澳門特別行政區

行政長官辦公室

第 41/2014 號行政長官公告

中華人民共和國於二零一零年九月二十八日以照會通知國際海事組織秘書長，一九八八年十一月十一日訂於倫敦的《1966年國際船舶載重線公約1988年議定書》（下稱“1988年議定書”）及其二零零三年、二零零四年、二零零六年及二零零八年的修正案，自二零一零年十月十一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：

——1988年議定書的中文及英文正式文本；

——1988年議定書的二零零三年修正案〔第MSC.143（77）號決議〕的中文及英文正式文本；

——1988年議定書的二零零四年修正案〔第MSC.172（79）號決議〕的中文及英文正式文本；

——1988年議定書的二零零六年修正案〔第MSC.223（82）號決議〕的中文及英文正式文本；及

——1988年議定書的二零零八年修正案〔第MSC.270（85）號決議〕的中文及英文正式文本。

二零一四年八月二十日發佈。

代理行政長官　陳麗敏

REGIÃO ADMINISTRATIVA ESPECIAL DE MACAU

GABINETE DO CHEFE DO EXECUTIVO

Aviso do Chefe do Executivo n.º 41/2014

Considerando que a República Popular da China, por nota datada de 28 de Setembro de 2010, notificou o Secretário-Geral da Organização Marítima Internacional sobre a aplicação na Região Administrativa Especial de Macau, a partir de 11 de Outubro de 2010, do Protocolo de 1988 relativo à Convenção Internacional das Linhas de Carga, 1966, adiante designado por Protocolo de 1988, concluído em Londres em 11 de Novembro de 1988, bem como das emendas ao tal Protocolo datadas, respectivamente, de 2003, 2004, 2006 e de 2008;

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,

— o Protocolo de 1988, nos seus textos autênticos em línguas chinesa e inglesa;

— as emendas de 2003 ao Protocolo de 1988 (resolução MSC.143(77)), nos seus textos autênticos em línguas chinesa e inglesa;

— as emendas de 2004 ao Protocolo de 1988 (resolução MSC.172(79)), nos seus textos autênticos em línguas chinesa e inglesa;

— as emendas de 2006 ao Protocolo de 1988 (resolução MSC.223(82)), nos seus textos autênticos em línguas chinesa e inglesa; e

— as emendas de 2008 ao Protocolo de 1988 (resolução MSC.270(85)), nos seus textos autênticos em línguas chinesa e inglesa.

Promulgado em 20 de Agosto de 2014.

A Chefe do Executivo, interina, *Florinda da Rosa Silva Chan*.

1966 年國際船舶載重線公約

1988 年議定書

本議定書締約國，

作為 1966 年 4 月 5 日在倫敦簽訂的 1966 年國際船舶載重線公約的締約國，

認識到上述公約在促進船舶、海上財產和船上人命的安全中所起的重大作用，

還認識到需要進一步改進上述公約的技術規定，

進一步認識到需要在上述公約中寫入與其他國際文件的相應規定相協調的檢驗和發證規定，

考慮到滿足這些需要的最好辦法是締結一份關於 1966 年國際船舶載重線公約的議定書，

協議如下：

第 I 條

一般義務

1 本議定書的締約國承諾實施本議定書以及作為本議定書組成部分的附件的各項規定。凡提及本議定書時，均包括其附件在內。

2 就本議定書的締約國之間而言，1966 年國際船舶載重線公約（以下簡稱“公約”）的規定，除第 29 條外，均應根據本議定書所列的修改和補充加以實施。

3 對於有權懸掛非公約和非本議定書締約國國旗的船舶，本議定書締約國應在必要時實施公約與本議定書的要求，以確保不給與此類船舶更為優惠的待遇。

第 II 條

現有證書

1 不論議定書有何其他規定，當本議定書對於船舶有權懸掛其國旗的國家的政府生效時，任何現有國際船舶載重線證書均應仍然有效，直至期滿。

2 本議定書的締約國不得根據和按照 1966 年 4 月 5 日通過的 1966 年國際船舶載重線公約的規定頒發證書。

第 III 條

資料傳送

本議定書的締約國承諾將下列資料送交國際海事組織（以下簡稱“本組織”）秘書長保存：

（a）就本議定書範圍內各種事項所發佈的法律、法令、命令、條例和其他文件的文本；

（b）一份分送給各締約國供其官員參考的，經授權代表其管理船舶載重線事項的被指定的驗船師或認可的組織的名單，一份關於被指定的驗船師或認可的組織的具體責任和授權條件的通知書；和

（c）根據本議定書規定頒發的證書的足夠數目的樣本。

第 IV 條

簽字、批准、接受、核准和加入

1 本議定書將自 1989 年 3 月 1 日至 1990 年 2 月 28 日在本組織總部開放供簽字，此後繼續開放供加入。在符合第 3 款規定的前提下，各國可通過下列方式表示同意受本議定書約束：

（a）簽字並對批准、接受或核准無保留；或

（b）簽字而有待批准、接受或核准，隨後予以批准、接受或核准；或

（c）加入。

2 批准、接受、核准或加入本議定書應向本組織秘書長交存一份相應的文件。

3 只有已對公約簽字並無保留，接受或加入的國家才可以對本議定書簽字並無保留、批准、接受、核准或加入。

第 V 條

生效

1 本議定書在下列兩個條件均獲滿足之日後十二個月生效：

（a）至少十五個國家，其商船隊合計總噸數不少於世界商船隊總噸數的百分之五十，已按第 IV 條表示同意受本議定書約束，和

（b）1974 年國際海上人命安全公約 1988 年議定書的生效條件已獲滿足。

但本議定書不得在 1992 年 2 月 1 日前生效。

2 對於在本議定書的生效條件已獲滿足後但在生效之日前交存了批准、接受、核准或加入文件的國家，其批准、接受、核准或加入應在本議定書生效之日或文件交存之日後三個月生效，以晚者為準。

3 在本議定書生效之日後交存的批准、接受、核准或加入文件應在交存之日後三個月生效。

4 在本議定書的修正案或，就本議定書締約國之間而言，在本公約的修正案根據第 VI 條被視為已獲接受之日後交存的任何批准、接受、核准或加入文件，均應適用於經修正的本議定書或公約。

第 VI 條

修正

1 本議定書可按以下各款規定的任一程序進行修正，就本議定書締約國之間而言，公約也可按以下各款規定的任一程序進行修正。

2 本組織內審議後的修正案：

（a）本議定書締約國提議的任何修正案均應送交本組織秘書長，隨後秘書長應在該修正案付諸審議前至少六個月將其分發給本組織所有會員國和公約所有締約國政府。

（b）按上述規定提議和分發的任何修正案應提交本組織海上安全委員會審議。

（c）本議定書的締約國，不論其是否本組織的會員國，均有權參加海上安全委員會審議和通過修正案的工作。

（d）修正案應在按照（c）項所規定的海上安全委員會擴大會議（以下簡稱“擴大海安會”）上，經到會並投票的本議定書

締約國的三分之二多數通過，但投票時至少應有三分之一的締約國出席。

（e）根據（d）項通過的修正案應由本組織秘書長通知本議定書的所有締約國，供接受。

（f）（i） 本議定書某一條款或附件 A 某一條款的修正案或，就本議定書締約國之間而言，公約某一條款的修正案，在其被本議定書三分之二締約國接受之日應被視為已獲接受；

（ii） 本議定書附件 B 的修正案或，就本議定書締約國之間而言，公約某一附件的修正案，在下列情況下應被視為已獲接受：

（aa）從通知本議定書締約國供其接受之日起兩年屆滿時；

（bb）不短於一年的不同期限屆滿時，如在擴大海安會上，到會並投票的締約國三分之二多數通過時作出此決定。

但是，如果在規定期間內，三分之一以上的締約國或商船隊合計總噸數不少於所有締約國商船隊總噸數百分之五十的締約國通知本組織秘書長，表示反對該修正案時，該修正案則應被視為未獲接受。

（g）（i） （f）（i）項提及的修正案，就業已接受該修正案的本議定書締約國而言，應在其被視為已獲接受之日後六個月生效，就該日後接受該修正案的每一締約國而言，應在該締約國接受之日後六個月生效。

（ii） （f）（ii）項提及的修正案應在其被視為已獲接受之日後六個月對本議定書的所有締約國生效，但根據（f）（ii）項對修正案表示過反對，並且仍未撤銷此種反對的締約國除外。然而，在該修正案生效日之前，任何締約國均可通知本組織秘書長，從該修正案生效之日起算，在不長於一年的期間內，或者在擴大海安會通過修正案時，經到會並投票的締約國政府的三分之二多數可能確定的更長期間內，免於實施該修正案。

3 會議修正

（a）應本議定書某一締約國的要求，並經至少有三分之一締約國的同意，本組織應召開締約國會議，審議本議定書及公約的修正案。

（b）由出席此種會議並投票的締約國的三分之二多數通過的每一項修正案，應由本組織秘書長通知所有締約國，供接受。

（c）除非會議另有決定，該修正案應分別根據2（f）和2（g）項所規定的程序被視為已獲接受並生效；但在這些條款中凡提及擴大海安會時，均應被視為係指該會議。

4（a）業已接受第2（f）（ii）項提及的已生效修正案的本議定書締約國，沒有義務將本議定書在所頒發證書方面的利益給與有權懸掛某一締約國國旗的船舶，這一締約國係按該項規定對該修正案表示過反對並仍未撤銷這種反對者，但這僅限於該修正案所涉及的與證書有關的事項。

（b）業已接受第2（f）（ii）項提及的已生效修正案的本議定書締約國，應將本議定書在所頒發證書方面的利益給與有權懸掛某一締約國國旗的船舶，這一締約國係按第2（g）（ii）

項規定已通知本組織秘書長免於實施該修正案者。

5 除非另有明文規定，按本條規定所作的任何與船舶結構有關的修正案應僅適用於在該修正案生效之日或以後安放龍骨或處於相應建造階段的船舶。

6 按照第 2（g）（ii）項對某項修正案的接受或反對的任何聲明或任何通知，應以書面形式提交給本組織秘書長，並由其應將任何此種文件的提交及收到日期通知本議定書的所有締約國。

7 本組織秘書長應將按照本條生效的任何修正案，以及每項此種修正案的生效日期，通知本議定書的所有締約國。

第 VII 條

退出

1 本議定書的任何締約國，在本議定書對其生效滿五年後，可隨時退出本公約。

2 退出應向本組織秘書長交存一份退出文件。

3 退出應在本組織秘書長收到退出文件一年後或在該文件中所載較此更長的期限屆滿後生效。

4 一締約國退出公約，則應被認為該締約國也退出本議定書。這種退出的生效日期應與根據公約第 30 條第 3 款退出公約的生效日期相同。

第 VIII 條

保存

1 本議定書應由本組織秘書長保存（以下簡稱"保存人"）。

2 保存人應：

（a）將下列事項通知已經簽署或加入該議定書的各國政府：

（i） 每一新的簽字或批准、接受、核准或加入文件的交存及其日期；

（ii） 該議定書的生效日期；

（iii） 退出本議定書的任何文件的交存及其收到日期和退出生效日期；

（b）將本議定書核證無誤的副本分送給已經簽署或加入該議定書的各國政府。

3 本議定書一經生效，保存人應按照聯合國憲章第 102 條的規定，將本議定書核證無誤的副本送交聯合國秘書處，供登記和公佈。

第 IX 條

文字

本議定書正本一份，分別用阿拉伯文、中文、英文、法文、俄文和西班牙文寫成，每種文字具有同等效力。

一九八八年十一月十一日訂於倫敦。

下列署名者，經各自政府正式授權，特簽署本議定書，以昭信守。

附件 A

1966 年國際船舶載重線公約

條文的修改和補充

第二條

定義

以下列文字取代第 8 款的現有條文：

“8. ‘長度’是指量自龍骨板上邊的最小型深 85%處水線總長的 96%，或沿該水線從首柱前邊至舵杆中心的長度，取大者。如首柱輪廓為凹形在最小型深 85%處水線以上時，則水線總長的最前端和首柱的前邊分別量自首柱輪廓最後端（在水線上）至該水線的垂直投影。船舶設計為傾斜龍骨時，其計量長度的水線應和設計水線平行。”

增加新的第 9 款，內容如下：

“9. ‘周年日’是指與有關證書到期之日相應的每年的月和日。”

第三、十二、十六和二十一條

在這幾條的現有條文中，刪除所有與國際船舶載重線證書有關的“（1966）”一詞。

第四條

適用範圍

以下列文字取代第 3 款的現有條文：

“3. 除另有明文規定外，附則一所載的條文適用於新船。”

第五條

除外

在第 2 款第（3）項中，以“曠地角〔聖安東尼奧角（Cabo San Antonio）〕”取代“北角”一詞。

第十三條

檢驗、檢查與勘劃標誌

以下列標題取代現有標題：

“檢驗與勘劃標誌”

在現有條文中，以“檢驗與勘劃標誌”取代“檢驗、檢查與勘劃標誌”。

第十四條

初次和定期的檢驗和檢查

以下列標題取代現有標題：

“初次、換新和年度檢驗”

以下列文字取代現有條文：

“1. 船舶應受下列檢驗：

（1）船舶投入營運前的初次檢驗，對於受本公約約束的船舶，此項檢驗應包括對船舶結構和設備的全面檢查。這種檢驗應保證各種佈置，材料和構件尺寸完全符合本公約的要求。

（2）換新檢驗的間隔期限由主管機關決定，但不得超過五年，除第十九條第 2、5、6 和 7 款規定外，這種檢驗應保證船舶結構、設備、佈置、材料和構件尺寸完全符合本公約的要求。

（3）年度檢驗，在證書的每一個周年日前或後三個月內進行，應保證：

.1 船體或上層建築沒有發生可以影響確定載重線位置的計算的變化；

.2 開口防護、欄杆、排水舷口和出入船員艙室的設施的各種裝置和設備保持有效狀態；

.3 乾舷標誌正確和永久地顯示；

.4 第十條要求的資料已提供。

2. 完成本條第 1 款第（3）項提到的年度檢驗之後，應在國際船舶載重線證書上或者對根據本公約第六條第 2 款給與免除的船舶頒發的國際船舶載重線免除證書上簽證。”

第十六條

證書的頒發

刪除第 4 款。

第十七條

由他國政府代發證書

以下列標題取代現有標題：

“他國政府代發證書和簽證”

以下列文字取代第 1 款的現有條文：

“1. 締約國政府應另一締約國政府請求，可對一船舶進行檢驗。如認為符合本公約的規定，應按照本公約對該船頒發或授權頒發國際船舶載重線證書，並且如果合適，對船舶的此項證書予以簽證或授權簽證。”

刪除第 4 款中提到的“（1966）”。

第十八條

證書格式

以下列文字取代現有條文：

“證書應按照本公約附則三的格式制定。如果所用文字既不是英文又不是法文，則文本應包括上述文字之一的譯文。”

第十九條

證書的有效期限

以下列標題取代現有標題：

“證書的期限和有效性”

以下列文字取代現有條文：

“1. 國際船舶載重線證書應按主管機關規定的期限頒發，但不得超過五年。

2.（1） 不論第 1 款有何要求，如果換新檢驗在現有證書到期之日前三個月內完成，則新證書的有效期應從換新檢驗完成之日起至自原有證書到期之日起算不超過五年的某日止。

（2） 如果換新檢驗在現有證書到期之日後完成，則新證書的有效期應從換新檢驗完成之日起至自原有證書到期之日起算不超過五年的某日止。

（3） 如果換新檢驗在原有證書失效日期的三個月之前完成，則新證書的有效期應從換新檢驗完成之日起至自該日期起算不超過五年的某日止。

3. 如頒發的證書有效期短於五年，則主管機關可將此種證書的有效期展至第 1 款所規定的最長期限，但當簽發有效期為五年的證書時要進行第十四條規定的有關年度檢驗。

4. 在進行第十四條第 1 款（2）項規定的換新檢驗後，如果在原有證書到期以前不能對該船頒發新證書，進行檢驗的人員或組織可以延長該證書的有效期，但該期限不得超過五個月。這一期限的延長應在證書上簽證，並且只應在對船舶乾舷具有影響的船舶結構、設備、佈置、材料或構件尺寸沒有變動的情況下才能准許。

5. 如果證書失效時船舶不在其要檢驗的港口，主管機關可以延長該證書的有效期，但是給與這種展期的目的僅僅是為了使該船完成其駛往檢驗港口的航行，而且只有在適當和合理時才能這樣做。任何證書的展期不得超過三個月。獲得展期的船舶在抵達檢驗港口後，在沒有取得新的證書前無權依據這種展期駛離該港口。換新檢驗完成後，新證書的有效期應從未經展期前的原有證書失效之日起至不超過五年的某日止。

6. 從事短途航行的船舶，其證書如未根據本條的上述款項加以展期則主管機關可對證書進行展期，但不得超過從證書註明的失效日期起算的一個月的寬限期。換新檢驗完成後，新證書的有效期應從未經展期前的原有證書失效之日起至不超過五年的某日止。

7. 在由主管機關決定的特殊情況下，新證書的有效期不必從第2.5和6款所要求的原有證書的失效日期起算。在此種情況下，新證書的有效期應從換新檢驗完成之日起至不超過五年的某日止。

8. 如年度檢驗在第十四條規定的期限前完成，則：

（1） 應通過簽證將證書中標明的周年日改為完成檢驗之日後不超過三個月的某日；

（2） 第十四條要求的而後的年度檢驗，應使用新的周年日按該條規定的間隔期完成；

（3） 如果進行了一次或多次年度檢驗，因而沒有超過第十四條規定的最長的間隔期，則失效期可以不變。

9. 如果存在下列任一情況，則國際船舶載重線證書應自動失效：

（1） 船舶的船體或上層建築已發生實質性變動，以致必需核定較大的乾舷；

（2） 第十四條第 1 款（3）項所述裝置和設備未能保持有效狀態；

（3） 證書上沒有簽證表明船舶已按照第十四條第 1 款（3）項的規定進行了檢驗；

（4） 船舶結構強度降低到不安全的程度。

10.（1） 由主管機關對根據第六條第 2 款給與免除的船舶頒發的國際船舶載重線免除證書的有效期限不得超過五年。這種證書應遵循本條對國際船舶載重線證書規定的關於換新、簽證、展期和吊銷的類似程序；

（2）對根據第六條第 4 款給與免除的船舶頒發的國際船舶載重線免除證書，其有效期應僅限於發給此種證書的單程航行。

11. 主管機關對某一船舶頒發的證書，在該船舶改懸另一國國旗時，應自動失效。

第二十一條

監督

以“第 9 款”取代第 1 款（3）項中提到的“第 3 款”。

附件 B

1966 年國際船舶載重線公約
附則的修改和補充

附則一

載重線核定規則

第一章

總則

第一條

船體強度

在標題中，以“船舶強度”取代”船體強度”。

在本條第一句中，以“船舶”取代“船體”。

第二條

適用範圍

增加新的第 6 和 7 款，內容如下：

“6. 第二十二條第 2 款和第二十七條僅適用於在 1966 年國際船舶載重線公約 1988 年議定書生效之日及以後安放龍骨或處

於相應建造階段的船舶。

7. 除第 6 款另有規定外，新船需符合本公約（經修改的）第二十七條還是 1966 年國際船舶載重線公約（1966 年 4 月 5 日簽訂的）第二十七條，應由主管機關決定。”

第三條

本附則中所用各項名詞的定義

以下列文字取代第 1 款的現有條文：

“1. 長度。長度（L）是指量自龍骨板上邊的最小型深 85%處水線總長的 96%，或沿該水線從首柱前邊至舵杆中心的長度，取大者。如首柱輪廓為凹形在最小型深 85%處水線以上時，則水線總長的最前端和首柱的前邊分別量自首柱輪廓最後端（在水線上）至該水線的垂直投影。船舶設計為傾斜龍骨時，其計量的水線應和設計水線平行。”

以“甲板型線和船舷型線”取代第 5 款（2）項中的“甲板型線和船殼旁板型線”。

第五條

載重線標誌

刪除本條最後一句中的“（如圖 2 所示）”。

第九條

標誌的鑑定

刪除與國際船舶載重線證書有關的“（1966）”一詞。

第二章

核定乾舷的條件

第十條

供給船長的資料

以下列文字取代第 2 款的現有條文：

“2. 根據現行國際海上人命安全公約，在建造完工時不需經過傾斜試驗的每艘船舶應：

（1）進行傾斜試驗，以確定空船情況的實際排水量和重心位置；

（2）以經認可的方式向船長提供此種必要的可靠資料，以便使其能迅速方便地獲得關於船舶在正常營運情況下可能遇到的穩性問題的正確指南；

（3）始終攜帶經主管機關認可的穩性資料及其證明文件；

（4）如主管機關認可，可以免除在建造完工時需要進行的傾斜試驗，但基本穩性數據可從姊妹船的傾斜試驗中得到，並且從此種基本數據中獲得的該船的可靠穩性資料能使主管機關滿意。”

第十五條

採用活動艙蓋關閉以及用艙蓋布和封艙壓條保證風雨密的艙口

在第 5 款的最後一句中，將“直線”一詞插入“內插法”一詞之前。

第二十二條

泄水孔、進水孔和排水孔

在第 1 款的第一句中，在“均應裝設.....”之前加上“除第 2 款規定外，”。

在現有條文中增加下款：

“2. 當船舶向左右傾斜 5° 不致浸沒乾舷甲板邊沿時，可以准許泄水孔從裝貨的封閉上層建築通過船殼，在其他情況下，排水設施均應按照現有的國際海上人命安全公約引向船內。”

將現有第 2 至 5 款重新排列為第 3 至 6 款。

以“第 2 款”取代在重新排列的第 1 款中提到的“第 1 款”。

在重新排列的第 b 款的第一句中，以“所有船殼附件、以及閥門”取代“所有閥門和船殼附件”。

第二十三條

舷窗

以“夏季載重線（或夏季木材載重線，如勘劃時）”取代本條第 2 款中的載重水線。”

第二十四條

排水舷口

在第 2 款第一句中，“根據第 1 款算得的面積”取代“所算得的面積”。

在第 2 款第二句中的“內插法”前加上“直線”。

以“設有圍蔽室的船舶不符合第三十六條第 1 款（5）項的要求”取代第 3 款中的“船舶設有一個不符合第三十六條第 1 款（5）項要求的圍蔽室”。

第三章

乾舷

第二十七條

船舶類型

以下列文字取代現有條文：

“1. 為計算乾舷，應將船舶分為“A”型和“B”型。

“A”型船舶

2. “A”型船舶

（1） 是專為載運散裝液體貨物而設計的船舶；

（2） 其露天甲板具有高度的完整性，貨艙僅有小的出入口，以鋼質或等效材料的水密填料蓋封閉；以及

（3） 其裝載的貨艙具有較低的滲透率。

3. “A”型船舶，如船長超過 150 米，其核定的乾舷比“B”型的小，當按照第 11 款的要求裝載，在任何一艙或數艙浸

水時，假定其滲透率為 0.95（根據第 12 款的破損假定得出），應能不沉，並按照第 13 款規定的合格平衡狀態保持漂浮。此種船舶的機器處所應作為浸水艙處理，但滲透率取 0.85。

