THIS IS TO CERTIFY:

1 that the ship has been surveyed in accordance with the provisions of 1.3.1 of the Code; and

2 that the survey showed that the structure, equipment, fittings, arrangements and material of the ship complied with the applicable provisions of the Code.

This certificate is issued subject to the provisions of 1.3.4 of the Code.

Issued at ....
(place of issue of Certificate) *(date)*

The undersigned declares that he is duly authorized by the said Government to issue this Certificate.

.....
(signature of official issuing the Certificate
and/or seal of issuing authority)

第 68/2014 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一九九零年五月二十五日透過第MSC.19（58）號決議通過了公約的修正案；

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；

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.19（58）號決議的中文及英文正式文本。

二零一四年九月二十五日發佈。

行政長官　崔世安

Aviso do Chefe do Executivo n.º 68/2014

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 25 de Maio de 1990, o Comité de Segurança Marítima da Organização Marítima Internacional, através da resolução MSC.19(58), adoptou emendas à Convenção;

Considerando ainda 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, tal como emendada, na Região Administrativa Especial de Macau, a partir de 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.19(58), que contém as referidas emendas, nos seus textos autênticos em línguas chinesa e inglesa.

Promulgado em 25 de Setembro de 2014.

O Chefe do Executivo, *Chui Sai On*.

第 MSC.19（58）號決議

（1990 年 5 月 25 日通過）

通過 1974 年國際海上人命安全公約的

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職責的第 28（b）條，

還憶及大會曾以第 A.265（viii）號決議通過了客船的分艙和穩性規則，該規則可用作 1974 年安全公約第 II-1 章 B 部分“分艙與穩性”的等效規定，

認識到在該公約中增加適用於貨船的分艙和穩性規則將加强船舶安全，

注意到在其第五十七次會議上曾以安全公約修正案的形式核准了以殘存概率概念為基礎的乾貨船（含滾裝船）的分艙和破損穩性規則並按該公約第 VIII（b）（i）條予以散發，

審議了作為該公約第 II-1 章新的 B 部分“貨船的分艙和破損穩性”而擬定的乾貨船（含滾裝船）的分艙和破損穩性規則，

1 按該公約第 VIII（b）（iv）條通過該公約的本修正案，其案文載於本決議的附件中；

2 按該公約第 VIII(b)(vi)(2)(bb)條決定：本修正案應在 1991 年 7 月 31 日視為已被接受，除非在該日期前，超過三分之一的該公約的締約政府或其合計商船隊的總噸位不少於世界商船隊總噸位百分之五十的締約政府已通知反對本修正案；

3 提請各締約政府注意：按該公約第 VIII（b）（vii）（2）條，本修正案在按上述第 2 款被接受後，應於 1992 年 2 月 1 日生效；

4 敦促各締約政府將本修正案中的規則結合由本組織制定的解釋性說明一併應用，以保證其得到一致的實施；

5 按 1974 年國際海上人命安全公約第 VIII（b）（v）條，要求秘書長將本決議及其附件中所載的修正案文本的經核證無誤的副本分發給該公約的所有締約政府；

6 還要求秘書長將本決議的副本分發給本組織非該公約締約政府的會員。

附 件

1974 年國際海上人命安全公約

修正案

第 II-1 章

構造——分艙和穩性、機電設備

在原有的 B 部分後加上由第 25-1 條至第 25-10 條組成下列新的 B-1 部分：

“B-1 部分——貨船的分艙和破損穩性*

（本部分適用於在 1992 年 2 月 1 日及以後建造的貨船）。

第 25-1 條

適用範圍

1 本部分中的要求應運用於船舶分艙長度（“L_S”）超過 100m 的貨船，但不包括經證實符合本組織制定的其他文件**中的分艙和破損穩性規則的船舶。

2 下文中凡提及規則，均指本節所載的規則。

---

* 海上安全委員會在通過 B-1 部分所載的規則時，提請各主管機關注意：這些規則應結合本組織制定的解釋性說明一併應用，以保證其得到一致的實施。

** 例如 73/78 年防污公約附件 I、國際散化規則、國際氣體運輸船規則、散化規則和氣體運輸船規則；近海供應船的設計和構造指南（第 A•469(XII) 號決議）、特殊用途船舶安全規則（第 A•534 號決議）和 1966 年載重線公約有關定為 B-60 或 B-100 乾舷的散裝船的第 27 條。

3 對於特定的某艘或某組船舶，如主管機關確信替代佈置達到了至少與規則所代表的同等的安全程度，則可以接受此種替代佈置。許可此種替代佈置的主管機關，應將其詳細情況通知本組織。

