殼板和下斜板焊接的附件上的25mm內5點方式”

油輪檢驗期間的強化檢查方案指南（第 A.744（18）號決議，附件 B）

25 第 1.2.1 款後增加下列一句：

“當在既用作液貨艙又用作壓載艙的艙中發現大量鏽蝕時，該艙將按壓載艙處理。”

26 以下列條文代替現有第 1.2.8 款：

“1.2.8 *防鏽系統*通常被認為是：

.1 全面的硬塗層；或

.2 以陽極補充的全面的硬塗層。

保護性塗層通常應為環氧樹脂塗層或等效物。如果按照廠家說明施用和維護，也可考慮接受以其他塗層系統作為替代物。

如施用軟塗層，應為驗船師提供可能包括現場清除塗層在內的驗證該塗層效果和評定內部結構情況的安全辦法。如不能夠提供安全辦法，則應清除軟塗層。”

27 在第 2.3.1 款第二句中，在“更新的”一詞後增加“或施用了軟塗層”數詞。

28 在第 4.2.4 款第一句中，在“更新的”一詞後增加“或施用了軟塗層的”諸詞。

29 在第 7.1.1.2 款後增加下列一句：

“在所有情況下，不論何種形式，厚度測量的範圍應足以相當於鋼板的實際平均狀況。”

30 在附件 B 的附件 10—“厚度測量的推薦程序”綜述中，在第 2 款末尾增加下列諸詞：

“並應說明最大允許減少。”

31 在附件 B 的附件 10 附錄 2—“厚度測量報告”中，增加標題為“最大允許減少（mm）”的新的一欄。

RESOLUTION 2 OF THE CONFERENCE OF CONTRACTING GOVERNMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974 ADOPTED ON 27 NOVEMBER 1997

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

THE CONFERENCE,

RECALLING article VIII(c) of the International Convention for the Safety of Life at Sea, 1974 (hereinafter referred to as "the Convention"), concerning the procedure for amending the Convention by a Conference of Contracting Governments,

RECALLING ALSO resolution A.744(18) by which the Assembly of the International Maritime Organization (IMO) adopted Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers,

RECALLING FURTHER article VIII(b) and regulation XI/2 of the Convention concerning the procedure for amending the aforementioned Guidelines,

NOTING that the IMO Assembly, at its eighteenth session, when adopting resolution A.744(18), requested the IMO Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

NOTING ALSO resolution MSC.49(66) by which amendments to resolution A.744(18) were adopted by the Maritime Safety Committee in accordance with article VIII and regulation XI/2 of the Convention,

RECOGNIZING the urgent need to further improve the safety standards of ships carrying solid bulk cargoes,

HAVING CONSIDERED amendments to the said Guidelines proposed and circulated in accordance with article VIII of the Convention,

1. ADOPTS, in accordance with article VIII(c)(ii) of the Convention, amendments to the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 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 January 1999, 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 fifty per cent of the gross tonnage of the world's merchant fleet, have notified the Secretary-General of IMO of 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 July 1999 upon their acceptance in accordance with paragraph 2 above.

AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18))

GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS (resolution A.744(18), Annex A)

1 In the "Contents", the following text is added at the end:

"Annex 10 - Requirements for extent of thickness measurement at areas of substantial corrosion. Periodical survey of bulk carriers within the cargo area".

2 Existing paragraph 1.2.10 is replaced by the following:

"1.2.10 *A corrosion prevention system* is normally considered either:

.1 a full hard coating; or

.2 a full hard coating supplemented by anodes

Protective coating should usually be epoxy coating or equivalent. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

Where soft coatings have been applied, safe access should be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft coating should be removed."

3 The title "Tank corrosion - prevention system" of section 2.3 is changed to "Space protection".

4 Existing paragraph 2.3.1 is replaced by the following:

"2.3.1 Where provided, the condition of corrosion prevention system of ballast tanks should be examined. For ballast tanks, excluding double bottom tanks, where a coating is found in POOR condition as defined in 1.2.11, and it is not renewed, or where a soft coating has been applied, or where a coating has not been applied, the tanks in question should be examined at annual intervals. When such breakdown of coating is found in ballast double bottom tanks, or where a soft coating has been applied, or where a coating has not been applied, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out. Where a protective coating is provided in cargo holds and is found in good condition, the extent of close-up surveys and thickness measurements may be specially considered*."

NOTES:

All through the text, replace the sentence "Thickness measurement should be carried out as considered necessary by the surveyor" with the expression "When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out."

Where the words "specially considered" are found, add a reference to the following footnote:

* As a minimum, the words "specially considered" is taken to mean that sufficient close-up inspection and thickness measurements are taken to confirm the actual average condition of the structure under the coating.

5 In paragraph 2.4.2, the word "Random" is deleted and the word "all" is inserted between the words "operation of" and "mechanically".

6 The following sentence is added to paragraph 2.6.3:

"Provisions for extended measurements for areas with substantial corrosion as defined in 1.2.9 are given in annex 10."

7 The following sentence is added to paragraph 2.6.4:

"Where a protective coating is provided in cargo holds and is found to be in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered."

8 In paragraph 3 3.2, the words ",including close-up survey of hatch cover plating" are inserted after the words "hatch covers".

9 In paragraph 3.3.3, the words ", including close-up survey of hatch cover plating" are inserted after the words "steel pontoons".

10 The following new paragraphs 3.3.5 and 3.3.6 are added:

"3.3.5 Checking the satisfactory condition of hatch coaming plating and its stiffeners, including close-up survey should be made.

3.3.6 Random checking of the satisfactory operation of mechanically operated hatch covers should be made, including:

.1 stowage and securing in the open condition;

.2 proper fit and efficiency of sealing in the closed condition;

.3 operational testing of hydraulic and power components, wires, chains, and link drives."

11 Existing paragraphs 3.4.1 and 3.4.2 are replaced by the following:

"3.4.1 For bulk carriers over 10 years of age, the following should be carried out:

.1 overall survey of all cargo holds. Where a protective coating is provided in cargo holds and is found to be in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered;

.2 close-up examination of sufficient extent, minimum 25% of frames, to establish the condition of the lower region of the shell frames, including approximately the lower one third length of the side frames at side shell and side frame end attachments and the adjacent shell plating in the forward cargo hold. Where this level of survey reveals the need for remedial measures, the survey is to be extended to include a close-up survey of all of the shell frames and adjacent shell plating of that cargo hold as well as a close-up survey of sufficient extent of all remaining cargo holds;

.3 when considered necessary by the surveyor, thickness measurements are to be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10.

3.4.2 For bulk carriers over 15 years of age, the following should be carried out:

.1 overall survey of all cargo holds Where a protective coating is provided in cargo holds and is found to be in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered;

.2 close-up examination of sufficient extent, minimum 25% of frames, to establish the condition of the lower region of the shell frames, including approximately the lower one third length of the side frames at side shell and side frame end attachments and the adjacent shell plating in the forward cargo hold and one other selected cargo hold. Where this level of survey reveals the need for remedial measures, the survey is to be extended to include a close-up survey of all of the shell frames and adjacent shell plating of that cargo hold as well as a close-up survey of sufficient extent of all remaining cargo holds;

.3 when considered necessary by the surveyor, thickness measurements should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10."

12 Add a new paragraph 3.4.2.4 as follows:

".4 all piping and penetrations in cargo holds, including overboard piping, should be examined."

13 Existing paragraph 3.5.1 is replaced by the following:

"3.5.1 Examination of ballast tanks should be carried out when required as a consequence of the results of the periodical survey and intermediate enhanced survey. When considered necessary by the surveyor, thickness measurements should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10."

14 Existing paragraph 4.2.3 is replaced by the following:

"4.2.3 For ballast tanks excluding double-bottom tanks, where a coating is found in POOR condition, as defined in 1.2.11, and it is not renewed, or where soft coating has been applied, or where a coating has not been applied, the tanks in question should be examined at annual intervals. When such breakdown of coating is found in ballast double-bottom tanks, or where soft coating has been applied, or where a coating has not been applied, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out."

15 Existing paragraphs 4.3.1 and 4.3.2 are replaced by the following:

"4.3.1 For bulk carriers over 5 years of age, the following should be carried out:

.1 an overall survey of all cargo holds, including a close-up survey of sufficient extent, minimum 25% of frames, should be carried out to establish the condition of:

- shell frames including their upper and lower end attachments, adjacent shell plating and transverse bulkheads in the forward cargo hold and one other selected cargo hold;

- areas found suspect according to 1.2.8 at the previous periodical survey, and

.2 where considered necessary by the surveyor as a result of the overall and close-up survey as described in 4.3.1.1, the survey should be extended to include a close-up survey of all the shell frames and adjacent shell plating of that cargo hold as well as a close-up survey of sufficient extent of all remaining cargo holds.

4.3.2 For bulk carriers over 10 years of age, the following should be carried out:

.1 an overall survey of all cargo holds, including a close-up survey of sufficient extent, minimum 25% of frames, is to be carried out to establish the condition of:

- shell frames including their upper and lower end attachments, adjacent shell plating and transverse bulkheads in all cargo holds;

- areas found suspect according to chapter 1.2.8 at the previous periodical survey; and

.2 where considered necessary by the surveyor as a result of the overall and close-up survey as described in 4.3.2.1, the survey is to be extended to include a close-up survey of all the shell frames and adjacent shell plating of all cargo holds."

16 The following new paragraph 4.3.3 is added:

"4.3.3 For bulk carriers over 15 years of age, the following should be carried out:

.1 an overall survey of all cargo holds, including a close-up survey, is to be carried out to establish the condition of:

- all shell frames including their upper and lower end attachments, adjacent shell plating and transverse bulkheads in all cargo holds; and

- areas found suspect according to 1.2.8 at the previous periodical survey."

17 The following sentences are added to paragraph 4.4.1:

"The minimum requirement for thickness measurements at the intermediate enhanced survey are areas found to be suspect areas according to 1.2.8 at the previous periodical survey. Where substantial corrosion as defined in 1.2.9 is found, the extent of thickness measurements should be increased in accordance with the requirements of annex 10."

18 The following new paragraph 4.4.3 is added:

"4.4.3 Where a protective coating is provided in cargo holds and is found in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered."

19 Existing sections 6, 7 and 8 are renumbered as sections 7, 8 and 9, including all relevant paragraphs, and the following new section 6 is inserted:

"6 **PROMPT AND THOROUGH REPAIRS OF BULK CARRIERS RELATIVE TO DAMAGES AND WASTAGE IN CARGO HOLDS**

6.1 General

6.1.1. Any damage or excessive wastage beyond allowable limits to side shell frames, their end attachments and/or adjacent shell plating, and deck structure and deck plating between hatches, watertight bulkheads and hatch covers and hatch coamings that affect the structural strength or integrity of the hull of the vessel, is to be promptly and thoroughly repaired.

"Prompt" is defined as to be done without delay at the time of the survey. "Thorough" is defined as satisfactory in all respects and permanent.

6.1.2 For locations where adequate repair facilities are not immediately available, consideration may be given to allowing a vessel to proceed directly to a repair facility. This may require discharging of the cargo and/or temporary repairs for the intended voyage.

6.1.3 Damages or excessive wastage in the areas noted above which are considered by the attending surveyor to be of a nature not immediately affecting the vessel's structural or watertight integrity may be temporarily repaired for a limited period."

20 The following sentence is added to existing paragraph 7.1.1.2:

"In all cases, regardless of the pattern, the extent of thickness measurements should be sufficient as to represent the actual average condition of the plate."

21 Existing annex 1 is replaced by the following:

"Annex 1

Requirements for close-up survey at periodical surveys

AGE ≤ 5	5 < AGE ≤ 10	10 < AGE ≤ 15	AGE > 15
1	2	3	4
(A) 25% of shell frames in the forward cargo hold at representative positions. Selected frames in remaining cargo holds	(A) 25% of shell frames in all cargo holds including upper and lower end attachments and adjacent shell plating.	(A) All shell frames in the forward cargo hold and 25% of frames in remaining cargo holds, including upper and lower end attachments and adjacent shell plating.	(A) All shell frames in all cargo holds including upper and lower end attachments and adjacent shell plating
(B) One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type (i.e. topside, hopper side or side tank.)	(B) One transverse web with associated plating and longitudinals in each water ballast tank (i.e. topside, hopper side or side tank)	(B) All transverse webs with associated plating and longitudinals in each water ballast tank (i.e. topside, hopper side or side tank)	Areas (B)-(E) as for column 3
(C) Two selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted	(B) Forward and aft transverse bulkhead in one side ballast tank, including stiffening system.	(B) All transverse bulkheads in ballast tanks, including stiffening systems.	
	(C) One transverse bulkhead in each cargo hold, including internal structure of upper and lower stools, where fitted.	(C) All cargo hold transverse bulkheads including internal structure of upper and lower stools, where fitted.	
(D) All cargo hold hatch covers and coamings	(D) All cargo hold hatch covers and coamings.	(D) All cargo hold hatch covers and coamings.	
	(E) Selected areas of deck plating inside line of hatch openings between cargo hold hatches	(E) All deck plating inside line of hatch openings between cargo hold hatches.	

(A) - Cargo hold transverse frame
(B) - Transverse web frame or water tight transverse bulkhead in water ballast tanks
(C) - Cargo hold transverse bulkheads plating, stiffeners and girders
(D)- Cargo hold hatch covers and coamings
(E) - Deck plating inside line of hatch openings between cargo hold hatches

Note Close-up survey of transverse bulkheads to be carried out at four levels:

Level (a) - Immediately above the inner bottom and immediately above the line of gussets (if fitted) and shedders for ships without lower stool

Level (b) - Immediately above and below the lower stool shelf plate (for those ships fitted with lower stools), and immediately above the line of the shedder plates

Level (c) - About mid-height of the bulkhead.

Level (d) - Immediately below the upper deck plating and immediately adjacent to the upper wing tank, and immediately below the upper stool shelf plate for those ships fitted with upper stools, or immediately below the topside tank."

22 In Annex 8 to Annex A - "Recommended procedures for thickness measurements", General, the following words are added at the end of paragraph 2:

"and the maximum allowable diminution should be stated."

23 In Appendix 2 to Annex 8 to Annex A - "Reports on thickness measurement", a new column headed "Maximum allowable diminution (mm)" is added.