4. “A”型船舶核定的乾舷應不小於根據第二十八條表 A 所列的乾舷。

“B”型船舶

5. 達不到第 2 和 3 款關於“A”型船舶各項規定的所有船舶，應被視為“B”型船舶。

6. “B”型船舶，在“位置 1”的艙口設有符合第十五條但不包括第 7 款要求的艙蓋時，應根據第二十八條表 B 數值核定乾舷，並按下表所列數值增加乾舷：

艙蓋不符合第十五條第 7 款或第十六條規定的

“B”型船舶在表列乾舷基礎上的乾舷增加值

船長（米）	乾舷增加值（毫米）	船長（米）	乾舷增加值（毫米）	船長（米）	乾舷增加值（毫米）
108 及以下	50	139	175	170	290
109	52	140	181	171	292
110	55	141	186	172	294
111	57	142	191	173	297
112	59	143	196	174	299
113	62	144	201	175	301
114	64	145	206	176	304
115	68	146	210	177	306
116	70	147	215	178	308

117	73	148	219	179	311
118	76	149	224	180	313
119	80	150	228	181	315
120	84	151	232	182	318
121	87	152	236	183	320
122	91	153	240	184	322
123	95	154	244	185	325
124	99	155	247	186	327
125	103	156	251	187	329
126	108	157	254	188	332
127	112	158	258	189	334
128	116	159	261	190	336
129	121	160	264	191	339
130	126	161	267	192	341
131	131	162	270	193	343
132	136	163	273	194	346
133	142	164	275	195	348
134	147	165	278	196	350
135	153	166	280	197	353
136	159	167	283	198	355
137	164	168	285	199	357
138	170	169	287	200	358

船長為中間值時，乾舷按直線內插法求得。

船長超過 200 米的船舶，應由主管機關處理。

7. “B”型船舶，在“位置 1”的艙口設有符合第十五條第 7 款或第十六條要求的艙蓋時，除本條第 8 至 13 款的規定以外，應根據第二十八條表 B 核定乾舷。

8. 船長超過 100 米的任何“B”型船舶，可以核定比第 7 款所要求的乾舷為小的乾舷，但所允許減少的乾舷量，須經主管機關對下述要求表示滿意：

（1） 保護船員的措施是足夠的；

（2） 排水裝置是足夠的；

（3） 在“位置1”和“位置2”的艙蓋符合第十六條有關規定，且具有足夠的強度，並特別注意其密封和緊固裝置；

（4） 當船舶按照第 11 款要求裝載，在任何一艙或數艙浸水時，假定滲透率為 0.95（根據第 12 款的破損假定得出），應能不沉，並按照第 13 款規定的合格平衡狀態保持漂浮。此種船舶如船長超過 150 米，其機器處所作為浸水艙處理，但滲透率為 0.85。

9. 對符合第 8、11、12 和 13 款要求的“B”型船舶，在計算乾舷時，取自第二十八條表 B 的乾舷值的減少值不應大於對某一相應船長在表 B 和表 A 所列數值之差的 60%。

10. （1） 按第 9 款所允許的表列乾舷的減少值，在其符合下列所有要求時，可以增加到第二十八條表 A 和表 B 之間的全部差值：

.1 第二十六條但不包括第 4 款的要求，就像把該船當作“A”型船舶一樣；

.2 本條第 8、11 和 13 款的要求，和

.3 本條第 12 款的要求，條件是在船舶全長範圍內假定任何一個橫艙壁受損，以致前後相鄰的兩個艙室同時浸水，但這樣的破損不適用於機器處所的隔艙壁。

（2） 對於長度大於 150 米的此種船舶，機器處所應作為浸水艙處理，但滲透率取 0.85。

初始裝載狀態

11. 浸水前的初始裝載狀態應按下列情況確定：

（1） 船舶裝載至夏季載重線，並假定無縱傾；

（2） 在計算重心高度時，適用下列原則：

.1 裝載的是同類貨物；

.2 除下列.3 目所述的情況外，所有貨物艙室，包括打算部分裝載的艙室應被視為滿載。如裝載的是液體貨物，則每一艙室應作為 98%滿載處理；

.3 如船舶打算裝載至夏季載重線時有空艙，並按此種狀況算得的重心高度不小於按.2 目所算得的高度，則此種艙室應被視為空艙；

.4 裝載消耗液體和消耗物料的所有艙櫃和處所，應允許其中個別的裝載量為總容量的 50%，對每一種液體至少有一對橫向艙櫃或一個中心線上的艙櫃具有最大的自由液面，而需考慮的一個艙櫃或成組艙櫃的自由液面影響應是最大的；每一艙櫃裝載物的重心應取艙櫃的形心，其餘艙櫃應假定其為完全空的或完全滿的，而各種消耗液體在這些艙櫃間的分佈，應使重心在龍骨以上獲得最大可能的高度；

.5 除.4 目規定的裝載消耗液體的艙櫃外，對.2 目規定的每一載有液體的貨物艙室均應考慮橫傾角大於 5°時的最大自由液面影響；

作為變通辦法，如計算方法為主管機關所接受，也可採用實際自由液面影響；

.6 應根據下列比重值計算重量：

海水 1.025

淡水 1.000

燃油 0.950

柴油 0.900

滑油 0.900

破損假定

12. 關於假定破損的特徵，適用下列原則：

（1） 在一切情況下，破損的垂向範圍假定自基線向上，不加限制。

（2） 破損的橫向範圍等於 8.5 或 11.5 米，取小值。在夏季載重水線水平面上自船側向船內垂直於中心線量計。

（3） 如果取較第（1）和（2）項規定為小的破損範圍反而造成更為嚴重的後果，則應假定此種較小的破損範圍。

（4） 除第 10 款第（1）項另有要求外，假若艙室內部的縱向界限不在假定破損的橫向範圍內，則浸水應限制在相鄰橫艙壁間的某一單個艙室內，邊艙的橫向界限艙壁沒有延伸至船的全寬，但延伸超出第（2）項規定的假定破損的橫向範圍，則應假定其未受破損。如橫艙壁的台階或凹入長度不超過 3 米，位於第（2）項規定的假定破損的橫向範圍內，這樣的橫艙壁可被視為完整，並且相鄰艙室可被認為單艙浸水。然而，如果位於假定破損的橫向範圍內橫艙壁的台階或凹入的長度

超過 3 米，則與該艙壁相鄰的兩個艙室應被認為浸水。尾尖艙艙壁和尾尖艙艙頂形成的台階就本條而言不應被認為是台階。

（5） 如主橫艙壁位於假定破損的橫向範圍內，並在雙層底艙或邊艙形成長度超過 3 米的台階，則與主橫艙壁台階相鄰的雙層底艙或邊艙應被認為同時浸水。如一邊艙有通向一個或數個貨艙的開口，諸如穀物添注孔，則此種單個貨艙或數個貨艙應被認為同時浸水。同樣，在設計載運液體貨物的船上，如邊艙有通向相鄰艙室的開口，則這些相鄰艙室應被認為是空艙並同時浸水。即使這些開口設有關閉裝置，此項規定仍然適用。除非在這些艙櫃間設有閘閥，且該閥是在甲板上控制的除頂邊艙的開口使頂邊艙與貨櫃相通的情況外，螺栓間距密集的人孔蓋被認為等效於未穿孔的艙壁。

（6） 如設想任何前後相鄰的兩個艙室浸水，為了考慮艙壁的有效性，主橫水密艙壁的間距至少為 $1/3L^{2/3}$ 或 14.5 米，取小值。如橫艙壁間距少於上述數值，為了獲得艙壁間的最小間距，則一個或數個艙壁應假定為不存在。

平衡狀態

13. 浸水後的平衡狀態如符合下列要求則應被認為合格：

（1） 考慮到下沉，橫傾和縱傾，船舶浸水後的最終水線應位於可能發生繼續向下浸水的開口下緣以下，這樣的開口應包括空氣管，通風筒和以風雨密門（即使符合

第十二條）或風雨密艙蓋（即使符合第十六條或第十九條第 1 款）關閉的開口。但可不包括以人孔蓋和平艙蓋（符合第十八條）和第二十七條第 2 款所述的貨艙蓋。遙控的滑移式水密門和永閉式舷窗（符合第二十三條）封閉的開口。然而，用以分隔主機器處所和舵機室的門可為絞鏈速閉式的水密門，且在海上不使用時保持關閉。但這些門中較低的門檻應在夏季載重水線以上。

（2） 如果管道，導管或隧道位於第 12 款第（2）項定義的假定破損穿透的範圍內，則應採取措施使繼續浸水不能由此而漫至計算中假定破損浸水的艙室以外的艙室。

（3） 由於不對稱浸水引起的橫傾角不超過 15°，如甲板沒有任何部分被淹沒，則橫傾角可至 17°。

（4） 在浸水狀態下的穩心高度應為正值。

（5） 在特定破損情況下，當假定浸水艙之外的甲板任何部分被淹沒時，或在任何情況下，對浸水狀態的臨界穩性有懷疑時，應對剩餘穩性進行研究。如果復原力臂曲線超過平衡位置的最小穩性範圍有 20°，且在此穩性範圍內的最大復原力臂至少為 1 米，則剩餘穩性可被視為是足夠的。在此穩性範圍內的復原力臂曲線下的面積應不小於 0.0175 米弧度。主管機關應考慮到受保護的或不受保護的開口在剩餘穩性範圍內可能暫時被淹沒而產生的危險。

（6） 主管機關相信在浸水中間階段的穩性是足夠的。

無推進裝置的船舶

14. 未設獨立推進裝置的港駁，運輸駁和其他船舶應按這些條款的規定核定乾舷，符合第 2 和 3 款時運輸駁可以核定“A”型船舶乾舷：

（1）主管機關應特別考慮露出甲板裝貨的運輸駁的穩性。甲板貨物只能由核定為一般“B”型船舶乾舷的運輸駁載運。

（2）但第二十五條、第二十六條第 2 和 3 款以及第三十九條的要求對無人運輸駁不適用。

（3）這種無人運輸駁，在其乾舷甲板上僅設有鋼質或等效材料制成的水密填料蓋封閉的小型出入口時，所核定的乾舷可以比按照這些條款算得的乾舷小 25%。

第三十七條

對上層建築和圍蔽室的乾舷減除

在第 2 款的“A”型船舶和“B”型船舶兩表的腳註中，在“上層建築”之後插入“和圍蔽室”。

第三十八條

舷弧

在第 12 款的“Y”定義中，以“尾或首垂線處”取代“舷弧末端”。

第四十條

最小乾舷

在第 4 款第一句中，以“第 3 款”取代“第 1 款”。

第四章

核定木材乾舷的特殊要求

第四十四條

裝載

以下列文字取代現有條文：

“**通則**

1. 其上堆裝貨物的露天甲板開口，應可靠地關閉和緊固。

通風筒和空氣管應有效地加以保護。

2. 木材甲板貨應至少延伸到全部可使用的長度，該長度為阱的總長或上層建築之間所有阱的總長。

如果在後端沒有上層建築的限制，則木材應至少延伸到最後艙口的後端。

木材甲板貨在船舶的橫向上應儘可能延伸到兩舷，對諸如欄杆，舷牆支柱、立柱、引水員出入口等引起的障礙可留出適當的餘地。但船舷的任何缺口不得超過平均船寬的 4%。木材應儘可能堆裝堅實。其堆裝高度除任何尾升高甲板外至少為上層建築的標準高度。

3. 在冬季航行於冬季季節地帶的船舶，甲板貨物在露天甲板上的高度不得超過該船最大寬度的三分之一。

4. 木材甲板貨應緊密地堆裝、綁牢和緊固。在任何情況下木材的堆裝不得妨礙船舶航行和船上的必要工作。

立柱

5. 根據所運木材種類而需要的立柱應在考慮到船舶寬度的情況下具有足夠的強度。立柱的強度不得超過舷牆的強度，其間距應適合所運木材的長度和特性，但不得超過 3 米。立柱應用堅固的角鋼或金屬承臼或等效設施來固定。

綁紮

6. 木材甲板貨應使用主管機關可接受的適於所運木材特性的綁紮系統在其全長範圍內予以有效地緊固。※

穩性

7. 應對在航行中所有階段的安全臨界穩性作出規定，並考慮由於木材的吸水和結冰而增加的重量以及由於燃料和物料的消耗而減少的重量。

對船員的保護、出入機器處所等

8. 除第二十五條第 5 款的要求外，尚應在貨物甲板兩側設置垂向間距不大於 350 毫米的欄杆或安全索，並高出貨物至少 1 米。

除安全索外，還可提供伸縮螺絲繃緊的鋼絲繩，並應儘實際可能接近船舶中心線。支撐欄杆和安全索支柱的間距應避免被支撐物過度下垂。如貨物不平，則應在貨物上設置寬度不

※參閱由國際海事組織以第 A.287(VIII)號決議通過並經第 39 屆海上安全委員會修正的“船舶載運木材甲板貨物安全實用規則”。

小於 600 毫米的安全走道面，並應在安全索之下或相鄰處作有效地緊固。

9. 如第 8 款的要求不適用，則可選擇主管機關認為滿意的佈置。

操舵裝置

10. 操舵裝置應妥為保護，避免被貨物損壞，並應儘實際可行地便於檢查。應備有可靠的設施，以便在主操舵裝置發生故障時能操縱船舶。

第四十五條

乾舷計算

在第 5 款中，在“計算”之後增加“或在量自龍骨上邊至夏季木材載重線的夏季木材吃水的基礎上按第四十條第 8 款計算”。

附則二

地帶、區域和季節期

第四十六條

北半球冬季季節地帶和區域

以下列文字取代第 1 款第（2）項最後一句：

“從這一地帶內除去：北大西洋冬季季節地帶 I，北大西洋冬季季節區域和以斯卡格拉克海峽的斯卡宴角的緯度平行線為界的波羅的海。設得蘭群島應被認為位於北大西洋冬季季節地帶 I 和

II 的界限上。

季節期

冬季：自 11 月 1 日至 3 月 31 日

夏季：自 4 月 1 日至 10 月 31 日

第四十七條

南半球冬季季節地帶

以下列文字取代本條末的“至美洲的西海岸”：

“至南緯 33°、西經 79°一點、然後沿恆向線至南緯 41°、西經 75°一點，再沿恆向線至南緯 41°47′、西經 73°53′的奇洛埃島上的彭塔科羅納燈塔，然後沿奇洛埃島的北海岸、東海岸和南海岸至南緯 43°20′、西經 74°20′一點、然後沿西經 74°20′子午線至南緯 45°45′等緯線，包括西經 74°20′子午線以東的奇洛埃水道的內部地區”。

第四十八條

熱帶地帶

將第 2 款第 1 段末尾的“然後再沿恆向線至美洲西海岸的南緯 30°處”改為“然後沿恆向線至南緯 32°47′、西經 72°一點、再沿南緯 32°47′等緯線至南美洲的西海岸”。

將第 2 款第 2 段中的“科金博”改為“瓦爾帕來索”。

第四十九條

季節熱帶區域

將第 4 款第（2）項中的“至東經 120°、再沿東經 120°子午線至澳大利亞的海岸為界”改為“至東經 114°、再沿東經 114°子午線至澳大利亞海岸為界”。

地帶和季節區域海圖

將沿美國東海岸地區的“季節冬季地帶”改為“冬季季節區域”。

將海圖中出現的“季節冬季地帶”（除上述情況外）一律改為“冬季季節地帶”，“季節熱帶”一律改為“季節熱帶區域”。

將註釋中的“西”改為“東”。

澳大利亞海岸的季節熱帶區域界線從東經 120°移至東經 114°。

南半球的夏季地帶的南界自南緯 33°、西經 79°的點上向東至美州西海岸這條分界線予以刪除，自南緯 33°、西經 79°處劃一條恆向線至南緯 41°、西經 75°處一再從該處劃一條恆向線至南緯 41°47′、西經 73°53′的奇洛埃島上的彭塔科羅納燈塔，然後劃出沿奇洛埃島的北海岸、東海岸和南海岸至南緯 43°20′、西經 74°20′處的界線，再劃出自西經 74°20′子午線至南緯 45°45′處和沿該等緯線至南美西海岸的界線。

從熱帶地帶南部界線中刪除自南緯 26°、西經 75°處至南美西海岸南緯 30°的恆向線、從南緯 26°、西經 75°處劃一條恆向線至南緯 32°47′、西經 72°處，然後再從該處沿南緯 32°47′等緯線劃至南美西海岸。

附則三

證書

以下列格式取代國際船舶載重線證書（1966）和國際船舶載重線免除證書現有格式：

"國際船舶載重線證書格式

國際船舶載重線證書

（公章） （國名）

經_____政府授權

（國家名稱）

由_____

（經授權的個人或組織）

根據經 1988 年議定書修訂的 1966 年國際船舶載重線公約的規定頒發

船舶特徵[1]

船名_____

船舶編號或呼號_____

船籍港_____

第二條第 8 款中規定的長度(L)(以米為單位)_____

國際海事組織編號[2]_____

[1] 也可以將船舶特徵橫向排列於方框中。

勘定乾舷按[3]	船舶類型
（新船	（“A”型船舶
（	（“B”型船舶
（現有船舶	（減少乾舷的“B”型船舶
	（增加乾舷的“B”型船舶

從甲板線上緣量起[4]：	載重線：
熱帶_____毫米（T）	高於（S）_____毫米
夏季_____毫米（S）	線上緣通過標圈中心_____
冬季_____毫米（W）	低於（S）_____毫米
北大西洋冬季_____毫米（WNA）	低於（S）_____毫米
木材熱帶_____毫米（LT）	高於（LS）_____毫米
木材夏季_____毫米（LS）	高於（S）_____毫米
木材冬季_____毫米（LW）	低於（LS）_____毫米
木材北大西洋冬____毫米（LWNA）	低於（LS）_____毫米

對木材以外各種乾舷的淡水寬限_____毫米。對木材乾舷_____毫米。

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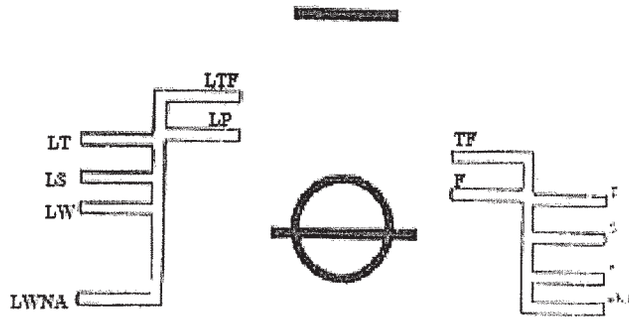
[2] 根據第 A.600（15）號決議—國際海事組織船舶識別號方案，該項可自願填寫。
[3] 視情刪除。
[4] 不適用的乾舷和載重線不必填入本證書，可自願將分艙載重線填入本證書。

用以量計各乾舷的甲板線上邊緣位於船旁_____甲板上_____毫米。



茲證明：

1 已根據公約第十四條的要求對該船進行了檢驗。

2 檢驗查明已根據公約核定於乾舷並勘劃上述載重線。

本證書有效期限至_____止[5]，但須按公約第十四條第 1 款（3）項進行年度檢驗。

頒發於_____

（發證地點）

_____ _____

（頒發日期） （經授權的發證官員的簽字）

（當局的鋼印或章印）

註：

1 船舶從江河或內陸水域的港口駛出時，准許超載量至多相等於從出發港至入海口間所消耗的燃料和所有其他物料的重量。

2 當船舶處於密度為 1,000 的淡水中時，其相應的載重線可被浸沒到上述淡水寬限值。如密度不是 1,000，寬限值可依

[5] 填入主管當局按公約第十九條第 1 款規定的失效日期。除非已按公約第十九條第 8 款進行了修改，否則該日期的月份和日期應與公約第二條第 9 款中規定的周年日相一致。

1.025 與實際密度之差按比例決定。

年度檢驗的簽證

茲證明，經按公約第十四條第 1 款（3）項要求進行的年度檢驗查明，該船符合公約的有關要求。

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

根據第十九條第 8 款（3）項進行的年度檢驗：

茲證明，經按公約第十九條第 8 款（3）項要求進行的檢驗查明，該船符合公約的有關要求：

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在第十九條第 3 款適用時，對有效期少於 5 年的證書展期的簽證。

該船符合公約的有關要求，本證書應按公約第十九條第 3 款得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在完成換檢驗和第十九條第 4 款適用時的簽證

該船符合公約有關要求，本證書應按公約第十九條第 4 款得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在第十九條第 5 款或第 6 款適用時，對本證書的有效期限展至船舶抵達檢驗港口或給與寬限期時的簽證

本證書應按公約第十九條第 5 款/第 6[3] 款得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

[3] 視情刪除。

在第十九條第 8 款適用時，對提前周年日的簽證

按公約第十九條第 8 款，新的周年日為_____

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

按公約第十九條第 8 款，新的周年日為_____

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

國際船舶載重線免除證書格式

國際船舶載重線免除證書

（公章） （國名）

經_____政府授權

（國家名稱）

由_____

（經認可的個人或組織）

根據經 1988 年議定書修訂的 1966 年國際船舶載重線公約的規定頒發

船舶特徵[1]_____

船名_____

船舶編號或呼號[2]_____

船籍港_____

第二條第 8 款中規定的長度(L)(以米為單位)_____

國際海事組織編號_____

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[1] 也可以將船舶特徵橫向排列於方框中。

[2] 根據第 A.600（15）號決議—國際海事組織船舶識別號，該項可自願填寫。

茲證明：

根據公約第六條第 2 款／第 4 款[3]所賦權力，免除該船受公約各項規定的約束。

根據第六條第 2 款，對該船免除的公約規定為：_____

_____

_____

_____

根據第六條第 4 款准許免除的航次為：

自：_____

至：_____

根據第六條第 2 款或第 4 款准許免除的條件(如有)為：_____

_____

_____

_____

本證書有效期限至_____止。[4]但須按公約第十四條第 1 款（3）項進行年度檢驗。

頒發於_____

（發證地點）

_____ _____

（頒發日期） （經授權的發證官員的簽字）

（當局的鋼印或章印）

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[3] 視情刪除。

[4] 填入主管當局按公約第十九條第 10 款規定的失效日期，除非已按公約第十九條第 8 款進行了修改，否則該日期的月份和日期應與公約第二條 9 款中規定的周年日相一致。

年度檢驗的簽證

茲證明，經按公約第十四條第 1 款（3）項要求進行的年度檢驗查明，該船符合准許此免除的條件。

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽 字 _____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽字_____

（經授權的官員的簽字）

地 點 _____

日期_____

（當局的鋼印或章印）

年度檢驗： 簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

按第十九條第 8 款（3）項進行的年度檢驗：

茲證明，經按公約第十九條第 8 款（3）項進行的檢驗查明，該船符合公約有關要求。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在第十九條第 3 款適用時，對有效期限少於 5 年的證書展期的簽證

該船符合公約有關要求，本證書應按公約第十九條第 3 款得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在完成換新檢驗和第十九條第 4 款適用時的簽證

該船符合公約有關要求，本證書應按公約第十九條第 4 款得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

在第十九條第 5 款或第 6 款適用時，對本證書的有效期限展至船舶抵達檢驗港口或給與寬限期時的簽證

本證書應按公約第十九條第 5 款／第 6 款[3]得到承認，其有效期限至_____止。

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

[3] 視情刪除。

在第十九條第 8 款適用時，對提前周年日的簽證

按公約第十九條第 8 款，新周年日為_____

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

按公約第十九條第 8 款，新周年日為_____

簽字_____

（經授權的官員的簽字）

地點_____

日期_____

（當局的鋼印或章印）

Protocol of 1988 Relating to the International Convention on Load Lines, 1966

THE PARTIES TO THE PRESENT PROTOCOL,

BEING PARTIES to the International Convention on Load Lines, 1966, done at London on 5 April 1966,

RECOGNIZING the significant contribution which is made by the above-mentioned Convention to the promotion of the safety of ships and property at sea and the lives of persons on board,

RECOGNIZING ALSO the need to improve further the technical provisions of the above-mentioned Convention,

RECOGNIZING FURTHER the need for the introduction into the above-mentioned Convention of provisions for survey and certification harmonized with corresponding provisions in other international instruments,

CONSIDERING that these needs may best be met by the conclusion of a Protocol relating to the International Convention on Load Lines, 1966,

HAVE AGREED as follows:

ARTICLE I

General obligations

1 The Parties to the present Protocol undertake to give effect to the provisions of the present Protocol and the Annexes hereto, which shall constitute an integral part of the present Protocol. Every reference to the present Protocol constitutes at the same time a reference to the Annexes hereto.