第 25-2 條

定義

除只有明文規定者外，就本規則而言：

1.1 分艙載重線是用以決定船舶分艙的水線。

1.2 最深分艙載重線是相當於船舶勘定的夏季吃水的分艙載重線。

1.3 局部載重線是船舶空載吃水加上 60%的船舶空載吃水與最深分艙載重線之間的差。

2.1 船舶分艙長度（“L_S”）是船舶處於最深分艙載重線狀況時，在限制垂向浸水範圍的一個或多個甲板處或其之下的那個部分的最大投影型長。

2.2 船長中點是船舶分艙長度的中點。

2.3 後端點是分艙長度的後端點。

2.4 前端點是分艙長度的前端點。

3 船寬（“B”）是船舶在最深分艙載重線處或其下的最大型寬。

4 吃水（“d”）是自船長中點處的船型基線至所述水線的垂直距離。

5 某一處所的滲透率（“μ”）是該處所可能被水浸佔的浸沒容積的比例。

第 25-3 條

要求的分艙指教“R”

1 本規則旨在向船舶提供最低的分艙標準。

2 要提供的分艙程度應由要求的分艙指數“R”按下列公式決定：

$R= (0.002+0.0009L_S)^{1/3}$，式中：

“L_S”以米表示。

第 25-4 條

達到的分艙指數“A”

1 按本條計算所得的達到分艙指數“A”不應小於按第 25-3 條第 2 款計算所得的要求的分艙指數“R”。

2 船舶達到的分艙指數“A”應按下列公式計算：

$$A=\sum P_i S_i$$

式中：

“i” 代表所考慮的每一個或每一組艙室，

“P_i” 代表只有考慮的那個或那組艙室可能浸水的滲透率，不計及任何水平分隔，

"S_i" 代表考慮的那個或那組艙室可能浸水的滲透率，包括任何水平分隔的影響。

3 在計算"A"時，應採用船舶首尾等吃水狀況。

4 此種總和僅包括對達到的分艙指數"A"的值產生影響的浸水情況。

5 上述公式表示的總和，在單個艙室或兩個或更多相鄰艙室浸水的一切情況下，應在船舶的整個長度上求得。

6 凡設有邊艙時，在邊艙浸水的一切情況下，均應計及對公式表示的總和的影響；此外，假定有一延至船舶中線的垂直穿透，但不包括任何中線艙壁的破損，則在一個或多個邊艙及其一個或多個內側相鄰艙室同時浸水的一切情況下，也應計及對該總和的影響。

7 假定的垂向破損範圍，係從基線向上延至水線之上的任何水密水平分隔或更高位置。但是，倘若某種較小的破損範圍會造成更嚴重的後果，則應假定此種破損範圍。

8 倘若在假定的浸水艙中有管道、導管或隧道，則應做出安排，保證連續浸水不會因此擴大到假定浸水艙之外的其他艙室。但是，如經證實，輕度的連續浸水的影響能容易地被控制並且不損害船舶的安全，則主管機關可以許可此種浸水。

9 按本規則進行的浸水計算中，僅須假定船體有一個破口。

第 25-5 條

因素"Pi"的計算

1 因素"Pi"應視情按第 1.1 款使用下列符號計算；

X_1 = 從“Ls”的後端點至考慮的艙室後端點的最前部的距離；

X_2 = 從“Ls”的後端點至考慮的艙室前端的最後部的距離；

$E_1 = X_1/Ls$

$E_2 = X_2/Ls$

$E = E_1 + E_2 - 1$

$J = E_2 - E_1$

$J' = J - E$，如 $E \geq 0$

$J' = J + E$，如 $E < 0$

最大無因次破損長度，

$J_{max} = 48/Ls$，但不得大於 0.24。

沿船長方向破損位置的假定分佈密度

$a = 1.2 + 0.8E$，但不得大於 1.2。

沿船長方向破損位置的假定分佈函數

$F = 0.4 + 0.25E\ (1.2 + a)$

$y = J/J_{max}$

$p = F_1\ J_{max}$

$q = 0.4\ F_2\ (J_{max})^2$

$F_1 = y^2 - \frac{y^3}{3}$，如 $y < 1$，

$F_1 = y - \frac{1}{3}$，在其他情況下；

$F_2 = \frac{y^3}{3} - \frac{y^4}{12}$，如 Y<1，

$F_2 = \frac{y^2}{2} - \frac{y}{3} + \frac{1}{12}$，在其他情況下。

1.1 決定每個單一艙室的因素“Pi”：

1.1.1 如果考慮的艙室延伸於整個船長“Ls”，則：

$Pi = 1$

1.1.2 如考慮的艙室的後端與後端點重合，則：

$Pi = F + 0.5ap + q$

1.1.3 如考慮的艙室的前端與前端點重合，則：

$Pi = 1 - F + 0.5ap$

1.1.4 如考慮的艙室的兩端位於船長“Ls”的前、後端點之內，則：

$Pi = ap$

1.1.5 在應用第 1.1.2 款、第 1.1.3 款和第 1.1.4 款的公式時，如考慮的艙室超過“船長中點”，則應將公式的值減去按求“q”公式得到的值，在計算“F_2”時，“y”取為 $J'／J_{max}$。

