

ANNEX

**AMENDMENTS TO THE INTERNATIONAL CODE FOR THE SAFE
CARRIAGE OF PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND
HIGH-LEVEL RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE)****Chapter 1 – General****1.1 Definitions**

In paragraph 1.1.1.3, the words “schedule 10, 11, 12 or 13” are replaced by the words “transport schedule 10, 11, 12, 13 or 14”.

第 88/2014 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二零零四年五月二十日透過第MSC.158(78)號決議通過了《用於檢查的進出通道的技術規定》修正案，且該修正案自二零零六年一月一日起對澳門特別行政區生效；

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MSC.158(78)號決議的中文及英文文本。

二零一四年十一月四日發佈。

行政長官 崔世安

Aviso do Chefe do Executivo n.º 88/2014

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, adiante designada por Convenção, tal como emendada, na Região Administrativa Especial de Macau, a partir de 20 de Dezembro de 1999;

Considerando igualmente que, em 20 de Maio de 2004, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.158(78), adoptou emendas às Disposições Técnicas relativas aos Meios de Acesso para as Inspeções, e que, tais emendas entraram em vigor, em relação à Região Administrativa Especial de Macau, a partir de 1 de Janeiro de 2006;

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.158(78), que contém as referidas emendas, nos seus textos em línguas chinesa e inglesa.

Promulgado em 4 de Novembro de 2014.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.158 (78) 號決議

(2004 年 5 月 20 日通過)

通過用於檢查的進出通道的技術規定修正案

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，

注意到，海安會第 MSC.133 (76) 號決議通過的“檢驗通道技術規定”(以下簡稱“技術規定”)，是海安會第 MSC.134 (76) 號決議通過的《安全公約》第 II-1 章第 3-6 條下關於進出油輪和散貨船貨物區域處所及在這些處所內的強制性規定，

意識到，對已注意到的實施技術規定要求時可能會遇到的問題表示的擔心，

還注意到，為解決上述擔心，海安會第 MSC.151 (78) 號決議通過的對上述《安全公約》第 II-1 章第 3-6 條的修正案，

在其第 78 屆會議上，審議了根據《1974 年安全公約》第 VIII 條和第 II-1 章第 3-6 條的規定所準備的並已散發的技術規定的修正案，

1. 通過了檢驗通道技術規定修正案，修正案的正文列於本決議的附件；
2. 決定，根據《公約》第 VIII (b) (vi) (2) (bb) 條的規定，上述修正案將於 2005 年 7 月 1 日視為被接受，除非在此日期之前，三分之一以上公約締約國政府或合計商船隊不少於世界商船隊總噸位 50% 的締約國政府對此修正案提出反對意見；

3. 邀請《安全公約》締約國政府注意到，根據公約第 VIII (b) (vi) (2) 條的規定，該修正案在他們依據上述第 2 段被接受後，將於 2006 年 1 月 1 日生效；
4. 要求秘書長將此決議及附件中所列的技術規定正文的核正無誤的文本發送給公約的所有締約國政府；
5. 還要求秘書長將此決議及附件的副本發送給非公約締約國政府的本組織的所有成員國。

附件

用於檢查的進出通道的技術規定修正案

(第 MSC.133 (76) 號決議)

- 1 檢驗通道技術規定的現有內容由下列代替：

“1 序言

1.1 保持船舶結構狀況符合適用要求的唯一方法是對其所有元部件進行終身定期檢驗，已被長期公認。這樣將確保他們免於因腐蝕、過載或接觸破損而帶來的諸如破裂、彎曲或變形的損壞，並能確保厚度的減少在給定的限值之內。為了實施全面的和近觀檢驗，提供出入船體結構的適當方式是必要的，而且，這樣的方式在船舶設計階段就應給與考慮和提供。

1.2 船舶的設計和建造應充分考慮到在其使用壽命期間，船旗國的檢查人員和船級社的檢驗人員如何對其進行檢驗，以及船員如何能監測船舶的狀況。如果沒有足夠的通道，船舶的結構狀況可能在未察覺的情況下變壞，並且可能產生重大的結構性事故。因此，需要一種涵蓋船舶整個設計綜合的船舶設計和維修保養措施。

1.3 為了解決這一問題，本組織制定了檢驗通道技術規定（以下簡稱“技術規定”），目的是為了便利出入油輪和散貨船貨物區域處所內和在這些處所的前部對《安全公約》第 II-1 章第 3-6 條提及的船舶結構進行近觀檢驗和厚度測量。這項技術規定不適用於符合《國際散化規則》規定的化學品/油混合船的液貨艙。

1.4 最好將永久性出入通道設計為船舶結構的組成部分，為了方便這樣的設計，主管機關可允許做合理的變動。

2 定義

就該技術規定而言，在經修正的《1974 年安全公約》和經修正的第 A.744 (18) 號大會決議確定的定義以外，還適用下列定義：

- .1 梯級係指垂直梯的梯級或垂直面上的梯級。
- .2 踏板係指斜梯的梯級或垂直出入開口的梯級。
- .3 斜梯的階梯 係指斜梯的實際縱桁長度。對於垂直梯，這是指平台之間的距離。
- .4 縱桁係指：
 - .1 梯的骨架；或
 - .2 安裝在舷殼、處所內橫向艙壁和/或縱向艙壁上的加強的水平鋼板結構。對於雙側處所寬度小於 5m 的壓載艙，水平鋼板結構屬於縱桁和縱向永久性出入裝置，如果它設有寬度 600mm 或更大的連續出入裝置，通過骨架或舷殼上的加強板或縱向艙壁。用作永久性出入通道的縱桁鋼板上的開口，應安排有護欄或格柵罩，以便保證縱桁上的安全通行或安全出入每一橫向桁材。
- .5 垂直梯係指傾斜角度為 70°多至 90°的梯子。垂直梯偏度不應大於 2°。
- .6 頂板障礙物 係指出入通道上方的甲板或縱桁結構，包括加強板。