2 As between the Parties to the present Protocol, the provisions of the International Convention on Load Lines, 1966 (hereinafter referred to as "the Convention"), except article 29, shall apply subject to the modifications and additions set out in the present Protocol.

3 With respect to ships entitled to fly the flag of a State which is not a Party to the Convention and the present Protocol, the Parties to the present Protocol shall apply the requirements of the Convention and the present Protocol as may be necessary to ensure that no more favourable treatment is given to such ships.

ARTICLE II

Existing certificates

1 Notwithstanding any other provisions of the present Protocol, any International Load Line Certificate which is current when the present Protocol enters into force in respect of the Government of the State whose flag the ship is entitled to fly shall remain valid until it expires.

2 A Party to the present Protocol shall not issue certificates under, and in accordance with, the provisions of the International Convention on Load Lines, 1966, as adopted on 5 April 1966.

ARTICLE III

Communication of information

The Parties to the present Protocol undertake to communicate to, and deposit with, the Secretary-General of the International Maritime Organization (hereinafter referred to as "the Organization"):

(a) the text of laws, decrees, orders and regulations and other instruments which have been promulgated on the various matters within the scope of the present Protocol;

(b) a list of nominated surveyors or recognized organizations which are authorized to act on their behalf in the administration of load line matters for circulation to the Parties for information of their officers, and a notification of the specific responsibilities and conditions of the authority delegated to those nominated surveyors or recognized organizations; and

(c) a sufficient number of specimens of their certificates issued under the provisions of the present Protocol.

ARTICLE IV

Signature, ratification, acceptance, approval and accession

1 The present Protocol shall be open for signature at the Headquarters of the Organization from 1 March 1989 to 28 February 1990 and shall thereafter remain open for accession. Subject to the provisions of paragraph 3, States may express their consent to be bound by the present Protocol by:

(a) signature without reservation as to ratification, acceptance or approval; or

(b) signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or

(c) accession.

2 Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General of the Organization.

3 The present Protocol may be signed without reservation, ratified, accepted, approved or acceded to only by States which have signed without reservation, accepted or acceded to the Convention.

ARTICLE V

Entry into force

1 The present Protocol shall enter into force twelve months after the date on which both the following conditions have been met:

(a) not less than fifteen States, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant shipping, have expressed their consent to be bound by it in accordance with article IV, and

(b) the conditions for the entry into force of the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974 have been met,

provided that the present Protocol shall not enter into force before 1 February 1992.

2 For States which have deposited an instrument of ratification, acceptance, approval or accession in respect of the present Protocol after the conditions for entry into force thereof have been met but prior to the date of entry into force, the ratification, acceptance, approval or accession shall take effect on the date of entry into force of the present Protocol or three months after the date of deposit of the instrument, whichever is the later date.

3 Any instrument of ratification, acceptance, approval or accession deposited after the date on which the present Protocol enters into force shall take effect three months after the date of deposit.

4 After the date on which an amendment to the present Protocol or an amendment, as between the Parties to the present Protocol, to the Convention is deemed to have been accepted under article VI, any instrument of ratification, acceptance, approval or accession deposited shall apply to the present Protocol or the Convention as amended.

ARTICLE VI

Amendments

1 The present Protocol and, as between the Parties to the present Protocol, the Convention may be amended by either of the procedures specified in the following paragraphs.

2 Amendment after consideration within the Organization:

(a) Any amendment proposed by a Party to the present Protocol shall be submitted to the Secretary-General of the Organization, who shall then circulate it to all Members of the Organization and all Contracting Governments to the Convention at least six months prior to its consideration.

(b) Any amendment proposed and circulated as above shall be referred to the Maritime Safety Committee of the Organization for consideration.

(c) States which are Parties to the present Protocol, whether or not Members of the Organization, shall be entitled to participate in the proceedings of the Maritime Safety Committee for the consideration and adoption of amendments.

(d) Amendments shall be adopted by a two-thirds majority of the Parties to the present Protocol present and voting in the Maritime Safety Committee expanded as provided for in subparagraph (c) (hereinafter referred to as "the expanded Maritime Safety Committee") on condition that at least one third of the Parties shall be present at the time of voting.

(e) Amendments adopted in accordance with subparagraph (d) shall be communicated by the Secretary-General of the Organization to all Parties to the present Protocol for acceptance.

(f) (i) An amendment to an article or Annex A to the present Protocol or an amendment, as between Parties to the present Protocol, to an article of the Convention, shall be deemed to have been accepted on the date on which it is accepted by two thirds of the Parties to the present Protocol.

(ii) An amendment to Annex B to the present Protocol or an amendment, as between Parties to the present Protocol, to an Annex to the Convention, shall be deemed to have been accepted:

(aa) at the end of two years from the date on which it is communicated to Parties to the present Protocol for acceptance; or

(bb) at the end of a different period, which shall not be less than one year, if so determined at the time of its adoption by a two-thirds majority of the Parties present and voting in the expanded Maritime Safety Committee.

However, if within the specified period either more than one third of the Parties, or Parties the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of all the merchant fleets of all Parties, notify the Secretary-General of the Organization that they object to the amendment, it shall be deemed not to have been accepted.

(g) (i) An amendment referred to in subparagraph (f)(i) shall enter into force with respect to those Parties to the present Protocol which have accepted it, six months after the date on which it is deemed to have been accepted, and with respect to each Party which accepts it after that date, six months after the date of that Party's acceptance.

(ii) An amendment referred to in subparagraph (f)(ii) shall enter into force with respect to all Parties to the present Protocol, except those which have objected to the amendment under that subparagraph and which have not withdrawn such objections, six months after the date on which it is deemed to have been accepted. However, before the date set for entry into force, any Party may give notice to the Secretary-General of the Organization that it exempts itself from giving effect to that amendment for a period not longer than one year from the date of its entry into force, or for such longer period as may be determined by a two-thirds majority of the Parties present and voting in the expanded Maritime Safety Committee at the time of the adoption of the amendment.

3 Amendment by a Conference:

(a) Upon the request of a Party to the present Protocol concurred in by at least one third of the Parties, the Organization shall convene a Conference of Parties to consider amendments to the present Protocol and the Convention.

(b) Every amendment adopted by such a Conference by a two-thirds majority of the Parties present and voting shall be communicated by the Secretary-General of the Organization to all Parties for acceptance.

(c) Unless the Conference decides otherwise, the amendment shall be deemed to have been accepted and shall enter into force in accordance with the procedures specified in subparagraphs 2(f) and 2(g) respectively, provided that references in these paragraphs to the expanded Maritime Safety Committee shall be taken to mean references to the Conference.

4 (a) A Party to the present Protocol which has accepted an amendment referred to in subparagraph 2(f)(ii) which has entered into force shall not be obliged to extend the benefit of the present Protocol in respect of the certificates issued to a ship entitled to fly the flag of a State Party which, pursuant to the provisions of that subparagraph, has objected to the amendment and has not withdrawn such an objection, in so far as such certificates relate to matters covered by the amendment in question.

(b) A Party to the present Protocol which has accepted an amendment referred to in subparagraph 2(f)(ii) which has entered into force shall extend the benefit of the present Protocol in respect of the certificates issued to a ship entitled to fly the flag of a State Party which, pursuant to the provisions of subparagraph 2(g)(ii), has notified the Secretary-General of the Organization that it exempts itself from giving effect to the amendment.

5 Unless expressly provided otherwise, any amendment made under this article which relates to the structure of a ship shall apply only to ships the keels of which are laid or which are at a similar stage of construction on or after the date on which the amendment enters into force.

6 Any declaration of acceptance of, or objection to, an amendment or any notice given under subparagraph 2(g)(ii) shall be submitted in writing to the Secretary-General of the Organization, who shall inform all Parties to the present Protocol of any such submission and the date of its receipt.

7 The Secretary-General of the Organization shall inform all Parties to the present Protocol of any amendments which enter into force under this article, together with the date on which each such amendment enters into force.

ARTICLE VII

Denunciation

1 The present Protocol may be denounced by any Party at any time after the expiry of five years from the date on which the present Protocol enters into force for that Party.

2 Denunciation shall be effected by the deposit of an instrument of denunciation with the Secretary-General of the Organization.

3 A denunciation shall take effect one year, or such longer period as may be specified in the instrument of denunciation, after its receipt by the Secretary-General of the Organization.

4 A denunciation of the Convention by a Party shall be deemed to be a denunciation of the present Protocol by that Party. Such denunciation shall take effect on the same date as denunciation of the Convention takes effect according to paragraph (3) of article 30 of the Convention.

ARTICLE VIII

Depositary

1 The present Protocol shall be deposited with the Secretary-General of the Organization (hereinafter referred to as "the depositary").

2 The depositary shall:

(a) inform the Governments of all States which have signed the present Protocol or acceded thereto of:

(i) each new signature or deposit of an instrument of ratification, acceptance, approval or accession, together with the date thereof;

(ii) the date of entry into force of the present Protocol;

(iii) the deposit of any instrument of denunciation of the present Protocol together with the date on which it was received and the date on which the denunciation takes effect;

(b) transmit certified true copies of the present Protocol to the Governments of all States which have signed the present Protocol or acceded thereto.

3 As soon as the present Protocol enters into force, a certified true copy thereof shall be transmitted by the depositary to the Secretariat of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

ARTICLE IX

Languages

The present Protocol is established in a single original in the Arabic, Chinese, English, French, Russian and Spanish languages, each text being equally authentic.

DONE AT LONDON this eleventh day of November one thousand nine hundred and eighty eight.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments for that purpose, have signed the present Protocol.

Annex A

Modifications and Additions to Articles of the International Convention on Load Lines, 1966

Article 2

Definitions

The existing text of paragraph (8) is replaced by the following:

"(8) 'Length' means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour (above that waterline). In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline."

Add a new paragraph (9) to read as follows:

"(9) 'Anniversary date' means the day and the month of each year which will correspond to the date of expiry of the relevant certificate."

Articles 3, 12, 16 and 21

In the existing text of these articles all references to "(1966)" in relation to the International Load Line Certificate are deleted.

Article 4

Application

The existing text of paragraph (3) is replaced by the following:

"(3) The regulations contained in annex I, unless expressly provided otherwise, are applicable to new ships."

Article 5

Exceptions

In paragraph (2)(c) the words "Punta Norte" are replaced by "Punta Rasa (Cabo San Antonio)".

Article 13

Survey, inspection and marking

The existing heading is replaced by the following:

"Surveys and marking"

In lines 1 , 4 and 7 replace the words "survey, inspection and marking" by "surveys and marking".

Article 14

Initial and periodical surveys and inspections

The existing heading is replaced by the following:

"Initial, renewal and annual surveys"

The existing text is replaced by the following:

"(1) A ship shall be subjected to the surveys specified below:

(a) An initial survey before the ship is put in service, which shall include a complete inspection of its structure and equipment in so far as the ship is covered by the present Convention. The survey shall be such as to ensure that the arrangements, materials and scantlings fully comply with the requirements of the present Convention.

(b) A renewal survey at intervals specified by the Administration but not exceeding 5 years, except where paragraphs (2), (5), (6) and (7) of article 19 are applicable, which shall be such as to ensure that the structure, equipment, arrangements, materials and scantlings fully comply with the requirements of the present Convention.

(c) An annual survey within 3 months before or after each anniversary date of the certificate to ensure that:

(i) alterations have not been made to the hull or superstructures which would affect the calculations determining the position of the load line;

(ii) the fittings and appliances for the protection of openings, guard rails, freeing ports and means of access to crew's quarters are maintained in an effective condition;

(iii) the freeboard marks are correctly and permanently indicated;

(iv) the information required by regulation 10 is provided.

(2) The annual surveys referred to in paragraph (l)(c) of this article shall be endorsed on the International Load Line Certificate or the International Load Line Exemption Certificate issued to a ship exempted under paragraph (2) of article 6 of the present Convention.

Article 16

Issue of certificates

Delete paragraph (4).

Article 17

Issue of certificates by another Government

The existing heading is replaced by the following:

"Issue or endorsement of certificates by another Government".

The existing text of paragraph (l) is replaced by the following:

"(1) A Contracting Government may at the request of another Contracting Government cause a ship to be surveyed and, if satisfied that the provisions of the present Convention are complied with, shall issue or authorize the issue of the International Load Line Certificate to the ship and, where appropriate, endorse or authorize the endorsement of the certificate on the ship in accordance with the present Convention."

In paragraph (4) reference to "(1966)" is deleted.

Article 18

Form of certificates

The existing text is replaced by the following:

"The certificates shall be drawn up in the form corresponding to the models given in Annex III to the present Convention. If the language used is neither English nor French, the text shall include a translation into one of these languages."

Article 19

Duration of certificates

The existing heading is replaced by the following:

"Duration and validity of certificates" .

The existing text is replaced by the following:

"(1) An International Load Line Certificate shall be issued for a period specified by the Administration, which shall not exceed 5 years.

(2) (a) Notwithstanding the requirements of paragraph (1), when the renewal survey is completed within 3 months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing certificate.

(b) When the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing certificate.

(c) When the renewal survey is completed more than 3 months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of completion of the renewal survey.

(3) If a certificate is issued for a period of less than 5 years, the Administration may extend the validity of a certificate beyond the expiry date to the maximum period specified in paragraph (1), provided that the annual surveys referred to in article 14 applicable when a certificate is issued for a period of 5 years are carried out as appropriate.

(4) If, after the renewal survey referred to in paragraph (l)(b) of article 14, a new certificate cannot be issued to the ship before the expiry date of the existing certificate, the person or organization carrying out the survey may extend the validity of the existing certificate for a period which shall not exceed 5 months. This extension shall be endorsed on the certificate, and shall be granted only where there have been no alterations in the structure, equipment, arrangements, materials or scantlings which affect the ship's freeboard.

(5) If a ship at the time when a certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than 3 months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing certificate before the extension was granted.

(6) A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this article may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed the new certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing certificate before the extension was granted.

(7) In special circumstances, as determined by the Administration, a new certificate need not be dated from the date of expiry of the existing certificate as required by paragraphs (2), (5) and (6). In these special circumstances, the new certificate shall be valid to a date not exceeding 5 years from the date of completion of the renewal survey.

(8) If an annual survey is completed before the period specified in article 14 then:

(a) the anniversary date shown on the certificate shall be amended by endorsement to a date which shall not be more than 3 months later than the date on which the survey was completed;

(b) the subsequent annual survey required by article 14 shall be completed at the intervals prescribed by that article using the new anniversary date;

(c) the expiry date may remain unchanged provided one or more annual surveys are carried out so that the maximum intervals between the surveys prescribed by article 14 are not exceeded.

(9) An International Load Line Certificate shall cease to be valid if any of the following circumstances exist:

(a) material alterations have taken place in the hull or superstructures of the ship such as would necessitate the assignment of an increased freeboard;

(b) the fittings and appliances mentioned in paragraph (1)(c) of article 14 are not maintained in an effective condition;

(c) the certificate is not endorsed to show that the ship has been surveyed as provided in paragraph (l)(c) of article 14;

(d) the structural strength of the ship is lowered to such an extent that the ship is unsafe.

(10) (a) The duration of an International Loan Line Exemption Certificate issued by an Administration to a ship exempted under paragraph (2) of article 6 shall not exceed 5 years. Such certificate shall be subject to a renewal, endorsement, extension and cancellation procedure similar to that provided for an International Load Line Certificate under this article.

(b) The duration of an International Load Line Exemption Certificate issued to a ship exempted under paragraph (4) of article 6 shall be limited to the single voyage for which it is issued.

(11) A certificate issued to a ship by an Administration shall cease to be valid upon the transfer of such a ship to the flag of another State."

Article 21

Control

In paragraph (1)(c) the reference to "paragraph (3)" is replaced by "paragraph (9)".

Annex B

Modifications and Additions to Annexes to the International Convention on Load Lines, 1966

Annex I

Regulations for Determining Load Lines

Chapter I. General

Regulation 1

Strength of hull

In the heading the words "Strength of Hull" are replaced by the words "Strength of ship".

In the first sentence of the regulation the word "hull" is replaced by the word "ship".

Regulation 2

Application

Add new paragraphs (6) and (7) to read as follows:

"(6) Regulation 22(2) and regulation 27 shall apply only to ships the keels of which are laid or which are at a similar stage of construction on or after the date on which the Protocol of 1988 Relating to the International Convention on Load Lines, 1966 enters into force.

(7) New ships, other than those specified in paragraph (6), shall comply either with regulation 27 of the present Convention (as amended) or with regulation 27 of the International Convention on Load Lines, 1966 (as adopted on 5 April 1966), as determined by the Administration."

Regulation 3

Definitions of terms used in the annexes

The existing text of paragraph (1) is replaced by the following:

"(1) Length. The length (L) shall be taken as 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or as the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour (above that waterline). In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline."

In paragraph (5)(b) the words "the moulded lines of the deck and side shell plating" are replaced by the words "the moulded lines of deck and sides".

Regulation 5

Load line mark

In the last sentence of the regulation the words "(as illustrated in figure 2)" are deleted.

Regulation 9

Verification of marks

The reference to "(1966)" in relation to the International Load Line Certificate is deleted.

Chapter II. Conditions of Assignment of Freeboard

Regulation 10

Information to be supplied to the master

The existing text of paragraph (2) is replaced by the following:

"(2) Every ship which is not required under the International Convention for Safety of Life at Sea in force to undergo an inclining test upon its completion shall:

(a) be so inclined and the actual displacement and position of the centre of gravity shall be determined for the light ship condition;

(b) have supplied for the use of its master such reliable information in an approved form as is necessary to enable him by rapid and simple processes to obtain accurate guidance as to the stability of the ship under all conditions likely to be encountered in normal service;

(c) carry on board at all times its approved stability information together with evidence that the information has been approved by the Administration;

(d) if the Administration so approves, have its inclining test on completion dispensed with, provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for the ship can be obtained from such basic data."

Regulation 15

Hatchways closed by portable covers and secured

Weathertight by tarpaulins and battening devices

In the last sentence of paragraph (5) the word "linear" is inserted before the word "interpolation".

Regulation 22

Scuppers, inlets and discharges

In the first sentence of paragraph (1) the words ", except as provided in paragraph (2)," are inserted between the words "shall" and "be".

The following paragraph is added to the existing text:

"(2) Scuppers led through the shell from enclosed superstructures used for the carriage of cargo shall be permitted only where the edge of the freeboard deck is not immersed when the ship heels 5° either way. In other cases the drainage shall be led inboard in accordance with the requirements of the International Convention for the Safety of Life at Sea in force."

The existing paragraphs (2) to (5) are renumbered (3) to (6).

In renumbered paragraph (4) the reference to "paragraph (1)" is replaced by "paragraph (2)".

In the first sentence of renumbered paragraph (6) the words "All valves and shell fittings" are replaced by the words "All shell fittings, and the valves".

Regulation 23

Side scuttles

In paragraph (2) of the regulation the words "load waterline" are replaced by the words "summer load line (or summer timber load line, if assigned)".

Regulation 24

Freeing ports

In the first sentence of paragraph (2) the words "calculated area" are replaced by the words "area calculated according to paragraph (1)".

In the second sentence of paragraph (2) the word "linear" is inserted before the word "interpolation".

In paragraph (3) the words "a ship is fitted with a trunk which" are replaced by the words "a ship fitted with a trunk".

Chapter III. Freeboards

Regulation 27

Types of ships

The existing text is replaced by the following:

"(1) For the purposes of freeboard computation, ships shall be divided into type 'A' and type 'B'.

Type 'A' ships

(2) A type 'A' ship is one which:

(a) is designed to carry only liquid cargoes in bulk;

(b) has a high integrity of the exposed deck with only small access openings to cargo compartments, closed by watertight gasketed covers of steel or equivalent material; and

(c) has low permeability of loaded cargo compartments.

(3) A type 'A' ship of over 150 m in length to which a freeboard less than type 'B' has been assigned, when loaded in accordance with the requirements of paragraph (11), shall be able to withstand the flooding of any compartment or compartments, with an assured permeability of 0.95, consequent upon the damage assumptions specified in paragraph (12), and shall remain afloat in a satisfactory condition of equilibrium as specified in paragraph (13). In such a ship the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(4) A type 'A' ship shall be assigned a freeboard not less than that based on table A of regulation 28.

Type 'B' ships

(5) All ships which do not come within the provisions regarding type 'A' ships in paragraphs (2) and (3) shall be considered as type 'B' ships.

(6) Type 'B' ships, which in position 1 have hatchways fitted with hatch covers which comply with the requirements of regulation 15, other than paragraph (7), shall be assigned freeboards based upon the values given in table B of regulation 28, increased by the values given in the following table:

Freeboard increase over tabular freeboard for type 'B' ships, for ships with hatch covers not complying with regulation 15(7) or regulation 16

Length of ship (metres)	Freeboard increase (millimetres)	Length of ship (metres)	Freeboard increase (millimetres)	Length of ship (metres)	Freeboard increase (millimetres)
108 and below	50	139	175	170	290
109	52	140	181	171	292
110	55	141	186	172	294
111	57	142	191	173	297
112	59	143	196	174	299
113	62	144	201	175	301
114	64	145	206	176	304
115	68	146	210	177	306
116	70	147	215	178	308
117	73	148	219	179	311
118	76	149	224	180	313
119	80	150	228	181	315
120	84	151	232	182	318
121	87	152	236	183	320
122	91	153	240	184	322
123	95	154	244	185	325
124	99	155	247	186	327
125	103	156	251	187	329
126	108	157	254	188	332
127	112	158	258	189	334
128	116	159	261	190	336
129	121	160	264	191	339
130	126	161	267	192	341
131	131	162	270	193	343
132	136	163	273	194	346
133	142	164	275	195	348
134	147	165	278	196	350
135	153	166	280	197	353
136	159	167	283	198	355
137	164	168	285	199	357
138	170	169	287	200	358

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.
Ships above 200 m in length shall be dealt with by the Administration.

(7) Type 'B' ships, which in position 1 have hatchways fitted with hatch covers complying with the requirements of regulation 15(7) or regulation 16, shall, except as provided in paragraphs (8) to (13) inclusive of this regulation, be assigned freeboards based on table B of regulation 28.

(8) Any type 'B' ship of over 100 m in length may be assigned freeboards less than those required under paragraph (7), provided that, in relation to the amount of reduction granted, the Administration is satisfied that:

(a) the measures provided for the protection of the crew are adequate;

(b) the freeing arrangements are adequate;

(c) the covers in positions 1 and 2 comply with the provisions of regulation 16 and have adequate strength, special care being given to their sealing and securing arrangements; and

(d) the ship, when loaded in accordance with the requirements of paragraph (11), shall be able to withstand the flooding of any compartment or compartments, with an assumed permeability of 0.95, consequent upon the damage assumptions specified in paragraph (12), and shall remain afloat in a satisfactory condition of equilibrium, as specified in paragraph (13). In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(9) In calculating the freeboards for type 'B' ships which comply with the requirements of paragraphs (8), (11), (12) and (13), the values from table B of regulation 28 shall not be reduced by more than 60% of the difference between the B and A tabular values for the appropriate ship lengths.