2 凡設有邊艙時，邊艙的“Pi”值應以第 3 款得到的值乘以按第 2.2 款得到的減縮因數“r”求得；“r”代表內側處所不浸水的概率。

2.1 某一邊艙及其內側相鄰處所同時浸水情況下的“Pi”值，應使用第 3 款的公式乘以因素（1-r）求得。

2.2 減縮因數“r”應使用下列公式決定：

當 $J \geq 0.2$ b/B 時：

$$r = \frac{b}{B}\left(2.3 + \frac{0.08}{J+0.02}\right) + 0.1$$，如 $b/B \leq 0.2$

$$r = \left(\frac{0.016}{J+0.02} + \frac{b}{B} + 0.36\right)$$，如 $b/B > 0.2$

當 $J<0.2$ b/B 時，減縮因數“r”應通過在下列兩者間使用線性內插法決定：

$r = 1$，當 $J=0$ 時，

和

r = 與 $J \geq 0.2b/B$ 的情況相同，當 $J=0.2b/B$ 時，

式中：

b = 在最深分艙載重線處以直角向中心線測量所得的船殼與下述平面間的平均橫向距離（以米表示）；該平面通過位於計算因素“Pi”所使用的縱向界限之間的那段縱向艙壁的最外部並與該段艙壁平行。

3 在計算單個艙室的“Pi”值時，應直接應用第 1 款和第 2 款中的公式。

3.1 在計算成組艙室的“Pi”值時，下述公式適用：

對於二個一組的艙室：：

$Pi = P_{12} - P_1 - P_2$

$Pi = P_{23} - P_2 - P_3$，等等。

對於三個一組的艙室：

$Pi = P_{123} - P_{12} - P_{23} + P_2$

$Pi = P_{234} - P_{23} - P_{34} + P_3$，等等。

對於四個一組的艙室；

$Pi = P_{1234} - P_{123} - P_{234} + P_{23}$

$Pi = P_{2345} - P_{234} - P_{345} + P_{34}$，等等。

式中：

P_{12}、P_{23}、P_{34}，等等，

P_{123}、P_{234}、P_{345}等等，和

P_{1234}、P_{2345}、P_{3456}等等

應按第 1 款和第 2 款中單個艙室的公式計算，而該艙室的無因次長度“J”相當於由“P”的下標指出的那些艙室組成的一組艙室者。

3.2 倘若由相鄰的三個或更多的艙室組成的一組艙室的無因次長度減去該組中最前和最後艙室的無因次長度，其值大於“J_{max}”，則該組艙室的因素“Pi”等於零。

第 25-6 條

因素“Si”的計算

1 每個或每組艙室的因素“Si”應按下述方式決定：

1.1 一般而言，對有別於初始裝載狀態的任何浸水狀態，“S”應為：

$$S = C\sqrt{0.5(GZ\max)(range)}$$

式中： C = 1， 如 $\theta_e \leq 25$ ，

C = 0， 如 $\theta_e > 30$ ，

$C = \sqrt{\frac{30-\theta e}{5}}$ ， 在其他情況下

GZ_{max} = 下述範圍內的最大正復原力臂（以米表示），但不得大於 0.1 米；

range = 超過平衡角的正復原力臂範圍（以度表示），但不得大於 20；該範圍應在不能被關閉成風雨密的開口被浸沒的角度終止；

θ_e = 橫傾的最後平衡角（以度表示）；

1.2 當計及下沉、橫傾和縱傾的最終水線浸沒了可能產生連續進水的開口的下緣時，S=0。此種開口應包括空氣管、通風口和使用風雨密的門或艙口蓋關閉的開口，但可以排除使用下列裝置關閉的開口：水密的人孔蓋、與甲板齊平的小艙口蓋、保持甲板高度完整性的小型水密艙口蓋、遙控操作的滑動水密門、具有水密完整性並在海上通常關閉的出入門及出入艙口蓋和非開啟型的舷窗。但是，如按上述方式浸水的艙室在計算時被計入，則應應用本條的要求。

1.3 每一或每組艙室的“Si”應按吃水狀況依下列方式加權：

$$S_i = 0.5S_i + 0.5S_p$$

式中：

“S_i”是處於最深分艙載重線時的因素“S”；

“S_p”是處於部分載重線時的因素“S”。

2 對於防撞艙壁之前的所有艙室，按假定船舶處在最深分艙載重線狀況並且垂向破損範圍不受限制計算，則“S”值應等於1。

3 凡所述水線以上沒有水平分隔時，則下述條款適用。

3.1 較低的那個或那組艙室的“S”值，應通過將1.1款中決定的值乘以按3.3款所得的減縮因數“V”求得；“V”代表水平分隔以上的處所不會浸水的概率。

3.2 在水平分隔以上的處所同時浸水而對指數“A”產生有利影響時，則由此求得的此種一個或一組艙室“S”值，應通過將由第3.1款決定的值加上按第1.1款得到的同時浸水的“S”值再乘以因素（1－v）求得。