- .7 天花板以下的距離 係指鋼板以下的距離。
- .8 橫越甲板係指位於舷內和艙口圍板之間的主甲板的橫向區域。

3 技術規定

3.1 《安全公約》第 II-1 章第 3-6 條提及的船舶結構中需要進行近觀檢驗和厚度測量的結構性構件，除雙層底處所的構件外，應設有永久性出入通道，達到適用的表 1 和表 2 中規定的標準。對於油輪和礦石船的船側壓載艙，只要結構允許，達到安全和有效使用的目的，可結合裝設的永久性出入通道使用經認可的替代方法。

3.2 永久性出入通道應儘可能成為船舶結構的組成部分，從而確保它們是堅固的，同時有助於船舶結構的整體強度。

3.3 構成永久性出入通道部分的上升通道，如果安裝的話，其最小暢通寬度應為 600mm，環繞垂直桁材的情形除外，這種情況下最小暢通寬度可減少到 450mm，並應針對其整個長度在開口側設有護欄。構成出入通道部分的傾斜結構應是不打滑的結構。護欄高度應為 1,000mm，應由扶手和高度為 500mm 的中間杆組成實質性結構。支柱的間隔不得超過 3m。

3.4 應通過易於接近的出入裝置、樓梯或踏板的形式提供從船底至永久性出入通道和垂直開口的設施。踏板應配有腳踏的橫向支撐結構。如果樓梯的梯級被安裝在垂直面上，梯級中心至垂直面的距離至少應為 150mm。如果垂直人孔是在步行水平以上高於 600mm 之處，應配有踏板和把手，兩邊應有落腳的平台，以方便出入。

3.5 永久性斜梯傾斜的角度應小於 70°。在斜梯面 750mm 內不得有障礙物，開口途中除外，淨空距離可以減少至 600mm。應提供足夠尺寸的休息平台，一般應在垂直高度最大為 6m 處設置。樓梯和扶手應為鋼結構，或由具有足夠強度的等效材料建造，並應由支柱使其安全地附着於結構之上。支撐的方法和支柱的長度，應為可使震動儘可能減到最小程度。在貨艙內，樓梯的設計和佈置應不會增加貨物裝卸的困難，並應將被貨物裝卸機械損壞的危險減少到最小。

3.6 縱桁之間斜梯的寬度不得少於 400mm。均等間隔踏板，要垂直測量，間隔距離應在 200mm 至 300mm 之間。當使用鋼材時，踏板應為兩塊方形鋼構成，截面不得小於 22mm x 22mm，形成邊緣朝上的水平梯級。踏板應延續至船側縱桁並以雙重連續焊接將其附着在結構上。所有斜梯的兩側均應配有實質性結構的扶手，安裝在踏板的上方，距離以方便為宜。

3.7 對於垂直梯或螺旋形梯，其寬度和結構應符合主管機關接受的國際標準或國家標準。

3.8 獨立便攜梯的長度不得超過 5m。

3.9 替代性出入通道包括，但不局限於下列裝置：

- .1 裝有穩定底座的液壓臂；
- .2 鋼索提升平台；
- .3 作業架板；
- .4 浮筏；

- .5 自動臂或遙控操作車輛 (ROV)；
- .6 長度超過 5m 的便攜梯，只有裝配了機械裝置的才可使用，以便對梯子的上端進行固定；
- .7 主管機關認可和接受的其他裝置。

出入和在這些處所內對這樣設備的安全操作和架設的方法應在《船舶結構出入手冊》中有明確的說明。

3.10 對於通過水平開口、艙口或人孔的通道，最小淨開口不得小於 600mm x 600mm。如果是通過貨艙的艙口出入貨艙，梯子的上端應儘可能地靠近艙口圍板。如果艙口圍板的高度大於 900mm，與梯子連接的外部還應設有梯級。

3.11 對於通過垂直開口，或人孔出入緩衝艙壁、地板、桁材以及整個處所長度和寬度都設有通道的桁材骨架，最小開口不得小於 600mm x 800mm，從通道起高度不得小於 600mm，除非已經配備了格板或其他踏板。

3.12 對於小於 5,000 載重噸的油輪，在特殊情況下，如果能證明通過開口或移動受傷人員的能力達到主管機關滿意的標準，主管機關對第 3.10 和第 3.11 段提及的開口可同意較小的尺寸。

3.13 對於散貨船，出入貨艙和其他處所的梯子：

- .1 如果在相鄰甲板上表面間或甲板與貨物處所底之間的垂直距離小於 6m，應為垂直梯或斜梯。
- .2 如果在相鄰甲板上表面間或甲板與貨物處所底之間的垂直距離大於 6m，應是個在貨艙一端的斜梯或系列斜梯，

除非貨艙處所最上端有 2.5m，且天花板上無障礙物以及最低處有 6m，可配有垂直梯，只要某一連接垂直梯的斜梯或系列斜梯的垂直度不小於 2.5m。

貨艙另一端的第二套出入通道可以形成系列錯位的垂直梯，應包括一個或多個連接平台的梯子，平台垂直間隔不得超過 6m，並且都設在梯子的一側。梯子的鄰近部分至少應以梯寬互相橫向偏置。直接靠近貨艙的梯子的最上端入口部分應為垂直的，高度為 2.5m，天花板上無障礙物，並與梯子連接平台相接。