(10) (a) The reduction in tabular freeboard allowed under paragraph (9) may be increased up to the total difference between the values in table A and those in table B of regulation 28 on condition that the ship complies with the requirements of:

(i) regulation 26, other than paragraph (4), as if it were a type 'A' ship;

(ii) paragraphs (8), (11) and (13) of this regulation; and

(iii) paragraph (12) of this regulation, provided that throughout the length of the ship any one transverse bulkhead will be assumed to be damaged, such that two adjacent fore and aft compartments shall be flooded simultaneously, except that such damage will not apply to the boundary bulkheads of a machinery space.

(b) In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

Initial condition of loading

(11) The initial condition of loading before flooding shall be determined as follows:

(a) The ship is loaded to its summer load waterline on an imaginary even keel.

(b) When calculating the vertical centre of gravity, the following principles apply:

(i) Homogeneous cargo is carried.

(ii) All cargo compartments, except those referred to under (iii), but including compartments intended to be partially filled, shall be considered fully loaded except that in the case of fluid cargoes each compartment shall be treated as 98% full.

(iii) If the ship is intended to operate at its summer load waterline with empty compartments, such compartments shall be considered empty provided the height of the centre of gravity so calculated is not less than as calculated under (ii).

(iv) 50% of the individual total capacity of all tanks and spaces fitted to contain consumable liquids and stores is allowed for. It shall be assumed that for each type of liquid, at least one transverse pair or a single centreline tank has maximum free surface, and the tank or combination of tanks to be taken into account shall be those where the effect of free surfaces is the greatest, in each tank the centre of gravity of the cotents shall be taken at the centre of volume of the tank. The remaining tanks shall be assumed either completely

empty or completely filled, and the distribution of consumable liquids between these tanks shall be effected so as to obtain the greatest possible height above the keel for the centre of gravity.

(v) At an angle of heel of not more than 5° in each compartment containing liquids, as prescribed in (ii) except that in the case of compartments containing consumable fluids, as prescribed in (iv), the maximum free surface effect shall be taken into account.

Alternatively, the actual free surface effects may be used, provided the methods of calculation are acceptable to the Administration.

(vi) Weights shall be calculated on the basis of the following values for specific gravities:

salt water	1.025
fresh water	1.000
oil fuel	0.950
diesel oil	0.900
lubricating oil	0.900

Damage assumptions

(12) The following principles regarding the character of the assumed damage apply:

(a) The vertical extent of damage in all cases is assumed to be from the base line upwards without limit.

(b) The transverse extent of damage is equal to B/5 or 11.5 m, whichever is the lesser, measured inboard from the side of the ship perpendicularly to the centreline at the level of the summer load waterline.

(c) If damage of a lesser extent than specified in subparagraphs (a) and (b) results in a more severe condition, such lesser extent shall be assumed.

(d) Except where otherwise required by paragraph (10) (a), the flooding shall be confined to a single compartment between adjacent transverse bulkheads provided the inner longitudinal boundary of the compartment is not in a position within the transverse extent of assumed damage. Transverse boundary bulkheads of wing tanks which do not extent over the full breadth of the ship shall be assumed not to be damaged, provided they extend beyond the transverse extent of assumed damage prescribed in subparagraph (b).

(e) Where a main transverse bulkhead is located within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3 m, the double bottom or side tanks adjacent to the stepped portion of the main transverse bulkhead shall be considered as flooded simultaneously. If this side tank has openings, into one or several holds, such as grain feeding holes, such hold or holds shall be considered as flooded simultaneously. Similarly in a ship designed for the carriage of fluid cargoes, if a side tank has openings into adjacent compartments, such adjacent compartments shall be considered as empty and as being flooded simultaneously. This provision is applicable even where such openings are fitted with closing appliances, except in the case of sluice valves fitted in bulkheads between tanks and where the valves are controlled from the deck. Manhole covers with closely-spaced bolts are considered equivalent to the unpierced bulkhead except in the case of openings in topside tanks making the topside tanks common to the holds.

(f) Where the flooding of any two adjacent fore and aft compartments is envisaged, main transverse watertight bulkheads shall be spaced at least $1/3\ L^{2/3}$ or 14.5 m, whichever is the lesser, in order to be considered effective. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads shall be assumed as non-existent in order to achieve the minimum spacing between bulkheads.

Condition of equilibrium

(13) The condition of equilibrium after flooding shall be regarded as satisfactory provided:

(a) The final waterline after flooding, taking into account sinkage, heel and trim, is below the lower edge of any opening through which progressive downflooding may take place. Such openings shall include air pipes, ventilators and openings which are closed by means of weathertight doors (even if they comply with regulation 12) or hatch covers (even if they comply with regulation 16 or regulation 19(4)), and may exclude those openings closed by means of manhole covers and flush scuttles (which comply with regulation 18), cargo hatch covers of the type described in regulation 27(2), remotely operated sliding watertight doors, and sidescuttles of the non-opening type (which comply with regulation 23). However, in the case of doors separating a main machinery space from a steering gear compartment, watertight doors may be of a hinged, quick-acting type kept closed at sea, whilst not in use, provided also that the lower sill of such doors is above the summer load waterline.

(b) If pipes, ducts or tunnels are situated within the assumed extent of damage penetration as defined in paragraph (12)(b), arrangements shall be made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable in the calculation for each case of damage.

(c) The angle of heel due to unsymmetrical flooding does not exceed 15°. If no part of the deck is immersed, an angle of heel of up to 17° may be accepted.

(d) The metacentric height in the flooded condition is positive.

(e) When any part of the deck outside the compartment assumed flooded in a particular case of damage is immersed, or in any case where the margin of stability in the flooded condition may be considered doubtful, the residual stability is to be investigated. It may be regarded as sufficient if the righting lever curve has a minimum range of 20° beyond the position of equilibrium with a maximum righting lever of at least 0.1 m within this range. The area under the righting lever curve within this range shall be not less than 0.0175 m.rad. The Administration shall give consideration to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within

the range of residual stability.

(f) The Administration is satisfied that the stability is sufficient during intermediate stages of flooding.

Ships without means of propulsion

(14) A lighter, barge or other ship without independent means of propulsion shall be assigned a freeboard in accordance with the provisions of these regulations. Barges which meet the requirements of paragraphs (2) and (3) may be assigned type 'A' freeboards:

(a) The Administration should especially consider the stability of barges with cargo on the weather deck. Deck cargo can only be carried on barges to which the ordinary type 'B' freeboard is assigned.

(b) However, in the case of barges which are unmanned, the requirements of regulations 25, 26(2), 26(3) and 39 shall not apply.

(c) Such unmanned barges which have on the freeboard deck only small access openings closed by watertight gasketed covers of steel or equivalent material may be assigned a freeboard 25% less than those calculated in accordance with these regulations."

Regulation 37

Deduction for superstructures and trunks

In the footnote to tables for both type 'A' and type 'B' ships in paragraph (2) the words "and trunks" are inserted after the word "superstructures".

Regulation 38

Sheer

In the definition of "y" in paragraph (12) the words "end of sheer" are replaced by "after or forward perpendicular".

Regulation 40

Minimum freeboards

In the first sentence of paragraph (4) the words "paragraph (1)" are replaced by the words "paragraph (3)".

Chapter IV. Special Requirements for Ships Assigned Timber Freeboards

Regulation 44

Stowage

The existing text is replaced by the following:

"General

(1) Openings in the weather deck over which cargo is stowed shall be securely closed and battened down.

The ventilators and air pipes shall be efficiently protected.

(2) Timber deck cargoes shall extend over at least the entire available length which is the total length of the well or wells between superstructures.

Where there is no limiting superstructure at the after end, the timber shall extend at least to the after end of the aftermost hatchway.

The timber deck cargo shall extend athwartships as close as possible to the ship's side, due allowance being made for obstructions such as guard rails, bulwark stays, uprights, pilot access, etc., provided any gap thus created at the side of the ship shall not exceed a mean of 4% of the breadth. The timber shall be stowed as solidly as possible to at least the standard height of the superstructure other than any raised quarterdeck.

(3) On a ship within a seasonal winter zone in winter, the height of the deck cargo above the weather deck shall not exceed one third of the extreme breadth of the ship.

(4) The timber deck cargo shall be compactly stowed, lashed and secured. It shall not interfere in any way with the navigation and necessary work of the ship.

Uprights

(5) Uprights, when required by the nature of the timber, shall be of adequate strength considering the breadth of the ship; the strength of the uprights shall not exceed the strength of the bulwark and the spacing shall be suitable for the length and character of timber carried, but shall not exceed 3 m. Strong angles or metal sockets or equally efficient means shall be provided for securing the uprights.

Lashings

(6) Timber deck cargo shall be effectively secured throughout its length by a lashing system acceptable to the Administration for the character of the timber carried.*

Stability

(7) Provision shall be made for a safe margin of stability at all stages of the voyage, regard being given to additions of weight, such as those arising from absorption of water or icing, if applicable, and to losses of weight such as those arising from consumption of fuel and stores.*

Protection of crew, access to machinery spaces, etc.

(8) In addition to the requirements of regulation 25(5), guard-rails or lifelines not more than 350 mm apart vertically shall be provided on each side of the cargo deck to a height of at least 1 m above the cargo.

In addition a lifeline, preferably wire rope set up taut with a stretching screw, shall be provided as near as practicable to the centreline of the ship. The stanchion supports to all guard-rails and lifelines shall be so spaced as to prevent undue sagging. Where the cargo is uneven a safe walking surface of not less than 600 mm in width shall be fitted over the cargo and effectively secured beneath or adjacent to the lifeline.

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* Reference is made to the Code of Safe Practice for Ships Carrying Timber Deck Cargoes originally adopted by the Organization as resolution A.287(VIII) and amended by the Maritime Safety Committee at its thirty-ninth session.

(9) Where the requirements prescribed in paragraph (8) are impracticable, alternative arrangements satisfactory to the Administration shall be used.

Steering arrangements

(10) Steering arrangements shall be effectively protected from damage by cargo and, as far as practicable, shall be accessible. Efficient provision shall be made for steering in the event of a breakdown in the main steering arrangements."

Regulation 45

Computation for freeboard

In paragraph (5) the words "or with regulation 40(8) based on the summer timber draught measured from the top of the keel to the summer timber load lines" are added after the word "waterline".

Annex II

Zones, Areas and Seasonal Periods

Regulation 46

Northern winter seasonal zones and area

The last sentence of paragraph (1)(b) is replaced by the following:

"Excluded from this zone are the North Atlantic winter seasonal zone I, the North Atlantic winter seasonal area and the Baltic Sea bounded by the parallel of latitude of the Skaw in the Skagerrak. The Shetland Islands are to be considered as being on the boundary of the North Atlantic winter seasonal zones I and II.

Seasonal periods:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October".

Regulation 47

Southern winter seasonal zone

The words "to the west coast of the American continent" at the end of the regulation are replaced by the following:

"to the point latitude 33°S, longitude 79°W, thence the rhumb line to the point latitude 41°S, longitude 75°W, thence the rhumb line to Punta Corona lighthouse on Chiloe Island, latitude 41°47'S, longitude 73°53'W, thence along the north, east and south coasts of Chiloe Island to the point latitude 43°20'S, longitude 74°20'W, and thence the meridian of longitude 74°20'W to the parallel of latitude 45°45'S, including the inner zone of Chiloe channels from the meridian 74°20'W to the east".

Regulation 48

Tropical zone

At the end of the first subparagraph of paragraph (2) the words "and thence the rhumb line to the west coast of the American continent at latitude 30°S" are replaced by the words "thence the rhumb line to the point latitude 32°47'S, longitude 72°W, and thence to the parallel of latitude 32°47'S to the west coast of South America".

In the second subparagraph of paragraph (2) the word "Coquimbo" is replaced by the word "Valparaiso".

Regulation 49

Seasonal tropical areas

In paragraph 4(b) the words "to longitude 120°E and thence the meridian of longitude 120°E to the coast of Australia" are replaced by the words "to longitude 114°E and thence the meridian of longitude 114°E to the coast of Australia".

Chart of zones and seasonal areas

The words "SEASONAL WINTER ZONE" where they indicate the area along the eastern coast of the United States are replaced by the words "WINTER SEASONAL AREA".

The words "SEASONAL WINTER ZONE" wherever they appear in the chart (except in the cases mentioned above) are replaced by the words "WINTER SEASONAL ZONE" and the words "SEASONAL TROPICAL" are replaced by the words "SEASONAL TROPICAL AREA".

In the note the word "western" is replaced by the word "eastern".

The border line of the seasonal tropical area at the coast of Australia is moved from longitude 120°E to longitude 114°E.

The southern border line of the southern summer zone east of the point latitude 33°S, longitude 79°W to the west coast of the American continent is deleted. A rhumb line from the point latitude 33°S, longitude 79°W to the point latitude 41°S, longitude

75°W is inserted. From there a rhumb line to Punta Corona lighthouse on Chiloe Island latitude 41°47'S, longitude 73°53'W is inserted. From there the north, east and south coast of Chiloe Island is marked as border to the point latitude 43°20'S, longitude 74°20'W. The meridian of longitude 74°20'W to the parallel of latitude 45°45'S and then this parallel to the west coast of South America are marked.

The rhumb line from the point latitude 26°S, longitude 75°W to the west coast of South America at latitude 30°S is deleted from the southern boundary of the tropical zone. A rhumb line from the point latitude 26°S, longitude 75°W to the point latitude 32°47'S, longitude 72°W and then the parallel of latitude 32°47'S to the west coast of South America are inserted.

Annex III

Certificates

The existing forms of the International Load Line Certificate (1966) and the International Load Line Exemption Certificate are replaced by the following:

"Form of International Certificate on Load Lines

INTERNATIONAL LOAD LINE CERTIFICATE

(Official seal) (State)

Issued under the provisions of the International Convention on Load Lines, 1966, as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

_____

(name of the State)

by _____

(person or organization authorized)

Particulars of ship[1]

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Length (L) as defined in article 2(8) (in metres) .....

IMO number[2] .....

[1] Alternately, the particulars of the ship may be placed horizontally in boxes.

[2] In accordance with resolution A.600(15) – IMO Ship Identification Number Scheme, this information may be included voluntarily.

Freeboard assigned as:[3]	Type of ship[3]
(A new ship	(Type 'A'
(	(Type 'B'
(An existing ship	(Type 'B' with
	(reduced freeboard
	(Type 'B' with
	(increased freeboard

Freeboard from deck line[4]		Load line[4]
Tropical	.... mm (T)	.... mm above (S)
Summer	.... mm (S)	Upper edge of line through centre of ring
Winter	.... mm (W)	.... mm below (S)
Winter North Atlantic	.... mm (WNA)	.... mm below (S)
Timber tropical	.... mm (LT)	.... mm above (LS)
Timber summer	.... mm (LS)	.... mm above (S)
Timber winter	.... mm (LW)	.... mm below (LS)
Timber winter North Atlantic	.... mm (LWNA)	.... mm below (LS)

Allowance for fresh water for all freeboards other than timber .... mm. For timber freeboards .... mm.

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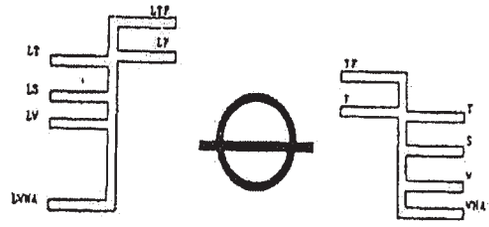
[3] Delete as appropriate.

[4] Freeboards and load lines which are not applicable need not be entered on the certificate. Subdivision load lines may be entered on the certificate on a voluntary basis.

The upper edge of the deck line from which these freeboards are measured is …. mm ……. deck at side.



THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with the requirements of article 14 of the Convention.

2 That the survey showed that the freeboards have been assigned and load lines shown above have been marked in accordance with the Convention.

This certificate is valid until .....[5] subject to annual surveys in accordance with article 14(1)(c) of the Convention.

Issued at .....

(Place of issue of certificate)

....

(Date of issue) (Signature of authorized official issuing the certificate)

(Seal or stamp of the authority, as appropriate)

Notes: 1. When a ship departs from a port situated on a river or inland waters, deeper loading shall be permitted corresponding to the weight of fuel and all other materials required for consumption between the point of departure and the sea.

2. When a ship is in fresh water of unit density the appropriate load line may be submerged by the amount of fresh water allowance shown above. Where the density is other than unity, an allowance shall be made proportional to the difference between 1.025 and the actual density.

[5] Insert the date of expiry as specified by the Administration in accordance with article 19(1) of the Convention. The day and the month of this date correspond to the anniversary date as defined in article 2(9) of the Convention, unless amended in accordance with article 19(8) of the Convention.

Endorsement for annual surveys

THIS IS TO CERTIFY that, at an annual survey required by article 14(1)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual survey: Signature: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey: Signature: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey: Signature: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey:

Signature: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey in accordance with article 19(8)(c):

THIS IS TO CERTIFY that, at a survey in accordance with article 19(8)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the certificate if valid for less than 5 years where article 19(3) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with article 19(3) of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and article 19(4) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with article 19(4) of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where article 19(5) or 19(6) applies

This certificate shall, in accordance with article 19(5)/19(6)[3] of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement for advancement of anniversary date where article 19(8) applies

In accordance with article 19(8) of the Convention the new anniversary date is .....

Signed: .....

[3] Delete as appropriate.

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

In accordance with article 19(8) of the Convention the new anniversary date is .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Form of International Exemption Certificate on Load Lines

International Load Line Exemption Certificate

(Official seal) (State)

Issued under the provisions of the International Convention on Load Lines, 1966, as modified by the Protocol of 1988 relating thereto

under the authority of the Government of

_____

(name of the State)

by _____

(person or organization recognized)

Particulars of ship[1]

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Length (L) as defined in article 2(8) (in metres) .....

IMO number[2] .....

[1] Alternately, the particulars of the ship may be placed horizontally in boxes.

[2] In accordance with resolution A.600(15) – IMO Ship Identification Number Scheme, this information may be included voluntarily.

THIS IS TO CERTIFY:

That the ship is exempted from the provisions of the Convention, under the authority conferred by article 6(2) / 6(4)[3] of the Convention referred to above.

The provisions of the Convention from which the ship is exempted under article 6(2) are:

.....

.....

.....

The voyage for which exemption is granted under article 6(4) is:

From: .....

To: .....

Conditions, if any, on which the exemption is granted under either article 6(2) or article 6(4):

.....

.....

.....

This certificate is valid until .....[4] subject to annual surveys in accordance with article 14(1)(c) of the Convention.

Issued at .....

(Place of issue of certificate)

....

(Date of issue) (Signature of authorized official issuing the certificate)

(Seal or stamp of the authority, as appropriate)

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[3] Delete as appropriate.

[4] Insert the date of expiry as specified by the Administration in accordance with article 19(10) of the Convention. The day and the month of this date correspond to the anniversary date as defined in article 2(9) of the Convention, unless amended in accordance with article 19(8) of the Convention.

Endorsement for annual surveys

THIS IS TO CERTIFY that, at an annual survey required by article 14(1)(c) of the Convention, the ship was found to comply with the conditions under which this exemption was granted.

Annual survey:

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey:

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey:

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey: Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Annual survey in accordance with article 19(8)(c):

THIS IS TO CERTIFY that, at a survey in accordance with article 19(8)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the certificate if valid for less than 5 years where article 19(3) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with article 19(3) of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and article 19(4) applies

The ship complies with the relevant requirements of the Convention, and this certificate shall, in accordance with article 19(4) of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where article 19(5) or 19(6) applies

This certificate shall, in accordance with article 19(5)/19(6)[3] of the Convention, be accepted as valid until .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

[3] Delete as appropriate.

Endorsement for advancement of anniversary date where article 19(8) applies

In accordance with article 19(8) of the Convention the new anniversary date is .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

In accordance with article 19(8) of the Convention the new anniversary date is .....

Signed: .....

(Signature of authorized official)

Place: .....

Date: .....