3.3 概率因素“V_i”應按下列公式計算：

$V_i = \frac{H-d}{H\max-d}$，當假定浸水達到分艙載重線之上的水平分隔時，式中的“H”不得超過“H_{max}”的高度。

$V_i = 1$，如假定破損區域內的最高水平分隔低於“H_{max}”。

式中：

“H”是在基線之上、被假定用以限制垂向破損範圍的水平分隔的高度（以米表示），

“H_{max}”是基線之上可能的最大垂向破損範圍，或

$H_{max} = d + 0.056L_S (1 - \frac{Ls}{500})$，

如 $L_S \leq 250$ 米；

$H_{max} = d + 7$，如 $L_S > 250$ 米

取小者。

第 25-7 條

<u>滲透率</u>

就規則的分艙和破損穩性的計算而言，每一處所或一處所之局部的滲透率應如下列：

處所	滲透率
儲藏　專用處所	0.60
起居設備所佔處所	0.95
機器佔用處所	0.85
空位處所	0.95
乾貨處所	0.70
供裝載液體處所	0 或 0.95*

* 取導致更嚴要求者。

第 25-8 條

穩性資料

1 應向船長提供使其能用迅速和簡便的方法獲得在各種營運狀況下的船舶穩性的正確指導所必需的可靠資料。這些資料應包括：

.1 最小營運穩性高度（GM）對吃水的關係曲線，該曲線確保符合有關的完整穩性要求和第 25－1 條至第 25－6 條的要求；或者相應的最大允許垂直重心（KG）對吃水的關係曲線，或其中任一曲線的等效曲線；

.2 橫 浸水裝置的操作說明書；和

.3 破損後保持穩性可能必需的一切其他數據和輔助資料。

2 為了指導負責該船的高級船員，在駕駛台上應永久展示或隨時可以得到各種平面圖，這些圖應清楚地表示每一甲板和船艙的水密艙室的界限、其帶有關閉裝置的開口及其任何控制裝置的位置和用以校正浸水引起的任何傾斜的裝置。此外，還應向船上的高級船員提供載有上述資料的小冊子。

3 為了提供第 1.1 款中所述的資料，如果極限 GM（或 KG）值是依據分艙指數決定的，而且極限 GM 值在最深分艙載重線與局部載重線間有線性變化，則應使用極限 GM（或 KG）值。在此種情況下，對於局部載重線以下的各種吃水，倘若在相應於局部載重線的吃水狀況下的最低 GM 要求產生於分艙指數的計算，則此 GM 值應假定為較小吃水狀況的 GM 值，但完整穩性要求適用的情況除外。

第 25-9 條

貨船水密艙壁和內甲板上的開口

1 水密分隔上的開口，應按船舶的設計和正常營運，被保持在最低數量。倘若因通道、管道、通風、電纜等而需要在水密艙壁和內甲板上設有貫穿孔道時，則應做出保持其水密完整性的佈置。如經證實，任何連續浸水均能容易地受到控制並且不會損害船舶的安全，則主管機關可以放寬對乾舷甲板以上開口水密性能的要求。

2 為保證在海上使用的內部開口的水密完整性而設的門，應為既能從駕駛台上遙控關閉，也能從艙壁的每側就地操作的滑動水密門。在控制位置上設有顯示門的啟閉狀況的指示器；在門的關閉位置上應設有音響警報器。在主電源失靈時，動力、控制和指示器均應可以操作。應特別注意減少控制系統失靈的影響。每一動力操縱的滑動水密門均應配有各自的手動裝置。應能在門的位置上從兩邊用手將其打開和關閉。

3 旨在保證內部開口水密完整性、在海上通常被關閉的出入門和出入艙口蓋應就地並在駕駛台上設有顯示此種門和艙口蓋啟閉狀態的指示器。在每一種門或艙口蓋上均應設有不得將其打開的警告標誌。使用此種門和艙口蓋，需經值班駕駛員許可。

4 倘若主管機關確信對大型貨物處所進行內部分隔的水密門或坡道是必需的，則可以裝設構造合格的此種門或坡道。此種門或坡道可以是鉸鏈式、滾動式或滑動式的，但不得使用遙控。此種門或坡道在航行開始前應被關閉，在航行期間應保持關閉；在港口打開此種門或坡道的時間和船舶離港前將其關閉的時間應記錄在航海日誌中。倘若

任何此種門或坡道在航行期間是可以進出的，則應裝設防止未經許可擅自打開的裝置。

5 為保證內部開口的水密完整性在海上航行時始終保持關閉的每一其他關閉裝置上，均應設有應將其保持關閉的警告標誌。配有螺栓緊固蓋的人孔不必作此標誌。

第 25-10 條

貨船的外部開口

1 通往破損分析中被假定為完整艙室的一切外部開口，如係低於最終破損水線者，應是水密的。

2 按第 1 款要求應為水密的外部開口，應有足夠的強度；並且除貨艙艙口蓋外，應在駕駛台上裝設指示器。

3 限制垂向浸水範圍的甲板以下的船殼板上的開口，在海上航行時應始終保持關閉。倘若任何此種開口在海上航行期間是可以進出的，則應安裝防止未經許可擅自打開的裝置。

4 雖有第 3 款的要求，但倘若為船舶操作所必需而並不會損害船舶的安全，則主管機關可准許船長自行決定打開某些特定的門。

5 為保證外部開口的水密完整性在海上航行期間始終保持關閉的每一其他關閉裝置上，均應設有應將其保持關閉的警告。配有螺栓緊固蓋的人孔不必作此標誌。”