- .3 可使用一垂直梯作為接近舷側液貨艙的設施，在甲板與液貨艙縱向出入通道或階梯或入口下處所的底部之間的垂直距離應為 6m 或更小。水箱垂直梯最上端入口部分應是垂直的，高度為 2.5m，天花板上無障礙物，並含有一個連接平台的梯子，除非是落在縱向出入裝置上，垂直距離內的階梯或底部偏位於垂直梯的一側。
- .4 除上述.3 段允許的以外，如果在甲板與入口下階梯之間、在階梯之間或在甲板或階梯與入口下處所底部之間的垂直距離大於 6m，應使用一斜梯或混合梯作為水箱或處所的出入通道。
- .5 在上述.4 的情況中，梯子在甲板最上端的入口部分應是垂直的，高度為 2.5m，天花板上無障礙物，應與落腳平台連接，並以斜梯延續下去。斜梯各段的實際長度不得超過 9m，垂直高度通常不超過 6m。梯子的最下面部分可以是垂直的，距離應不小於 2.5m。

- .6 在寬度小於 2.5m 的雙層殼處所中，可以通過垂直梯出入處所，應包括一個或多個連接平台的梯子，平台垂直間隔距離不得大於 6m，並且位於梯子的一側。梯子鄰近部分至少應以梯寬互相橫向偏置。
- .7 可以接受螺旋梯來代替斜梯。最上端可為連續 2.5m 的螺旋梯子，不必將其改變為垂直梯。

3.14 出入液貨艙的垂直梯在甲板的最上端入口部分應是垂直的，距離為 2.5m，天花板上無障礙物，並且包括一個連接平台的梯子，平台應位於垂直梯的一側。在甲板結構以下的垂直梯，可以在 1.6m 與 3m 之間，只要它落在此範圍內的縱向或垂直於縱軸的永久性出入通道上。

表 1—油輪壓載艙和貨艙出入通道*

1 壓載水艙（右欄內規定的除外）和貨油艙	2 構成雙舷側處所的寬度小於 5m 的舷側壓載水艙和污水底艙部分
接近甲板下結構和垂直結構	
1.1 對於含有內部結構的高度為 6m 及以上的艙，應根據 .1 至 .6 裝配永久性出入通道： .1 在加強面的每個橫向艙壁上佈置連續垂直於縱	2.1 對於污底艙部分上節點以上的雙舷側處所，應根據下列 .1 至 .3 裝配永久性出入通道： .1 如果在水平最上端階梯

<p>軸的永久性出入通道，在天花板下的高度，最小為 1.6m 至最大為 3m；</p> <p>.2 在艙的每邊至少有一個連續的縱向永久性出入通道。其中一個出入通道，在天花板下最小為 1.6m 至最大為 6m，另一個在天花板下最小為 1.6m 至最大為 3m；</p> <p>.3 在 .1 和 .2 中規定的佈置之間和從主甲板至 .1 或 .2 的出入通道；</p> <p>.4 應裝配連續縱向永久性出入通道，該通道與縱向艙壁加強面上的結構部件形成一體，如果可能，應與橫向艙壁的水平樑形成直線，以便接近橫向桁材，除非永久性裝置被安裝在最上端的平台上，作為替代裝置使用，如《技術規定》第 3.9 段所定義的，便</p>	<p>與天花板之間的垂直距離為 6m 或大於 6m，應裝配一個連續縱向永久性出入通道，應對艙的整個長度配備這樣的通道，以便通過橫向桁材，在天花板下最小為 1.6m 至最大為 3m，垂直出入梯置於艙的每一端；</p> <p>.2 連續縱向永久性出入通道與結構成為一體，垂直間隔距離不超過 6m；</p> <p>和</p> <p>.3 鉚接階梯應儘可能與水平橫向艙壁的樑材形成直線。</p> <p>2.2 對於從艙底至上節點的垂直距離為 6m 及以上的污底艙部分，應為該艙的全部長度裝配一個縱向永久性出入通道。通過該艙每端的垂直永久性出入通道可進入該通道。</p> <p>2.2.1 可在污底艙部分的頂部</p>
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<p>於中間高度的檢查；</p> <p>.5 對於在艙底以上有 6m 或以上的橫向連接杆的船舶，應裝配接近橫向連接杆的橫向永久性通道，便於檢查艙兩邊的連接杆外傾墊板，可從.4 中某一縱向永久性出入通道進出；和</p> <p>.6 小船可裝配《技術規定》第 3.9 段所定義的替代性裝置，作為.4 中高度小於 17m 的貨油艙的替代性裝置。</p> <p>1.2 對於高度小於 6m 的液艙，可使用《技術規定》第 3.9 段中定義的替代裝置或移動裝置，代替永久性出入通道。</p>	<p>最小 1.6m 至最大 3m 處裝配縱向連續永久性出入通道。在這種情況中，可使用寬板肋骨路徑中延伸縱向連續永久性出入通道的平台接近確定的結構臨界區域。</p> <p>2.2.2 可在桁板圈暢通開口頂部以下的最小 1.2m 處裝配替代性連續縱向永久性出入通道，以便使用移動式的出入裝置到達所確定的結構臨界區域。</p>
<p>首尖艙</p> <p>1.3 對於在防撞艙壁中線處深度為 6m 或以上的首尖艙，應配備一合適的出入通道，以便接近諸如甲板下結構、縱桁、</p>	<p>2.3 如果在 2.2 中提及的垂直距離小於 6m，可使用《技術規定》第 3.9 段中所定義的替代性通道或移動式的出入裝置，代替永久性出入通道。為便於</p>