24 The following new annex 10 is added:

"ANNEX 10

REQUIREMENTS FOR EXTENT OF THICKNESS MEASUREMENT AT AREAS OF SUBSTANTIAL CORROSION

PERIODICAL SURVEY OF BULK CARRIERS WITHIN THE CARGO AREA

SHELL PLATING		
STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Bottom and side shell plating	a. Suspect plate, plus four adjacent plates b. See other tables for particulars on gauging in way of tanks and cargo holds	a. 5 point pattern for each panel between longitudinals
2. Bottom/side shell longitudinals	Minimum of three longitudinals in way of suspect areas	3 measurements in line across web 3 measurements on flange

TRANSVERSE BULKHEADS IN CARGO HOLDS		
STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Lower stool	a. Transverse band within 25 mm of welded connection to innerbottom.	a. 5 point between stiffeners over 1 m length
	b Transverse band within 25 mm of welded connection to shelf plate.	b. Ditto
2. Transverse bulkhead	a Transverse band at approximately mid-height	a. 5 point pattern over 1 m^2 of plating
	b Transverse band at part of bulkhead adjacent to upper deck or below upper stool shelf plate (for those ships fitted with upper stools)	b. 5 point pattern over 1 m^2 of plating

DECK STRUCTURE INCLUDING CROSS STRIPS, MAIN CARGO HATCHWAYS, HATCH COVERS, COAMINGS AND TOPSIDE TANKS		
STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Cross deck strip plating	Suspect cross deck strip plating	a. 5 point pattern between underdeck stiffeners over 1 m length
2. Underdeck stiffeners	a. Transverse members	a 5 point pattern at each end and mid-span
	b. Longitudinal member	b. 5 point pattern on both web and flange
3. Hatch covers	a. Skirt, each side and ends, 3 locations	a. 5 point pattern at each location
	b 3 longitudinal bands, outboard strakes (2) and centerline strake (1).	b. 5 point measurement each band
4. Hatch coamings	Each side and end of coaming, one band lower 1/3, one band upper 2/3 of coaming	5 point measurement each band, i.e. end or side coaming
5. Topside water ballast tanks	a. Watertight transverse bulkheads	
	i. lower 1/3 of bulkhead ii. upper 2/3 of bulkhead iii. stiffeners	i. 5 point pattern over 1 m^2 of plating ii. 5 point pattern over 1 m^2 of plating iii. 5 point pattern over 1 m length
	b. 2 representative swash transverse bulkheads	
	i. lower 1/3 of bulkhead ii. upper 2/3 of bulkhead iii. stiffeners	i. 5 point pattern over 1 m^2 of plating ii. 5 point pattern over 1 m^2 of plating iii. 5 point pattern over 1 m length

STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
5. Topside water ballast tanks (cont'd)	c. 3 representative bays of slope plating i. lower 1/3 of tank ii. upper 2/3 of tank	c. i. 5 point pattern over 1 m^2 of plating ii. 5 point pattern over 1 m^2 of plating
	d. Longitudinals, suspect and adjacent	d. 5 point pattern both web and flange over 1 m length
6. Main deck plating	Suspect plates and adjacent (4)	5 point pattern over 1 m^2 of plating
7. Main deck longitudinals	Minimum of 3 longitudinals where plating measured	5 point pattern on both web and flange over 1 m length
8. Web frames/transverses	Suspect plates	5 point pattern over 1 m^2

DOUBLE BOTTOM AND HOPPER STRUCTURE		
STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Inner/double bottom plating	Suspect plate plus all adjacent plates	5 point pattern for each panel between longitudinals over 1 m length
2. Inner/double bottom longitudinals	Three longitudinals where plates measured	3 measurements inline across web, and 3 measurements on flange
3. Longitudinal girders or transverse floors	b. Suspect plates	b. 5 point pattern over about 1 m^2
4. Watertight bulkheads (WT floors)	a. lower 1/3 of tank	a. 5 point pattern over 1 m^2 of plating
	b. upper 2/3 of tank	b. 5 point pattern alternate plates over 1 m^2 of plating
5. Web frames	Suspect plate	5 point pattern over 1 m^2 of plating
6. Bottom/side shell longitudinals	Minimum of three longitudinals in way of suspect areas	3 measurements in line across web 3 measurements on flange

CARGO HOLDS		
STRUCTURAL MEMBER	EXTENT OF MEASUREMENT	PATTERN OF MEASUREMENT
1. Side shell frames	Suspect frame and each adjacent	a. At each end and mid span: 5 point pattern of both web and flange b 5 point pattern within 25 mm of welded attachment to both shell and lower slope plate"

GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTION DURING SURVEYS OF OIL TANKERS (Resolution A.744(18), Annex B))

25 The following sentence is added to paragraph 1.2.1:

"A tank which is used for both cargo and ballast will be treated as a ballast tank when substantial corrosion has been found in that tank."

26 Existing paragraph 1.2.8 is replaced by the following:

"1.2.8 *A corrosion prevention system* is normally considered either:

.1 a full hard coating; or

.2 a full hard coating supplemented by anodes.

Protective coating should usually be epoxy coating or equivalent. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

Where soft coatings have been applied, safe access should be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft coating should be removed."

27 In paragraph 2.3.1, second sentence, the words "or where soft coating has been applied," are added after the word "renewed".

28 In paragraph 4.2.4, first sentence, the words "or where soft coating has been applied," are added after the word "renewed".

29 The following sentence is added to paragraph 7.1.1.2:

"In all cases, regardless of the pattern, the extent of thickness measurements should be sufficient as to represent the actual average condition of the plate."

30 In annex 10 to Annex B - "Recommended procedures for thickness measurements". General, the following words are added at the end of paragraph 2.

"and the maximum allowable diminution should be stated."

31 In Appendix 2 to annex 10 to Annex B - "Reports on thickness measurement", a new column headed "Maximum allowable diminution (mm)" is added.

第 55/2015 號行政長官公告

中華人民共和國於一九九九年十二月十三日以照會通知聯合國秘書長，經修訂的《1974年國際海上人命安全公約》自一九九九年十二月二十日起適用於澳門特別行政區；

國際海事組織海上安全委員會於二零零三年六月五日透過第MSC.144（77）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第A.744（18）號決議）的修正案，該修正案自二零零五年一月一日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.144（77）號決議的中文及英文文本。

二零一五年五月十一日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 55/2015

Considerando que a República Popular da China, por nota datada de 13 de Dezembro de 1999, notificou o Secretário-Geral das Nações Unidas sobre a aplicação da Convenção Internacional para a Salvaguarda da Vida Humana no Mar de 1974, tal como emendada, na Região Administrativa Especial de Macau a partir de 20 de Dezembro de 1999;

Considerando igualmente que, em 5 de Junho de 2003, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.144(77), adoptou emendas às Directrizes relativas ao Programa Reforçado de Inspecções no âmbito das Vistorias a Graneleiros e Petroleiros (resolução A.744(18), tal como emendada), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 1 de Janeiro de 2005;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.144(77), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 11 de Maio de 2015.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.144（77）號決議

（2003 年 6 月 5 日通過）

通過《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第 A.744（18）號決議）的修正案

海上安全委員會，

憶及《國際海事組織公約》關於本委員會職能的第 28（b）條，

也憶及 A.744（18）號大會決議，大會據此通過了關於散貨船和油輪檢驗期間的加強檢驗計劃導則（導則），

進一步憶及《1974 年海上人命安全國際公約》（SOLAS）（下稱“公約”）關於修正導則程序的第 VIII（b）條和第 XI/2 條，

注意到在通過 A.744（18）號大會決議時，大會要求海安會和環保會根據適用導則取得的經驗保持對本導則進行審議並進行必要的更新，

也注意到海安會 MSC.49（66）號決議、MSC.105（73）號決議、MSC.125（75）號決議和本公約 1997 年締約國政府大會第 2 號決議，按照本公約第 VIII（b）條和第 XI/2 條海安會和本公約締約國政府大會據此通過了 A.744（18）號大會決議的修正案，

在第 77 屆會議上審議了按照本公約第 VIII（b）（i）條規定建議和散發的本導則的修正案，

1 根據本公約第 VIII（b）（iv）條規定，通過散貨船和油輪檢驗期間的加強檢驗計劃導則的修正案，文本載列於本決議的附件中；

2 根據本公約第 VIII（b）（vi）（2）（bb）條規定，決定該修正案將視為於 2004 年 7 月 1 日被接受，除非在此日期前，有三分之一以上的本公約締約國政府或商船隊總和不少於世界商船隊總噸位的 50%的締約國政府已經通知他們反對該修正案；

3 提請各締約國政府注意根據本公約第 VIII（b）（vii）（2）條規定，按上述第 2 段被接受之後，該修正案將於 2005 年 1 月 1 日生效；

4 要求秘書長按照本公約第 VIII（b）（v）條將本決議核證無誤的文本和本附件中修正案的文本轉發給本公約所有締約國政府；

5 進一步要求秘書長將本決議及其附件的文本轉發給非本公約締約國的本組織的成員國。

附件

《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第 A.744（18）號決議）的修正案

附件 B

油輪檢驗期間的加強檢驗計劃導則

1 在附件 12 第 2 節“縱向強度評估”的現有段落後增加下述新的段落：

“在縱向強度評估中的船體樑狀況應按照附錄 3 中所述的方法決定。”

2 在附件 12 附錄 2 的末尾增加下述新的附錄 3：

“附錄 3

縱向強度評估中厚度測量的取樣方法和修理方法

1 縱向強度評估的範圍

縱向強度應在 0.4L 船中處評估，範圍為包括液貨艙在內的船體樑長度，並應在 0.5L 船中處評估，範圍為可能超出 0.4L 船中的附近液貨艙，液貨艙包括壓載水艙和貨艙。

2 厚度測量的取樣方法

2.1 根據附錄 B 第 2.5 節的要求，橫截面的選擇應保證可以對儘可能多的在腐蝕環境下的液貨艙進行厚度測量，即通過與安裝了加熱線圈的貨艙共用分隔板的壓載水艙、其他壓載水艙、允許裝載海水的貨艙和其他貨艙。只要存在與安裝了加熱線圈的貨艙共用分隔板的壓載水艙和允許裝載海水的貨艙，就應選擇對其進行厚度測量。

2.2 被取樣的橫截面的最低數量應符合附件 B 的附件 2。選取的橫截面應為被懷疑厚度可能出現最大削減的位置或按照 2.3 規定進行的甲板板和底板測量所反映的厚度削減最大的位置，且橫截面應離開被局部換新或加強的區域。

2.3 在按照附件 2 要求必須測量的貨物區域內的每塊甲板或船底板上應至少測量兩點。

2.4 在按照附件 2 要求所測量的每一橫截面的甲板和船底的 0.1D（D 係指船舶的模型深度）處，腹板和面板上的每一縱材和桁樑均應測量，每塊板應從縱材之間的一點進行測量。

2.5 對於第 2.4 段規定以外的按照附件 2 要求所測量的每一橫截面的縱板，腹板和面板上每一縱材和桁材均應測量，且每塊板應至少從每塊列板的一點予以測量。

2.6 每一構件的厚度應對每一構件橫截面的所有測量值取平均來決定。

3 縱向強度缺陷情況下的附加測量

3.1 如果發現一處或多處橫截面不足以滿足本附件中所給出的縱向強度要求，則應增加進行厚度測量的橫截面的數量，以保證在 0.5L 船中區域的每一液貨艙均被取樣。部分位於但超出 0.5L 區域的液貨艙處所應被取樣。

3.2 對於每一修理區域的前一橫截面和後一橫截面也應進行額外的厚度測量，測量的程度應保證修理截面的周邊區域也應符合附件 B 的要求。

4 有效的修理方法

4.1 為符合本附件要求進行的換新或加強的範圍應符合第 4.2 段的要求。

4.2 換新或加強的構板的最小持續長度不應少於主構板間距的兩倍。此外，被替換的構板（板材、加強筋、桁腹板和側板等）前部和後部的每一接板的對接處的厚度消耗不應在重大腐蝕範圍內（就特定的板材而言 75% 允許的消耗）。對接處厚度之差超過下限厚度的 15%，則應提供過渡斜坡。

4.3 包括安裝墊板或改動構板在內的其他修理方法應給以特殊考慮。考慮安裝墊板應僅限於下述情況：

.1 恢復或增加縱向強度；

.2 加強的甲板板或船底板的厚度消耗不應在重大腐蝕範圍內（甲板板的允許消耗為 75%）；

.3 校平和佈置，包括墊板的終止，應符合主管機關所認可的標準；

.4 列板應連續覆蓋整個 0.5L 船中長度；及

.5 在對焊處和按照列板的寬度在槽焊處，使用連續條焊和熔深焊接。所適用的焊接程序應為主管機關所接受。

4.4 在替換區域附近且與安裝的列板所配套的現有結構應能經受住所作用的載荷，考慮屈曲的抵抗力及縱板和船體外殼板之間焊接的情況。

RESOLUTION MSC.144(77)
(adopted on 5 June 2003)

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), 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.744(18) by which the Assembly adopted the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (the Guidelines),

RECALLING FURTHER article VIII(b) and regulation XI/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (hereinafter referred to as "the Convention") concerning the procedure for amending the Guidelines,

NOTING that the Assembly, when adopting resolution A.744(18), requested the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

NOTING ALSO resolutions MSC.49(66), MSC.105(73), MSC.125(75) and resolution 2 of the 1997 Conference of Contracting Governments to the Convention, by which amendments to resolution A.744(18) were adopted by the Maritime Safety Committee and the Conference of Contracting Governments to the Convention, in accordance with article VIII(b) and regulation XI/2 of the Convention,

HAVING CONSIDERED, at its seventy-seventh session, amendments to the Guidelines 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 Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 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 2004, 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 2005 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 GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)

ANNEX B

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

1 The following new paragraph is added after the existing paragraph under section 2 "Evaluation of longitudinal strength" of annex 12:

"The condition of the hull girder for longitudinal strength evaluation should be determined in accordance with the methods specified in appendix 3."

2 The following new appendix 3 is added at the end of appendix 2 to annex 12:

"Appendix 3

Sampling method of thickness measurements for longitudinal strength evaluation and repair methods

1 Extent of longitudinal strength evaluation

Longitudinal strength should be evaluated within 0.4L amidships for the extent of the hull girder length that contains tanks therein and within 0.5L amidships for adjacent tanks which may extend beyond 0.4L amidships, where tanks means ballast tanks and cargo tanks.

2 Sampling method of thickness measurement

2.1 Pursuant to the requirements of section 2.5 of Annex B, transverse sections should be chosen such that thickness measurements can be taken for as many different tanks in corrosive environments as possible, e.g. ballast tanks sharing a common plane boundary with cargo tanks fitted with heating coils, other ballast tanks, cargo tanks permitted to be filled with sea water and other cargo tanks. Ballast tanks sharing a common plane boundary with cargo tanks fitted with heating coils and cargo tanks permitted to be filled with sea water should be selected where present.

2.2 The minimum number of transverse sections to be sampled should be in accordance with annex 2 to Annex B. The transverse sections should be located where the largest thickness reductions are suspected to occur or are revealed from deck and bottom plating measurements prescribed in 2.3 and should be clear of areas which have been locally renewed or reinforced.

2.3 At least two points should be measured on each deck plate and/or bottom shell plate required to be measured within the cargo area in accordance with the requirements of annex 2.

2.4 Within 0.1D (where D is the ship's moulded depth) of the deck and bottom at each transverse section to be measured in accordance with the requirements of annex 2, every longitudinal and girder should be measured on the web and face plate, and every plate should be measured at one point between longitudinals.

2.5 For longitudinal members other than those specified in 2.4 to be measured at each transverse section in accordance with the requirements of annex 2, every longitudinal and girder should be measured on the web and face plate, and every plate should be measured at least in one point per strake.

2.6 The thickness of each component should be determined by averaging all of the measurements taken in way of the transverse section on each component.

3 Additional measurements where the longitudinal strength is deficient

3.1 Where one or more of the transverse sections are found to be deficient in respect of the longitudinal strength requirements given in this annex, the number of transverse sections for thickness measurement should be increased such that each tank within the 0.5L amidships region has been sampled. Tank spaces that are partially within, but extend beyond, the 0.5L region, should be sampled.

3.2 Additional thickness measurements should also be performed on one transverse section forward and one aft of each repaired area to the extent necessary to ensure that the areas bordering the repaired section also comply with the requirements of Annex B.

4 Effective repair methods

4.1 The extent of renewal or reinforcement carried out to comply with this annex should be in accordance with 4.2.

4.2 The minimum continuous length of a renewed or reinforced structural member should be not less than twice the spacing of the primary members in way. In addition, the thickness diminution in way of the butt joint of each joining member forward and aft of the replaced member (plates, stiffeners, girder webs and flanges, etc.) should not be within the substantial corrosion range (75% of the allowable diminution associated with each particular member). Where differences in thickness at the butt joint exceed 15% of the lower thickness, a transition taper should be provided.