RESOLUTION MSC 19(58)
(adopted on 25 May 1990)

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

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER that by resolution A.265(VIII) the Assembly adopted regulations on subdivision and stability of passenger ships, which may be used as an equivalent to part B "Subdivision and stability" of chapter II-1 of the 1974 SOLAS Convention,

RECOGNIZING that safety of ships will be enhanced by incorporating regulations on subdivision and damage stability applicable to cargo ships in the Convention,

NOTING that, at its fifty-seventh session, regulations on subdivision and damage stability of dry cargo ships, including ro-ro ships, based on the probabilistic concept of survival, were approved in the form of amendments to the SOLAS Convention and circulated in accordance with article VIII(b)(i) of the Convention,

HAVING CONSIDERED the regulations on subdivision and damage stability of dry cargo ships, including ro-ro ships, prepared as a new part B-1 "Subdivision and damage stability of cargo ships" of chapter II-1 of the Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the Convention, the amendments to the Convention, the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the amendments shall be deemed to have been accepted on 31 July 1991 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 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 Convention, the amendments shall enter into force on 1 February 1992 upon their acceptance in accordance with paragraph 2 above;

4. URGES Contracting Governments to apply the regulations in conjunction with the explanatory notes developed by the Organization in order to ensure their uniform application;

5. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Contracting Governments to the International Convention for the Safety of Life at Sea, 1974;

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

ANNEX

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

Chapter II-1

CONSTRUCTION - SUBDIVISION AND STABILITY,
MACHINERY AND ELECTRICAL INSTALLATIONS

Insert the following new part B-1, comprising regulations 25-1 to 25-10, after existing part B:

"PART B-1 - SUBDIVISION AND DAMAGE STABILITY OF CARGO SHIPS*

(This part applies to cargo ships constructed on or after 1 February 1992).

Regulation 25-1

Application

1 The requirements in this part shall apply to cargo ships over 100 m in length ("L_s") but shall exclude those ships which are shown to comply with subdivision and damage stability regulations in other instruments** developed by the Organization.

2 Any reference hereinafter to regulations refers to the set of regulations contained in this part.

3 The Administration may for a particular ship or group of ships accept alternative arrangements, if it is satisfied that at least the same degree of safety as represented by these regulations is achieved. Any Administration which allows such alternative arrangements shall communicate to the Organization particulars thereof.

---

* The Maritime Safety Committee, in adopting the regulations contained in part B-1, invited Administrations to note that the regulations should be applied in conjunction with the explanatory notes developed by the Organization in order to ensure their uniform application.

** Such as Annex I to MARPOL 73/78, IBC, IGC, BCH and GC Codes, Guidelines for the Design and Construction of Offshore Supply Vessels (resolution A.469(XII)), Code of Safety for Special Purpose Ships (resolution A.534(13)) and regulation 27 of the 1966 LL Convention for bulk carriers assigned B-60 or B-100 freeboards.

Regulation 25-2

Definitions

For the purpose of these regulations, unless expressly provided otherwise:

1.1 Subdivision load line is a waterline used in determining the subdivision of the ship.

1.2 Deepest subdivision load line is the subdivision load line which corresponds to the summer draught to be assigned to the ship.

1.3 Partial load line is the light ship draught plus 60% of the difference between the light ship draught and deepest subdivision load line.

2.1 Subdivision length of the ship ("L_s") is the greatest projected moulded length of that part of the ship at or below deck or decks limiting the vertical extent of flooding with the ship at the deepest subdivision load line.

2.2 Mid-length is the mid point of the subdivision length of the ship.

2.3 Aft terminal is the aft limit of the subdivision length.

2.4 Forward terminal is the forward limit of the subdivision length.

3 Breadth ("B") is the greatest moulded breadth of the ship at or below the deepest subdivision load line.

4 Draught ("d") is the vertical distance from the moulded baseline at mid-length to the waterline in question.

5 Permeability ("μ") of a space is the proportion of the immersed volume of that space which can be occupied by water.

Regulation 25-3

Required subdivision index "R"

1 These regulations are intended to provide ships with a minimum standard of subdivision.

2 The degree of subdivision to be provided shall be determined by the required subdivision index "R", as follows:

$R = (0.002 + 0.0009L_s)^{1/3}$ where "L_s" is in metres.

Regulation 25-4

Attained subdivision index "A"

1 The attained subdivision index "A", calculated in accordance with this regulation, shall not be less than the required subdivision index "R", calculated in accordance with paragraph 2 of regulation 25-3.