(Seal or stamp of the authority, as appropriate)

海安會第 MSC.143（77）號決議

（於 2003 年 6 月 5 日通過）

通過《1966 年國際載重線公約 1988 年議定書》的修正案

海上安全委員會，

憶及《國際海事組織公約》第 28（b）條關於本委員會的職責，

還憶及《1966 年國際載重線公約 1988 年議定書》（以下簡稱“1988 年載重線議定書”）第 VI 條關於修正程序，

在其第 77 屆會議上審議了根據《1988 年載重線議定書》第 VI 條第 2（a）款建議的並散發的《1988 年載重線議定書》的修正案，

1. 根據《1988 年載重線議定書》第 VI 條第 2（d）款通過了《1988 年載重線議定書》附則 B 的修正案，該修正案的正文列於本決議的附件；

2. 根據《1988 年載重線議定書》第 VI 條第 2（f）（ii）（bb）條，決定所述修正案將於 2004 年 7 月 1 日被視為接受，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噸位不少於世界商船隊總噸位 50%的締約國政府對修正案提出反對意見；

3. 請《1988 年載重線議定書》締約國政府注意，根據《1988 年載重線議定書》第 VI 條第 2（g）（ii）款，修正案在上述第 2 段所明確的被接受後將於 2005 年 1 月 1 日生效；

4. 要求秘書長依據《1988 年載重線議定書》第 VI 條第 2（e）款將本決議核正無誤的副本和載於附件的修正案的正文散發給《1988 年載重線議定書》的所有締約國政府；

5. 還要求秘書長將此決議的副本及其附件散發給非《1988 年載重線議定書》締約國政府的本組織所有成員國。

《1966 年國際載重線公約》1988 年議定書

附件 B 修正案

1 附件 B 附則 I 的現有文字由以下內容取代：

“附則 I 載重線核定規則

第 I 章 總則

本規則假定貨物的性質和裝載、壓載等可以保證船舶有足夠的穩性，並避免過度的結構應力。

本規則還假定，如果有關於穩性或分艙的國際要求，這些要求已得到遵守。

第 1 條

船舶強度與完整穩性

(1) 主管機關應肯定，船舶在相應於核定乾舷的吃水狀態具有足夠的總結構強度。

(2) 如果船舶的設計、建造和維護符合包括船級社在內的由主管機關或通過主管機關適用的國家標準根據第 2-1 條的規定認可的組織的要求，可認為其強度已達到可接受的水平。上述規定應適用於本附則涉及的所有結構、設備和屬具，其強度和結構的標準並未明確規定。

(3) 船舶應符合主管機關可接受的完整穩性標準。

第 2 條

適用範圍

(1) 機動船舶或港駁、運輸駁船或其他無獨立推進裝置的船舶，應根據第 1 條至第 40 條的各項規定核定乾舷。

(2) 運載木材甲板貨的船舶，除第（1）款規定的乾舷外，還應根據第 41 條至第 45 條的各項規定核定木材乾舷。

(3) 設計帶帆（不論是作為唯一的推進方式還是作為輔助的推進方式）的船舶和拖船，都應根據第 1 條至第 40 條所含的各項要求核定的乾舷。按主管機關的決定可要求附加乾舷。

(4) 木質或混合結構船舶，或經主管機關批准採用其他材料建造的船舶，或由於其結構特點而使應用本附則各項規定不合理或不切實際的船舶，應按主管機關的要求核定乾舷。

(5) 第 10 條至第 26 條所含的各項規定，應適用於核定最小乾舷的每艘船舶。對於所核定乾舷大於最小乾舷的船舶，則這些要求可予放寬，條件是對其所具備的安全狀況能令主管機關滿意。

(6) 如果核定的夏季乾舷增至使最終吃水不超過同一船舶相應於最小夏季乾舷的吃水，且假定乾舷甲板的位置在該船實際乾舷甲板的至少一個標準上層建築高度以下，則按照第 12 條、第 14-1 條至第 20 條、第 23 條、第 24 條和第 25 條，對實際乾舷甲板適用的核定條件可與對上層建築甲板的要求相同。

(7) 除非另有明文規定外，本附則的各條適用於在 2005 年 1 月 1 日或以後安放龍骨或處於類似建造階段的船舶。

(8) 對於在 2005 年 1 月 1 日之前安放龍骨或處於類似建造階段的船舶，主管機關應確保其符合經 1988 年國際檢驗和發證協調系統會議通過的 1988 年議定書修訂的《1966 年國際載重線公約》適用的要求。

(9) 符合本組織海上安全委員會以 MSC.97（73）號決議通過的《2000 年國際高速船安全規則》（2000 HSC 規則）並已按該規則檢驗和發證的高速船，應視為已符合本附則的要求。按《2000 HSC 規則》簽發的證書和許可應與按本附則簽發的證書具有同等效力並得到同等認可。

第 2-1 條

對被認可組織的授權

本公約第 13 條和規則第 1（2）條提及的各組織，包括船級社，應符合本組織以第 A.739（18）號大會決議通過的導則，該導則可由本組織修正，和本組織以第 A.789（19）號大會決議通過的規範，該規範可由本組織修正，但這些修正案應按照本議定書第 VI 條規定通過、生效和發生效力。

第 3 條

附則中所用術語的定義

(1) *長度*

(a) 長度（L）應取為量自龍骨上邊的最小型深 85%處水

線總長的 96%，或沿該水線從首柱前邊至舵杆中心的長度，取大者。

(b) 對於無舵杆的船舶，長度（L）取為最小型深 85%處水線總長的 96%。

(c) 如果在最小型深 85%處水線以上的首柱輪廓為凹入狀，則總長的最前端和首柱前邊應分別取自（在該水線以上的）首柱輪廓最後一點至該水線的垂直投影線（見圖 3.1）。

(d) 對於設計成有傾斜龍骨的船舶，計量本長度的水線應和最小型深 D_{min} 的 85%處的設計水線平行，最小型深通過繪製一平行於船舶的龍骨線（包括呆木）並與乾舷甲板的型舷弧線相切的直線來取得。最小型深為在切點處從龍骨板上邊量至乾舷甲板舷側處橫樑上邊的豎直距離（見圖 3.2）。

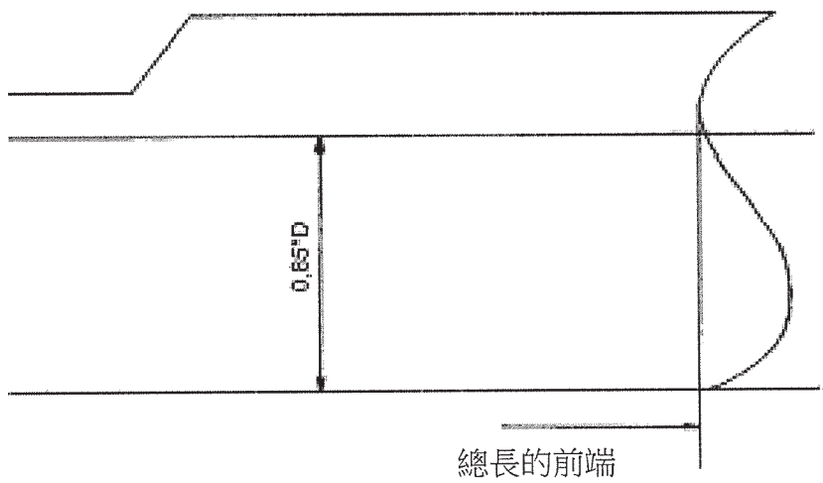


圖 3.1

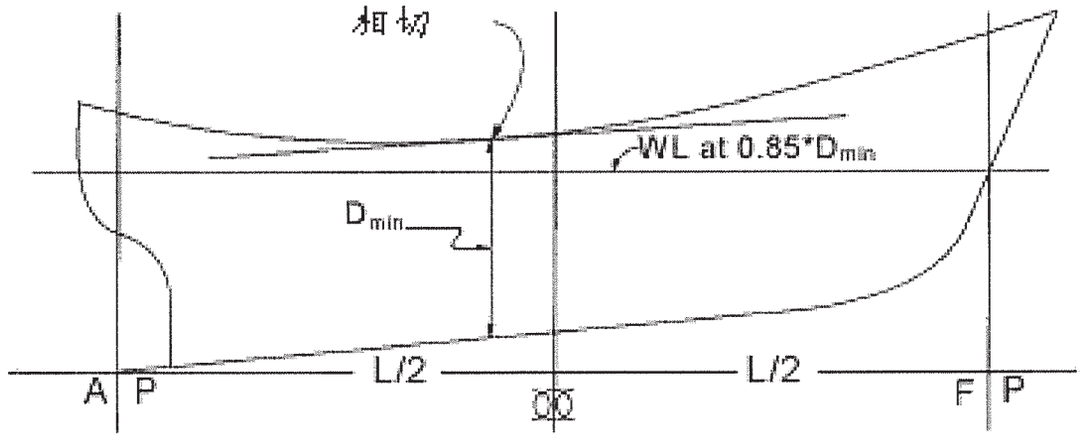


圖 3.2

(2) *垂線*。首尾垂線應取自長度（L）的前後兩端。首垂線應與在計量長度的水線上的首柱前邊相重合。

(3) *船中*。船中是長度（L）的中點。

(4) *寬度*。除非另有明文規定外，寬度（B）是船舶的最大寬度，對於金屬船殼的船舶是從船中處量至兩舷肋骨型線，對於任何其他材料船殼的船舶是從船中處量至船體兩舷的外表面。

(5) *型深*

(a) 型深是從龍骨板上邊量至乾舷甲板舷側處橫樑上邊的豎直距離。對木質和混合材料構造船舶，該豎直距離則從龍骨槽口的下邊量起。如船中剖面下部的形狀是凹形，或如裝有加厚的龍骨翼板，此距離從船底的平坦部分向內延伸線與龍骨側邊相交點量起。

(b) 有圓弧形舷緣的船舶，型深應量至甲板和船側型線延伸的交點，即將舷緣當作方角設計。

(c) 如乾舷甲板為階梯形且此甲板的升高部分延伸至超過決定型深的那一點，型深應量至從該甲板較低部分延伸且與升高部分相平行的基準線。

(6) *乾舷深度（D）*

(a) 乾舷深度（D）是船中處型深加乾舷甲板側邊的厚度。

(b) 對於圓弧形舷緣半徑大於寬度（B）的 4%或上部舷側為特殊形狀的船舶，乾舷深度（D）取自一船中截面的計算型深，此截面兩舷上側垂直並具有同樣的樑拱，且上部截面面積等於實際的船中截面的上部截面面積。

(7) *方形系數*

(a) 方形系數（C_b）由下式確定：

$$C_b = \frac{\nabla}{L \cdot B \cdot d_1}$$

式中： ∇ 對於金屬船殼的船舶是船舶的型排水體積，不包括尾軸轂，對於任何其他材料船殼的船舶為量至船體外表面的排水體積，兩者均取自 d_1 處的型吃水；

d_1 最小型深的 85%。

(b) 在計算多體船的方形系數時，應取用第（4）款定義的有效寬度（B），而不是用單體的寬度。

(8) *乾舷*

勘定的乾舷是在船中處從甲板線的上邊緣向下量至相關載重線的上邊緣的垂直距離。

(9) *乾舷甲板*

(a) 乾舷甲板通常是最上層露天全通甲板，其上所有的露天開口設有永久性關閉裝置，其下在船側的所有開口設有永久性水密關閉裝置。

(b) 下層甲板作為乾舷甲板

由船東選擇並經主管機關批准，可將一下層甲板定為乾舷甲板，條件是該甲板前、後方向至少在機器處所與首、尾尖艙艙壁之間以及橫向是全通的永久性連續甲板。

(i) 如果該下層甲板為階梯形，甲板最低線及其平行於甲板上部的延伸部分取為乾舷甲板。

(ii) 當一下層甲板被定為乾舷甲板時，就乾舷的核定條件和計算而言，該乾舷甲板以上的船體部分作為上層建築對待，即乾舷從這個甲板算起。

(iii) 當一下層甲板被定為乾舷甲板時，在貨艙範圍內，這種乾舷甲板的結構最低限度應在船側設有骨架支持的邊板，並在通至上甲板的每一水密艙壁處有適當的橫向構件。這些邊板的寬度應顧及船舶的結構和操作，不小於能夠便於安裝的寬度。邊板的任何佈置均應能使結構上的要求得到滿足。

(c) 不連續的乾舷甲板，階梯形乾舷甲板

(i) 如果乾舷甲板的凹槽延伸到船舶的兩舷側且長度超過一米，則該露天甲板的最低線及其平行於甲板上部的延伸部分取為乾舷甲板（見圖 3.3）。

(ii) 如果乾舷甲板的凹槽未延伸到兩舷側，則甲板上部取為乾舷甲板。

(iii) 露天甲板以下的一層甲板定為乾舷甲板，且其凹槽未從一舷側延伸至另一舷側，則只要露天甲板上的所有開口設有風雨密關閉裝置，該凹槽可以不計。

(iv) 應充分考慮露天凹槽的排水以及自由液面對穩定性的影響。

(v) （i）至（iv）的各項要求不擬用於挖泥船、開底泥駁或設有大開口艙的其他類似船舶，對這些船舶需單獨考慮。

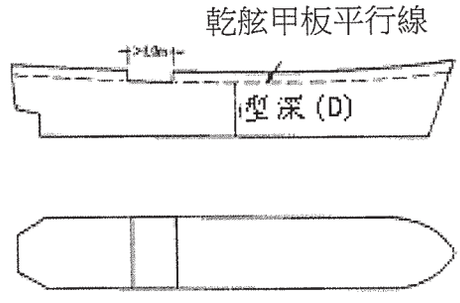


圖 3.3

(10) *上層建築*

(a) 上層建築為乾舷甲板上的甲板建築物，從舷側跨到另一舷側或其側壁板離船殼板向內不大於船寬（B）的4%。

(b) 封閉的上層建築是一種具備下列設施的上層建築：

(i) 結構堅固的封閉艙壁；

(ii) 這些艙壁的出入開口（如有），設有符合第 12 條要求的門；

(iii) 上層建築側壁或端部的所有其他開口，設有有效的風雨密關閉裝置。

橋樓或尾樓不應視為封閉的，除非當端壁開口封閉時，有通道供船員隨時自最上層露天全通甲板或更高甲板上的任何一處用其他方式到達這些上層建築內的機器處所和其他工作處所。

(c) 上層建築的高度是指在船側從上層建築甲板橫樑頂量至乾舷甲板橫樑頂的最小垂直高度。

(d) 上層建築的長度（S）是指上層建築位於長度（L）以內部分的平均長度。

(e) 橋樓。橋樓是不延伸到首垂線或尾垂線的上層建築。

(f) 尾樓。尾樓是自尾垂線向前延伸到首垂線後某一位置的上層建築。尾樓可以起始於尾垂線後的某一位置。

(g) 首樓。首樓是自首垂線向後延伸到尾垂線前某一位置的上層建築。首樓可以起始於首垂線前的某一位置。

(h) 全上層建築。全上層建築是至少自首垂線延伸到尾垂線的上層建築。

(i) 後升高甲板。後升高甲板是自尾垂線向前延伸的上層建築，高度一般低於標準上層建築，並有完整的前艙壁（非開啟式舷窗設有有效風暴蓋和螺栓連接的人孔蓋）（見圖 3.4）。如果前艙壁因設有門和通道開口而不是完整的，則該上層建築應視為尾樓。

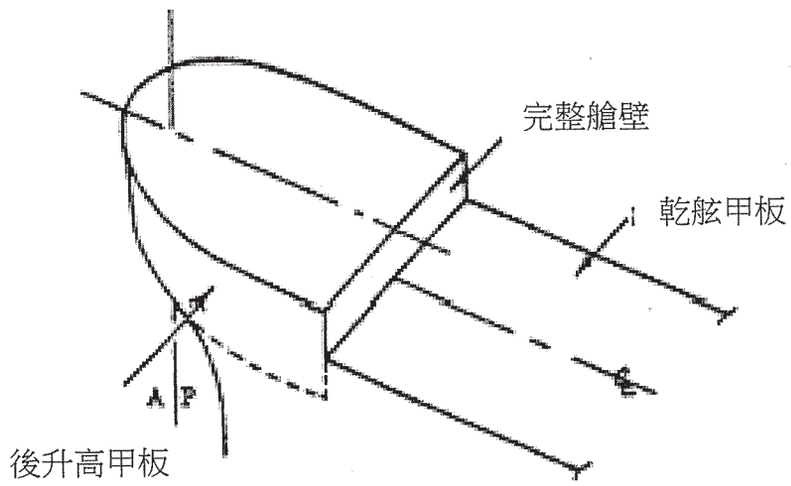


圖 3.4

(11) *上層建築甲板*。上層建築甲板是構成上層建築上部邊界的甲板。

(12) *平甲板船*。平甲板船是指乾舷甲板上沒有上層建築的船。

(13) *風雨密*。風雨密係指在任何海況下水都不會透入船內。

(14) *水密*。水密係指在所須承受的最大水頭壓力下，能防止水從任何方向透過結構，並有適當的抗水裕量。

(15) *阱*。阱是甲板上可能積水的任何露天部位。阱被視為在兩側或多側被甲板結構圍住的甲板部位。

第 4 條

甲板線

甲板線係長為 300mm、寬為 25mm 的一條水平線。甲板線應標記在船中處的每側，其上邊緣一般應經過乾舷甲板上表面向外延伸與船體外表面之交點（如圖 4.1 所示），如果在乾舷經過相應校正的情況下，甲板線也可以參照船上另一確定點來劃定。參考點的定位和乾舷甲板的標定，在任何情況下均應在《國際載重線證書》上寫明。

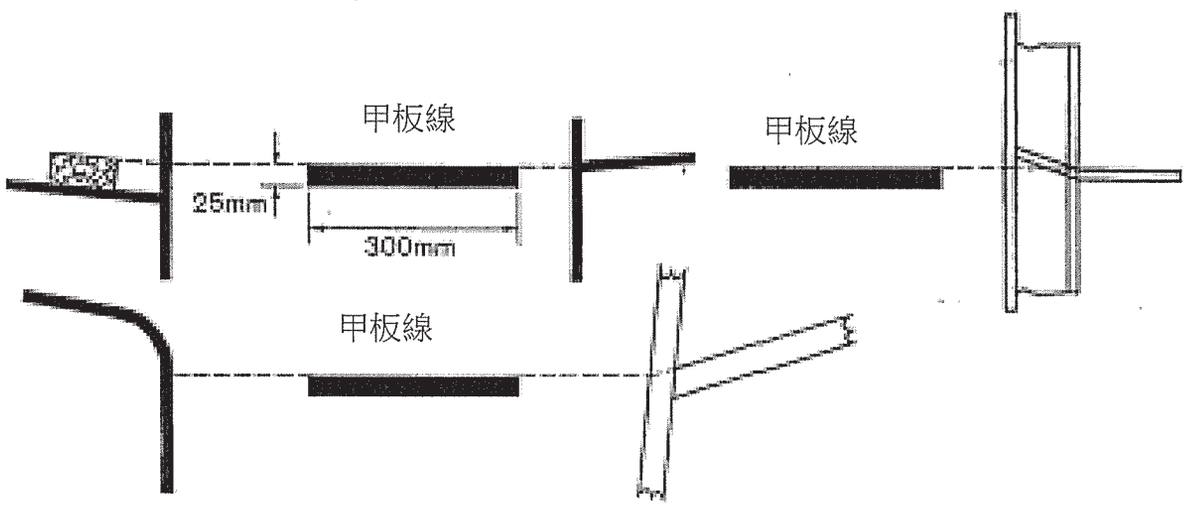


圖 4.1 甲板線

第 5 條

載重線標記

載重線標記由外徑為 300mm，寬為 25mm 的圓圈與長為 450mm，寬為 25mm 的水平線相交組成。水平線的上邊緣通過圓圈的中心。圓圈的中心應位於船中處，從甲板線上邊緣垂直向下量至圓圈中心的距離等於所核定的夏季乾舷（如圖 6.1 所示）。

第 6 條

載重線標誌使用的各線段

(1) 除另有明文規定外，根據本規則所核定載重線的各線段，為長 230mm 和寬 25mm 的水平線，這些線段與標在距圓圈中心前方 540mm 的一條寬 25mm 的垂線成直角，並位於垂線的前方（如圖 6.1 所示）。

(2) 所用載重線如下：

(a) 夏季載重線由通過圓圈中心的線段的上邊緣及標有 S 的線段表示。

(b) 冬季載重線由標有 W 的線段的上邊緣表示。

(c) 北大西洋冬季載重線由標有 WNA 的線段的上邊緣表示。

(d) 熱帶載重線由標有 T 的線段的上邊緣表示。

(e) 夏季淡水載重線由標有 F 的線段的上邊緣表示。夏季淡水載重線勘劃在垂線的後方。夏季淡水載重線和夏

季載重線之間的差數，也是對其他各載重線在淡水中裝載的允許差額。

(f) 熱帶淡水載重線由標有 TF 的線段的上邊緣表示，並勘劃在垂線的後方。

(3) 如根據本規則核定了木材乾舷，則木材載重線應在通常載重線以外另行勘劃。除另有明文規定外，這些線段應為長 230mm 和寬 25mm 的水平線，這些線段與勘劃在距圓圈中心後方 540mm，寬 25mm 的垂線成直角，並位於垂線的後方（如圖所 6.2 所示）。

(4) 所用木材載重線如下：

(a) 夏季木材載重線由標有 LS 的線段的上邊緣表示。

(b) 冬季木材載重線由標有 LW 的線段的上邊緣表示。

(c) 北大西洋冬季木材載重線由標有 LWNA 的線段的上邊緣表示。

(d) 熱帶木材載重線由標有 LT 的線段的上邊緣表示。

(e) 夏季淡水木材載重線由標有 LF 的線段的上邊緣表示，並勘劃在垂線的前方。夏季木材淡水載重線和夏季木材載重線之間的差數，也是對其他各載重線在淡水中裝載的允許差額。

(f) 熱帶淡水木材載重線由標有 LTF 的線段的上邊緣表示，並勘劃在垂線的前方。

(5) 如船舶的特殊性或船舶的業務性質或受航行的限制，不可能使用某些季節的載重線時，則這些載重線可不勘劃。

(6) 如對船舶所核定的乾舷比最小乾舷為大，因而其載重線是勘劃在相當或低於根據本議定書所核定的最低季節性最小乾舷載重線位置時，則僅需勘劃淡水載重線。

(7) 如在同一垂線上的北大西洋冬季載重線與冬季載重線重合，則此載重線僅標 W。

(8) 其他現行國際公約所需的替代和（或）附加載重線，可勘劃在第（1）款規定的垂線後方並與垂線成直角。

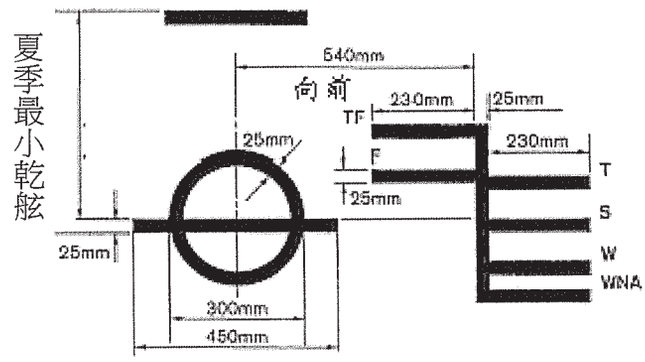


圖 6.1 載重線標誌及此標誌所用各線段

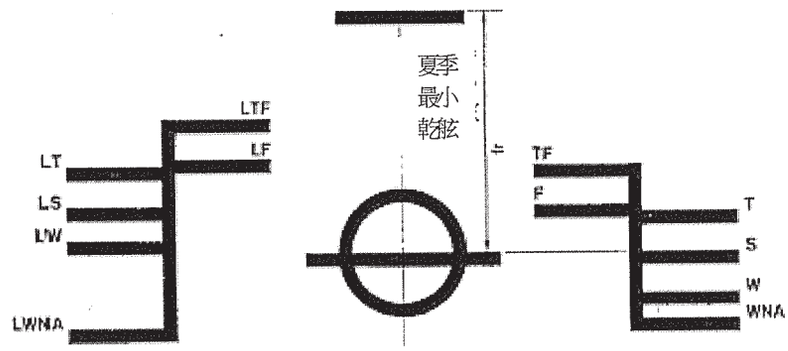


圖 6.2 木材載重線標誌及此標誌所用各線段

第 7 條

核定載重線當局的標誌

核定載重線當局的標誌可表示在通過載重線圓圈中心的水平線上方或上方和下方靠近圓圈處。此標誌應由不多於四個表明當局名稱的首字母所組成，每個字母的高度約 115mm，寬度約 75mm。

第 8 條

勘劃標誌的細節

對圓圈、線段和字母，當船舷為暗色底者，應漆成白色或黃色，當船舷為淺色底者，應漆成黑色。它們也應該是經主管機關認可的，並勘劃在船舷兩側的永久性標誌。這些標誌應能清晰可見，必要時應為此作出專門的安排。

第 9 條

標誌的鑒別

在官員或驗船師根據本公約第 13 條的規定認定這些標誌是正確地和永久地標示在船舷兩側以前，不應發給該船《國際載重線證書》。

第 II 章

核定乾舷的條件

第 10 條

提供給船長的資料

(1) 應提供資料給每艘新船的船長，使之在裝貨或壓載時避免在船舶結構中產生過度的應力，但對任何特殊長度、設計或級別的船舶，主管機關認為不必要時可以不適用此要求。

(2) 應以主管機關或認可組織批准的格式向船長提供資料。穩性資料以及第（1）款要求的與船舶強度相關的裝載資料，應連同這些資料已經過主管機關批准的證明一起始終保存在船上。

(3) 對不要求按現行有效的《國際海上人命安全公約》在其完工時進行傾斜試驗的船舶應：

(a) 進行傾斜試驗並確定空船狀態的實際排水量和重心位置；

(b) 若基本穩性數據可取自姊妹船的傾斜試驗，且主管機關認為可靠的穩性資料能夠從這些基本數據取得，經主管機關批准，可免除在完工後進行傾斜試驗；

(c) 如果主管機關判定由於船的大小、佈置、強度或船形使得進行傾斜試驗不實際、不安全或得出不準確的結果，則可以通過詳細的重量估算並經空船重量檢驗而確定空船特性；

(d) 向船長提供了使其能夠簡捷地獲得在正常營運中可能遇到的所有情況下關於船舶穩性的正確指導所必需的資料；和

(e) 始終隨船攜帶經批准的穩性資料及主管機關批准這些資料的證明。

(4) 如果對船舶進行了任何改動而實質上影響了提供給船長的裝載或穩性資料，則應提供經修訂的資料。如有必要，船舶應重新進行傾斜試驗。

第 11 條

上層建築端壁

封閉的上層建築的露天端壁的強度應達到可接受的水平。

第 12 條

門

(1) 封閉的上層建築端壁上的所有出入口應裝設鋼質或其他相當材料的門，永久地和牢固地固定在端壁上，並加框、加固和裝配，使整個結構與完整的端壁具有同等的強度，並在關閉時保持風雨密。保證風雨密的裝置應包括襯墊和夾扣裝置或其他相當的裝置，並應永久裝固於端壁或門上，同時這些門應在端壁兩邊都能進行操作。

(2) 除非主管機關另行批准，否則門均應向外開並設有防止海水衝擊的附加安全保護。

(3) 除本規則另有規定外，封閉的上層建築端壁上出入口門檻的高度，應高出甲板至少 380mm。

(4) 應避免採用可拆移的門檻，然而為了裝卸笨重的備件或類似物件，可在滿足下列條件時採用可拆移的門檻：

（a）必須在船舶離港之前裝好；

（b）門檻應有襯墊裝置並應用間距緊密的螺栓緊固。

第 13 條

艙口、門口和通風筒的位置

本規則規定艙口、門口和通風筒的兩種位置，其定義如下：

位置 1 — 在露天乾舷甲板上和後升高甲板上，以及位於從首垂線起船長的四分之一以前的露天上層建築甲板上。

位置 2 — 在位於從首垂線起船長的四分之一以後乾舷甲板以上至少一個標準上層建築高度的露天上層建築甲板上。.