4.3 Alternative repair methods involving the fitting of straps or structural member modification should be subject to special consideration. In considering the fitting of straps, it should be limited to the following conditions:

.1 to restore and/or increase longitudinal strength;

.2 the thickness diminution of the deck or bottom plating to be reinforced should not be within the substantial corrosion range (75% of the allowable diminution associated with the deck plating);

.3 the alignment and arrangement, including the termination of the straps, is in accordance with a standard recognized by the Administration;

.4 the straps are continuous over the entire 0.5L amidships length; and

.5 continuous fillet welding and full penetration welds are used at butt welding and, depending on the width of the strap, slot welds. The welding procedures applied should be acceptable to the Administration.

4.4 The existing structure adjacent to replacement areas and in conjunction with the fitted straps, etc. should be capable of withstanding the applied loads, taking into account the buckling resistance and the condition of welds between the longitudinal members and hull envelope plating."

第 56/2015 號行政長官公告

中華人民共和國於一九九九年十二月十三日以照會通知聯合國秘書長，經修訂的《1974年國際海上人命安全公約》自一九九九年十二月二十日起適用於澳門特別行政區；

國際海事組織海上安全委員會於二零零零年十二月五日透過第MSC.105（73）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第A.744（18）號決議）的修正案，該修正案自二零零二年七月一日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.105（73）號決議的中文及英文文本。

二零一五年五月十九日發佈。

代理行政長官　陳海帆

Aviso do Chefe do Executivo n.º 56/2015

Considerando que a República Popular da China, por nota datada de 13 de Dezembro de 1999, notificou o Secretário-Geral das Nações Unidas sobre a aplicação da Convenção Internacional para a Salvaguarda da Vida Humana no Mar de 1974, tal como emendada, na Região Administrativa Especial de Macau, a partir de 20 de Dezembro de 1999;

Considerando igualmente que, em 5 de Dezembro de 2000, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.105(73), adoptou emendas às Directrizes relativas ao Programa Reforçado de Inspecções no âmbito das Vistorias a Graneleiros e Petroleiros (resolução A.744(18), tal como emendada), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 1 de Julho de 2002;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.105(73), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 19 de Maio de 2015.

A Chefe do Executivo, interina, *Chan Hoi Fan*.

第 MSC.105（73）號決議

（2000 年 12 月 5 日通過）

通過《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第 A.744（18）號決議）的修正案

海上安全委員會，

憶及《國際海事組織公約》關於本委員會職責的第 28（b）條，

又憶及大會據以通過“散貨船和油船檢驗期間的強化檢查方案指南”（指南）的第 A.744（18）號決議，

還憶及《1974 年國際海上人命安全公約（SOLAS）》（以下簡稱“公約”）關於指南修正程序的第 VIII（b）條和第 XI/2 條，

注意到大會在通過第 A.744（18）號決議時要求海上安全委員會和海洋環境保護委員會根據其應用經驗對指南作出檢查和必要的更新，

還注意到海上安全委員會和公約締約政府會議按公約第 VIII（b）條和第 XI/2 條據以通過第 A.744（18）號決議修正案的第 MSC.49（66）號決議和 1997 年公約締約政府會議第 2 號決議，

在其第 73 次會議上**審議了**按公約第 VIII（b）（i）條提議並散發的指南修正案，

1. 按公約第 VIII（b）（iv）條**通過**“散貨船和油船檢驗期間的強化檢查方案指南”修正案，其條文載於本決議附件中；

2. 按公約第 VIII（b）（vi）（2）（bb）條**決定**：這些修正案應於 2002 年 1 月 1 日視為已被接受，除非在此日期之前，有超過三分之一的公約締約政府或其合計商船隊總噸位不少於世界商船隊總噸位 50%的締約政府通知反對該修正案；

3. **提請**各締約政府注意，按公約第 VIII（b）（vii）（2）條，這些修正案在按上文第 2 段被接受後，應於 2002 年 7 月 1 日生效；

4. **要求**秘書長按照公約第 VIII（b）（v）條，將本決議和附件中所列修正案條文的核證副本發給本公約所有締約政府；

5. **還要求**秘書長將本決議及其附件的副本發給非本公約締約政府的本組織成員。

附件

《散貨船和油輪檢驗期間的強化檢查方案指南》

（經修正的第 A.744（18）號決議）的修正案

附件 A

散貨船檢驗期間的強化檢查方案指南

1 原第 2.2.2 款的條文由下文取代：

“2.2.2 對於船齡為 15 年及以上的船舶，船底外部檢驗應在船舶在乾塢中時進行。對於船齡小於 15 年的船舶，不予定期檢驗期間的強化檢驗一起進行的替代船底檢查，可對漂浮船舶進行。只有在狀況令人滿意並有適當的設備和具有適當資格的人員時，才能進行漂浮船舶檢查。”

附件 B

油船檢驗期間的加強檢驗計劃導則

2 原第 2.2.2 款的條文由下文取代：

“2.2.2 對於船齡為 15 年及以上的船舶，船底外部檢驗應在船舶在乾塢中時進行。對於船齡小於 15 年的船舶，不予定期檢驗期間的強化檢驗一起進行的替代船底檢查，可對漂浮船舶進行。只有

在狀況令人滿意並有適當的設備和具有適當資格的人員時，才能進行漂浮船舶檢查。”

3 在原第 8.1.1 款後新增第 8.1.1.1 款如下：

“8.1.1.1 對於長度為 130 米及以上的油船（按生效的《國際載重線公約》的規定），船舶的縱向強度應在船齡達到 10 年以後所進行的安全構造換證檢驗期間，通過使用經丈量、更新或加強的厚度，按附件 12 規定的油船船體桁材的縱向強度標準來評估。”

4 在原第 8.1.2 款後新增第 8.1.2.1 款如下：

“8.1.2.1 在因初步評定而對構件作了更新或加強後，第 8.1.1.1 款所要求的船舶縱向強度評估的最後結果，應作為狀態評價報告的一部分予以報告。”

5 在附件 8 中，在原第 3.3 款後新增第 3.4 款如下：

“3.4 船舶縱向強度的評估結果(對於長度為 130 米及以上且船齡超過 10 年的油船）”。

6 在附件 9 的末尾增加下列條文：

“長度為 130 米及以上且船齡超過

10 年的油船船體桁材縱向強度評估結果

（在下面第 1、2 和 3 節中，只需填寫適用的一節）

1 本節適用於所有船舶，無論何時建造：船體桁材的甲板緣板（甲板板材與甲板縱材）和船底緣板（底殼板與船底縱材）的橫截面面積，已在船齡達到 10 年以後最近進行的《貨船設備安全證書》或《貨船安全證書》（SC）換證檢驗期間，視情通過使用丈量的、更新的和加強的結構構件的厚度計算得出，並發現橫截面面積的減少不超過原建面積的 10%，如下表所示：

表 1 船體桁材折邊橫截面面積

		實測值	原建值	減少量（率）
橫截面 1	甲板緣板	cm^2	cm^2	cm^2 （ %）
	底緣板	cm^2	cm^2	cm^2 （ %）
橫截面 2	甲板緣板	cm^2	cm^2	cm^2 （ %）
	底緣板	cm^2	cm^2	cm^2 （ %）
橫截面 3	甲板緣板	cm^2	cm^2	cm^2 （ %）
	底緣板	cm^2	cm^2	cm^2 （ %）

2 本節適用於 2002 年 7 月 1 日以後建造的船舶：船體桁材橫截面的截面模數已在船齡達到 10 年以後最近進行的 SC 換新檢驗期間，視情通過使用丈量的、更新的或加強的厚度，根據附件 12 第 2.2.1.1 條規定計算得出，並發現該截面模數滿足主管機關考慮到本組織通過的建議而確定的減少限值，如下表所示：

表 2 船體桁材橫截面模數

		Z_{act}（cm^3）*1	Z_{req}（cm^3）*2	備註
橫截面 1	上甲板			
	船底			
橫截面 2	上甲板			

表 2 船體桁材橫截面模數				
		Z_{act}（cm^3）*1	Z_{req}（cm^3）*2	備註
	船底			
橫截面 3	上甲板			
	船底			

註：

*1 Z_{act} 係指在進行 SC 換新檢驗期間，視情通過使用丈量的、更新的和加強的厚度，根據附件 12 第 2.2.1.1 款的規定計算得出的船體桁材橫截面的實際截面模數。

*2 Z_{req} 係指按照附件 12 第 2.2.1.1 款的規定計算得出的船舶縱向彎曲強度的減少限值。

Z_{act} 的計算圖表應附於本報告之後。

3 本節適用於 2002 年 7 月 1 日前建造的船舶：船體桁材橫截面的截面模數已在船齡達到 10 年以後最近進行的 SC 換新檢驗期間，視情通過使用丈量的、更新的或加強的厚度，根據附件 12 第 2.2.1.1 款規定計算得出，並發現該截面模數滿足主管機關或認可的船級社要求的衡準，並且 Z_{act} 不小於附件 12 附錄 2 中所規定的 Z_{mc} 值（見下文*2 的定義），如下表所示：

陳述主管當局或被認可的船級社要求的現役船船體桁材最小截面模數的接受衡準。

表 3 船體桁材橫截面模數				
		Z_{act}（cm^3）*1	Z_{mc}（cm^3）*2	備註
橫截面 1	上甲板			
	船底			
橫截面 2	上甲板			
	船底			
橫截面 3	上甲板			
	船底			

註：

*1 見表 2 註*1 的定義。

*2 Z_{mc} 係指按照附件 12 第 2.2.1.1 款的規定計算得出的船舶最小截面模數的減少限值。”

7 在附件 11 後新增附件 12 如下：

“附件 12

油船船體桁材縱向強度衡準

1 總則

1.1 本衡準應被用於評估第 8.1.1.1 款所要求的船體桁材縱向強度。

1.2 為使評估的船舶縱向強度能被承認為有效，縱向內構件與船體外殼之間的角焊狀況應該良好，以保持縱向內構件與船體外殼的完整性。

2 縱向強度評估

對於長度為 130 米及以上且船齡超過 10 年的油船，在《貨船構造安全證書》或《貨船安全證書》的換證檢驗（SC 換證檢驗）期間，應視情根據測量的、更新的或加強的厚度，按本附件的要求對船體桁材的縱向強度進行評估。

2.1 船體桁材甲板和船底緣板橫截面面積的計算

2.1.1 在 SC 換證檢驗期間，船體桁材甲板緣板（甲板板材和甲板縱材）和底部緣板（底殼板和船底縱材）的橫截面面積，應視情通過使用測量的、更新的或加強的構件厚度計算。

2.1.2 如果甲板或底部緣板的截面面積的減少超過其原建面積（即船舶建造時的原橫截面面積）的 10%，則應採取下列措施之一：

.1 更新或加強甲板或船底部緣板，使實際截面面積不少於原建面積的 90%；或

.2 在 SC 換證檢驗期間，運用附錄 1 中規定的計算方法，視情使用丈量的、更新的或加強的厚度計算船體桁材橫截面的實際截面模數（Z_{act}）。

2.2 船體桁材橫截面模數的要求

2.2.1 按照第 2.1.2.2 款算得的船體桁材橫截面的實際截面模數應視情滿足下列規定之一者：

.1 對於 2002 年 7 月 1 日或以後建造的船舶，按照第 2.1.2.2 款算得的船體桁材橫截面的實際截面模數（Z_{act}），應不小於主管機關考慮到本組織通過的建議所確定的減少限值；或

.2 對於 2002 年 7 月 1 日以前建造的船舶，按照第 2.1.2.2 款算得的船體桁材橫截面的實際截面模數（Z_{act}），應滿足主管機關或經認可的船級社要求的現役船舶的最小截面模數衡準，但無論如何，Z_{act} 的值都不應小於附錄 2 中規定的最小截面模數的減少限值（Z_{mc}）。

附錄 1

船體桁材船中截面的截面模數計算衡準

1 在計算船體桁材橫截面模數時，應計入所有連續縱向強度構件的截面面積。

2 要將大開口（即長度超過 2.5 米或寬度超過 1.2 米的開口）及使用扇形焊的扇形口從截面模數計算中使用的截面面積中扣除。

3 小開口（人孔、照明孔、焊縫單扇孔等）的面積不必扣除，但其寬度或陰影面積寬度在一個截面面積上的總和不應使甲板或底部截面模數的減少超過 3%，而且縱骨或縱桁材上的照明孔、排水孔和單扇孔的高度不超過桁板深度的 25%，扇孔最大為 75 毫米。

4 船底或甲板上一橫截面中不予扣除的小開口寬度總和為 0.06（B-Σb）（B 為船寬，Σb 為大開口的總寬）時，可認為等於上述截面模數的減少。

5 陰影面積將通過畫兩條開角為 30°的切線來取得。

6 甲板模數與船舷型甲板線有關。

7 船底模數與基線有關。

8 如果連續的圍壁通道和縱向艙口圍板由縱向艙壁或深桁材加以有效支撐，則應包括在縱向橫截面面積中。甲板模數則通過用慣性力矩除以下述距離來計算得出，但該距離應大於至船舷甲板線的距離：

$$y_t = y\left(0.9 + 0.2\frac{x}{B}\right)$$

式中： y = 從中性軸至連續強度構件頂部的距離

x = 從連續結構頂部至船舶中線的距離。

x 和 y 應量至 y_t 值最大的點。

9 多艙口之間的縱向桁材將按特殊計算方法加以考慮。

附錄 2

現役船舶最小縱向強度的減少限值

1 現役油船的最小截面模數的減少限值（Z_{mc}），由下述公式得出：

$$Z_{mc}=cL^2B\ (C_b+0.7)\ k\ (\mathrm{cm}^3)$$

式中：

L = 船舶長度。L 是在夏季載重水線上從船首柱前側至舵柱後側或舵杆中心（如果沒有舵柱）的距離，以米計。L 不應小於夏季載重水線上的最大長度的 96%，但不必大於 97%。對於有異常船尾和船首佈置的船舶，L 的長度可作特殊考慮。

B = 最大型寬，以米計算。

C_b = 在相應於夏季載重水線的吃水 d 處的型方形係數，取決於 L 和 B。C_b 取值不應少於 0.6。

$$C_b = \frac{\text{吃水處}d\text{的型排水量(立方米)}}{\mathrm{LBd}}$$

$c = 0.9c_n$

$c_n = 10.75 - \left(\frac{300 - L}{100}\right)^{1.5}$ 若 $130m \leqq L \leqq 300m$

$c_n = 10.75$ 若 $300m < L < 350m$

$C_n = 10.75 - \left(\frac{L - 350}{150}\right)^{1.5}$ 若 $350m \leqq L \leqq 500m$

k = 材料係數，例如：

對於屈服應力為 235N/mm^2 及以上的軟鋼而言，k=1.0。

對於屈服應力為 315N/mm^2 及以上的高強度鋼而言，k=0.78。

對於屈服應力為 355N/mm^2 及以上高強度鋼而言，k=0.72。

2 依據上文第 1 段的截面模數要求的船體桁材的所有連續縱向構件的尺寸應保持在船中 0.4L 的範圍內。但在特殊情況下，基於對船型、船體構形和載重條件的考慮，構件尺寸在 0.4L 部分的末端方向可逐漸減少，但不要限制船舶的裝載靈活性。

3 然而，上述標準可不適用於異常船型或設計，例如對於非常規主配載和/或重量分配的船舶。”

RESOLUTION MSC.105(73)
(adopted on 5 December 2000)

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), 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.744(18) by which the Assembly adopted the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (the Guidelines),

RECALLING FURTHER article VIII(b) and regulation XI/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (hereinafter referred to as "the Convention") concerning the procedure for amending the Guidelines,

NOTING that the Assembly, when adopting resolution A.744(18), requested the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

NOTING ALSO resolution MSC.49(66) and resolution 2 of the 1997 Conference of Contracting Governments to the Convention by which amendments to resolution A.744(18) were adopted by the Maritime Safety Committee and the Conference of Contracting Governments to the Convention, respectively, in accordance with article VIII(b) and regulation XI/2 of the Convention,

HAVING CONSIDERED, at its seventy-third session, amendments to the Guidelines 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 Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 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 January 2002, 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 July 2002 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 GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)

ANNEX A

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

1 The existing text of paragraph 2.2.2 is replaced by the following:

"2.2.2 For ships of 15 years of age and over, inspection of the outside of the ship's bottom should be carried out with the ship in dry dock. For ships of less than 15 years of age, alternate inspections of the ship's bottom not conducted in conjunction with the enhanced survey during the periodical survey may be carried out with the ship afloat. Inspection of the ship afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably qualified staff are available".