<p>防撞艙壁和舷側結構的臨界區域。</p> <p>1.3.1 對於從天花板起或從直接縱桁之上起垂直距離小於 6m 的，要考慮提供合適的出入裝置，與移動式的出入裝置一起使用。</p> <p>1.3.2 如果在天花板與縱桁、縱桁或最低縱桁與艙底之間的垂直距離為 6m 或大於 6m，應裝配《技術規定》第 3.9 段所定義的替代性出入通道。</p>	<p>替代性出入裝置的操作，應在水平縱桁上配備系列開口。這些開口應有足夠的直徑並應有適當的護欄。</p>
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表 2 – 散貨船出入通道*

1 貨艙	2 壓載艙
<p>接近甲板下結構</p> <p>1.1 應裝配永久性出入通道，以便接近橫向甲板兩邊和中心線附近的天花板結構。無論是從貨艙或是直接從主甲板都應方便地接近每一個出入</p>	<p>舷側艙</p> <p>2.1 對於高度為 6m 及以上的每一舷側艙，應沿舷側桁材裝配一縱向的永久性出入通道並安裝在甲板下最小 1.6m 至最大 3m 處，在接近該艙的每個</p>

通道，應安裝在甲板下最小 1.6m 至最大 3m 處。

1.2 安裝在橫艙頂甲板下橫向艙壁上最小 1.6m 至最大 3m 處的橫向永久性出入通道，可接受作為 1.1 的等效方式。

1.3 接近橫向甲板的天花板結構的永久性出入通道也可通過上面的踏腳板。

1.4 對具有橫向艙壁的船舶，具有全尺寸的上踏腳板，可從主甲板接近裏邊監測所有骨架和板材，無須配備橫向甲板的永久性出入通道。

1.5 可使用替代性的移動式出入裝置接近橫向甲板的天花板結構，如果它在艙頂部上方的垂直距離為 17m 或更小。

通道附近應有一垂直出入的梯子。

2.2 如果在艙基 600mm 內整個橫向桁材上沒有配備出入孔，而且桁材骨架圈在舷側船殼和傾斜船板的路徑中桁材的高度大於 1m，則應裝配梯級階梯/扶手欄杆，以便安全通過每個橫向桁材骨架圈。

2.3 應給艙口旁縱桁裝配三個永久性出入裝置，安裝在每個艙的端底版和中間底版上，從水箱基座向上連至傾斜板的交叉之處。現有的縱向結構，如果是安裝在該處所的傾斜板上，可作為這一出入通道的一部分進行使用。

2.4 對於高度小於 6m 的舷側艙，可使用《技術規定》第 3.9 段中定義的替代性裝置或移動式裝置，代替永久性出入通道。

接近垂直結構

1.6 在所有貨艙中都應裝配永久性垂直出入通道，並且建在結構中，以便至少對平均分佈在全艙中左右舷艙內肋骨總數的 25% 進行檢查，包括橫向艙壁路徑中的每一端。但無論如何，這種佈置不得少於 3 個永久性垂直出入通道，安裝在每一側（艙的前後端和中跨）。在相鄰的兩個艙內肋骨之間安裝的永久性垂直出入通道可作為檢查兩個艙內肋骨的通道。可使用移動式出入裝置接近較低的壓載水艙的傾斜板。

1.7 此外，可使用輕便的或移動式出入裝置接近其餘的艙內肋骨直至其上端的墊板和橫向艙壁。

1.8 可使用輕便的或移動式出入裝置接近艙內肋骨直至其在第 1.6 中要求的永久性通道處所的上墊板。這些出入裝置

污水底艙

2.5 對於高度為 6m 及以上的每個污水底艙，應沿舷側桁材裝配一縱向的連續永久性出入通道，安裝在桁材圈通暢開口頂部下最小 1.2m 處，在每個出入污水底艙的附近有一個垂直出入梯子。

2.5.1 應在污水底艙的每一端裝配一個在縱向永久性出入通道與處所底部之間的進出梯子。

2.5.2 縱向永久性出入通道可通過桁材圈通暢開口以上的上桁材板，位於天花板以下的最小 1.6m 處，如果這種佈置方便對確定的關鍵結構區域進行適當檢查的話。對於步橋，可使用加大的縱向框架。

2.5.3 對於雙層殼散貨船，可裝配縱向連續永久性出入通道，如果與替代方法結合使用來接近節點，可設在艙底節點起 6m 之內。

<p>應帶在船上，隨時備用。</p> <p>1.9 接近艙內肋骨的垂直梯的寬度應至少為 300mm，在縱桁之間測量。</p> <p>1.10 長度大於 6m 的單獨垂直梯是可以接受的，用於檢查單殼結構的艙側肋骨。</p> <p>1.11 對於雙層殼結構的船舶，不需要配備檢查貨艙表面的垂直梯。應在雙層殼處所內配備檢查這種結構的方式。</p>	<p>2.6 如果在艙底座 600mm 之內整個橫向環行桁材上並未裝配出入孔以及桁材框架圈在舷側船殼和傾斜板的路徑中桁材高度大於 1m，那麼，應配備梯級階梯/扶手護欄，以便安全通過每個橫向桁材框架圈。</p> <p>2.7 對於高度小於 6m 的污水底艙，可使用《技術規定》第 3.9 段定義的替代性裝置或輕便的裝置，代替永久性出入通道。應能夠表明這種裝置，在需要區域可隨時使用。</p> <p>雙層殼艙</p> <p>2.8 應根據表 1 的適用部分設置永久性出入通道。</p>
	<p>首尖艙</p> <p>2.9 對於在防撞艙壁中心線深度為 6m 或以上的首尖艙，應裝配適當的出入通道，以便接近諸如甲板下結構、縱桁、防撞艙壁和舷側船殼的關鍵區域。</p>