2 The attained subdivision index "A" shall be calculated for the ship by the following formula:

$$A = \Sigma p_i s_i$$

where:

"i" represents each compartment or group of compartments under consideration,

"p_i" accounts for the probability that only the compartment or group of compartments under consideration may be flooded, disregarding any horizontal subdivision,

"s_i" accounts for the probability of survival after flooding the compartment or group of compartments under consideration, including the effects of any horizontal subdivision.

3 In calculating "A", level trim shall be used.

4 This summation covers only those cases of flooding which contribute to the value of the attained subdivision index "A".

5 The summation indicated by the above formula shall be taken over the ship's length for all cases of flooding in which a single compartment or two or more adjacent compartments are involved.

6 Wherever wing compartments are fitted, contribution to the summation indicated by the formula shall be taken for all cases of flooding in which wing compartments are involved; and additionally, for all cases of simultaneous flooding of a wing compartment or compartments and the adjacent inboard compartment or compartments, assuming a rectangular penetration which extends to the ship's centreline, but excludes damage to any centreline bulkhead.

7 The assumed vertical extent of damage is to extend from the baseline upwards to any watertight horizontal subdivision above the waterline or higher. However, if a lesser extent will give a more severe result, such extent is to be assumed.

8 If pipes, ducts or tunnels are situated within assumed flooded compartments, arrangements are to be made to ensure that progressive flooding cannot thereby extend to compartments other than those assumed flooded. However, the Administration may permit minor progressive flooding if it is demonstrated that its effects can be easily controlled and the safety of the ship is not impaired.

9 In the flooding calculations carried out according to the regulations, only one breach of the hull need be assumed.

Regulation 25-5

Calculation of the factor "p_i"

1 The factor "p_i" shall be calculated according to paragraph 1.1 as appropriate, using the following notations:

x_1 = the distance from the aft terminal of "L_s" to the foremost portion of the aft end of the compartment being considered;

x_2 = the distance from the aft terminal of "L_s" to the aftermost portion of the forward end of the compartment being considered;

$E_1 = x_1/L_s$

$E_2 = x_2/L_s$

$E = E_1 + E_2 - 1$

$J = E_2 - E_1$

$J' = J - E$, if $E \geqslant 0$

$J' = J + E$, if $E < 0$

The maximum nondimensional damage length,
$J_{max} = 48/L_s$, but not more than 0.24.

The assumed distribution density of damage location along the ship's length
$a = 1.2 + 0.8E$, but not more than 1.2.

The assumed distribution function of damage location along the ship's length

$F = 0.4 + 0.25\,E\,(1.2 + a)$

$y = J/J_{max}$

$p = F_1 J_{max}$

$q = 0.4\,F_2\,(J_{max})^2$

$F_1 = y^2 - \frac{y^3}{3}$, if $y < 1$,

$F_1 = y - \frac{1}{3}$ otherwise;

$F_2 = \frac{y^3}{3} - \frac{y^4}{12}$, if $y < 1$,

$F_2 = \frac{y^2}{2} - \frac{y}{3} + \frac{1}{12}$ otherwise.

1.1 The factor "p_i" is determined for each single compartment:

1.1.1 Where the compartment considered extends over the entire ship length, "L_s":

$$p_i = 1$$

1.1.2 Where the aft limit of the compartment considered coincides with the aft terminal:

$$p_i = F + 0.5ap + q$$

1.1.3 Where the forward limit of the compartment considered coincides with the forward terminal:

$$p_i = 1 - F + 0.5ap$$

1.1.4 When both ends of the compartment considered are inside the aft and forward terminals of the ship length, "L_s":

$$p_i = ap$$

1.1.5 In applying the formulae of paragraphs 1.1.2, 1.1.3 and 1.1.4, where the compartment considered extends over the "mid-length", these formulae values shall be reduced by an amount determined according to the formula for "q", in which "F_2" is calculated taking "y" to be J'/J_{max}.

2 Wherever wing compartments are fitted, the "p_i"-value for a wing compartment shall be obtained by multiplying the value, as determined in paragraph 3, by the reduction factor "r" according to subparagraph 2.2, which represents the probability that the inboard spaces will not be flooded.

2.1 The "p_i"-value for the case of simultaneous flooding of a wing and adjacent inboard compartment shall be obtained by using the formulae of paragraph 3, multiplied by the factor (1 - r).

2.2 The reduction factor "r" shall be determined by the following formulae:

For $J \geqslant 0.2\ b/B$:

$$r = \frac{b}{B}\left(2.3 + \frac{0.08}{J + 0.02}\right) + 0.1, \text{ if } b/B \leqslant 0.2$$

$$r = \left(\frac{0.016}{J + 0.02} + \frac{b}{B} + 0.36\right), \text{ if } b/B > 0.2$$

For $J < 0.2\ b/B$ the reduction factor "r" shall be determined by linear interpolation between

$$r = 1, \text{ for } J = 0$$

and

r = as for the case where $J \geqslant 0.2b/B$, for $J = 0.2\ b/B$,

where:

b = the mean transverse distance in metres measured at right angles to the centreline at the deepest subdivision load line between the shell and a plane through the outermost portion of and parallel to that part of the longitudinal bulkhead which extends between the longitudinal limits used in calculating the factor "p_i".