在位於從首垂線起船長的四分之一以前，且在乾舷甲板以上至少兩個標準上層建築高度的露天上層建築甲板上。

第 14 條

貨艙口及其他艙口

(1) 處於位置 1 和位置 2 的貨艙口和其他艙口保持風雨密的方法，應至少相當於第 16 條的要求，除非主管機關允許將第 15 條運用於此類艙口。

(2) 上層建築甲板以上的各層甲板的露天處所的艙口，其艙口圍板和艙口蓋應符合主管機關的要求。

第 14-1 條

艙口圍板

(1) 艙口圍板應根據其位置具有堅實的構造，而且其甲板以上的高度應至少如下：

（a）如在位置 1，則為 600mm；和

（b）如在位置 2，則為 450mm。

(2) 如艙口符合第 16（2）至 16（5）條的要求，則圍板的高度可以減小，或者完全可以省略，條件是使主管機關對在任何海況下船舶的安全不會受到損害感到滿意。

第 15 條

採用活動艙蓋關閉以及用艙蓋布和封艙壓條來保證風雨密的艙口

艙口蓋

(1) 艙口蓋每個支承面的寬度應至少為 65mm。

(2) 當艙口蓋為木質、跨距不大於 1.5m 時，其加工後厚度應至少為 60mm。

(3) 如艙蓋用軟鋼製成，其強度應按照第 16（2）至（4）條的要求計算，並且按此計算所得的最大應力與系數 1.25 的乘積，應不超過材料的極限強度的最低值。艙蓋的設計應使在這些負荷下其撓度限制在不大於跨距的 0.0056 倍。

活動樑

(4) 當支撐艙口蓋的活動樑用軟鋼製成時，其強度對位置 1 的艙口應以假定負荷不小於 3.5t/m^2 來計算，對位置 2 的艙口應以假定負荷不小於 2.6t/m^2 來計算，並且按此計算所得的最大應力與系數 1.47 的乘積，應不超過材料的極限強度的最低值。樑的設計應使在假定負荷下其撓度限制在不大於跨距的 0.0044 倍。

(5) 在位置 1 的艙口上，其假定負荷對長度 24m 的船舶，可以降低到 2t/m^2，但對長度 100m 的船舶，應不小於 3.5t/m^2。在位置 2 的艙口上，其相應負荷可以分別降低到 1.5t/m^2 和 2.6t/m^2。在所有情況下，介於中間長度的船舶，其負荷數值應用線性內插法求得。

箱形艙口蓋

(6) 當採用代替活動樑和艙蓋的箱形艙口蓋是用軟鋼製成時，其強度應按 16 條（2）至（4）款的要求來計算，並且按此計算乘以系數 1.47 所得的最大應力，應不超過材料極限強度的最低值。箱形艙口蓋的設計應使其撓度限制在不大於跨距的 0.0044 倍。製造蓋頂的軟鋼板厚度應不小於加強筋間距的 1%或 6mm，取其大者。

(7) 用軟鋼以外的其他材料製成的箱形艙蓋，其強度和剛度應相當於用軟鋼製成者，並使主管機關滿意。

艙口樑座或插座

(8) 活動樑的樑座或插座應結構堅固，並應具有有效的裝配和緊固活動樑的裝置。使用滾動式樑時，其裝置應能保證在艙口關閉後，樑仍正確保持在原位上。

艙口楔耳

(9) 艙口楔耳的安裝應適合楔子的斜度。楔耳寬應至少 65mm，其中心間距不大於 600mm；沿艙口每側或每端的楔耳距艙口的轉角，應不大於 150mm。

封艙壓條和楔子

(10) 封艙壓條和楔子應堅固並處於良好狀態。楔子應用堅韌的木材或其他相當的材料。楔子斜度應不大於 1:6，且其尖頭的厚度應不小於 13mm。

艙口蓋布

(11) 在位置 1 和位置 2 的每一艙口，至少應備有兩層良好的艙口蓋布。艙口蓋布應防水並具有足夠的強度，其材料的重量和質量至少應達到認可的標準。

艙口蓋的固定

(12) 在位置 1 和位置 2 的所有艙口，應備有鋼質壓條或其他相當的裝置，以便在艙蓋布封艙以後，能獨立地有效固定每段艙口蓋。艙口蓋的長度超過 1.5m 時，應至少用這樣的兩套緊固裝置來固定。

第 16 條

由鋼質或其他相當材料製作的風雨密蓋關閉的艙口

(1) 位置 1 和位置 2 上的所有艙口應設有鋼質或其他相當材料的艙口蓋。除第 14（2）條規定的情況以外，艙口蓋應為風雨密，並應設有襯墊和夾扣裝置。關閉並保持風雨密的措施應經主管機關批准。其佈置應確保能在任何海況下保持密封性，為此，應在初次檢驗時要求進行密封性試驗，並可在換證檢驗和年度檢驗時或更短的間隔期進行此種密封性試驗。

艙口蓋最小設計負荷

(2) 對於船長為 100m 及以上的船舶

（a）位於首部四分之一船長範圍內的位置 1 艙口蓋，應按首垂線處的波浪負荷設計，該負荷用下式計算：

負荷 $= 5.0 + (L_H - 100)\ a \quad t/m^2$

式中：

L_H 對於船長不超過 340m 但不小於 100m 的船舶，取 L；對於船長大於 340m 的船舶，取 340m；

L 第 3 條定義的船舶長度（m）；

a 由表 16.1 給出，

並在首部四分之一船長末端減至 $3.5t/m^2$，如表 16.2 所示。每個艙口蓋板格的設計負荷應確定在其中點位置。

（b）所有其他的位置 1 艙口蓋應按 $3.5t/m^2$ 設計。

（c）位置 2 艙口蓋應按 $2.6t/m^2$ 設計。

（d）如位置 1 艙口位於乾舷甲板以上至少一個標準上層建築高度，則可按 $3.5t/m^2$ 設計。

	a
B 型乾舷船舶	0.0074

根據第 27（9）或（10）條規定為船舶核定了減小乾舷	0.0363

表 16.1

(3) 對於船長 24m 的船舶

（a）位於首部四分之一船長範圍內的位置 1 艙口蓋，應按波浪負荷在首垂線處為 2.43t/m^2 並線性減至首部四分之一船長範圍末端處的 2t/m^2 進行設計，如表 16.2 所示。每個艙口蓋板格的設計負荷應確定在其中點位置。

（b）所有其他的位置 1 艙口蓋應按 2t/m^2 設計。

（c）位置 2 艙口蓋應按 1.5t/m^2 設計。

（d）如位置 1 艙口位於乾舷甲板以上至少一個標準上層建築高度，則可按 2t/m^2 設計。

(4) 對於船長為 24m 和 100m 之間的船舶以及首垂線和 0.25L 之間的位置，波浪負荷的數值應按線性內插法求得，見表 16.2。

	縱向位置		
	首垂線	0.25L	0.25L 之後
L > 100 m			
乾舷甲板	第 16（2）（a）條中的公式	3.5t/m^2	3.5t/m^2
上層建築甲板	3.5t/m^2		2.6t/m^2
L = 100 m			
乾舷甲板	5.0t/m^2	3.5t/m^2	3.5t/m^2
上層建築甲板	3.5t/m^2		2.6t/m^2
L = 24 m			
乾舷甲板	2.43t/m^2	2.0t/m^2	2t/m^2
上層建築甲板	2.0t/m^2		1.5t/m^2

表 16.2

(5) 所有的艙口蓋均應設計為：

（a）按照上述負荷確定的最大應力與系數 1.25 的乘積應不超過材料的拉伸極限屈服強度的最低值和壓縮臨界屈曲強度的最低值；

（b）撓度應不大於跨距的 0.0056 倍；

（c）艙蓋頂鋼板的厚度應不小於扶強材間距的 1%或 6mm，取大者；和

（d）將適當的腐蝕餘量考慮在內。

緊固裝置替代措施

(6) 如採用不同於襯墊和夾扣的其他緊固及保持風雨密的措施，應經主管機關批准。

(7) 設於圍板上的艙口蓋應通過能承受任何海況下水平方向載荷的衝擊的裝置保持關閉狀態。

第 17 條

機艙開口

(1) 在位置 1 和位置 2 的機艙開口應有適當的構架和用足夠強度的鋼質構件有效地圍閉，如果構件沒有其他建築物防護，其強度要作特殊考慮。上述構件的出入口，應裝設符合第 12（1）條要求的門，如在位置 1 時，門檻應至少高出甲板 600mm，如在位置 2 時，應至少高出甲板 380mm。在上述構件中的其他開口，應設有相當的罩蓋，永久附裝在它的適當位置上。

(2) 對核定乾舷小於根據第 28 條表 28.2 所列乾舷的船舶，如果機艙構件沒有其他結構保護，則應裝設雙道門（即符合第 12(1)條要求的內門和外門），且內門門檻高度應為 230mm，外門門檻高度應為 600mm。

(3) 乾舷甲板或上層建築甲板上露天部分的任何機爐艙頂棚、煙囪或機器處所通風筒的圍板，應合理地和切實可行地高出甲板。一般情況下，向機器處所連續供風所必需的通風筒應裝

設符合第 19（3）條要求的有足夠高度的圍板，不必裝設風雨密關閉裝置。向應急發電機艙連續供風所必需的通風筒，如果在穩性計算中計入其浮力或視其保護通向下層的開口，則應裝設符合第 19（3）條要求的有足夠高度的圍板，不必裝設風雨密關閉裝置。

(4) 在因船舶大小和佈置而使得足夠高度不可行的情況下，結合其他適當的佈置以保證不間斷地為機器處所和應急發電機艙提供適當的通風，主管機關可以同意這些處所通風筒圍板取較小的高度，但應按照第 19（4）條裝設風雨密關閉裝置。

(5) 機爐艙頂棚開口應裝設鋼質的或其他相當材料的堅固罩蓋，永久附裝在它們的適當位置上，並能保證風雨密。

第 18 條

乾舷甲板和上層建築甲板的各種開口

(1) 在位置 1 或位置 2，或在非封閉上層建築內的人孔或平的小艙口，應用能達到水密的堅固罩蓋關閉。除使用間隔緊密的螺栓緊固外，罩蓋應永久地附裝於開口處。

(2) 在乾舷甲板上，除貨艙口、機器處所開口、人孔和平的小艙口以外的開口，應由封閉的上層建築，或甲板室，或強度和風雨密相當的升降口來防護。與此相似，在露天的上層建築甲板或在乾舷甲板上的甲板室頂部，通往乾舷甲板以下的處所或封閉的上層建築以內的處所的任何開口，應用堅固的甲板室或升降口來保護。通向前往下層的梯道或提供通道到通往下層的梯道的上述升降口或甲板室應按第 12（1）條的要

求裝設門。作為替代措施，如果甲板室內的梯道被封閉在設有符合第 12（1）條要求的門的結構堅固的升降口內，則外門不必風雨密。

(3) 低於標準高度的後升高甲板或高度等於或大於標準後升高甲板高度的上層建築上的甲板室頂部的開口，應設有可接受的關閉裝置，但是，如果該甲板室的高度至少為一個標準上層建築高度時，則該開口不必用本條規定的堅固的甲板室或升降口來保護。高度小於標準上層建築高度的甲板室上的甲板室頂部開口可以用類似方式處理。

(4) 在位置 1，至升降口門口的在門檻甲板以上的高度應至少為 600mm，在位置 2，則應至少為 380mm。

(5) 如果在符合第 3（10）（b）條的甲板上設有補充出入口代替乾舷甲板上的出入口，則進入橋樓或尾樓的門檻高度應為 380mm。乾舷甲板上的甲板室也可按此處理。

(6) 如果未設有上述補充出入口，則乾舷甲板上甲板室門口的門檻高度應為 600mm。

(7) 如果上層建築和甲板室內出入開口的關閉裝置不符合第 12（1）條的要求，則內部甲板開口應視為露天的（即位於開敞甲板上）。

第 19 條

通風筒

(1) 在位置 1 或位置 2，通往乾舷甲板或封閉上層建築甲板以下

處所的通風筒應有鋼質的或其他相當材料的圍板，其結構應堅固，並且與甲板牢固地連接。在位置 1 的通風筒，其圍板在甲板以上的高度應至少為 900mm，在位置 2 的通風筒，其圍板在甲板以上的高度應至少為 760mm。如果任何通風筒的圍板高度超過 900mm，則必須有專門的支撐。

(2) 通過非封閉的上層建築的通風筒，應在乾舷甲板上有堅固結構的鋼質的或其他相當材料的圍板。

(3) 在位置 1 的圍板高出甲板以上 4.5m 的通風筒和在位置 2 的圍板高出甲板以上 2.3m 的通風筒，均不需裝設封閉裝置，除非主管機關有特殊要求。

(4) 除第（3）款的規定以外，通風筒的開口應有鋼質或其他相當材料的風雨密封閉裝置。對於長度不超過 100m 的船舶，封閉裝置應永久地附裝於通風筒上；對於其他船舶，如不是這樣裝設的，則應方便地貯存在指定附裝的通風筒附近。

(5) 在露天部位，圍板的高度可以增加到主管機關滿意的高度。

第 20 條

空氣管

(1) 如壓載水艙或其他水艙的空氣管伸到乾舷甲板或上層建築甲板之上，其露出部分應結構堅固；自甲板至水可能從管口進入下面的那一點的高度在乾舷甲板上應至少為 760mm，在上層建築甲板上應至少為 450mm。

(2) 如果上述高度可能妨礙船上工作時，如果主管機關認為該關閉裝置和其他條件證明較小高度是合理的，可同意採用較小的高度。

(3) 空氣管應裝設自動關閉裝置。

(4) 可接受油船上使用壓力真空閥（PV 閥）。

第 21 條

船側裝貨艙舷門和其他類似開口

(1) 乾舷甲板以下船舷兩側的舷側裝貨門及其他類似開口應裝設門，其設計應保證與周圍外板有相同的水密性和結構完整性。除主管機關另行許可外，這些開口均應向外開啟。上述開口的數目應符合船舶設計的意圖和實際工作需要的最低數目。

(2) 除經主管機關另行許可，第（1）款中所述開口的下邊緣不得低於船側乾舷甲板的平行線，該線最低點在最高載重線上邊緣以上至少 230mm。

(3) 如果准許將舷側裝貨門和其他類似開口的下邊緣佈置在第（2）款規定的線以下，則應另行採取措施保持水密完整性。

(4) 安裝具有同等強度和水密性的第二道門是一種可接受的佈置，但在兩道門之間的艙室中應設有滲漏探測器。該艙室應設置方便接近的螺旋閥將水從該艙室排至艙底的排水系統，外門應向外開啟。

(5) 首門及其內門、舷門、尾門及其密封的設置應符合認可組織的要求，或符合提供同等安全水平的主管機關適用的國家標準的要求。

第 22 條

泄水孔、進水孔和排水孔

(1) （a） 從乾舷甲板以下處所或從裝有符合第 12 條要求的門的乾舷甲板上的上層建築和甲板室內（除第（2）款規定者外）通過船殼的排水孔，均應裝設堅固的和方便接近的設備，以防水侵入船內。通常每一獨立的排水口應有一個自動止回閥，並且備有從乾舷甲板上某一位置能直接關閉它的設備。如果排水管的船內一端位於夏季載重線以上至少 0.01L，則排水口可以有兩個自動止回閥而不需直接關閉裝置。如果上述垂直距離超過 0.02L，則可以使用單一的自動止回閥而不需直接關閉裝置。直接操縱關閉閥的設備應便於檢視操縱，並備有表示該閥是開或閉的指示器。

（b） 可以接受使用一個自動止回閥和一個從乾舷甲板以上控制的閘閥來代替一個帶有從乾舷甲板以上位置直接關閉設備的自動止回閥。

（c） 如果要求有兩個自動止回閥，船內端的閥應易於接近，以便在工作條件下進行檢查（即船內端的閥應位於熱帶載重線以上）。如果這樣不可行，則船內端

的閥不必裝設在熱帶載重線以上，但在兩個自動止回閥之間應設置一個就地控制的閘閥。

（d） 如果衛生排水管及泄水管在機器處所內通過船殼排向舷外，則裝設在船殼上的一個就地直接關閉的閥連同一個船內端止回閥是可以接受的。該閥的控制設備應位於易於接近的位置。

（e） 如果核定了木材乾舷，排水孔船內端的位置應以夏季木材載重線相關。

（f） 對止回閥的要求僅適用于船正常營運時保持開啟的排水孔。對在海上保持關閉的排水孔，可使用從甲板上操縱的單一螺旋閥。

（g） 表 22.1 給出了泄水孔、進水孔和排水孔的可接受佈置。

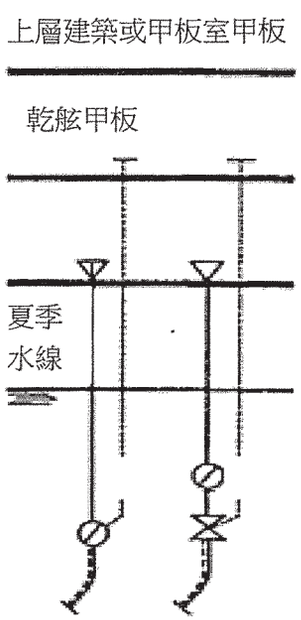
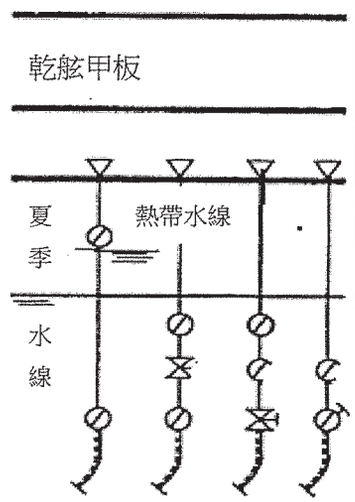
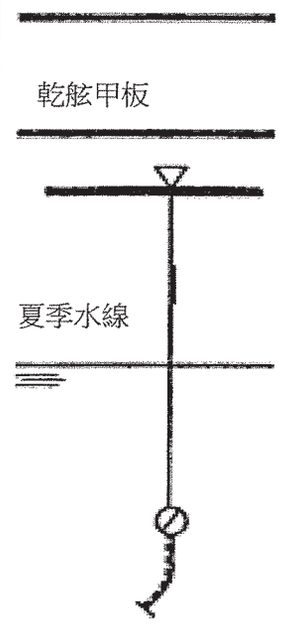
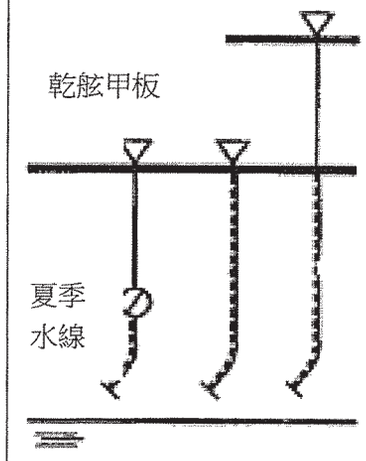
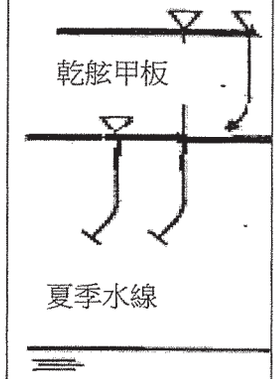
<table>
<tr><td colspan="3">從乾舷甲板以下或乾舷甲板上的封閉處所排水</td><td colspan="2">從其他處所排水</td></tr>
<tr><td>一般要求：
第 22（1）條，如在舷內端夏季水線以上≤0.01L</td><td>通過機艙的排水</td><td>舷內端的替代方案（第 22（1）條）
夏季水線以上＞0.01L</td><td>舷內端的替代方案（第 22（1）條）
夏季水線以上＞0.02L</td><td>舷外端在乾舷甲板以下＞450mm 或夏季水線以上≤600mm 第 22（4）條</td><td>其他
第 22（5）條</td></tr>
<tr><td> 
</td><td> 
</td><td> 
</td><td> 
</td><td> 
</td><td> 
</td></tr>
<tr><td colspan="5">符號：
▽管子的舷內端
◿管子的舷外端
◢管子終止在開敞甲板上
⊘ 無直接關閉裝置的止回閥
⊘ 有直接關閉裝置的就地控制止回閥
⊠ 就地控制閥
⊤ 遙控
正常厚度
特別厚度</td></tr>
</table>

表 22.1

(2) 如果乾舷甲板邊緣在船舶向兩側橫傾大於 5°時不會被淹沒，則從用於載貨的封閉上層建築引出通過外板的泄水孔是允許的。除此之外，應按照現行《國際海上人命安全公約》的要求將泄水引向船內。

(3) 在人工操縱的機器處所，與機器運轉有關的海水主、輔進水口和排水口可以就地控制。控制設備應便於使用，並應設有顯示該閥是開或關的指示器。

(4) 開始於任何水平面的泄水孔和排水管，不論是在乾舷甲板以下大於 450mm，或在夏季載重水線以上小於 600mm 處穿過船殼板，均應在船殼板處設有止回閥。除非第（2）款的有要求外，如過管系有足夠的厚度，此閥可以省略（見以下第（7）款）。

(5) 由未裝置符合第 12 條要求的門的上層建築或甲板室引出的泄水孔，應通到舷外。

(6) 所有外板上的附件和本條要求的閥應為鋼質、青銅或其他經批准的韌性材料。不許使用普通生鐵或類似材料製成的閥。本條所涉及的所有管系，應為鋼質的或經主管機關認可的其他相當材料。