	<p>2.9.1 對於從天花板起或在縱桁之上垂直距離小於 6m 的縱桁，要考慮設置與輕便的出入裝置一起使用的設置。</p> <p>2.9.2 如果天花板與縱桁、縱桁或最低縱桁與艙底之間的垂直距離為 6m 或以上，應裝配《技術規定》第 3.9 段中定義的替代性出入裝置。</p>
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* 對於礦石船，應根據表 1 和表 2 的適用部分裝配永久性出入通道。”

RESOLUTION MSC.158(78)
(adopted on 20 May 2004)

**ADOPTION OF AMENDMENTS TO THE TECHNICAL PROVISIONS FOR MEANS
OF ACCESS FOR INSPECTIONS**

THE MARITIME SAFETY COMMITTEE,

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

NOTING the Technical provisions for means of access for inspections (hereinafter referred to as “the Technical provisions”), adopted by resolution MSC.133(76), which are mandatory under SOLAS regulation II-1/3-6 on Access to and within spaces in the cargo area of oil tankers and bulk carriers adopted by resolution MSC.134(76),

ACKNOWLEDGING concerns expressed with regard to perceived problems which might be encountered when implementing the requirements of the Technical provisions,

NOTING ALSO the amendments to the aforementioned SOLAS regulation II-1/3-6 adopted by resolution MSC.151(78) to address the above concerns,

HAVING CONSIDERED, at its seventy-eighth session, amendments to the Technical provisions, prepared and circulated in accordance with article VIII and regulation II-1/3-6 of the 1974 SOLAS Convention,

1. ADOPTS amendments to the Technical provisions for means of access for inspections, 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 2005, 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 2006 upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General to transmit certified copies of this resolution and the text of the Technical provisions contained in the Annex to all Contracting Governments to the Convention;
5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and the Annex to all Members of the Organization, which are not Contracting Governments to the Convention.

ANNEX

**AMENDMENTS TO THE TECHNICAL PROVISIONS FOR
MEANS OF ACCESS FOR INSPECTIONS
(RESOLUTION MSC.133(76))**

1 The existing text of the Technical provisions for means of access for inspections is replaced with the following:

"1 Preamble

1.1 It has long been recognized that the only way of ensuring that the condition of a ship's structure is maintained to conform with the applicable requirements is for all its components to be surveyed on a regular basis throughout their operational life. This will ensure that they are free from damage such as cracks, buckling or deformation due to corrosion, overloading, or contact damage and that thickness diminution is within established limits. The provision of suitable means of access to the hull structure for the purpose of carrying out overall and close-up surveys and inspections is essential and such means should be considered and provided for at the ship design stage.

1.2 Ships should be designed and built with due consideration as to how they will be surveyed by flag State inspectors and classification society surveyors during their in-service life and how the crew will be able to monitor the condition of the ship. Without adequate access, the structural condition of the ship can deteriorate undetected and major structural failure can arise. A comprehensive approach to design and maintenance is required to cover the whole projected life of the ship.

1.3 In order to address this issue, the Organization has developed these Technical provisions for means of access for inspections (hereinafter called the "Technical provisions"), intended to facilitate close-up inspections and thickness measurements of the ship's structure referred to in SOLAS regulation II-1/3-6 on Access to and within spaces in, and forward of, the cargo area of oil tankers and bulk carriers. The Technical provisions do not apply to the cargo tanks of combined chemical/oil tankers complying with the provisions of the IBC Code.

1.4 Permanent means of access which are designed to be integral parts of the structure itself are preferred and Administrations may allow reasonable deviations to facilitate such designs.

2 Definitions

For the purpose of these Technical provisions, the following definitions apply in addition to those provided in the 1974 SOLAS Convention, as amended, and in resolution A.744(18), as amended:

- .1 *Rung* means the step of a vertical ladder or step on the vertical surface.
- .2 *Tread* means the step of an inclined ladder or step for the vertical access opening.
- .3 *Flight of an inclined ladder* means the actual stringer length of an inclined ladder. For vertical ladders, it is the distance between the platforms.
- .4 *Stringer* means:
 - .1 the frame of a ladder; or
 - .2 the stiffened horizontal plating structure fitted on the side shell, transverse bulkheads and/or longitudinal bulkheads in the space. For the purpose of ballast tanks of less than 5 m width forming double side spaces, the horizontal plating structure is credited as a stringer and a longitudinal permanent means of access, if it provides a continuous passage of 600 mm or more in width past frames or stiffeners on the side shell or longitudinal bulkhead. Openings in stringer plating utilized as permanent means of access shall be arranged with guard rails or grid covers to provide safe passage on the stringer or safe access to each transverse web.
- .5 *Vertical ladder* means a ladder of which the inclined angle is 70° and over up to 90°. A vertical ladder shall not be skewed by more than 2°.
- .6 *Overhead obstructions* mean the deck or stringer structure including stiffeners above the means of access.
- .7 *Distance below deck head* means the distance below the plating.
- .8 *Cross deck* means the transverse area of the main deck which is located inboard and between hatch coamings.

3 Technical provisions

3.1 Structural members subject to the close-up inspections and thickness measurements of the ship's structure referred to in SOLAS regulation II-1/3-6, except those in double bottom spaces, shall be provided with a permanent means of access to the extent as specified in table 1 and table 2, as applicable. For oil tankers and wing ballast tanks of ore carriers, approved alternative methods may be used in combination with the fitted permanent means of access, provided that the structure allows for its safe and effective use.

3.2 Permanent means of access should as far as possible be integral to the structure of the ships, thus ensuring that they are robust and at the same time contributing to the overall strength of the structure of the ship.