3 To evaluate "p_i" for compartments taken singly the formulae in paragraphs 1 and 2 shall be applied directly.

3.1 To evaluate the "p_i"-values attributable to groups of compartments the following applies:

for compartments taken by pairs:
$P_i = P12 - P1 - P2$
$P_i = P23 - P2 - P3$, etc.
for compartments taken by groups of three:
$P_i = P123 - P12 - P23 + P2$
$P_i = P234 - P23 - P34 + P3$ etc.
for compartments taken by groups of four:
$P_i = P1234 - P123 - P234 + P23$
$P_i = P2345 - P234 - P345 + P34$, etc.

where:

P12, P23, P34, etc.,
P123, P234, P345, etc. and
P1234, P2345, P3456, etc.

shall be calculated according to the formulae in paragraphs 1 and 2 for a single compartment whose nondimensional length "J" corresponds to that of a group consisting of the compartments indicated by the indices assigned to "p".

3.2 The factor "p_i" for a group of three or more adjacent compartments equals zero if the nondimensional length of such a group minus the nondimensional length of the aftermost and foremost compartments in the group is greater than "J max."

Regulation 25-6

Calculation of factor "s_i"

1 The factor "s_i", shall be determined for each compartment or group of compartments according to the following:

1.1 in general for any condition of flooding from any initial loading condition "s" shall be

$$s = C\sqrt{0.5(GZmax)(range)}$$

with $C = 1$, if $\theta e \leqslant 25^\circ$,

$C = 0$, if $\theta e > 30^\circ$,

$C = \sqrt{\frac{30 - \theta e}{5}}$ otherwise

GZmax = maximum positive righting lever (in metres) within the range as given below but not more than 0.1 m;

range = range of positive righting levers beyond the angle of equilibrium (in degrees) but not more than 20°; however, the range shall be terminated at the angle where openings not capable of being closed weathertight are immersed;

θe = final equilibrium angle of heel (in degrees);

1.2 s = 0 where the final waterline taking into account sinkage, heel and trim, immerses the lower edge of openings through which progressive flooding may take place. Such opening shall include air-pipes, ventilators and openings which are closed by means of weathertight doors or hatch covers, and may exclude those openings closed by means of watertight manhole covers and flush scuttles, small watertight hatch covers which maintain the high integrity of the deck, remotely operated sliding watertight doors, access doors and access hatch covers, of watertight integrity, normally closed at sea and sidescuttles of the non-opening type. However, if the compartments so flooded are taken into account in the calculations the requirements of this regulation shall be applied.

1.3 For each compartment or group of compartments "s_i" shall be weighted according to draught considerations as follows:

$$s_i = 0.5\ s_1 + 0.5\ s_p$$

where

"s_1" is the "s"-factor at the deepest subdivision load line

"s_p" is the "s"-factor at the partial load line.

2 For all compartments forward of the collision bulkhead, the "s"-value, calculated assuming the ship to be at its deepest subdivision load line and with assumed unlimited vertical extent of damage is to be equal to 1.

3 Wherever a horizontal subdivision is fitted above the waterline in question the following applies.

3.1 The "s"-value for the lower compartment or group of compartments shall be obtained by multiplying the value as determined in subparagraph 1.1 by the reduction factor "v" according to subparagraph 3.3, which represents the probability that the spaces above the horizontal subdivision will not be flooded.

3.2 In cases of positive contribution to index "A" due to simultaneous flooding of the spaces above the horizontal subdivision, the resulting "s"-value for such a compartment or group of compartments shall be obtained by an increase of the value as determined by subparagraph 3.1 by the "s"-value for simultaneous flooding according to subparagraph 1.1, multiplied by the factor (1-v).

3.3 The probability factor "v_i" shall be calculated according to:

$v_i = \frac{H - d}{Hmax - d}$, for the assumed flooding up to the horizontal subdivision above the subdivision load line, where "H" is to be restricted to a height of "Hmax",

$v_i = 1$, if the uppermost horizontal subdivision in way of the assumed damaged region is below "Hmax",

where:

"H" is the height of the horizontal subdivision above the baseline (in metres) which is assumed to limit the vertical extent of damage,

"Hmax" is the maximum possible vertical extent of damage above the baseline (in metres), or

$Hmax = d + 0{,}056\ L_s \left(1 - \frac{L_s}{500}\right)$, if $L_s \leqslant 250$ m;

$Hmax = d + 7$, if $L_s > 250$ m

whichever is less.

Regulation 25-7

Permeability

For the purpose of the subdivision and damage stability calculations of the regulations, the permeability of each space or part of a space shall be as follows:

Spaces	Permeability
Appropriated to stores	0.60
Occupied by accommodation	0.95
Occupied by machinery	0.85
Void spaces	0.95
Dry cargo spaces	0.70
Intended for liquid	0 or 0.95*

* Whichever results in the more severe requirements.