ANNEX B

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

2 The existing text of paragraph 2.2.2 is replaced by the following:

"2.2.2 For ships of 15 years of age and over, inspection of the outside of the ship's bottom should be carried out with the ship in dry dock. For ships of less than 15 years of age, alternate inspections of the ship's bottom not conducted in conjunction with the enhanced survey during the periodical survey may be carried out with the ship afloat. Inspection of the ship afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably qualified staff are available".

3 The following new paragraph 8.1.1.1 is added after the existing paragraph 8.1.1:

"8.1.1.1 In case of oil tankers of 130 m in length and upwards (as defined in the International Convention on Load Lines in force), the ship's longitudinal strength should be evaluated by using the thickness of structural members measured, renewed and reinforced, as appropriate, during the renewal survey of safety construction carried out after the ship reached 10 years of age, in accordance with the criteria for longitudinal strength of the ship's hull girder for oil tankers specified in annex 12."

4 The following new paragraph 8.1.2.1 is added after the existing paragraph 8.1.2:

"8.1.2.1 The final result of the evaluation of the ship's longitudinal strength required in 8.1.1.1, after renewal or reinforcement work of structural members, if carried out as a result of initial evaluation, should be reported as a part of the condition evaluation report."

5 In annex 8, the following new paragraph 3.4 is added after the existing paragraph 3.3:

"3.4 Evaluation result of the ship's longitudinal strength (for oil tankers of 130 m in length and upwards and of over 10 years of age)."

6 In annex 9, the following is added at the end:

"Evaluation result of longitudinal strength of the hull girder of oil tankers of 130 m in length and upwards and of over 10 years of age (Of sections 1, 2 and 3 below, only one applicable section should be completed)

1 This section applies to ships regardless of the date of construction: Transverse sectional areas of deck flange (deck plating and deck longitudinals) and bottom flange (bottom shell plating and bottom longitudinals) of the ship's hull girder have been calculated by using the thickness measured, renewed or reinforced, as appropriate, during the renewal survey of the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate (SC renewal survey) most recently conducted after the ship reached 10 years of age, and found that the diminution of the transverse sectional area does not exceed 10% of the as-built area, as shown in the following table:

Table 1 Transverse sectional area of hull girder flange				
		Measured	As-built	Diminution
Transverse Section 1	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)
Transverse section 2	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)
Transverse section 3	Deck flange	cm^2	cm^2	cm^2 (%)
	Bottom flange	cm^2	cm^2	cm^2 (%)

2 This section applies to ships constructed on or after 1 July 2002: Section moduli of transverse section of the ship's hull girder have been calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the SC renewal survey most recently conducted after the ship reached 10 years of age in accordance with the provisions of paragraph 2.2.1.1 of annex 12, and are found to be within their diminution limits determined by the Administration, taking into account the recommendations adopted by the Organization, as shown in the following table:

Table 2 Transverse section modulus of hull girder				
		Z_{act} (cm^3) *1	Z_{req} (cm^3) *2	Remarks
Transverse section 1	Upper deck			
	Bottom			
Transverse section 2	Upper deck			
	Bottom			
Transverse section 3	Upper deck			
	Bottom			

Notes

*1 Z_{act} means the actual section moduli of the transverse section of the ship's hull girder calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the SC renewal survey, in accordance with the provisions of paragraph 2.2.1.1 of annex 12.

*2 Z_{req} means diminution limit of the longitudinal bending strength of ships, as calculated in accordance with the provisions of paragraph 2.2.1.1 of annex 12.

The calculation sheets for Z_{act} should be attached to this report.

3 This section applies to ships constructed before 1 July 2002: Section moduli of transverse section of the ship's hull girder have been calculated by using the thickness of structural members measured, renewed or reinforced, as appropriate, during the SC renewal survey most recently conducted after the ship reached 10 years of age in accordance with the provisions of paragraph 2.2.1.2 of annex 12, and found to meet the criteria required by the Administration or the recognized classification society and that Z_{act} is not less than Z_{mc} (defined in *2 below) as specified in appendix 2 to annex 12, as shown in the following table:

Describe the criteria for acceptance of the minimum section moduli of the ship's hull girder for ships in service required by the Administration or the recognized classification society.

Table 3 Transverse section modulus of hull girder

		Z_{act} (cm^3) *1	Z_{mc} (cm^3) *2	Remark
Transverse section 1	Upper deck			
	Bottom			
Transverse section 2	Upper deck			
	Bottom			
Transverse section 3	Upper deck			
	Bottom			

Notes

*1 As defined in note *1 of table 2.

*2 Z_{mc} means the diminution limit of minimum section modulus calculated in accordance with provisions of paragraph 2.2.1.2 of annex 12."

7 The following new annex 12 is added after annex 11:

"ANNEX 12

CRITERIA FOR LONGITUDINAL STRENGTH OF HULL GIRDER FOR OIL TANKERS

1 General

1.1 These criteria should be used for the evaluation of the longitudinal strength of the ship's hull girder as required by 8.1.1.1.

1.2 In order that the ship's longitudinal strength to be evaluated can be recognized as valid, fillet welding between longitudinal internal members and hull envelopes should be in sound condition so as to keep integrity of longitudinal internal members with hull envelopes.

2 Evaluation of longitudinal strength

On oil tankers of 130 m in length and upwards and of over 10 years of age, the longitudinal strength of the ship's hull girder should be evaluated in compliance with the requirements of this annex on the basis of the thickness measured, renewed or reinforced, as appropriate, during the renewal survey of the Cargo Ship Safety Construction Certificate or Cargo Ship Safety Certificate (SC renewal survey).

2.1 Calculation of transverse sectional areas of deck and bottom flanges of hull girder

2.1.1 The transverse sectional areas of deck flange (deck plating and deck longitudinals) and bottom flange (bottom shell plating and bottom longitudinals) of the ship's hull girder should be calculated by using the thickness measured, renewed or reinforced, as appropriate, during the SC renewal survey.

2.1.2 If the diminution of sectional areas of either deck or bottom flange exceeds 10% of their respective as-built area (i.e., original sectional area when the ship was built), either one of the following measures should be taken:

.1 to renew or reinforce the deck or bottom flanges so that the actual sectional area is not less than 90% of the as-built area; or

.2 to calculate the actual section moduli (Z_{act}) of transverse section of the ship's hull girder by applying the calculation method specified in appendix 1, by using the thickness measured, renewed or reinforced, as appropriate, during the SC renewal survey.

2.2 Requirements for transverse section modulus of hull girder

2.2.1 The actual section moduli of the transverse section of the ship's hull girder, calculated in accordance with paragraph 2.1.2.2, should satisfy either of the following provisions, as applicable:

.1 for ships constructed on or after 1 July 2002, the actual section moduli (Z_{act}) of the transverse section of the ship's hull girder calculated in accordance with the requirements of paragraph 2.1.2.2 should be not less than the diminution limits determined by the Administration, taking into account the recommendations adopted by the Organization; or

.2 for ships constructed before 1 July 2002, the actual section moduli (Z_{act}) of the transverse section of the ship's hull girder calculated in accordance with the requirements of paragraph 2.1.2.2 should meet the criteria for minimum section modulus for ships in service required by the Administration or recognized classification society, provided that in no case Z_{act} should be less than the diminution limit of the minimum section modulus (Z_{mc}) as specified in appendix 2.

APPENDIX 1

CALCULATION CRITERIA OF SECTION MODULI OF MIDSHIP SECTION OF HULL GIRDER

1 When calculating the transverse section modulus of the ship's hull girder, the sectional area of all continuous longitudinal strength members is to be taken into account.

2 Large openings, i.e., openings exceeding 2.5 m in length or 1.2 m in breadth and scallops, where scallop welding is applied, are always to be deducted from the sectional areas used in the section modulus calculation.

3 Smaller openings (manholes, lightening holes, single scallops in way of seams, etc.) need not be deducted, provided that the sum of their breadths or shadow area breadths in one transverse section does not reduce the section modulus at deck or bottom by more than 3% and provided that the height of lightening holes, draining holes and single scallops in longitudinals or longitudinal girders does not exceed 25% of the web depth, for scallops maximum 75mm.

4 A deduction-free sum of smaller opening breadths in one transverse section in the bottom or deck area of $0.06(B - \Sigma b)$ (where B = breadth of ship, Σb = total breadth of large openings) may be considered equivalent to the above reduction in sectional modulus.

5 The shadow area will be obtained by drawing two tangent lines with an opening angle of 30°.

6 The deck modulus is related to the moulded deck line at side.

7 The bottom modulus is related to the base line.

8 Continuous trunks and longitudinal hatch coamings are to be included in the longitudinal sectional area provided they are effectively supported by longitudinal bulkheads or deep girders. The deck modulus is then to be calculated by dividing the moment of inertia by the following distance, provided this is greater than the distance to the deck line at side:

$$y_t = y\left(0.9 + 0.2\frac{x}{B}\right)$$

where:

y = distance from neutral axis to top of continuous strength member
x = distance from top of continuous strength member to centreline of the ship
x and y to be measured to the point giving the largest value of y_t

9 Longitudinal girders between multi-hatchways will be considered by special calculations.

APPENDIX 2

DIMINUTION LIMIT OF MINIMUM LONGITUDINAL STRENGTH OF SHIPS IN SERVICE

1 The diminution limit of the minimum section modulus (Z_{mc}) of oil tankers in service is given by the following formula:

$$Z_{mc} = cL^2B(C_b + 0.7)k \quad (\text{cm}^3)$$

where:

L = Length of ships. L is the distance, in metres, on the summer load waterline from the fore side of stem to the after side of the rudder post, or the centre of the rudder stock if there is no rudder post. L is not to be less than 96%, and need not be greater than 97%, of the extreme length on the summer load waterline. In ships with unusual stern and bow arrangement, the length L may be specially considered

B = Greatest moulded breadth in metres

C_b = Moulded block coefficient at draught d corresponding to summer load waterline, based on L and B. C_b is not to be taken less than 0.6

$$C_b = \frac{\text{moulded displacement}(\text{m}^3)\text{ at draught } d}{\text{LBd}}$$

$$c = 0.9c_n$$

$$c_n = 10.75 - \left(\frac{300-L}{100}\right)^{1.5} \quad \text{for } 130\ m \le L \le 300\ m$$

$$c_n = 10.75 \quad \text{for } 300\ m < L < 350\ m$$

$$c_n = 10.75 - \left(\frac{L-350}{150}\right)^{1.5} \quad \text{for } 350\ m \le L \le 500\ m$$

k = material factor, e.g.:

$k = 1.0$ for mild steel with yield stress of 235 N/mm^2 and over
$k = 0.78$ for high tensile steel with yield stress of 315 N/mm^2 and over
$k = 0.72$ for high tensile steel with yield stress of 355 N/mm^2 and over

2 Scantlings of all continuous longitudinal members of the ship's hull girder based on the section modulus requirement in 1 above are to be maintained within 0.4 L amidships. However, in special cases, based on consideration of type of ship, hull form and loading conditions, the scantlings may be gradually reduced towards the end of 0.4 L part, bearing in mind the desire not to inhibit the ship's loading flexibility.

3 However, the above standard may not be applicable to ships of unusual type or design, e.g., for ships of unusual main proportions and/or weight distributions."

第 57/2015 號行政長官公告

中華人民共和國於一九九九年十二月十三日以照會通知聯合國秘書長，經修訂的《1974年國際海上人命安全公約》自一九九九年十二月二十日起適用於澳門特別行政區；

國際海事組織海上安全委員會於二零零二年五月二十四日透過第MSC.125（75）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第A.744（18）號決議）的修正案，該修正案自二零零四年一月一日起適用於澳門特別行政區；

基於此，行政長官根據澳門特別行政區第3/1999號法律第六條第一款的規定，命令公佈包含上指修正案的第MSC.125（75）號決議的中文及英文文本。

二零一五年五月十九日發佈。

代理行政長官　陳海帆

Aviso do Chefe do Executivo n.º 57/2015

Considerando que a República Popular da China, por nota datada de 13 de Dezembro de 1999, notificou o Secretário-Geral das Nações Unidas sobre a aplicação da Convenção Internacional para a Salvaguarda da Vida Humana no Mar de 1974, tal como emendada, na Região Administrativa Especial de Macau a partir de 20 de Dezembro de 1999;

Considerando igualmente que, em 24 de Maio de 2002, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.125(75), adoptou emendas às Directrizes relativas ao Programa Reforçado de Inspecções no âmbito das Vistorias a Graneleiros e Petroleiros (resolução A.744(18), tal como emendada), e que tais emendas são aplicáveis na Região Administrativa Especial de Macau desde 1 de Janeiro de 2004;

O Chefe do Executivo manda publicar, nos termos do n.º 1 do artigo 6.º da Lei n.º 3/1999 da Região Administrativa Especial de Macau, a resolução MSC.125(75), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 19 de Maio de 2015.

A Chefe do Executivo, interina, *Chan Hoi Fan*.