3.3 Elevated passageways forming sections of a permanent means of access, where fitted, shall have a minimum clear width of 600 mm, except for going around vertical

webs where the minimum clear width may be reduced to 450 mm, and have guard rails over the open side of their entire length. Sloping structures providing part of the access shall be of a non-skid construction. Guard rails shall be 1,000 mm in height and consist of a rail and an intermediate bar 500 mm in height and of substantial construction. Stanchions shall be not more than 3 m apart.

3.4 Access to permanent means of access and vertical openings from the ship's bottom shall be provided by means of easily accessible passageways, ladders or treads. Treads shall be provided with lateral support for the foot. Where the rungs of ladders are fitted against a vertical surface, the distance from the centre of the rungs to the surface shall be at least 150 mm. Where vertical manholes are fitted higher than 600 mm above the walking level, access shall be facilitated by means of treads and hand grips with platform landings on both sides.

3.5 Permanent inclined ladders shall be inclined at an angle of less than 70°. There shall be no obstructions within 750 mm of the face of the inclined ladder, except that in way of an opening this clearance may be reduced to 600 mm. Resting platforms of adequate dimensions shall be provided, normally at a maximum of 6 m vertical height. Ladders and handrails shall be constructed of steel or equivalent material of adequate strength and stiffness and securely attached to the structure by stays. The method of support and length of stay shall be such that vibration is reduced to a practical minimum. In cargo holds, ladders shall be designed and arranged so that cargo handling difficulties are not increased and the risk of damage from cargo handling gear is minimized.

3.6 The width of inclined ladders between stringers shall not be less than 400 mm. The treads shall be equally spaced at a distance apart, measured vertically, of between 200 mm and 300 mm. When steel is used, the treads shall be formed of two square bars of not less than 22 mm by 22 mm in section, fitted to form a horizontal step with the edges pointing upward. The treads shall be carried through the side stringers and attached thereto by double continuous welding. All inclined ladders shall be provided with handrails of substantial construction on both sides, fitted at a convenient distance above the treads.

3.7 For vertical ladders or spiral ladders, the width and construction should be in accordance with international or national standards accepted by the Administration.

3.8 No free-standing portable ladder shall be more than 5 m long.

3.9 Alternative means of access include, but are not limited to, such devices as:

- .1 hydraulic arm fitted with a stable base;
- .2 wire lift platform;
- .3 staging;
- .4 rafting;
- .5 robot arm or remotely operated vehicle (ROV);

- .6 portable ladders more than 5 m long shall only be utilized if fitted with a mechanical device to secure the upper end of the ladder;
- .7 other means of access, approved by and acceptable to the Administration.

Means for safe operation and rigging of such equipment to and from and within the spaces shall be clearly described in the Ship Structure Access Manual.

3.10 For access through horizontal openings, hatches or manholes, the minimum clear opening shall not be less than 600 mm x 600 mm. When access to a cargo hold is arranged through the cargo hatch, the top of the ladder shall be placed as close as possible to the hatch coaming. Access hatch coamings having a height greater than 900 mm shall also have steps on the outside in conjunction with the ladder.

3.11 For access through vertical openings, or manholes, in swash bulkheads, floors, girders and web frames providing passage through the length and breadth of the space, the minimum opening shall be not less than 600 mm x 800 mm at a height of not more than 600 mm from the passage unless gratings or other foot holds are provided.

3.12 For oil tankers of less than 5,000 tonnes deadweight, the Administration may approve, in special circumstances, smaller dimensions for the openings referred to in paragraphs 3.10 and 3.11, if the ability to traverse such openings or to remove an injured person can be proved to the satisfaction of the Administration.

3.13 For bulk carriers, access ladders to cargo holds and other spaces shall be:

- .1 Where the vertical distance between the upper surface of adjacent decks or between deck and the bottom of the cargo space is not more than 6 m, either a vertical ladder or an inclined ladder.
- .2 Where the vertical distance between the upper surface of adjacent decks or between deck and the bottom of the cargo space is more than 6 m, an inclined ladder or series of inclined ladders at one end of the cargo hold, except the uppermost 2.5 m of a cargo space measured clear of overhead obstructions and the lowest 6 m may have vertical ladders, provided that the vertical extent of the inclined ladder or ladders connecting the vertical ladders is not less than 2.5 m.

The second means of access at the other end of the cargo hold may be formed of a series of staggered vertical ladders, which should comprise of one or more ladder linking platforms spaced not more than 6 m apart vertically and displaced to one side of the ladder. Adjacent sections of ladder should be laterally offset from each other by at least the width of the ladder. The uppermost entrance section of the ladder directly exposed to a cargo hold should be vertical for a distance of 2.5 m measured clear of overhead obstructions and connected to a ladder-linking platform.

- .3 A vertical ladder may be used as a means of access to topside tanks, where the vertical distance is 6 m or less between the deck and the longitudinal means of access in the tank or the stringer or the bottom of the space

immediately below the entrance. The uppermost entrance section from deck of the vertical ladder of the tank should be vertical for a distance of 2.5 m measured clear of overhead obstructions and comprise a ladder linking platform, unless landing on the longitudinal means of access, the stringer or the bottom within the vertical distance, displaced to one side of a vertical ladder.