Regulation 25-8

Stability information

1 The master of the ship shall be supplied with such reliable information as is necessary to enable him by rapid and simple means to obtain accurate guidance as to the stability of the ship under varying conditions of service. The information shall include:

.1 a curve of minimum operational metacentric height (GM) versus draught which assures compliance with the relevant intact stability requirements and the requirements of regulations 25-1 to 25-6, alternatively a corresponding curve of the maximum allowable vertical centre of gravity (KG) versus draught, or with the equivalents of either of these curves;

.2 instructions concerning the operation of cross-flooding arrangements; and

.3 all other data and aids which might be necessary to maintain stability after damage.

2 There shall be permanently exhibited, or readily available on the navigating bridge, for the guidance of the officer in charge of the ship, plans showing clearly for each deck and hold the boundaries of the watertight compartments, the openings therein with the means of closure and position of any controls thereof, and the arrangements for the correction of any list due to flooding. In addition, booklets containing the aforementioned information shall be made available to the officers of the ship.

3 In order to provide the information referred to in 1.1, the limiting GM (or KG) values to be used, if they have been determined from considerations related to the subdivision index, the limiting GM shall be varied linearly between the deepest subdivision load line and the partial load line. In such cases, for draughts below the partial load line if the minimum GM requirement at this draught results from the calculation of the subdivision index, then this GM value shall be assumed for lesser draughts, unless the intact stability requirements apply.

Regulation 25-9

Openings in watertight bulkheads and internal decks in cargo ships

1 The number of openings in watertight subdivisions is to be kept to a minimum compatible with the design and proper working of the ship. Where penetrations of watertight bulkheads and internal decks are necessary for access, piping, ventilation, electrical cables, etc., arrangements are to be made to maintain the watertight integrity. The Administration may permit relaxation in the watertightness of openings above the freeboard deck, provided that it is demonstrated that any progressive flooding can be easily controlled and that the safety of the ship is not impaired.

2 Doors provided to ensure the watertight integrity of internal openings which are used while at sea are to be sliding watertight doors capable of being remotely closed from the bridge and are also to be operable locally from each side of the bulkhead. Indicators are to be provided at the control position showing whether the doors are open or closed, and an audible alarm is to be provided at the door closure. The power, control and indicators are to be operable in the event of main power failure. Particular attention is to be paid to minimize the effect of control system failure. Each power-operated sliding watertight door shall be provided with an individual hand-operated mechanism. It shall be possible to open and close the door by hand at the door itself from both sides.

3 Access doors and access hatch covers normally closed at sea, intended to ensure the watertight integrity of internal openings, shall be provided with means of indication locally and on the bridge showing whether these doors or hatch covers are open or closed. A notice is to be affixed to each such door or hatch cover to the effect that it is not to be left open. The use of such doors and hatch covers shall be authorized by the officer of the watch.

4 Watertight doors or ramps of satisfactory construction may be fitted to internally subdivide large cargo spaces, provided that the Administration is satisfied that such doors or ramps are essential. These doors or ramps may be hinged, rolling or sliding doors or ramps, but shall not be remotely controlled. Such doors or ramps shall be closed before the voyage commences and shall be kept closed during navigation; the time of opening such doors or ramps in port and of closing them before the ship leaves port shall be entered in the log book. Should any of the doors or ramps be accessible during the voyage, they shall be fitted with a device which prevents unauthorized opening.

5 Other closing appliances which are kept permanently closed at sea to ensure the watertight integrity of internal openings shall be provided with a notice which is to be affixed to each such closing appliance to the effect that it is to be kept closed. Manholes fitted with closely bolted covers need not be so marked.

Regulation 25-10

External openings in cargo ships

1 All external openings leading to compartments assumed intact in the damage analysis, which are below the final damage waterline, are required to be watertight.

2 External openings required to be watertight in accordance with paragraph 1 shall be of sufficient strength and, except for cargo hatch covers, shall be fitted with indicators on the bridge.

3 Openings in the shell plating below the deck limiting the vertical extent of damage shall be kept permanently closed while at sea. Should any of these openings be accessible during the voyage, they shall be fitted with a device which prevents unathorized opening.

4 Notwithstanding the requirements of paragraph 3, the Administration may authorize that particular doors may be opened at the discretion of the master, if necessary for the operation of the ship and provided that the safety of the ship is not impaired.

5 Other closing appliances which are kept permanently closed at sea to ensure the watertight integrity of external openings shall be provided with a notice affixed to each appliance to the effect that it is to be kept closed. Manholes fitted with closely bolted covers need not be so marked.

二零一四年九月二十五日於行政長官辦公室

辦公室主任　譚俊榮

Gabinete do Chefe do Executivo, aos 25 de Setembro de 2014. — O Chefe do Gabinete, *Alexis, Tam Chon Weng.*

印務局
Imprensa Oficial
每份售價 $310.00
PREÇO DESTE NÚMERO $ 310,00