(7) 泄水管系和排水管系：

（a）對於泄水管和排水管，如果不要求有具體的厚度：

（i） 對外徑等於或小於 155mm 的管子，厚度應不小於 4.5mm；

（ii）對外徑等於或大於 230mm 的管子，厚度應不小於 6.0mm。

外徑尺寸為中間值時，厚度應通過線性內插法確定。

（b）對於泄水管和排水管，如果要求有具體的厚度：

（i） 對外徑等於或小於 80mm 的管子，厚度應不小於 7.0mm；

（ii）對外徑為 180mm 的管子，厚度應不小於 10.0mm；

（iii） 對外徑等於或大於 220mm 的管子，厚度應不小於 12.5mm。

外徑尺寸為中間值時，厚度應通過線性內插法確定。

第 22-1 條

垃圾通道

(1) 可用兩個從通道的工作甲板上控制的閘閥代替在乾舷甲板以上位置直接關閉裝置的止回閥，閘閥應符合下列要求：

（a）較低的閘閥應可從乾舷甲板以上位置控制。兩個閥之間應裝設一個連鎖系統；

（b）船內端應位於相對於核定的夏季乾舷吃水由左舷或右舷橫傾 8.5°所形成的水線以上，但不小於夏季水線以上 1000mm。如果船內端在夏季水線以上超過 0.01L，則該閥可不要求從乾舷甲板上控制，但船內的閘閥在工作狀況下隨時都能操作；而且

（c）作為替代措施，可以在通道的船內端設置一個鉸鏈式風雨密蓋及一個排放蓋板代替上面的和下面的閘閥。風雨密蓋與蓋板應裝設一個連鎖裝置，以使蓋板在風雨密蓋關閉前不能被啟動。

(2) 包括蓋在內的整個通道應採用有足夠厚度的材料製成。

(3) 閘閥的控制器和（或）鉸鏈式蓋上應清楚地標明“不用時請保持關閉”。

(4) 對於客船，如果通道的船內端位於乾舷甲板以下，或對於適用破艙穩性要求的貨船，如果通道的船內端位於平衡水線以下，則：

（a）船內端鉸鏈式蓋（閥）應為水密。

（b）閥應為裝設在最深載重線以上便於接近的螺旋止回閥。

（c）螺旋止回閥應從艙壁甲板以上位置控制並裝設有開啟／關閉指示器。閥的指示器上應清楚地標明“不用時請保持關閉”。

第 22-2 條

錨鏈管和錨鏈艙

(1) 錨鏈管和錨鏈艙向上至露天甲板應為水密。

(2) 如果設有出入口，則應用堅固的蓋和緊密間距的螺栓關閉。

(3) 放置錨鏈的錨鏈管應裝設永久性附設關閉裝置，以使進水減至最少。

第 23 條

舷窗、窗和天窗

(1) 舷窗和窗連同其玻璃、窗蓋和風暴蓋（如裝設），應按經批准的設計，並具有堅固的結構。不可接受非金屬框架。

(2) 舷窗被定義為面積不超過 $0.16m^2$ 的圓形或橢圓形開口。面積超過 $0.16m^2$ 的圓形或橢圓形開口應視為窗。

(3) 窗通常被定義為方形的開口，在與方窗尺度以及面積超過 $0.16m^2$ 的圓形或橢圓形開口。相適應的每個角有圓弧過渡；

(4) 下列處所的舷窗應裝設鉸鏈式內側窗蓋：

（a）乾舷甲板以下的處所；

（b）封閉上層建築第一層內的處所；

（c）乾舷甲板上保護通向甲板以下的開口或在穩性計算中計入浮力的第一層甲板室。

窗內蓋應能關閉和緊固，如位於乾舷甲板以下應保證水密，如位於乾舷甲板以上應風雨密。

(5) 若窗檻低於船側處的乾舷甲板平行線，並且該線的最低點在夏季載重線（或夏季木材載重線，如勘劃）以上的距離為船寬 B 的 2.5%或 500mm（取較大者），則不應在該位置設舷窗。

(6) 如所要求的破艙穩性計算表明在進水的任何中間階段或最終平衡水線，舷窗會被淹沒，則船上的舷窗應為非開啟型。

(7) 窗不應裝設在下列位置：

（a）乾舷甲板以下；

（b）封閉上層建築第一層的端壁或側壁；或

（c）穩性計算中計入浮力的第一層甲板室。

(8) 保護通往下層開口的直達通道或在穩性計算中計入浮力的第二層上層建築側壁上的舷窗和窗，應裝設能夠風雨密關閉

和緊固的鉸鏈式內側窗蓋。

(9) 保護通往第（4）款中所列處所直達通道的第二層側壁以內邊艙壁上的舷窗和窗，應裝設鉸鏈式內側窗蓋，或者，當該窗易於接近時，應裝設能夠風雨密關閉和緊固的永久性附設的外部風暴蓋。

(10) 將舷窗和窗與直接通向下層的通道相隔離的或穩性計算中計入浮力的第二層及以上艙室艙壁和門，可允許其代替裝設在舷窗和窗上的窗蓋或風暴蓋。

(11) 位於後升高甲板上或小於標準高度的上層建築甲板上的甲板室，如果後升高甲板或上層建築的高度等於或大於升高甲板標準高度，就涉及窗蓋的要求而言，可以被認為是在第二層。

(12) 固定式或開啟式天窗，應按照對舷窗和窗的要求，安裝與其尺寸和位置相適應的一定厚度的玻璃。任何位置上的天窗玻璃都應避免機械損壞，且無論裝設在位置 1 或位置 2，都應裝有永久性附連的窗蓋或風暴蓋。

第 24 條

排水舷口

(1) （a） 如果舷牆在乾舷甲板和上層建築甲板的露天部分形

成阱，則應採取足夠的措施迅速排出甲板積水和放盡積水。

（b） 除第（1）（c）和（2）款的規定以外，如果阱處的舷弧是標準舷弧或大於標準舷弧，乾舷甲板上每個阱內在船舶每側的最小排水舷口面積（A）應按下式決定。

在上層建築甲板上的每個阱內，最小面積應為按下式算得面積的一半：

當阱內舷牆長度（l）為 20m 或小於 20m 時：

$$A = 0.7 + 0.035\ lm^2，$$

當 l 超過 20m 時：

$$A = 0.07\ lm^2。$$

在任何情況下，所取之 l 值都不必大於 0.7 L。

如果舷牆平均高度大於 1.2m，則所需面積對每 0.1m 高度差，按每米阱長增加 $0.004m^2$。如果舷牆平均高度小於 0.9m，則所需面積對每 0.1m 高度差，按每米阱長減少 $0.004m^2$。

（c） 對沒有舷弧的船舶，則按（b）算得的面積應增加 50%。如果舷弧小於標準舷弧，此百分數應以線性內插法求得。

（d） 對船中設有寬度至少為船寬的 80% 的甲板室且沿船側的通道寬度不超過 1.5m 的平甲板船，形成兩個阱。此時，每一個阱應根據各自的長度設置要求的排水舷口面積。

（e） 如果船中部甲板室前端設有完全橫跨船寬的屏板艙壁，露天甲板被分成兩個阱，對甲板室的寬度沒有限制。

（f） 後升高甲板上的阱應按乾舷甲板上的阱來處理。

（g） 裝設在油船露天甲板貨油總管和貨油管系四周高度大於 300mm 的槽溝扁鋼應視為舷牆。排水舷口應按本條規定佈置。附設在排水舷口上在裝卸作業期間使用的插銷應設計為在海上時不會發生軋住的情況。

(2) 當船舶設有一個不符合第 36（1）（e）條要求的凸形甲板；或者如在分立的上層建築之間設有連續或大體連續的艙口側圍板時，排水舷口的最小面積應按下表計算：

艙口或凸形甲板的寬度與船舶寬度比值	排水舷口面積與舷牆總面積比值
40%或小於 40%	20%
75%或大於 75%	10%

中間寬度上的排水舷口面積，應按線性內插法求得。

(3) 第（1）款要求的舷牆上排水面積的效能取決於橫跨船甲板的自由水流面積。

甲板上自由水流面積是艙口之間、艙口與上層建築和甲板室之間向上至舷牆實際高度的淨縫隙面積。

舷牆上排水舷口面積應與淨水流面積相聯繫確定出如下：

（a）假設艙口圍板是連續的，如果自由水流面積不小於由第（2）款算得的排水面積時，應認為由第（1）款算得的最小排水舷口面積是足夠的。

（b）如果自由水流面積等於或小於由第（1）款算得的面積，舷牆上最小排水面積應按第（2）款確定。

（c）如果自由水流面積小於由第（2）款算得的面積，但大於由第（1）款算得的面積，舷牆上最小排水面積應按下式確定：

$$F = F_1 + F_2 - f_p \quad m^2$$

式中：F_1 - 由第（1）款算得的最小排水面積；

F_2 - 由第（2）款算得的最小排水面積；

f_p - 艙口頂端與上層建築或甲板室向上至舷牆實際高度之間的通道和縫隙的淨總面積。

(4) 對於在乾舷甲板上或上層建築甲板上設有上層建築的船舶，若上層建築的任一端或兩端由開敞甲板上的舷牆形成阱，上層建築內的開敞出所應有足夠的排水設施。

船舶開敞上層建築的每一側的排水舷口最小面積（A_s）和露天阱的排水舷口最小面積（A_w）應按照以下步驟計算：

（a）確定阱的總長（l_t）等於舷牆圍成的開敞甲板長度（l_w）與開敞上層建築內公共處所的長度（l_s）之和。

（b）確定（A_s）：

（i） 按第（1）款假定為標準高度舷牆，計算長度為 l_t 的開敞阱所要求的排水舷口面積（A）。

（ii） 如適用，按第（1）（c）款對沒有舷弧的船舶進行修正，乘以系數 1.5。

（iii） 對封閉上層建築端壁開口寬度（b_o）乘以系數（b_o/l_t），調整排水舷口面積。

（iv） 調整由開敞上層建築圍成的阱的總長中的部分排水舷口面積，乘以系數：

$$1-(l_w/l_t)^2$$

式中，l_w 和 l_t 在第（4）（a）款中有定義。

（v） 針對乾舷甲板以上的阱甲板的距離調整排水舷口面積，對於乾舷甲板以上大於 $0.5h_s$ 的甲板，乘以系數：

$$0.5(h_s/h_w)$$

式中，h_w 為乾舷甲板以上阱甲板的距離，h_s 為一個標準上層建築高度。

（c） 確定（A_w）：

（i） 開敞阱的排水舷口面積（A_w）應按上述（b）（i）的規定計算，利用 l_w 計算排水舷口名義面積（A'），然後用下列面積修正方法中適用的一種對舷牆的實際高度（h_b）進行調整：

若舷牆高度大於 1.2m：

$$A_c = l_w((h_b\text{-}1.2)/0.10)(0.004)\ m^2$$

若舷牆高度小於 0.9m：

$$A_c = l_w ((h_b - 0.9) / 0.10)(0.004)\ m^2$$

對於高度在 1.2m 和 0.9m 之間的舷牆，不作修正（即 $A_c=0$）。

（ii）經修正的排水舷口面積（$A_w=A'+A_c$）應按上述（b）（ii）和（b）（v），用 h_s 和 h_w 對無舷弧（如適用）和高出乾舷甲板的高度進行調整。

（d）沿開敞上層建築含蓋的開敞處所的每一側和開敞阱的每一側應分別提供開敞上層建築的有效排水舷口面積（A_s）和開敞阱的有效排水舷口面積（A_w）。

（e）上述關係用下列等式予以概括，其中假定 l_w 與 l_s 之和 lt 大於 20m：

開敞阱的排水舷口面積 A_w：

$$A_w = (0.07\ l_w + A_c)(舷弧修正)(0.5\ h_s / h_w)$$

開敞上層建築的排水舷口面積 A_s：

$$A_s = (0.07 l_t)(舷弧修正)(b_o / l_t)(1 - (l_w / l_t)^2)(0.5 h_s / h_w)$$

當 l_t 等於或小於 20m 時，按照第（1）款，基本的排水舷口面積為 $A=0.7+0.035 l_t$。

(5) 排水舷口的下邊緣應儘可能接近甲板。所需排水舷口面積的三分之二應分佈在阱內最接近舷弧最低點的二分之一長度範圍內。所需排水舷口面積的三分之一應沿剩下的阱長平均分佈。在舷弧為零或舷弧很小的露天乾舷甲板或露天上層建築甲板上，排水舷口面積應沿阱長平均分佈。

(6) 舷牆上所有排水舷口，應使用間距約為 230mm 的欄杆或鐵條保護。如排水舷口設有蓋板，則應有足夠空隙以防堵塞。鉸鏈的銷子或軸承應採用耐腐蝕材料。蓋板不應裝設鎖緊裝置。

第 25 條

對船員的保護

(1) 用作船員居住處所的甲板室，其構造應達到可接受的強度水平。

(2) 在所有露天甲板四周應裝設欄杆或舷牆。舷牆或欄杆的高度應至少高出甲板 1m，當此高度妨礙船舶正常工作時，可准許採用較小的高度，但所提供的適當防護措施應使主管機關滿意。

(3) 裝設在上層建築和乾舷甲板上的欄杆應至少有三檔。欄杆的最低一檔以下的開口應不超過 230mm，其他各檔的間隙應

不超過 380mm。如船舶設有圓弧形舷緣，則欄杆支座應置於甲板的平坦部位。在其他位置上，欄杆應至少有二檔。欄杆應符合以下規定：

（a）固定式、移動式或鉸鏈式撐柱應相隔約 1.5m 裝設。移動式或鉸鏈式撐柱應能夠鎖定在直立位置。

（b）至少每第 3 根撐柱應使用肘板或撐條支持。

（c）如因船舶正常工作需要，可以同意用鋼絲繩代替欄杆，但鋼絲繩應採用螺絲扣繃緊製成。

（d）如因船舶正常工作需要，可以同意在兩個固定撐柱和/或舷牆之間裝設鏈索來代替欄杆。

(4) 為保護船員進出其住所、機器處所以及船上重要操作所需的其他處所，應為第 25-1 條要求的安全通道配備適當的設施（如欄杆、安全繩、通道或甲板下走道等形式）。

(5) 任何船舶所裝運的甲板貨物的堆裝，應使位於貨物堆裝途徑中的任何開口和進出船員住所、機艙和船上重要操作所需的其他所有部位的任何開口均能正常關閉和緊固，以防止進水。如在甲板上和甲板下均沒有適宜的通道時，在甲板貨物上面應配置合適的欄杆或安全繩，以保證船員的安全。

第 25-1 條

船員安全通道的佈置

(1) 應為船員安全通道提供表 25 – 1.1 內所列至少一項佈置。

船型	船上通道的位置	勘劃的夏季乾舷	按照勘劃乾舷的類型可接受的裝置***			
			A 型	B – 100 型	B – 60 型	B 和 B+型
除油船*、化學品船*和氣體運輸船*以外的所有船舶	**1.1 通往船中住艙的通道** 1.1.1 尾樓和橋樓之間，或 1.1.2 尾樓和甲板室（內有居住艙室或航行設備，或兩者兼有）之間	≤3000mm	a b e	a b e	a b c（1） e f（1）	a b c（1） c（2） c（4） d（1） d（2） d（3） e f（1） f（2）
		>3000mm	a b e	a b e	a b c（1） c（2） e f（1） f（2）	

	1.2 通往首位兩端的通道 1.2.1 尾樓和船艏之間（如無橋樓） 1.2.2 橋樓和船艏之間，或 1.2.3 甲板室（含居住艙室或航行設備，或兩者兼有）和船艏之間，或 1.2.4 若為平甲板船，船員艙室和船舶首尾端之間	≤3000mm	a b c（1） e f（1）	a b c（1） c（2） e f（1） f（2）	a b c（1） c（2） e f（1） f（2）	f（4）
		>3000mm	a b c（1） d（1） e f（1）	a b c（1） c（2） d（1） d（2） e f（1） f（2）	a b c（1） c（2） c（4） d（1） d（2） d（3） e f（1） f（2） f（4）	

油船*、化學品船*和氣體運輸船*	**2.1 通往船艙的通道** 2.1.1 尾樓和船艙之間，或	≤（$A_f + H_s$）**	a e f （1） f （5）
	2.1.2 甲板室（含居住艙室或航行設備，或兩者兼有）和船艙之間，或 2.1.3 若為平甲板船，船員艙室和船舶首端之間	＞（$A_f + H_s$）**	a e f （1） f （2）
	2.2 通往船尾的通道 若為平甲板船，船員艙室和船端之間	如 1.2.4 中對其他船型所要求的	

表 25 – 1.1

* 油船、化學品船和氣體運輸船分別同 SOLAS 公約 II-1/2.12，VII/8.2 和 VII/11.2 的定義。

** A_f： 按 A 型船舶計算所得的最小夏季乾舷，而不論實際勘劃的乾舷類型。

H_s： 第 33 條定義的上層建築標準高度。

*** 裝置 a 至 f 在以下（2）說明。位置（1）至（5）在以下（3）說明。

(2) 表 25–1.1 所指可接受的佈置定義如下：

（a）一條儘可能靠近乾舷甲板的照明和通風良好的甲板下通道（淨開口至少寬 0.8m，高 2.0m）連接和通達各有關處所。

（b）在上層建築甲板面或以上的船舶中心線或儘可能靠近船舶中心線處裝設一固定步橋，設置一個表面防滑的至少寬 0.6m 的連續平台，並在其全長範圍內兩側裝設欄杆。欄杆至少高 1m，並按第 25（3）條要求設有三檔。還應設擋腳板。

（c）一個固定走道，寬度至少為 0.6m，設在乾舷甲板平面上，並由兩行欄杆和間距不大於 3m 的撐柱組成。欄杆的橫檔數和間距應符合第 25（3）條的要求。在 B 型船上，當艙口圍板高度不小於 0.6m 時，可同意作為走道的一側，條件是在艙口之間設有兩排欄杆。

（d）一條由間距不大於 10m 的撐柱支持的直徑不小於 10mm 的鋼絲繩救生索，或一條附在艙口圍板上的，艙口之間連續有支撐的單根扶手或鋼絲繩。

（e）一架固定步橋：

（i） 位於上層建築甲板面或以上；

（ii） 位於或儘可能接近船舶中心線處；

（iii） 位於不至妨礙方便穿過甲板工作面處；

（iv） 提供一個寬度至少 1m 的連續平台；

（v） 由耐火和防滑材料構成；

（vi） 在其全長範圍內的每一側裝設欄杆；欄杆應至少高 1m，開檔符合第 25（3）條要求，並由間距不大於 1.5m 的撐柱支持；

（vii） 每側設置擋腳板；

（viii） 有通往甲板的開口，在適當時，配有梯子。開口間距應不大於 40m；

（ix） 如果所橫穿的甲板的長度超過 70m，在步橋處應設置間距不超過 45m 的遮蔽設施。每個這種遮蔽設施應至少能容納一人，且其結構應能在前部、左舷和右舷提供風雨保護。

（f） 設在船舶乾舷甲板面中心線或儘可能靠近中心線處的固定走道，除擋腳板外，其技術規格和（e）中所列固定步橋的規格相同。在 B 型船（核准載運散裝液貨）

上，當艙口圍板和所設艙口蓋的高度之和不小於 1m 時，艙口圍板可接受成為走道的一側，條件是艙口之間裝設兩排欄杆。

(3) 如合適，上述（2）（c）、（d）和（f）中佈置的許可橫向位置為：

（i） 在或靠近船舶中心線處；或裝設在位於或靠近船舶中心線處的艙口上。

（ii）裝設在船舶每一舷。

（iii） 裝設在船舶一舷，但每一舷應有供安裝的安排。

（iv） 僅裝設在船舶的一舷。

（v）裝設在儘可能靠近中心線的艙口的每一側。

(4) （a）如使用鋼絲繩，應裝設螺絲扣以保證其繃緊。

（b）如船舶正常工作需要，可允許用鋼絲繩代替欄杆。

（c）如船舶正常工作需要，可允許用裝設在兩個固定撐柱之間的鏈索代替欄杆。

（d）如設撐柱，每第 3 根撐柱應由肘板或撐條支持。

（e）移動式或鉸鏈式撐柱應能鎖定在直立位置。

（f）凡遇障礙物，例如管道或其他固定附件，應配置能通行的設施。

（g）通常，步橋或甲板面走道的寬度應不超過 1.5m。

(5) 對船長小於 100m 的液貨船，按上述（2）（e）或（f）裝設的步橋平台或甲板面走道的最小寬度可分別減至 0.6m。

第 26 條

核定“A”型船舶的特殊條件

機艙棚

(1) 第 27 條所定義的“A”型船舶，其機艙棚應由下列裝置之一保護：

（a）至少為一個標準高度的封閉尾樓或橋樓；或

（b）同等高度和相當強度的甲板室。

(2) 但是，如果沒有從乾舷甲板直接進入機艙的開口，機艙棚可以是露天的。此時，可允許在機艙棚上裝設一扇符合第 12 條要求的門，條件是該門通向一個與機艙棚同樣堅固結構的處所或通道，而且還要用鋼質或其他相當材料的第二扇風雨密門把進入機艙的梯道分開。

步橋和出入通道

(3) 在“A”型船舶的上層建築甲板平面上，於尾樓和船中橋樓或甲板室（如設有時）之間，應按照第 25-1（2）（e）條的要求設置一條貫通前後的固定步橋。第 25-1（2）（a）條列出的佈置可視為達到該步橋通行目的等效通道設施。

(4) 在分離的船員艙室之間以及船員艙室和機艙之間，步橋層面應有安全的出入通道。

艙口

(5) 在“A”型船舶乾舷甲板和首樓甲板上或膨脹阱頂上的露天艙口，應備有鋼質或其他相當材料的有效水密艙蓋。

排水設備

(6) 設有舷牆的“A”型船舶，至少應在露天甲板的一半長度內，設置柵欄欄杆或其他相當的排水佈置。位於該舷牆下部的面積為舷牆總面積的 33%的排水舷口可接受作為相等的排水佈置。舷側頂列板的上邊緣應儘可能低。

(7) 如上層建築之間用凸形甲板相連接，則在乾舷甲板露天部分的全長內應設置柵欄欄杆。

第Ⅲ章

乾舷

第 27 條

船舶類型

(1) 為了計算乾舷，船舶應分為“A”型和“B”型。

“A”型船舶

(2) “A”型船舶是：

（a）專為載運散裝液體貨物而設計的船舶；

（b）其露天甲板具有高度完整性，僅設有通向貨艙的小出入口，並以鋼質或等效材料的水密填料蓋封閉；和

（c）載貨時，貨艙具有低滲透率。

(3) 船長超過 150m、核定的乾舷小於“B”型船舶的“A”型船舶，當按第（11）款的要求裝載時，如按第（12）款規定的破損假定而引起任一艙或數艙進水，且假定其滲透率為 0.95，應能不沉，並仍可按第（13）款規定的合格平衡狀態保持飄浮。這類船舶的機器處所應作為浸水艙處理，但滲透率取 0.85。

(4) 對“A”型船舶所核定的乾舷，應不小於根據表 28.1 所得的乾舷。

“B”型船舶

(5) 凡未列入第（2）和（3）款關於“A”型船舶規定的所有船舶均應被認為是“B”型船舶。

(6) 在位置 1 設有經主管機關批准符合第 15 條（第 6 款除外）要求的艙蓋或符合第 16（6）條規定的緊固裝置的艙口蓋的“B”型船舶，應根據表 28.2 所列數值核定乾舷，並按表 27.1 所列數值增加乾舷：