- .4 Unless allowed in .3 above, an inclined ladder or combination of ladders should be used for access to a tank or a space where the vertical distance is greater than 6 m between the deck and a stringer immediately below the entrance, between stringers, or between the deck or a stringer and the bottom of the space immediately below the entrance.
- .5 In case of .4 above, the uppermost entrance section from deck of the ladder should be vertical for a distance of 2.5 m clear of overhead obstructions and connected to a landing platform and continued with an inclined ladder. The flights of inclined ladders should not be more than 9 m in actual length and the vertical height should not normally be more than 6 m. The lowermost section of the ladders may be vertical for a distance of not less than 2.5 m.
- .6 In double-side skin spaces of less than 2.5 m width, the access to the space may be by means of vertical ladders that comprise of one or more ladder linking platforms spaced not more than 6 m apart vertically and displaced to one side of the ladder. Adjacent sections of ladder should be laterally offset from each other by at least the width of the ladder.
- .7 A spiral ladder is considered acceptable as an alternative for inclined ladders. In this regard, the uppermost 2.5 m can continue to be comprised of the spiral ladder and need not change over to vertical ladders.

3.14 The uppermost entrance section from deck of the vertical ladder providing access to a tank should be vertical for a distance of 2.5 m measured clear of overhead obstructions and comprise a ladder linking platform, displaced to one side of a vertical ladder. The vertical ladder can be between 1.6 m and 3 m below deck structure if it lands on a longitudinal or athwartship permanent means of access fitted within that range.

Table 1 - Means of access for ballast and cargo tanks of oil tankers*

1 Water ballast tanks, except those specified in the right column, and cargo oil tanks	2 Water ballast wing tanks of less than 5 m width forming double side spaces and their bilge hopper sections
Access to the underdeck and vertical structure	
<p>1.1 For tanks of which the height is 6 m and over containing internal structures, permanent means of access shall be provided in accordance with .1 to .6:</p> <p>.1 continuous athwartship permanent access arranged at each transverse bulkhead on the stiffened surface, at a minimum of 1.6 m to a maximum of 3 m below the deck head;</p> <p>.2 at least one continuous longitudinal permanent means of access at each side of the tank. One of these accesses shall be at a minimum of 1.6 m to a maximum of 6 m below the deck head and the other shall be at a minimum of 1.6 m to a maximum of 3 m below the deck head;</p> <p>.3 access between the arrangements specified in .1 and .2 and from the main deck to either .1 or .2;</p> <p>.4 continuous longitudinal permanent means of access which are integrated in the structural member on the stiffened surface of a longitudinal bulkhead, in alignment, where possible, with horizontal girders of transverse bulkheads are to be provided for access to the transverse webs unless permanent fittings are installed at the uppermost platform for use of alternative means, as defined in paragraph 3.9 of the Technical provisions, for inspection at intermediate heights;</p> <p>.5 for ships having cross-ties which are 6 m or more above tank bottom, a transverse permanent means of access on the cross-ties providing inspection of the tie flaring brackets at both sides of the tank, with access from one of the longitudinal permanent means of access in .4; and</p> <p>.6 alternative means as defined in paragraph 3.9 of the Technical provisions may be provided for small ships as an alternative to .4 for cargo oil tanks of which the height is less than 17 m.</p>	<p>2.1 For double side spaces above the upper knuckle point of the bilge hopper sections, permanent means of access are to be provided in accordance with .1 to .3:</p> <p>.1 where the vertical distance between horizontal uppermost stringer and deck head is 6 m or more, one continuous longitudinal permanent means of access shall be provided for the full length of the tank with a means to allow passing through transverse webs installed at a minimum of 1.6 m to a maximum of 3 m below the deck head with a vertical access ladder at each end of the tank;</p> <p>.2 continuous longitudinal permanent means of access, which are integrated in the structure, at a vertical distance not exceeding 6 m apart; and</p> <p>.3 plated stringers shall, as far as possible, be in alignment with horizontal girders of transverse bulkheads.</p>

<p>1.2 For tanks of which the height is less than 6 m, alternative means as defined in paragraph 3.9 of the Technical provisions or portable means may be utilized in lieu of the permanent means of access.</p>	<p>2.2 For bilge hopper sections of which the vertical distance from the tank bottom to the upper knuckle point is 6 m and over, one longitudinal permanent means of access shall be provided for the full length of the tank. It shall be accessible by vertical permanent means of access at each end of the tank.</p> <p>2.2.1 The longitudinal continuous permanent means of access may be installed at a minimum 1.6 m to maximum 3 m from the top of the bilge hopper section. In this case, a platform extending the longitudinal continuous permanent means of access in way of the webframe may be used to access the identified structural critical areas.</p> <p>2.2.2 Alternatively, the continuous longitudinal permanent means of access may be installed at a minimum of 1.2 m below the top of the clear opening of the web ring allowing a use of portable means of access to reach identified structural critical areas.</p>
<p>Fore peak tanks</p> <p>1.3 For fore peak tanks with a depth of 6 m or more at the centre line of the collision bulkhead, a suitable means of access shall be provided for access to critical areas such as the underdeck structure, stringers, collision bulkhead and side shell structure.</p> <p>1.3.1 Stringers of less than 6 m in vertical distance from the deck head or a stringer immediately above are considered to provide suitable access in combination with portable means of access.</p> <p>1.3.2 In case the vertical distance between the deck head and stringers, stringers or the lowest stringer and the tank bottom is 6 m or more, alternative means of access as defined in paragraph 3.9 of the Technical provisions shall be provided.</p>	<p>2.3 Where the vertical distance referred to in 2.2 is less than 6 m, alternative means as defined in paragraph 3.9 of the Technical provisions or portable means of access may be utilised in lieu of the permanent means of access. To facilitate the operation of the alternative means of access, in-line openings in horizontal stringers shall be provided. The openings shall be of an adequate diameter and shall have suitable protective railings.</p>