第 MSC.125（75）號決議

（2002 年 5 月 24 日通過）

通過《散貨船和油輪檢驗期間的強化檢查方案指南》

（經修正的第 A.744（18）號決議）的修正案

海上安全委員會，

憶及《國際海事組織公約》有關本委員會的職責的第 28（b）條，

還憶及大會以第 A.744（18）號決議通過了《散貨船和油輪檢驗期間的強化檢查方案指南》，

進一步憶及有關上述指南的修正程序的《1974 年國際海上人命安全公約》（SOLAS）（以下稱為“公約”）第 VIII（b）條和規則第 XI/2 條，

注意到大會在通過第 A.744（18）號決議時，要求海上安全委員會和海洋環境保護委員會根據其應用中取得的經驗，對該指南不斷進行審查和作出必要的更新，

在其第 75 次會議上，**審議了**按照公約第 VIII（b）（i）條規定提議和分發的指南的修正案，

1. 按照公約第 VIII（b）（iv）條，**通過了**《散貨船和油輪檢驗期間的強化檢查方案指南》的修正案，其條文載於本決議的附件中；

2. 按照公約第 VIII（b）（vi）（2）（bb）條，**決定**所述修正案應於 2003 年 7 月 1 日視為已被接受，除非在此日期之前，有三分之一以上的締約國政府或其合計商船隊不少於世界商船隊總噸位 50%的締約國政府通知反對該修正案；

3. **還請**締約國政府注意，按照公約第 VIII（b）（vii）（2）條，在修正案按照上述第 2 段被接受後，應於 2004 年 1 月 1 日生效；

4. **要求**秘書長按照公約第 VIII（b）（v）條，將本決議和載於附件中的修正案條文的核證副本發送給公約的所有締約國政府；

5. **進一步要求**秘書長將本決議及其附件的副本發送給不是公約締約國政府的本組織會員。

《散貨船和油輪檢驗期間的強化檢查方案指南》（經修正的第 A.744（18）號決議）的修正案

附件 A

散貨船檢驗期間的強化檢查方案指南

1 “目錄”作如下修改：

.1 現有 1.3 的條文以下文代替：

“1.3 修理”；

.2 在現有 3.5 後增加以下新的一項：

“3.6 《SOLAS》第 XII/9.1 條規定的船舶的最前貨艙附加年度檢驗要求”；

.3 現有 4 至 4.4 的條文以下文代替：

“4 **中期強化檢驗**

4.1 綜述

4.2 5－10 年船齡的散貨船

4.3 10－15 年船齡的散貨船

4.4 15 年以上船齡的散貨船”；

.4 刪去現有 6 和 6.1 的條文，並將 7、8 和 9 重新編號為 6、7 和 8；

.5 在附件 8 的附錄 3 後增加下列新的附錄 4 和 5：

“附錄 4 礦砂運輸船－厚度測量和表明縱向和橫向構件的典型橫截面

附錄 5 礦砂運輸船－厚度測量和細節檢驗要求”；

.6 在附件 10 後增加新的附件 11 和 12：

“附件 11 測量第 1 艙和第 2 艙之間垂直波紋橫向水密艙壁的指南

附件 12 《SOLAS》第 XII/9.1 條規定的船舶的最前貨艙附加年度檢驗要求”

2 在現有第 1.2.14 段後增加下述新的第 1.2.15 和 1.2.16 段：

“1.2.15 *及時和徹底的修理*係指在檢驗時完成的使驗船師滿意的消除強制實施任何相關入級條件必要性的日常性修理。

1.2.16 *公約*係指經修正的《1974 年國際海上人命安全公約》。”

3 現有第 1.3 節的條文以下文代替：

“**1.3 修理**

1.3.1 超過允許極限的耗損引起的任何損壞（包括翹曲、開槽、分離或破裂），或超過允許極限，影響或主管機關認為將影響船舶結構、水密或風雨密完整性的大面積耗損，應予以及時和徹底的修理。需考慮的區域包括：

.1 船殼邊板肋骨、其邊緣附件或相鄰船殼板；

.2 甲板結構和甲板板；

.3 船底結構和船底板；

.4 水密或油密艙壁；和

.5 艙口蓋或艙口圍板。

如無足夠修理設施，則主管機關可允許船舶直接駛往某個修理場所。這可能需要為預定的航程進行卸貨和/或臨時修理。

1.3.2 此外，當檢驗結果證實有嚴重的鏽蝕或結構缺陷，主管機關認為其中任一情況都將影響船舶繼續營運的適航性時，則應在船舶繼續營運前實施補救措施。”

4 在第 2.6.1 段後增加下文：

“附件 11 規定了須符合本公約第 XII/6.2 條規定的船舶的第 1 和 2 貨艙之間垂直波紋橫向水密艙壁的額外厚度測量指南。”

5 在現有第 3.5.1 後增加新的第 3.6：

“3.6 按照附件 12 的要求對本公約第 XII/9.1 條規定的船舶的最前貨艙的附加年度檢驗

本公約第 XII/9.1 條規定的船舶係指符合下列所有條件的船舶：

.1 長度在 150 m 及以上的單層邊殼構造的散貨船；

.2 載運密度在 1,780 kg/m^3 及以上固體散貨；

.3 1999 年 7 月 1 日以前建造；和

.4 建有數量不足的橫向水密艙壁而使其能承受在所有裝載條件下最前貨艙的浸水和以本公約第 XII/4.3 條規定的令人滿意的平衡狀態保持漂浮。”

6 現有第 4 節的條文以下文代替：

“**4 中期強化檢驗**

4.1 綜述

4.1.1 年度檢驗要求以外的項目可以在第二次或第三次年度檢驗時或在這兩次檢驗之間進行檢驗。

4.1.2 檢驗的範圍取決於 4.2、4.3 和 4.4 中規定的船齡。

4.2 5 至 10 年船齡的散貨船

4.2.1 壓載艙

4.2.1.1 就用於鹹水壓載的處所而言，應對驗船師挑選的具有代表性的處所進行全面檢驗。如果這些檢查未發現明顯的結構缺陷，則檢查可局限於驗證防護塗層仍然有效。

4.2.1.2 如在鹹水壓載處所發現**不良**塗層狀況、鏽蝕或其他缺陷，或如自建造時起未使用過防護塗層，則檢查應擴大到同類型的其他壓載處所。

4.2.1.3 在除雙層底艙以外的鹹水壓載處所，如發現防護塗層處於**不良**狀況並且未予更新，或使用了軟塗層，或如自建造時起未使用過防護塗層，則應視必要以年度間隔對所述艙進行檢查和厚度測量。如在鹹水壓載雙層底艙使用過軟塗層，當發現塗層的此類開裂時，或者如沒有使用過塗層，則應以年度間隔對

所述艙進行檢查。當驗船師認為必要，或如存在大範圍的鏽蝕，則應對這些艙進行厚度測量。

4.2.1.4 除上述要求以外，應對前次定期檢驗時發現的可疑區域進行全面和細節檢驗。

4.2.2 貨艙

4.2.2.1 應對所有貨艙進行全面檢驗，包括足夠範圍（至少 25% 的肋骨）的細節檢驗，以確定下述狀況：

.1 包括頂部和底部邊緣附件在內的船殼肋骨、相鄰船殼板，和船艏貨艙及另一選定貨艙的橫向艙壁；和

.2 前次定期檢驗時發現的可疑區域。

4.2.2.2 如驗船師根據 4.2.2.1 中所述的全面和細節檢驗的結果認為有必要，則檢驗應擴大到包括對該貨艙的所有船殼肋骨和相鄰船殼板進行細節檢驗及其餘所有貨艙進行充分範圍的細節檢驗。

4.2.3 厚度測量的範圍

4.2.3.1 厚度測量的範圍應足以確定需進行 4.2.2.1 中所述的細節檢驗的區域的總體和局部鏽蝕程度。中期強化檢驗時的厚度測量最低要求是對前次定期檢驗時發現的可疑區域進行測量。

4.2.3.2 如發現嚴重鏽蝕，則應按附件 10 的要求增加厚度測量的範圍。

4.2.3.3 如經細節檢驗，驗船師確信沒有結構性減薄並且防護塗層（如施用的話）仍然有效，則可免予厚度測量。

4.2.3.4 如認為下面註釋中提及的貨艙的防護塗層處於**良好**狀態，則主管機關可對細節檢驗和厚度測量的範圍予以特殊考慮。

註釋：

在新建造時，除平艙頂部區域和船殼邊肋和托架大約 300 mm 以下底卸式艙斜板以外，所有艙口圍板和艙口蓋的內部和外部表面和所有貨艙的內部表面均應具有按照生產商建議所使用的一層高效防護塗層（環氧塗層或等效物）。在選擇塗層時，船東應適當考慮未來營運中擬運貨物的情況。就現有散貨船而言，如船東選擇對上面提及的貨艙進行塗層或重新塗層，則可考慮細節檢驗和厚度測量檢驗的範圍。在對現有船舶貨艙進行塗層之前，應在驗船師在場的情況下確定船材尺度。

4.3 10 至 15 年船齡的散貨船

4.3.1 壓載艙

4.3.1.1 對於散貨船：

所有鹹水壓載艙均應予以檢查。如這些檢查未發現明顯的結構缺陷，則檢查可局限於驗證防護塗層仍然有效。

4.3.1.2 對於礦砂船：

.1 所有加強肋骨環－在一個壓載邊艙中；

.2 一個甲板橫截面－在其餘所有的壓載邊艙中；

.3 兩個橫向艙壁－在一處壓載邊艙中；

.4 一個橫向艙壁－在其餘所有的壓載邊艙中。

4.3.1.3 此外，4.2.1.2 至 4.2.1.4 中的要求也適用。

4.3.2 貨艙

4.3.2.1 應對所有貨艙進行全面檢驗，包括進行足夠範圍（至少25%的肋骨）的細節檢驗，以確定下述狀況：

.1 包括頂部和底部邊緣附件在內的船殼肋骨、相鄰船殼板和所有貨艙的橫向艙壁；和

.2 前次定期檢驗時發現的可疑區域。

4.3.2.2 如驗船師根據 4.3.2.1 中所述的全面和細節檢驗的結果認為有必要，則檢驗應擴大到包括對所有貨艙的所有船殼肋骨和相鄰殼板進行細節檢驗。

4.3.3 厚度測量的範圍

4.3.3.1 厚度測量的範圍應足以確定需進行 4.3.2.1 中所述的細節檢驗的區域的總體和局部鏽蝕程度。中期強化檢驗時的厚度測量最低要求是對前次定期檢驗時發現的可疑區域進行測量。

4.3.3.2 此外，4.2.3.2 至 4.2.3.4 中所述的要求也適用。

4.4 15 年以上船齡的散貨船

4.4.1 中期強化檢驗的要求應與 2 和 5.1 要求的前次定期檢驗的範圍相同。但是，無需對液艙和用於壓載的貨艙進行壓力測試，除非參加檢驗的驗船師認為有必要。

4.4.2 在應用 4.4.1 時，中期強化檢驗可以從第二次年度檢驗開始，並在續後一年期間繼續進行，以期在第三次年度檢驗時完成，代替對 2.1.1 的應用。”

7 現有第 5.2.2 段的條文以下文代替：

“5.2.2 液艙和處所應為能安全進入，即無有害易燃氣體、具有通風和照明。”

8 刪去第 6 章條文，並對後面的第 7、8 和 9 章相應進行重新編號。

9 在現有第 7.3.1 段（重新編號為第 6.3.1 段）後增加如下新的第 5 小段：

“.5 5.1 所要求的檢驗方案，直至定期檢驗完成。”

10 現有第 8.1 節（重新編號為 7.1 節）的條文以下文代替：

“7.1 綜述

7.1.1 如所要求的厚度測量不是由代表主管機關的認可組織進行的，則應由認可組織的一名驗船師在場。該驗船師應在船上停留至監控該過程所必需的時間為止。

7.1.2 厚度測量公司應參加開始檢驗前召開的檢驗規劃會議。

7.1.3 在所有情況下，厚度測量的範圍應足以代表實際的平均狀況。”

11 附件 2 中的表格修正如下：

.1 在第 2 欄 “5<船齡≤10” 中，現有第 6 項的條文以下文代替：

"6. 根據上述第 2 點所考慮的橫截面上的風和水的列板。"

.2 在第 3 欄 "10<船齡≤15" 中，在末尾增加下述新的第 8 項：

"8. 對須符合公約第 XII/6.2 條規定的船舶，如附件 12 所要求。"

12 在附件 7 中，標題為 "厚度測量摘要" 的表格修正如下：

.1 現有第 1 欄標題的條文由下文代替：

"嚴重鏽蝕的液艙/區域或深度點蝕的區域的位置"

.2 在表格末尾增加下述新的註解：

"3 對於點蝕程度達到或超過 20%，在嚴重鏽蝕區域有耗損或平均點蝕深度達到或超過實際板材厚度的 1/3 的任何船底板，均應予以注意。"

13 在附件 8 "綜述" 中，對附錄清單增加下述新的附錄：

"附錄 4 礦砂運輸船－厚度測量和表明縱向和橫向構件的典型橫截面

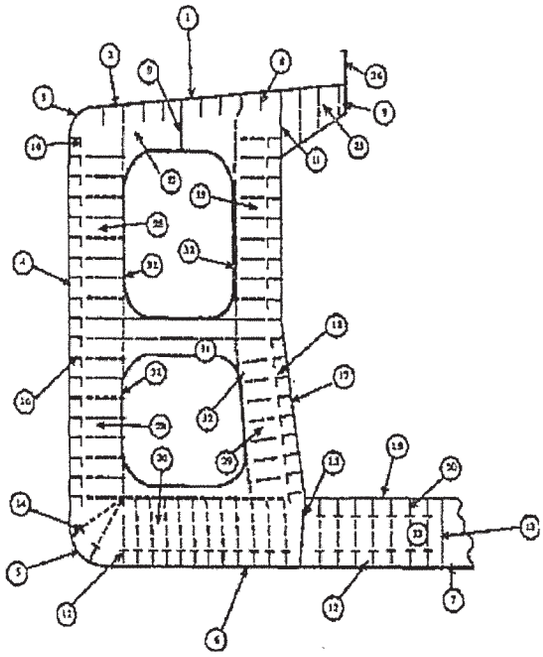
附錄 5 礦砂運輸船－厚度測量和細節檢驗要求"

14 在附件 8 的附錄 3 之後增加新的附錄 4 和 5 如下：

“附錄 4

礦砂運輸船

厚度測量和表明縱向和橫向構件的典型橫截面



TM2-BC（1）和（2）上的報告
1. 強力甲板板材
2. 縱桁板
3. 船側厚板
4. 船側殼板
5. 舭板
6. 船底外殼板材
7. 龍骨板

TM3-BC 上的報告
8. 甲板縱材
9. 甲板桁材
10. 船側厚板縱材
11. 縱向艙壁頂部列板
12. 艙底縱材
13. 船底桁材
14. 舭部縱材
15. 縱向艙壁下列板
16. 舷側外殼縱材
17. 縱向艙壁板材（剩餘）
18. 縱向艙壁縱材
19. 內底板材
20. 內底縱材

TM4-BC 上的報告
25. 甲板橫向中央液艙
26. 底部橫向中央液艙
27. 甲板橫向翼液艙
28. 舷側外殼垂直桁材
29. 縱向艙壁垂直桁材
30. 底部橫向翼液艙
31. 支柱
32. 橫向桁材面板
33. 雙層底肋板

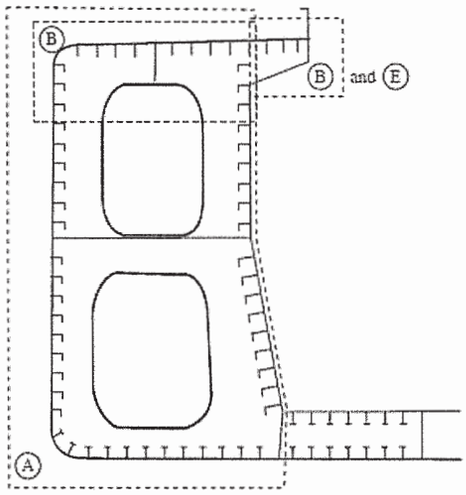
TM6-BC 上的報告
36. 艙口圍板
37. 艙口間甲板材
38. 艙口蓋

附錄 5

礦砂運輸船

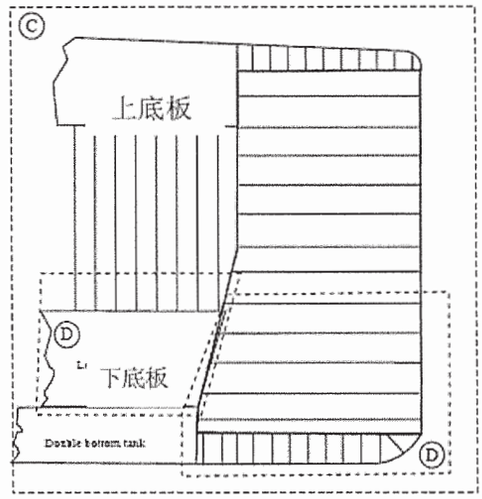
厚度測量和細節檢驗要求

典型橫截面細節檢驗



視情在附件 B 的 TM3-T 和
附件 B 的 TM4-T 上報告的厚度

典型橫向艙壁



在附件 B 的 TM5-T 上報告的厚度
關於測量範圍和方式的建議案列在附件 10 中

細節檢驗區域

15 在附件 10 中的標題為“包括交叉板條、主貨艙口、艙蓋、艙口圍板和船舷頂艙在內的甲板結構”的表格中，以下述內容代替標題為“結構構件”欄內的“3. 艙蓋”項相對應的標題為“測量範圍”欄中現有的“a”項內容：