Table 2 - Means of access for bulk carriers⁷

1 Cargo holds	2 Ballast tanks
<p>Access to underdeck structure</p> <p>1.1 Permanent means of access shall be fitted to provide access to the overhead structure at both sides of the cross deck and in the vicinity of the centreline. Each means of access shall be accessible from the cargo hold access or directly from the main deck and installed at a minimum of 1.6 m to a maximum of 3 m below the deck.</p> <p>1.2 An athwartship permanent means of access fitted on the transverse bulkhead at a minimum 1.6 m to a maximum 3 m below the cross-deck head is accepted as equivalent to 1.1.</p> <p>1.3 Access to the permanent means of access to overhead structure of the cross deck may also be via the upper stool.</p> <p>1.4 Ships having transverse bulkheads with full upper stools with access from the main deck which allows monitoring of all framing and plates from inside do not require permanent means of access of the cross deck.</p> <p>1.5 Alternatively, movable means of access may be utilized for access to the overhead structure of the cross deck if its vertical distance is 17 m or less above the tank top.</p>	<p>Top side tanks</p> <p>2.1 For each topside tank of which the height is 6 m and over, one longitudinal continuous permanent means of access shall be provided along the side shell webs and installed at a minimum of 1.6 m to a maximum of 3 m below deck with a vertical access ladder in the vicinity of each access to that tank.</p> <p>2.2 If no access holes are provided through the transverse webs within 600 mm of the tank base and the web frame rings have a web height greater than 1 m in way of side shell and sloping plating, then step rungs/grab rails shall be provided to allow safe access over each transverse web frame ring.</p> <p>2.3 Three permanent means of access, fitted at the end bay and middle bay of each tank, shall be provided spanning from tank base up to the intersection of the sloping plate with the hatch side girder. The existing longitudinal structure, if fitted on the sloping plate in the space may be used as part of this means of access.</p> <p>2.4 For topside tanks of which the height is less than 6 m, alternative means as defined in paragraph 3.9 of the Technical provisions or portable means may be utilized in lieu of the permanent means of access.</p>
<p>Access to vertical structures</p> <p>1.6 Permanent means of vertical access shall be provided in all cargo holds and built into the structure to allow for an inspection of a minimum of 25 % of the total number of hold frames port and starboard equally distributed throughout the hold including at each end in way of transverse bulkheads. But in no circumstance shall this arrangement be less than 3 permanent means of vertical access fitted to each side (fore and aft ends of hold and mid-span). Permanent means of vertical access fitted between two adjacent hold frames is counted for an access for the inspection of both hold frames. A means of portable access may be used to gain access over the sloping plating of lower hopper ballast tanks.</p> <p>1.7 In addition, portable or movable means of access shall be utilized for access to the remaining hold frames up to their upper brackets and transverse bulkheads.</p>	<p>Bilge hopper tanks</p> <p>2.5 For each bilge hopper tank of which the height is 6 m and over, one longitudinal continuous permanent means of access shall be provided along the side shell webs and installed at a minimum of 1.2 m below the top of the clear opening of the web ring with a vertical access ladder in the vicinity of each access to the tank.</p> <p>2.5.1 An access ladder between the longitudinal continuous permanent means of access and the bottom of the space shall be provided at each end of the tank.</p> <p>2.5.2 Alternatively, the longitudinal continuous permanent means of access can be located through the upper web plating above the clear opening of the web ring, at a minimum of 1.6 m below the deck head, when this arrangement facilitates more suitable inspection of identified structurally critical areas. An enlarged longitudinal frame can be used for the purpose of the walkway.</p>

<p>1.8 Portable or movable means of access may be utilized for access to hold frames up to their upper bracket in place of the permanent means required in 1.6. These means of access shall be carried on board the ship and readily available for use.</p> <p>1.9 The width of vertical ladders for access to hold frames shall be at least 300 mm, measured between stringers.</p> <p>1.10 A single vertical ladder over 6 m in length is acceptable for the inspection of the hold side frames in a single skin construction.</p> <p>1.11 For double-side skin construction no vertical ladders for the inspection of the cargo hold surfaces are required. Inspection of this structure should be provided from within the double hull space.</p>	<p>2.5.3 For double-side skin bulk carriers, the longitudinal continuous permanent means of access may be installed within 6 m from the knuckle point of the bilge, if used in combination with alternative methods to gain access to the knuckle point.</p> <p>2.6 If no access holes are provided through the transverse ring webs within 600 mm of the tank base and the web frame rings have a web height greater than 1 m in way of side shell and sloping plating, then step rungs/grab rails shall be provided to allow safe access over each transverse web frame ring.</p> <p>2.7 For bilge hopper tanks of which the height is less than 6 m, alternative means as defined in paragraph 3.9 of the Technical provisions or portable means may be utilized in lieu of the permanent means of access. Such means of access shall be demonstrated that they can be deployed and made readily available in the areas where needed.</p> <p>Double-skin side tanks</p> <p>2.8 Permanent means of access shall be provided in accordance with the applicable sections of table 1.</p>
	<p>Fore peak tanks</p> <p>2.9 For fore peak tanks with a depth of 6 m or more at the centreline of the collision bulkhead, a suitable means of access shall be provided for access to critical areas such as the underdeck structure, stringers, collision bulkhead and side shell structure.</p> <p>2.9.1 Stringers of less than 6 m in vertical distance from the deck head or a stringer immediately above are considered to provide suitable access in combination with portable means of access.</p> <p>2.9.2 In case the vertical distance between the deck head and stringers, stringers or the lowest stringer and the tank bottom is 6 m or more, alternative means of access as defined in paragraph 3.9 of the Technical provisions shall be provided.</p>

* For ore carriers, permanent means of access shall be provided in accordance with the applicable sections of table 1 and table 2."