“a. 船側和邊緣圍裙，各 3 處”。

16 在現有附件 10 的條文後，增加下述新的附件 11 和 12：

“附件 11

測量第 1 艙和第 2 艙之間垂直波紋橫向水密艙壁的指南

1 測量對於確定船舶結構的一般狀況和明確可能的修理和/或加強垂直波紋橫向水密艙壁的範圍，以驗證是否符合本公約第 XII/1.5 條規定的散貨船艙壁和雙層底強度標準是必要的。

2 考慮到本公約第 XII/1.5 條規定的散貨船艙壁和雙層底強度標準中說明的翹曲模型，決定本附件圖 1 和圖 2 所示的關鍵水平面上的厚度減薄程度是至關重要的。

3 應在下述水平面上進行測量。為充分評估每一垂直波紋船材尺度，應對下述所有水平面的每一波紋凸緣、桁材、卸料板和聯接板予以測量。

水平面 （a） 不帶下底板的船舶 （見圖 1）

位置：

— 卸料板線以上約 200 mm 的波紋凸緣的中間寬度；

— 波紋凸緣之間聯接板（如裝有的話）的中部；

— 卸料板中部；

— 卸料板線以上約 200 mm 的波紋桁材的中間寬度。

水平面 （b） 帶下底板的船舶 （見圖 2）

位置：

— 卸料板線以上約 200 mm 的波紋凸緣的中間寬度；

— 波紋凸緣之間聯接板（如安裝的話）的中部；

— 卸料板中部；

— 卸料板線以上約 200 mm 的波紋桁材的中間寬度。

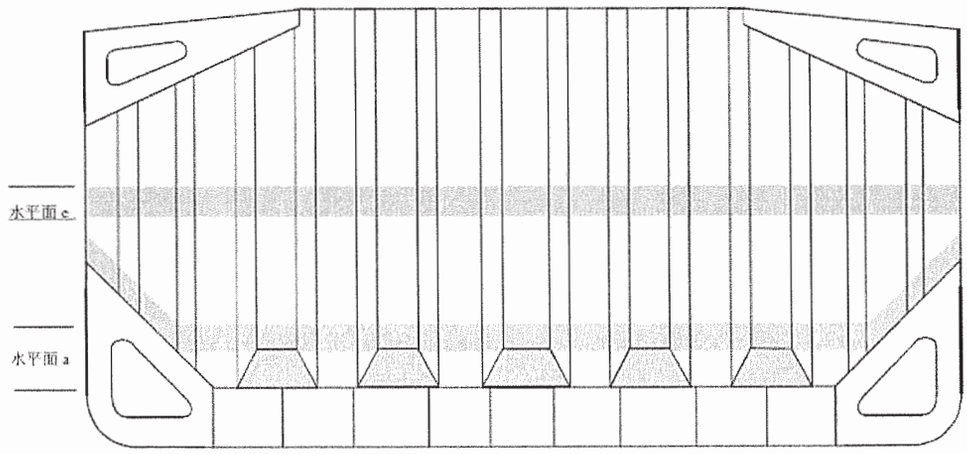
水平面 （c） 帶有或不帶下底板的船舶 （見圖 1 和圖 2）

位置：

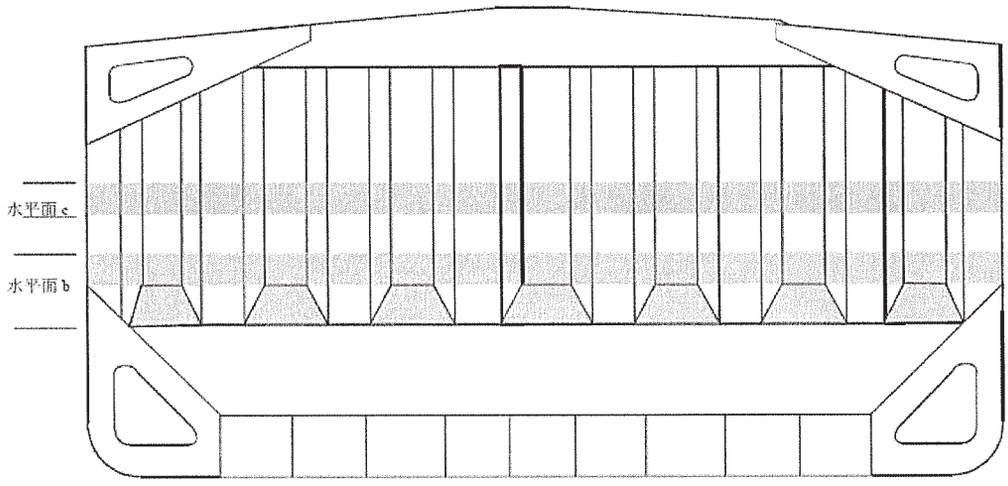
— 在波紋的大約中間高度上的波紋凸緣和桁材的中間寬度。

4 如果橫向水平面的厚度有變化，則應對較薄的底板予以測量。

5 鋼板換新和/或加強應符合本公約第 XII/1.5 條規定的散貨船艙壁和雙層底強度標準。



圖例 1：不帶下底板的船舶



圖例 2：帶有下底板的船舶

附件 12

《SOLAS》第 XII/9.1 條規定的

船舶的最前貨艙附加年度檢驗要求

1 綜述

對於 5 年以上船齡的散貨船，除本指南第 3 章規定的年度檢驗要求外，年度檢驗還應包括對下述項目的檢查。

2 檢驗範圍

2.1 5－15 年船齡的散貨船

2.1.1 應對最前貨艙進行全面檢驗，包括足夠範圍（至少 25%的肋骨）的細節檢驗，以確定下述狀況：

.1 包括上邊緣和下邊緣連接件在內的船殼肋板，相鄰船殼板和橫向艙壁；和

.2 前次定期檢驗時發現的可疑區域。

2.1.2 如果驗船師根據 2.1.1 中所述的全面和細節檢驗的結果認為有必要，則檢驗應擴大到包括對該貨艙的所有船殼肋骨和相鄰船殼板進行細節檢驗。

2.2 15 年以上船齡的散貨船：

2.3 應對最前貨艙進行全面檢驗，包括細節檢驗，以確定下述狀況：

.1 包括上邊緣和下邊緣連接件在內的所有船殼肋板，相鄰船殼板和橫向艙壁；和

.2 前次定期檢驗時發現的可疑區域。

3 厚度測量範圍

3.1 厚度測量的範圍應足以確定需進行 2.1 和 2.2 中所述的細節檢驗的區域的總體和局部鏽蝕程度。厚度測量最低要求是對前次定期檢驗時發現的可疑區域進行測量。如發現嚴重鏽蝕，則應按附件 10 的要求增加厚度測量的範圍。

3.2 如經細節檢驗，驗船師確信沒有結構性減薄並且防護塗層（如施用的話）仍然有效，則可免予厚度測量。

4 特殊考慮

如認為下面註釋中提及的最前貨艙的防護塗層處於**良好**狀態，則可對細節檢驗和厚度測量的範圍予以特殊考慮。

註釋：

在新建造時，除平艙頂部區域和船殼邊肋和托架大約 300 mm 以下底卸式艙斜板以外，所有艙口圍板和艙口蓋的內部和外部表面和所有貨艙的內部表面均應具有按照生產商建議所使用的一層高效防護塗層（環氧塗層或等效物）。在選擇塗層時，船東應適當考慮未來營運中擬運貨物的情況。

就現有散貨船而言，如船東選擇對上面提及的貨艙進行塗層或重新塗層，則可考慮細節檢驗和厚度測量檢驗的範圍。在對現有船舶貨艙進行塗層之前，應在驗船師在場的情況下確定船材尺度。”

附件 B

油輪檢驗期間的強化檢驗方案指南

17 “目錄”修改如下：

.1 現有 1.3 的條文以下文代替：

“1.3 修理”

.2 現有 4 至 4.4 的條文以下文代替：

“**4 中期強化檢驗**

4.1 綜述

4.2 5－10 年船齡的油輪

4.3 10－15 年船齡的油輪

4.4 15 年以上船齡的油輪”

18 在現有第 1.2.12 段後增加下述新的第 1.2.13 段：

“1.2.13 *及時和徹底的修理*係指在檢驗時完成的使驗船師滿意的消除強制實施相關入級條件必要性的日常修理。”

19 現有第 1.3 節的條文以下文代替：

“**1.3 修理**

1.3.1 超過允許極限的耗損引起的損壞（包括翹曲、開槽、分離或破裂），或超過允許極限，影響或主管機關認為將影響船舶結構、水密或風雨密完整性的大面積耗損，應予以及時和徹底的修理。需考慮的區域包括：

.1 船殼邊板肋骨、其邊緣附件或相鄰船殼板；

.2 甲板結構和甲板板；

.3 船底結構和船底板；

.4 水密或油密艙壁；和

.5 艙口蓋或艙口圍板。

如無足夠修理設施，則主管機關可允許船舶直接駛往某個修理場所。這可能需要為預定的航程進行卸貨和/或臨時修理。

1.3.2 此外，當檢驗結果證實有嚴重鏽蝕或結構缺陷，主管機關認為其中任一情況都將影響船舶繼續營運的適航性時，則應在船舶繼續營運前實施補救措施。”

20 在現有第 2.1.3 段中的“管路”和“處於令人滿意的狀況”間插入“按照 2.1.5 中的要求，” 。

21 現有第 2.1.5 段的條文以下文代替：

“2.1.5 甲板上貨物管路，包括原油洗艙（COW）管路，以及上述液艙和處所內的貨物和壓載管路應進行檢查和操作上的工作壓力測試，致使在場的驗船師滿意，以確保緊密性和狀況保持令人滿意。應特別注意貨艙中的壓載管路和壓載水艙及空處的貨物管路，並應在任何情況下均告知驗船師，在船舶修理期間，該管路包括閥門和裝置在何時是打開的，可以進行內部檢查。”

22 現有第 2.3.1 段的條文以下文代替：

"如裝有液貨艙防鏽蝕系統，應對其狀況進行檢查。如發現壓載水艙防護塗層處於**不良**狀況並且未予更新，或使用了軟塗層，或如自建造時起未使用過防護塗層，則應以年度間隔對有關液艙進行檢查。如驗船師認為有必要，則應進行厚度測量。"

23 現有第 3.5.2 段後增加下述新的段落：

"3.5.3 對於超過 15 年以上船齡的油輪，應對所有與帶有加熱裝置的液貨艙相鄰（即具有共同平面界限）的壓載水艙進行內部檢查。如驗船師認為有必要，則應進行厚度測量；如果這些厚度測量的結果發現嚴重鏽蝕，則應根據附件 4 中的要求增加厚度測量的範圍。主管機關可對在前次中期或定期檢驗中發現塗層處於**良好**狀況的液艙或處所予以特殊考慮。"

24 現有第 4 至 4.4.2 段的條文以下文代替：

"**4 中期強化檢驗**

4.1 綜述

4.1.1 年度檢驗要求以外的項目可以在第二次或第三次年度檢驗時或在這兩次檢驗之間進行檢驗。

4.1.2 視船齡而定的液貨艙和壓載艙的檢驗範圍在 4.2、4.3 和 4.4 中作了規定。

4.1.3 對於露天甲板，應儘可能對貨物、原油清洗、燃油、壓載、蒸汽和通風管系以及通風桅桿和集管進行檢查。如果根據檢查對管路狀況有任何懷疑，則可要求對管路進行壓力測試或厚度測量或兩者均進行。

4.2 5 至 10 年船齡的油輪

4.2.1 4.1.3 的要求適用。

4.2.2 對用於鹹水壓載的液艙，應對驗船師選擇的具有代表性的液艙進行全面檢驗。如此種檢查未發現明顯的結構缺陷，則檢查可局限於驗證防護塗層仍然有效。

4.2.3 如在鹹水壓載艙發現**不良**塗層狀況、鏽蝕或其他缺陷，或如自建造以來未使用過防護塗層，則檢查應擴大到同類型的其他壓載艙。

4.2.4 如在鹹水壓載艙發現防護塗層處於**不良**狀況並且未予更新，或使用了軟塗層，或如自建造時起未使用過防護塗層，則應視必要以年度間隔對有關液艙進行檢查和厚度測量。

4.3 10 至 15 年船齡的油輪

4.3.1 4.2 的要求適用。

4.3.2 至少應對兩個有代表性的液貨艙進行全面檢驗。

4.3.3 對用於鹹水壓載的液艙，包括貨物/壓載兼用艙，應對所有此類液艙進行全面檢驗。如此種檢驗未發現明顯的結構缺陷，則檢驗可局限於驗證防護塗層仍然有效。

4.3.4 細節檢驗的範圍：

.1 壓載艙：與前次定期檢驗的範圍相同。

.2 液貨艙：兩個貨物/壓載兼用艙。檢驗的範圍應基於前次定期檢驗的記錄和液艙以往的修理史。

可按 2.4.3 中所述擴大細節檢驗的範圍。對液艙中塗層處於**良好**狀態的區域，主管機關可對細節檢驗的範圍予以特殊考慮。

4.3.5 厚度測量的範圍

中期檢驗時的厚度測量最低要求是對上次定期檢驗時發現的可疑區域進行測量。如發現嚴重鏽蝕，則應按附件 4 的要求增加厚度測量的範圍。

4.4 15 年以上船齡的油輪

4.4.1 中期檢驗的要求應與 2 和 5.1 中要求的前次定期檢驗的範圍相同。但是無需對液貨艙和壓載艙進行壓力測試，除非參加檢驗的驗船師認為有必要。

4.4.2 在應用 4.4.1 時，中期強化檢驗可以從第二次年度檢驗時開始並在後續一年期間繼續進行，以期在第三次年度檢驗時完成，代替對 2.1.1 的應用。”

25 現有第 5.2.2 段的條文以下文代替：

“5.2.2 液艙和處所應能安全進入，即無有害易燃氣體、具有通風和照明。”

26 在現有 6.3.1 段的第.5 小段後增加新的第.6 小段如下：

“.6 5.1 所要求的檢驗方案，直至定期檢驗完成。”

27 現有第 7.1.1 段的條文以下文代替：

“7.1.1 如所要求的厚度測量不是由代表主管機關的認可組織進行的，則應有認可組織的一名驗船師在場。該驗船師應在船上停留至監控該過程所必需的時間為止。

7.1.2 厚度測量公司應參加檢驗前召開的檢驗規劃會議。

7.1.3 在所有情況下，厚度測量的範圍應足以代表實際的平均狀況。”

28 附件 9 修正如下：

.1 在標題為“狀況評估報告的內容”的狀況評估報告的現有第 3 部分後插入新的第 4 部分：

“第 4 部分—貨物、壓載管系：— 已檢查

— 已操作測試”

而現有 4 至 9 部分重新編號為 5 至 10 部分；

.2 標題為“厚度測量摘要”的表格修正如下：

.1 現有第 1 欄的標題由下文代替：

“嚴重鏽蝕的液艙/區域或深度點蝕的區域的位置”

.2 在表格末尾增加下述新的註釋：

“3 對於點蝕程度達到或超過 20%，在嚴重鏽蝕區域有耗損或平均點蝕深度達到或超過實際板材厚度 1/3 的任何船底板，均應予以注意。”

29 在附件 11 中，現有第 3.1 條的條文的第 4 句以下文代替：

“方法基本上是根據有關設計和鏽蝕的知識和經驗做風險評估。”

RESOLUTION MSC.125(75)
(adopted on 24 May 2002)

ADOPTION OF AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), 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.744(18) by which the Assembly adopted the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers,

RECALLING FURTHER article VIII(b) and regulation XI/2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 (hereinafter referred to as "the Convention") concerning the procedure for amending the aforementioned Guidelines,

NOTING that the Assembly, when adopting resolution A.744(18), requested the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Guidelines under review and update them as necessary, in the light of experience gained in their application,

HAVING CONSIDERED, at its seventy-fifth session, amendments to the Guidelines 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 Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, 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 2003, 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 2004 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.

AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)

ANNEX A

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

1 The "Contents" are amended as follows:

.1 the existing text of 1.3 is replaced by the following:

"1.3 Repairs";

.2 the following new item is added after the existing 3.5:

"3.6 Additional annual survey requirements for the foremost cargo hold of ships subject to SOLAS regulation XII/9.1";

.3 the existing text of 4 to 4.4 is replaced by the following:

"4 INTERMEDIATE ENHANCED SURVEY
4.1 General
4.2 Bulk carriers 5-10 years of age
4.3 Bulk carriers 10-15 years of age
4.4 Bulk carriers exceeding 15 years of age";

.4 the existing text of 6 and 6.1 is deleted and 7, 8 and 9 are renumbered as 6, 7 and 8;

.5 the following new appendices 4 and 5 are added in annex 8 after appendix 3:

"Appendix 4 Ore carriers - Thickness measurement and typical transverse section indicating longitudinal and transverse members

Appendix 5 Ore carriers - Thickness measurement and close-up survey requirements";

.6 the following new annexes 11 and 12 are added after annex 10:

"Annex 11 Guidelines for the gauging of the vertically corrugated transverse watertight bulkhead between holds Nos.1 and 2

Annex 12 Additional annual survey requirements for the foremost cargo hold of ships subject to SOLAS regulation XII/9.1"

2 The following new paragraphs 1.2.15 and 1.2.16 are added after the existing paragraph 1.2.14:

"1.2.15 A *prompt and thorough repair* is a permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of classification.

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

3 The existing text of section 1.3 is replaced by the following:

"1.3 Repairs

1.3.1 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Administration, will affect the ship's structural, watertight or weathertight integrity, should be promptly and thoroughly repaired. Areas to be considered include:

.1 side shell frames, their end attachments or adjacent shell plating;
.2 deck structure and deck plating;
.3 bottom structure and bottom plating;
.4 watertight or oiltight bulkheads, and
.5 hatch covers or hatch coamings.

Where adequate repair facilities are not available, the Administration may allow the ship to proceed directly to a repair facility. This may require discharging the cargo and/or temporary repairs for the intended voyage.

1.3.2 Additionally, when a survey results in the identification of significant corrosion or structural defects, either of which, in the opinion of the Administration, will impair the ship's fitness for continued service, remedial measures should be implemented before the ship continues in service."

4 The following text is added at the end of paragraph 2.6.1:

"Annex 11 provides additional thickness measurement guidelines applicable to the vertically corrugated transverse watertight bulkhead between cargo hold Nos.1 and 2 on ships subject to compliance with regulation XII/6.2 of the Convention."

5 The following new paragraph 3.6 is added after the existing paragraph 3.5.1:

"3.6 Additional annual survey of the foremost cargo hold of ships subject to regulation XII/9.1 of the Convention in accordance with the requirements of annex 12

Ships subject to regulation XII/9.1 of the Convention are those meeting all of the following conditions:

.1 bulk carriers of 150 m in length and upwards of single side skin construction;

.2 carrying solid bulk cargoes having a density of 1,780 kg/m^3 and above;

.3 constructed before 1 July 1999; and

.4 constructed with an insufficient number of transverse watertight bulkheads to enable them to withstand flooding of the foremost cargo hold in all loading conditions and remain afloat in a satisfactory condition of equilibrium as specified in regulation XII/4.3 of the Convention."

6 The existing text of section 4 is replaced by the following:

"4 INTERMEDIATE ENHANCED SURVEY

4.1 General

4.1.1 Items that are additional to the requirements of the annual survey may be surveyed either at the second or third annual survey or between these surveys.

4.1.2 The extent of survey is dependent upon the age of the ship as specified in 4.2, 4.3 and 4.4.

4.2 Bulk carriers of 5 to 10 years of age

4.2.1 Ballast tanks

4.2.1.1 For spaces used for salt water ballast, an overall survey of representative spaces selected by the surveyor should be carried out. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains efficient.

4.2.1.2 Where POOR coating condition, corrosion or other defects are found in salt water ballast spaces or where protective coating was not applied from the time of construction, the examination should be extended to other ballast spaces of the same type.

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

4.2.1.4 In addition to the requirements above, areas found to be suspect areas at the previous periodical survey should be overall and close-up surveyed.

4.2.2 Cargo holds

4.2.2.1 An overall survey of all cargo holds, including close-up survey of sufficient extent, minimum 25% of frames, should be carried out to establish the condition of:

.1 shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads in the forward cargo hold and one other selected cargo hold; and

.2 areas found to be suspect areas at the previous periodical survey.

4.2.2.2 Where considered necessary by the surveyor as a result of the overall and close-up survey as described in 4.2.2.1, the survey should be extended to include a close-up survey of all of the shell frames and adjacent shell plating of that cargo hold as well as a close-up survey of sufficient extent of all remaining cargo holds.

4.2.3 Extent of thickness measurement

4.2.3.1 Thickness measurement should be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey as described in 4.2.2.1. The minimum requirement for thickness measurements at the intermediate enhanced survey are areas found to be suspect areas at the previous periodical survey.

4.2.3.2 Where substantial corrosion is found, the extent of thickness measurements should be increased in accordance with the requirements of annex 10.

4.2.3.3 The thickness measurement may be dispensed with provided the surveyor is satisfied by the close-up survey, that there is no structural diminution and the protective coating, where applied, remains effective.

4.2.3.4 Where the protective coating in cargo holds, as referred to in the explanatory note below, is found to be in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered by the Administration.

Explanatory note:

At the time of new construction, all internal and external surfaces of hatch coamings and hatch covers, and all internal surfaces of the cargo holds, excluding the flat tank top areas and the hopper tanks sloping plating approximately 300 mm below the side shell frame and brackets, should have an efficient protective coating (epoxy coating or equivalent) applied in accordance with the manufacturer's recommendation. In the selection of coating, due consideration should be given by the owner to intended cargo conditions expected in service. For existing bulk carriers, where owners may elect to coat or recoat cargo holds as noted above, consideration may be given to the extent of the close-up and thickness measurement surveys. Prior to the coating of cargo holds of existing ships, scantlings should be ascertained in the presence of a surveyor.

4.3 Bulk carriers 10 - 15 years of age

4.3.1 Ballast tanks

4.3.1.1 For bulk carriers:

All salt water ballast tanks should be examined. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains efficient.

4.3.1.2 For ore carriers:

.1 all web frame rings - in one ballast wing tank;

.2 one deck transverse - in each of the remaining ballast wing tanks;

.3 both transverse bulkheads - in one ballast wing tank;

.4 one transverse bulkhead - in each remaining ballast wing tank.

4.3.1.3 In addition, the requirements described in 4.2.1.2 to 4.2.1.4 apply.

4.3.2 Cargo holds

4.3.2.1 An overall survey of all cargo holds, including close-up survey of sufficient extent, minimum 25% of frames, should be carried out to establish the condition of:

.1 shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads of all cargo holds; and

.2 areas found to be suspect areas at the previous periodical survey.

4.3.2.2 Where considered necessary by the surveyor as a result of the overall and close-up survey as described in 4.3.2.1, the survey should be extended to include a close-up survey of all of the shell frames and adjacent plating of all cargo holds.

4.3.3 Extent of thickness measurement

4.3.3.1 Thickness measurement should be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey as described in 4.3.2.1. The minimum requirement for thickness measurements at the intermediate enhanced survey are areas found to be suspect areas at the previous periodical survey.

4.3.3.2 In addition, the requirements described in 4.2.3.2 to 4.2.3.4 apply.

4.4 Bulk carriers exceeding 15 years of age

4.4.1 The requirements of the intermediate enhanced survey should be to the same extent as the previous periodical survey required in 2 and 5.1. However, pressure testing of tanks and cargo holds used for ballast is not required unless deemed necessary by the attending surveyor.

4.4.2 In application of 4.4.1, the intermediate enhanced survey may be commenced at the second annual survey and be progressed during the succeeding year with a view to completion at the third annual survey in lieu of the application of 2.1.1."

7 The existing text of paragraph 5.2.2 is replaced by the following:

"5.2.2 Tanks and spaces should be safe for access, i.e. gas-freed, ventilated, and illuminated."

8 The text of chapter 6 is deleted and the following chapters 7, 8 and 9 are renumbered accordingly.

9 The following new subparagraph 5 is added at the end of existing paragraph 7.3.1 (renumbered paragraph 6.3.1):

".5 survey programme as required by 5.1 until such time as the periodical survey has been completed."

10 The existing text of section 8.1 (renumbered section 7.1) is replaced by the following:

"7.1 General

7.1.1 The required thickness measurements, if not carried out by the recognised organization acting on behalf of the Administration, should be witnessed by a surveyor of the recognised organization. The surveyor should be on board to the extent necessary to control the process.

7.1.2 The thickness measurement company should be part of the survey planning meeting to be held prior to commencing the survey.

7.1.3 In all cases the extend of the thickness measurements should be sufficient as to represent the actual average condition."

11 The table in annex 2 is amended as follows:

.1 In the second column "5<AGE≤ 10", the existing text of item 6 is replaced by the following:

"6. Wind and water strakes in way of transverse sections considered under point 2 above."

.2 In the third column "10<AGE≤ 15", the following new item 8 is added at the end:

"8. As required by annex 12 for ships subject to compliance with regulation XII/6.2 of the Convention."

12 In annex 7, the table headed "Extract of thickness measurements" is amended as follows:

.1 The existing text of the heading of the first column is replaced by the following:

"Position of substantially corroded tanks/areas or areas with deep pitting"

.2 The following new note is added at the end of the table:

"3 Any bottom plating with a pitting intensity of 20% or more, with wastage in the substantial corrosion range or having an average depth of pitting of 1/3 or more of actual plate thickness should be noted."

13 In annex 8, General, the following new appendices are added to the list of appendices:

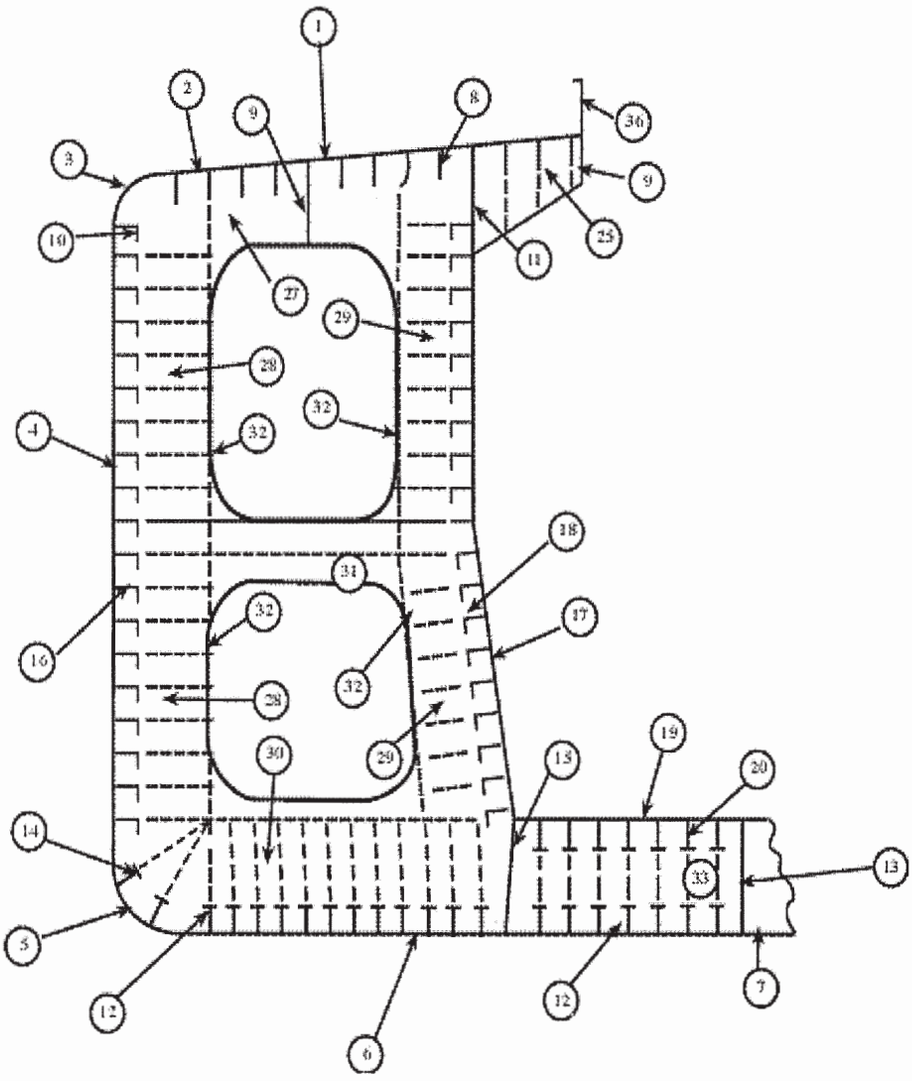
"Appendix 4 Ore carriers – Thickness measurement and typical transverse section indicating longitudinal and transverse members

Appendix 5 Ore carriers – Thickness measurements and close-up surrey requirements"

14 In annex 8, the following new appendices 4 and 5 are added after appendix 3:

"**Appendix 4**

Ore carriers
Thickness measurement and typical transverse section indicating longitudinal and transverse members



Report on TM2-BC (1) and (2)
1. Strength deck plating
2. Stringer plate
3. Sheerstrake
4. Side shell plating
5. Bilge plating
6. Bottom shell plating
7. Keel plate

Report on TM6-BC
36. Hatch coamings
37. Deck plating between hatches
38. Hatch covers

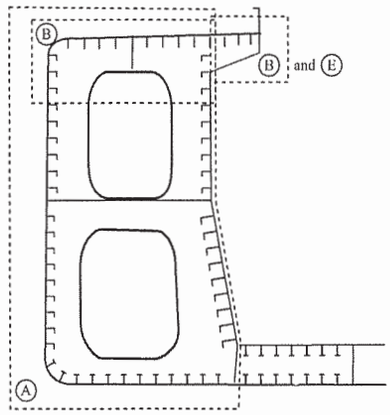
Report on TM3-BC
8. Deck longitudinals
9. Deck girders
10. Sheerstrake longitudinals
11. Longitudinal bulkhead top strake
12. Bottom longitudinals
13. Bottom girders
14. Bilge longitudinals
15. Longitudinal bulkhead lower strake
16. Side shell longitudinals
17. Longitudinal bulkhead plating (remainder)
18. Longitudinal bulkhead longitudinals
19. Inner bottom plating
20. Inner bottom longitudinals

Report on TM4-BC
25. Deck transverse centre tank
26. Bottom transverse centre tank
27. Deck transverse wing tank
28. Side shell vertical web
29. Longitudinal bulk-head vertical web
30. Bottom transverse wing tank
31. Struts
32. Transverse web face plate
33. D.b. floors

Appendix 5

Ore carriers
Thickness measurement and close-up survey requirements

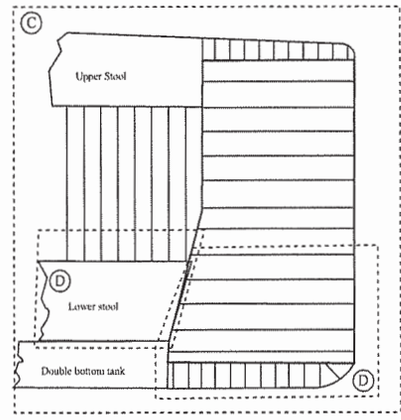
Typical transverse section close-up survey



Thickness to be reported on TM3-T of Annex B and TM4-T of Annex B as appropriate

Close-up survey area

Typical transverse bulkhead



Thickness to be reported on TM5-T of Annex B

Recommendations for the extent and patterm of gaugings are indicated in Annex 10.

15 In annex 10, in the table headed "Deck structure including cross strips, main cargo hatchways, hatch covers, coamings and top side tanks", the existing text of item "a", in the column headed "Extent of measurement", across from the entry "3. Hatch covers" in the column headed "Structural members" is replaced by the following:

"a. Side and end skirts, each 3 locations".

16 The following new annexes 11 and 12 are added after existing annex 10:

"ANNEX 11

GUIDELINES FOR THE GAUGING OF THE VERTICALLY CORRUGATED TRANSVERSE WATERTIGHT BULKHEAD BETWEEN HOLDS Nos.1 AND 2

1 Gauging is necessary to determine the general condition of the structure and to define the extent of possible repairs and/or reinforcements of the vertically corrugated transverse watertight bulkhead for verification of the compliance with the Bulk carrier bulkhead and double bottom strength standards, defined in regulation XII/1.5 of the Convention.

2 Taking into account the buckling model specified in the Bulk carrier bulkhead and double bottom strength standards, defined in regulation XII/1.5 of the Convention, in the evaluation of strength of the bulkhead, it is essential to determine the thickness diminution at the critical levels shown in figures 1 and 2 of this annex.

3 The gauging should be carried out at the levels as described below. To adequately assess the scantlings of each individual vertical corrugation, each corrugation flange, web, shedder plate and gusset plate within each of the levels given below should be gauged.

Level (a) Ships without lower stool (see figure 1):

Locations:

- The mid-breadth of the corrugation flanges at approximately 200 mm above the line of shedder plates;
- The middle of gusset plates between corrugation flanges, where fitted;
- The middle of the shedder plates;
- The mid-breadth of the corrugation webs at approximately 200 mm above the line of shedder plates.

Level (b) Ships with lower stool (see figure 2):

Locations:

- The mid-breadth of the corrugation flanges at approximately 200 mm above the line of shedder plates;
- The middle of gusset plates between corrugation flanges, where fitted;
- The middle of the shedder plates;
- The mid-breadth of the corrugation webs at approximately 200 mm above the line of shedder plates.

Level (c) Ships with or without lower stool (see figures 1 and 2):

Locations:

- The mid-breadth of the corrugation flanges and webs at about the mid-height of the corrugation.

4 Where the thickness changes within the horizontal levels, the thinner plate should be gauged.

5 Steel renewal and/or reinforcement should comply with the Bulk carrier bulkhead and double bottom strength standards, defined in regulation XII/1.5 of the Convention.

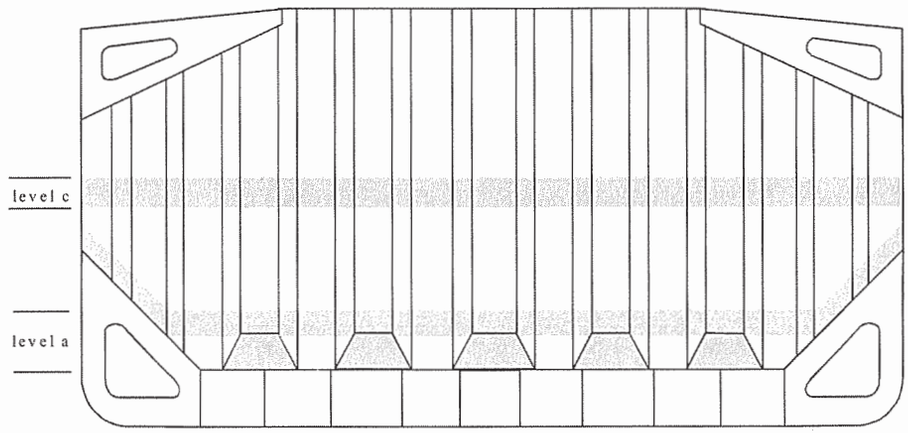


Figure 1. Ships without lower stool

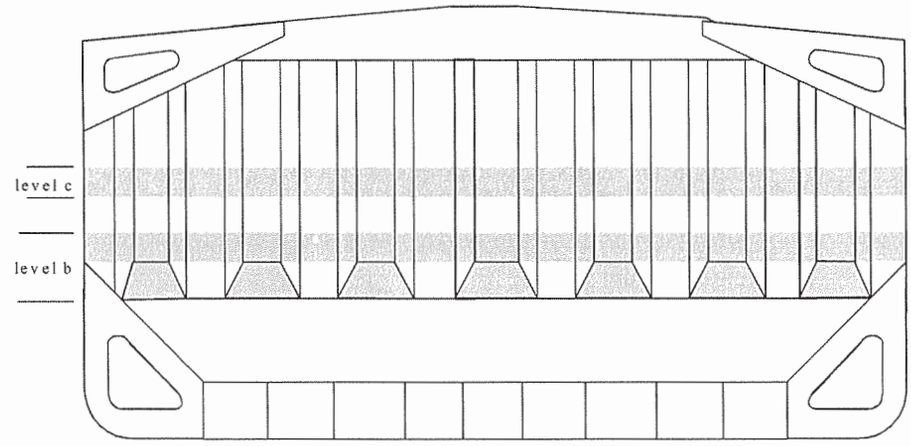


Figure 2. Ships with lower stool

ANNEX 12

ADDITIONAL ANNUAL SURVEY REQUIREMENTS FOR THE FOREMOST CARGO HOLD OF SHIPS SUBJECT TO SOLAS REGULATION XII/9.1

1 General

In the case of bulk carriers over 5 years of age, the annual survey should include, in addition to the requirements of the annual surveys prescribed in chapter 3 of the present Guidelines, an examination of the following items.

2 Extent of survey

2.1 For bulk carriers of 5 - 15 years of age:

2.1.1 An overall survey of the foremost cargo hold, including close-up survey of sufficient extent, minimum 25% of frames, should be carried out to establish the condition of:

.1 shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads; and

.2 areas found to be suspect areas at the previous periodical survey.

2.1.2 Where considered necessary by the surveyor as a result of the overall and close-up survey as described in 2.1.1 above, the survey should be extended to include a close-up survey of all of the shell frames and adjacent shell plating of the cargo hold.

2.2 For bulk carriers exceeding 15 years of age:

An overall survey of the foremost cargo hold, including close-up survey should be carried out to establish the condition of:

.1 all shell frames including their upper and lower end attachments, adjacent shell plating, and transverse bulkheads; and

.2 areas found to be suspect areas at the previous periodical survey.

3 Extent of thickness measurement

3.1 Thickness measurement should be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey, as described in 2.1 and 2.2. The minimum requirement for thickness measurements are areas found to be suspect areas at the previous periodical survey. Where substantial corrosion is found, the extent of thickness measurements should be increased with the requirements of annex 10.

3.2 The thickness measurement may be dispensed with provided the surveyor is satisfied by the close-up survey, there is no structural diminution and the protective coating, where applied, remains effective.

4 Special consideration

Where the protective coating, as referred to in the explanatory note below, in the foremost cargo hold is found to be in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered.

Explanatory note:

At the time of new construction, all internal and external surfaces of hatch coamings and hatch covers, and all internal surfaces of the cargo holds, excluding the flat tank top areas and the hopper tanks sloping sloping plating approximately 300 mm below the side shell frame and brackets, should have an efficient protective coating (epoxy coating or equivalent) applied in accordance with the manufacturer's recommendation. In the selection of coating due consideration should be given by the owner to intended cargo conditions expected in service.

For existing bulk carriers, where owners may elect to coat or recoat cargo holds as noted above, consideration may be given to the extent of the close-up and thickness measurement surveys. Prior to the coating of cargo holds of existing ships, scantlings should be ascertained in the presence of a surveyor."

ANNEX B

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

17 The "Contents" are amended as follows:

.1 The existing text of 1.3 is replaced by the following:

"1.3 Repairs"

.2 The existing text of 4 to 4.4 is replaced by the following:

"4 INTERMEDIATE ENHANCED SURVEY

4.1 General
4.2 Oil tankers 5-10 years of age
4.3 Oil tankers 10-15 years of age
4.4 Oil tankers exceeding 15 years of age"

18 The following new paragraphs 1.2.13 is added after the existing paragraph 1.2.12:

"1.2.13 A *prompt and thorough repair* is a permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of classification."

19 The existing text of section 1.3 is replaced by the following:

"**1.3 Repairs**

1.3.1 Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Administration, will affect the ship's structural, watertight or weathertight integrity, should be promptly and thoroughly repaired. Areas to be considered include:

.1 side shell frames, their end attachments or adjacent shell plating;

.2 deck structure and deck plating;

.3 bottom structure and bottom plating;

.4 watertight or oiltight bulkheads; and

.5 hatch covers or hatch coamings.

Where adequate repair facilities are not available, the Administration may allow the ship to proceed directly to a repair facility. This may require discharging the cargo and/or temporary repairs for the intended voyage.

1.3.2 Additionally, when a survey results in the identification of significant corrosion or structural defects, either of which, in the opinion of the Administration, will impair the ship's fitness for continued service, remedial measures should be implemented before the ship continues in service."

20 In existing paragraph 2.1.3 the words ", as required in 2.1.5," are inserted between the words "piping" and "is in a satisfactory condition".

21 The existing text of paragraph 2.1.5 is replaced by the following:

"2.1.5 Cargo piping on deck, including crude oil washing (COW) piping, and cargo and ballast piping within the above tanks and spaces should be examined and operationally tested to working pressure to attending surveyor's satisfaction to ensure that tightness and condition remain satisfactory. Special attention should be given to any ballast piping in cargo tanks and cargo piping in ballast tanks and void spaces, and surveyors should be advised on all occasions when this piping, including valves and fittings, are open during repair periods and can be examined internally."

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

"Where provided, the condition of the corrosion prevention system of cargo tanks should be examined. A ballast tank where a protective coating is found in POOR condition and it is not renewed, or where soft coating has been applied, or where a protective coating has not been applied from the time of construction, the tank in question should be examined at annual intervals. Thickness measurements should be carried out as deemed necessary by the surveyor."

23 The following new paragraph is added after the end of the existing paragraph 3.5.2:

"3.5.3. For oil tankers exceeding 15 years of age, all ballast tanks adjacent to (i.e. with a common plane boundary) a cargo tank with any means of heating should be examined internally. When considered necessary by the surveyor, thickness measurements should be carried out and if the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with the requirements of annex 4. Tanks or areas where coating was found to be in GOOD condition at the previous intermediate or periodical survey may be specially considered by the Administration."

24 The existing text of paragraphs 4 to 4.4.2 is replaced by the following:

"**4 INTERMEDIATE ENHANCED SURVEY**

4.1 General

4.1.1 Items that are additional to the requirements of the annual survey may be surveyed either at the second or third annual survey or between these surveys.

4.1.2 The survey extent of cargo and ballast tanks dependent on the age of the ship is specified in 4.2, 4.3 and 4.4.

4.1.3 For weather decks, an examination as far as applicable of cargo, crude oil washing, bunker, ballast, steam and vent piping systems as well as vent masts and headers. If upon examination there is any doubt as to the condition of the piping, the piping may be required to be pressure tested, thickness measured or both.

4.2 Oil tankers of 5 to 10 years of age

4.2.1 The requirements of 4.1.3 apply.

4.2.2 For tanks used for salt water ballast, an overall survey of representative tanks selected by the surveyor should be carried out. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains efficient.

4.2.3 Where POOR coating condition, corrosion or other defects are found in salt water ballast tanks or where a protective coating was not applied from the time of construction, the examination should be extended to other ballast tanks of the same type.

4.2.4 In salt water ballast tanks where a protective coating is found in POOR condition and it is not renewed, or where soft coating has been applied, or where a protective coating was not applied from the time of construction, the tanks in question should be examined and thickness measurements carried out as considered necessary at annual intervals.

4.3 Oil tankers of 10 to 15 years of age

4.3.1 The requirements of 4.2 apply.

4.3.2 An overall survey of at least two representative cargo tanks should be carried out.

4.3.3 For tanks used for salt water ballast including combined cargo/ballast tanks, an overall survey of all such tanks should be carried out. If such survey reveals no visible structural defects, the survey may be limited to a verification that the protective coatings remain efficient.

4.3.4 Extent of close up survey:

.1 Ballast tanks: To the same extent as previous periodical survey.

.2 Cargo tanks: Two combined cargo/ballast tanks. The extent of survey should be based on the record of the previous periodical survey, and repair history of the tanks.

The extent of close-up surveys may be extended as stated in 2.4.3. For areas in tanks where coatings are found to be in GOOD condition, the extent of the close-up surveys may be specially considered by the Administration.

4.3.5 Extent of thickness measurement

The minimum requirements for thickness measurements at the intermediate survey are areas found to be suspect areas at the previous periodical survey. Where substantial corrosion is found, the extent of the thickness measurements should be increased in accordance with the requirements of annex 4.

4.4 Oil tankers exceeding 15 years of age

4.4.1 The requirements of the intermediate survey should be to the same extent as the previous periodical survey as required in 2 and 5.1. However, pressure testing of cargo and ballast tanks is not required unless deemed necessary by the attending surveyor.

4.4.2 In application of 4.4.1, the intermediate enhanced survey may be commenced at the second annual survey and be progressed during the succeeding year with a view to completion at the third annual survey in lieu of the application of 2.1.1."

25 The existing text of paragraph 5.2.2 is replaced by the following:

"5.2.2 Tanks and spaces should be safe for access, i.e. gas-freed, ventilated and illuminated."

26 The following new subparagraph .6 is added after subparagraph .5 of existing paragraph 6.3.1:

".6 survey programme as required by 5.1 until such time as the periodical survey has been completed,".

27 The existing text of paragraph 7.1.1 is replaced by the following:

"7.1.1 The required thickness measurements, if not carried out by the recognised organization acting on behalf of the Administration, should be witnessed by a surveyor of the recognised organization. The surveyor should be on board to the extent necessary to control the process.

7.1.2 The thickness measurement company should be part of the survey planning meeting to be held prior to commencing the survey.

7.1.3 In all cases the extend of the thickness measurements should be sufficient as to represent the actual average condition."

28 Annex 9 is amended as follows:

.1 In the Condition evaluation report under the heading "Contents of condition evaluation report" after the existing Part 3, the following new Part 4 is inserted:

"Part 4 - Cargo and ballast piping system: - Examined
- Operationally tested"

and the existing parts 4 to 9 are renumbered as parts 5 to 10;

.2 The table headed "Extract of thickness measurements" is amended as follows:

.1 The existing text of the heading of the first column is replaced by the following:

"Position of substantially corroded tanks/areas or areas with deep pitting"

.2 The following new note is added at the end of the table:

"3 Any bottom plating with a pitting intensity of 20% or more, with wastage in the substantial corrosion range or having an average depth of pitting of 1/3 or more of actual plate thickness should be noted."

29 In annex 11, the fourth sentence of the existing paragraph 3.1 is replaced by the following:

"The approach is basically an evaluation of the risk based on the knowledge and experience related to design and corrosion."

二零一五年五月二十一日於行政長官辦公室

辦公室代主任 盧麗卿

Gabinete do Chefe do Executivo, aos 21 de Maio de 2015. — A Chefe do Gabinete, substituta, *Lo Lai Heng.*

印務局
Imprensa Oficial

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