艙口蓋符合第 15 條（6 款除外）規定的“B”型船舶

按表列乾舷增加的乾舷值

船長（m）	增加乾舷值（mm）	船長（m）	增加乾舷值（mm）	船長（m）	增加乾舷值（mm）
108 及以下	50	139	175	170	290
109	52	140	181	171	292
110	55	141	186	172	294
111	57	142	191	173	297

112	59	143	196	174	299
113	62	144	201	175	301
114	64	145	206	176	304
115	68	146	210	177	306
116	70	147	215	178	308
117	73	148	219	179	311
118	76	149	224	180	313
119	80	150	228	181	315
120	84	151	232	182	318
121	87	152	236	183	320
122	91	153	240	184	322
123	95	154	244	185	325
124	99	155	247	186	327
125	103	156	251	187	329
126	108	157	254	188	332
127	112	158	258	189	334
128	116	159	261	190	336
129	121	160	264	191	339
130	126	161	267	192	341
131	131	162	270	193	343
132	136	163	273	194	346
133	142	164	275	195	348

134	147	165	278	196	350
135	153	166	280	197	353
136	159	167	283	198	355
137	164	168	285	199	357
138	170	169	287	200	358

船長為中間值時，乾舷按線性內插法求得。

長度超過 200m 的船舶乾舷由主管機關處理。

表 27.1

(7) 在位置 1 的艙口設有符合第 16（2）至（5）條要求的艙口蓋的“B”型船舶，除第（8）至（13）款所規定者外，應按表 28.2 核定乾舷。

(8) 船長超過 100m 的任何“B”型船舶可核定為較第（7）款要求小的乾舷，但就所允許的乾舷減小量而言，主管機關要對以下方面感到滿意：

（a）對船員所提供的保護措施是足夠的；

（b）排水裝置是足夠的；

（c）在位置 1 和位置 2 的艙口蓋符合 16（1）至（5）和（7）的規定，且有足夠的強度，特別注意其密封裝置和緊固裝置；和

（d）當船舶按第（11）款的要求裝載時，如按第（12）款規定的破損假定而引起任一艙或數艙浸水，且假定其滲透率為 0.95，應能不沉，並仍可按第（13）款規定的合格平衡狀態保持飄浮。如這類船舶長度超過 150m，則機器處所應作為浸水艙處理，但滲透率取 0.85。

(9) 在計算符合第（8）、（11）、（12）和（13）款要求的“B”型船舶乾舷時，取自表 28.2 的乾舷值的減小值應不大於對某一相應船長在表 28.1 和 28.2 上所列數值之差的 60%。

(10) （a）第（9）款下允許的表列乾舷減小值可以增大到表 28.1 和 28.2 所列數值間的總差值，其條件是該船應符合：

（i） 第 26 條的要求（第（5）款除外），就像該船是“A”型船舶一樣；

（ii） 第（8）、（11）和（13）款的要求；和

（iii） 第（12）款的要求，且假定在船的全長範圍內，任一橫艙壁假定受損，從而使二個前後相鄰的艙室同時浸水，但此項假定破損不適用於機器處所的限界艙壁。

（b）這類船舶長度如超過 150m，則機器處所應作為浸水艙處理，但滲透率取 0.85。

初始裝載狀態

(11) 浸水前的初始裝載狀態應按下列確定：

（a）船舶裝載至夏季載重水線，並假定處於無縱傾狀態。

（b）計算重心高度時，適用下列原則：

（i）裝載的是勻質貨物。

（ii）除下列（iii）所述及者外，所有貨艙，包括擬作部分裝載的貨艙應認為是滿載的。如果裝的是液貨，則每一貨艙應作為裝滿至 98%。

（iii）如船舶擬在夏季載重水線營運時具有空艙，若按此種狀況算得的重心高度不小於按（ii）所算得者，則這種空艙應認為是空的。

（iv）裝載消耗液體及消耗物料的所有艙櫃和處所，應考慮其中個別艙的裝載量為其總容量的 50%。對每一種液體應假定至少有一對橫向艙櫃或一個中心線上艙櫃具有最大自由液面，而需考慮的一個艙櫃或多個艙櫃的自由液面影響應為最大者；每

一艙櫃裝載物的重心應取艙櫃的形心。餘下的艙櫃應假定其為完全空艙或完全裝滿，而各種消耗液體在這些艙櫃內的分佈，應使重心在龍骨以上獲得最大可能的高度。

（v）除（iv）所規定的裝載消耗液體的艙櫃外，在（ii）規定的每一載有液體的艙櫃均應考慮橫傾角不大於 5º 時的最大自由液面影響。作為變通，如計算方法為主管機關所接受，亦可採用實際自由液面影響。

（vi）計算重量須根據下列比重值：

海水	1.025
淡水	1.000
燃油	0.950
柴油	0.900
滑油	0.900

破損假定

(12) 關於破損假定的特徵，適用下列原則：

（a）在一切情況下，垂向破損範圍假定自基線向上無限制。

（b）橫向破損範圍等於 B/5 或 11.5m，取小值，在夏季載重水線水平面上自船側向船內垂直於中心線量計。

（c）如果較（a）和（b）所規定範圍為小的破損反而造成更為嚴重的後果，則應假定此種較小的破損範圍。

（d）除在第（10）（a）款中另有要求外，若艙室的內部縱艙壁不位於假定破損橫向範圍內，則浸水應限制在相鄰橫艙壁間的某一單個艙室內。邊艙的橫向限界艙壁未延伸至船的全寬，但延伸超出（b）規定的假定破損橫向範圍，則應假定未受破損。如橫艙壁的台階或凹折長度不超過 3m，位於（b）定義的假定破損橫向範圍內，這一橫艙壁可被認為是完整的，其相鄰艙室可被認為是單個艙浸水。然而，在假定破損橫向範圍內，橫艙壁有長度超過 3m 的台階或凹折，則與該艙壁相鄰的二個艙室應被認為是同時浸水。就本條而言，尾尖艙艙壁和艙頂所形成的台階不應被認作是台階。

（e）如主橫艙壁位於假定破損橫向範圍內，並在雙層底艙或邊艙形成長度超過 3m 的台階，則與主橫艙壁台階相鄰的雙層底櫃或邊艙應認為同時浸水。如這一邊艙有通向一個或數個貨艙的開口（如穀物添注孔），則此一個或數個貨艙亦應認為同時浸水。同樣地，在設計為

載運液體貨物的船上，如邊艙有通向相鄰艙室的開口，則這些相鄰艙室應考慮作為空艙同時進水。即使這些開口設有關閉裝置，此項規定仍然適用，但如艙櫃間的艙壁上設有閘門閥，且該閥是在甲板上操縱的，則可例外。除頂邊艙上的開口使頂邊艙與貨艙相通的情況外，螺栓間距緊密的人孔蓋，應被認為等效於未穿孔的艙壁。

（f） 如設想任何前後相鄰的二個艙室浸水，為了考慮艙壁的有效性，主橫水密艙壁的間距應至少為 $\frac{1}{3}L^{2/3}$ 或 14.5m，取其小者。如橫艙壁間距小於上述，為獲得艙壁間的最小間距，則一個或數個艙壁應被假定為不存在。

平衡狀態

(13) 浸水後的平衡狀態如滿足下列要求則被認為合格：

（a） 經考慮了下沉、橫傾及縱傾，船舶浸水後的最終水線應位於可能通過其發生繼續向下浸水的任何開口下緣的下方。這些開口應包括空氣管、通風筒（即使符合第 19（4）條）和用風雨密門（即使符合第 12 條）或風雨密艙蓋（即使符合第 16（1）至（5）條）關閉的

開口。但可不包括用人孔蓋和平艙蓋（符合第 18 條）以及第 27（2）條所述型式的貨艙蓋、遙控的滑移式水密門和永閉式舷窗（符合第 23 條）封閉的開口。但分隔主機艙和舵機艙的水密門可為鉸鏈速閉式門，且在海上不使用時保持關閉，同時，此類門的下門檻是在夏季載重水線以上。

（b）如果管子、管道或隧道位於第（12）（b）款定義的假定破損範圍以內，則應採取措施使繼續浸水不能由此漫流至每一破損情況計算中假定浸水艙以外的各艙室。

（c）由於不對稱浸水而引起的橫傾角不超過 15°。如甲板沒有任何部分被淹沒，則可允許橫傾角至 17°。

（d）在浸水狀態下的初穩性高度應為正值。

（e）在一特定破損情況中，當假定浸水艙之外的甲板任何部分被淹沒時，或在任何情況下，對浸水狀態的臨界穩性有懷疑時，應對剩餘穩性加以研究。如果復原力臂曲線超過平衡位置的最小穩距有 20°，且在此穩距內的最大復原力臂至少為 0.1m，則剩餘穩性可被認為是足夠的，在此穩距內的復原力臂曲線下的面積應不小

於 0.0175m.rad。主管機關應考慮到受保護的或不受保護的開口在剩餘穩性範圍內可能暫時被淹沒而產生的潛在危險。

（f） 浸水中間階段的穩性應使主管機關滿意。

無推進裝置的船舶

(14) 港駁、運輸駁船或其他非機動船舶應按本規則的各項規定核定乾舷。符合第（2）和（3）款要求的駁船可以核定“A”型船舶乾舷。

（a） 主管機關應特別考慮露天甲板上載貨駁船的穩性。只准在核定一般“B”型船舶乾舷的駁船上載運甲板貨物。

（b） 但對無人照管的駁船，第 25、26（3）、26（4）條和第 39 條的要求應不適用。

（c） 此類無人照管的駁船，如在其乾舷甲板上僅設有用鋼質或等效材料製成的水密填料蓋封閉的小型出入開口時，則可核定較各條計算所得小 25%的乾舷。

第 28 條

乾舷表

“A” 型船舶

（1） “A” 型船舶的表列乾舷應按表 28.1 決定：

表 28.1

“A” 型船舶的乾舷表

船長（m）	乾舷（mm）	船長（m）	乾舷（mm）	船長（m）	乾舷（mm）
24	200	51	455	78	814
25	208	52	467	79	828
26	217	53	478	80	841
27	225	54	490	81	855
28	233	55	503	82	869
29	242	56	516	83	883
30	250	57	530	84	897
31	258	58	544	85	911
32	267	59	559	86	926
33	275	60	573	87	940
34	283	61	587	88	955
35	292	62	600	89	969

36	300	63	613	90	984
37	308	64	626	91	999
38	316	65	639	92	1014
39	325	66	653	93	1029
40	334	67	666	94	1044
41	344	68	680	95	1059
42	354	69	693	96	1074
43	364	70	706	97	1089
44	374	71	720	98	1105
45	385	72	733	99	1120
46	396	73	746	100	1135
47	408	74	760	101	1151
48	420	75	773	102	1166
49	432	76	786	103	1181
50	443	77	800	104	1196
105	1212	168	2240	231	2880
106	1228	169	2254	232	2888
107	1244	170	2268	233	2895
108	1260	171	2281	234	2903
109	1276	172	2294	235	2910
110	1293	173	2307	236	2918
111	1309	174	2320	237	2925

112	1326	175	2332	238	2932
113	1342	176	2345	239	2939
114	1359	177	2357	240	2946
115	1376	178	2369	241	2953
116	1392	179	2381	242	2959
117	1409	180	2393	243	2966
118	1426	181	2405	244	2973
119	1442	182	2416	245	2979
120	1459	183	2428	246	2986
121	1476	184	2440	247	2993
122	1494	185	2451	248	3000
123	1511	186	2463	249	3006
124	1528	187	2474	250	3012
125	1546	188	2486	251	3018
126	1563	189	2497	252	3024
127	1580	190	2508	253	3030
128	1598	191	2519	254	3036
129	1615	192	2530	255	3042
130	1632	193	2541	256	3048
131	1650	194	2552	257	3054
132	1667	195	2562	258	3060
133	1684	196	2572	259	3066

134	1702	197	2582	260	3072
135	1719	198	2592	261	3078
136	1736	199	2602	262	3084
137	1753	200	2612	263	3089
138	1770	201	2622	264	3095
139	1787	202	2632	265	3101
140	1803	203	2641	266	3106
141	1820	204	2650	267	3112
142	1837	205	2659	268	3117
143	1853	206	2669	269	3123
144	1870	207	2678	270	3128
145	1886	208	2687	271	3133
146	1903	209	2696	272	3138
147	1919	210	2705	273	3143
148	1935	211	2714	274	3148
149	1952	212	2723	275	3153
150	1968	213	2732	276	3158
151	1984	214	2741	277	3163
152	2000	215	2749	278	3167
153	2016	216	2758	279	3172
154	2032	217	2767	280	3176
155	2048	218	2775	281	3181

156	2064	219	2784	282	3185
157	2080	220	2792	283	3189
158	2096	221	2801	284	3194
159	2111	222	2809	285	3198
160	2126	223	2817	286	3202
161	2141	224	2825	287	3207
162	2155	225	2833	288	3211
163	2169	226	2841	289	3215
164	2184	227	2849	290	3220
165	2198	228	2857	291	3224
166	2212	229	2865	292	3228
167	2226	230	2872	293	3233
294	3237	318	3325	342	3387
295	3241	319	3328	343	3389
296	3246	320	3331	344	3392
297	3250	321	3334	345	3394
298	3254	322	3337	346	3396
299	3258	323	3339	347	3399
300	3262	324	3342	348	3401
301	3266	325	3345	349	3403
302	3270	326	3347	350	3406
303	3274	327	3350	351	3408

304	3278	328	3353	352	3410
305	3281	329	3355	353	3412
306	3285	330	3358	354	3414
307	3288	331	3361	355	3416
308	3292	332	3363	356	3418
309	3295	333	3366	357	3420
310	3298	334	3368	358	3422
311	3302	335	3371	359	3423
312	3305	336	3373	360	3425
313	3308	337	3375	361	3427
314	3312	338	3378	362	3428
315	3315	339	3380	363	3430
316	3318	340	3382	364	3432
317	3322	341	3385	365	3433

船長為中間值時，乾舷按線性內插法求得。

長度超過 365m 的船，應由主管機關處理。

“B”型船舶

（2） “B”型船舶的表列乾舷應按表 28.2 決定：

表 28.2

“B” 型船舶的乾舷表

船長（m）	乾舷（mm）	船長（m）	乾舷（mm）	船長（m）	乾舷（mm）
24	200	70	721	116	1609
25	208	71	738	117	1630
26	217	72	754	118	1651
27	225	73	769	119	1671
28	233	74	784	120	1690
29	242	75	800	121	1709
30	250	76	816	122	1729
31	258	77	833	123	1750
32	267	78	850	124	1771
33	275	79	868	125	1793
34	283	80	887	126	1815
35	292	81	905	127	1837
36	300	82	923	128	1859
37	308	83	942	129	1880
38	316	84	960	130	1901
39	325	85	978	131	1921
40	334	86	996	132	1940

41	344	87	1015	133	1959
42	354	88	1034	134	1979
43	364	89	1054	135	2000
44	374	90	1075	136	2021
45	385	91	1096	137	2043
46	396	92	1116	138	2065
47	408	93	1135	139	2087
48	420	94	1154	140	2109
49	432	95	1172	141	2130
50	443	96	1190	142	2151
51	455	97	1209	143	2171
52	467	98	1229	144	2190
53	478	99	1250	145	2209
54	490	100	1271	146	2229
55	503	101	1293	147	2250
56	516	102	1315	148	2271
57	530	103	1337	149	2293
58	544	104	1359	150	2315
59	559	105	1380	151	2334
60	573	106	1401	152	2354
61	587	107	1421	153	2375
62	601	108	1440	154	2396

63	615	109	1459	155	2418
64	629	110	1479	156	2440
65	644	111	1500	157	2460
66	659	112	1521	158	2480
67	674	113	1543	159	2500
68	689	114	1565	160	2520
69	705	115	1587	161	2540
162	2560	225	3660	288	4490
163	2580	226	3675	289	4502
164	2600	227	3690	290	4513
165	2620	228	3705	291	4525
166	2640	229	3720	292	4537
167	2660	230	3735	293	4548
168	2680	231	3750	294	4560
169	2698	232	3765	295	4572
170	2716	233	3780	296	4583
171	2735	234	3795	297	4595
172	2754	235	3808	298	4607
173	2774	236	3821	299	4618
174	2795	237	3835	300	4630
175	2815	238	3849	301	4642
176	2835	239	3864	302	4654

177	2855	240	3880	303	4665
178	2875	241	3893	304	4676
179	2895	242	3906	305	4686
180	2915	243	3920	306	4695
181	2933	244	3934	307	4704
182	2952	245	3949	308	4714
183	2970	246	3965	309	4725
184	2988	247	3978	310	4736
185	3007	248	3992	311	4748
186	3025	249	4005	312	4757
187	3044	250	4018	313	4768
188	3062	251	4032	314	4779
189	3080	252	4045	315	4790
190	3098	253	4058	316	4801
191	3116	254	4072	317	4812
192	3134	255	4085	318	4823
193	3151	256	4098	319	4834
194	3167	257	4112	320	4844
195	3185	258	4125	321	4855
196	3202	259	4139	322	4866
197	3219	260	4152	323	4878
198	3235	261	4165	324	4890

199	3249	262	4177	325	4899
200	3264	263	4189	326	4909
201	3280	264	4201	327	4920
202	3296	265	4214	328	4931
203	3313	266	4227	329	4943
204	3330	267	4240	330	4955
205	3347	268	4252	331	4965
206	3363	269	4264	332	4975
207	3380	270	4276	333	4985
208	3397	271	4289	334	4995
209	3413	272	4302	335	5005
210	3430	273	4315	336	5015
211	3445	274	4327	337	5025
212	3460	275	4339	338	5035
213	3475	276	4350	339	5045
214	3490	277	4362	340	5055
215	3505	278	4373	341	5065
216	3520	279	4385	342	5075
217	3537	280	4397	343	5086
218	3554	281	4408	344	5097
219	3570	282	4420	345	5108
220	3586	283	4432	346	5119

221	3601	284	4443	347	5130
222	3615	285	4455	348	5140
223	3630	286	4467	349	5150
224	3645	287	4478	350	5160
351	5170	356	5220	361	5268
352	5180	357	5230	362	5276
353	5190	358	5240	363	5285
354	5200	359	5250	364	5294
355	5210	360	5260	365	5303

船長為中間值時，乾舷按線性內插法求得。

長度超過 365m 的船，應由主管機關處理。

第 29 條

長度在 100m 以下船舶的乾舷修正

長度在 24m 和 100m 之間，封閉的上層建築有效長度小於船長 35% 的“B”型船舶，其表列乾舷應增加：

$$7.5(100-L)(0.35-\frac{E_1}{L})mm$$

式中： L 船長，m；

E_1 第 35 條規定的上層建築有效長度 E，但不包括凸形甲板的長度。

第 30 條

方形系數修正

如方形系數（C_b）超過 0.68，第 28 條規定的表列乾舷，如適用時，則經對 27（8），27（10）和第 29 條修正後，應乘以系數

$$\frac{C_b + 0.68}{1.36}$$

方形系數取值不大於 1.0。

第 31 條

計算型深修正

(1) 如 D 超過 $\frac{L}{15}$，則乾舷增加（$D - \frac{L}{15}$）Rmm，其中 R 對船長小於 120m 的船舶為 $\frac{L}{0.48}$，對船長為 120m 及以上的船舶為 250。

(2) 如 D 小於 $\frac{L}{15}$，乾舷不應減少，但當船中部具有長度至少為 0.6 L 的封閉的上層建築，或具有全通的凸形甲板，或具有延伸全船的分立封閉的上層建築與凸形甲板的組合體時，其乾舷應按第（1）款所述的規定值減少。

(3) 如上層建築或凸形甲板的高度小於相應的標準高度，則所算得的減小值應乘以上層建築或凸形甲板的實際高度與第 33 條規定的適用標準高度的比值予以修正。

第 32 條

甲板線位置修正

如量至甲板線上邊緣的實際計算型深大於或小於 D 時，則兩者的差數應加於乾舷或從乾舷中減去。

第 32-1 條

乾舷甲板凹槽修正

(1) 若乾舷甲板上有一凹槽，且其不延伸到船兩側時，則按未計該凹槽所算得的乾舷應按相應的浮力損失進行修正。該修正值應等於凹槽的體積除以 85%最小型深處船舶的水線面面積所得之值（見圖 32-1.1）。

(2) 修正值應加到所有其他修正完成後所得的乾舷值上，但船艏高度修正除外。

(3) 如上述按浮力損失修正後的乾舷大於根據量至凹槽底部的型深所確定的最小幾何乾舷，則可以使用後者。

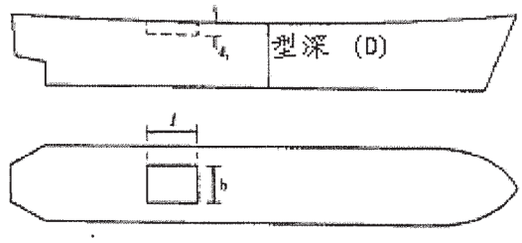


圖 32-1.1

附加於乾舷的修正值等於：

$$\frac{l \times b \times d_r}{\text{0.85D 處的水線面面積}}$$

第 33 條

上層建築標準高度

上層建築的標準高度應按下表確定：

標準高度（m）		
L （船長 m）	後升高甲板	所有其他上層建築
30 或 30 以下	0.9	1.8
75	1.2	1.8
125 或以上	1.8	2.3

表 33.1

船長為中間值時，其標準高度應按線性內插法求得。

第 34 條

上層建築長度

(1) 除第（2）款規定的情況以外，上層建築長度（S）應為處於船長（L）以內的上層建築平均長度。

如上層建築端壁有凹入時，則該上層建築的有效長度應予減小，減小的長度等於平面圖上凹入面積除以凹入長度中點處的上層建築寬度所得值。如凹入部分相對於中心線是不對稱的，則以不對稱凹入中較大者作為船舶兩側的凹入部分來計算。凹入部分不必用板遮蓋起來。

(2) 如封閉上層建築的端壁在其與上層建築兩側交點向外延伸呈凸圓平順曲線，則上層建築的長度可在一相當平面端壁基礎上予以增加。此增加量應為曲度前後延伸範圍長度的三分之二。在確定此增加量時，可計入的最大彎曲部分在上層建築圓弧端壁與其側壁交點至上層建築半寬處。上層建築有一突出部分，該突出部分在中心線的每一側的寬度不小於船寬的 30%，則上層建築的有用長度應考慮一拋物線狀的相等上層建築端壁予以增加。該拋物線應從突出部分中心線處延伸，通過實際上層建築端壁與突出部分側壁的交點，再延伸到船的兩側。拋物線應完全在上層建築及其突出部分的邊界之內。

如上層建築從船側到第 3（10）條所許可的界限有凹入，則應以上層建築的實際寬度（而不是船寬）為基礎計算相等端壁。

(3) 有傾斜端壁的上層建築應按下列方式處理：

（a）當位於傾斜部分之外的上層建築的高度等於或小於標準高度時，長度 S 應按圖 34.1 所示算得。

（b）當上述高度大於標準高度時，長度 S 應按圖 34.2 所示算得。

（c）上述僅適用於坡線相對於基線的傾斜為 15°或以上情況，如傾斜小於 15°，則該結構應作為舷弧處理。

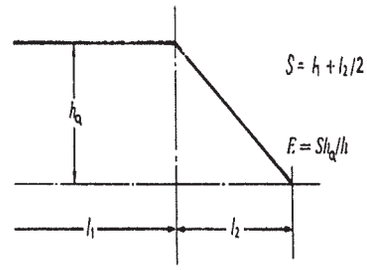


圖 34.1 上層建築的高度等於或小於標準高度 h

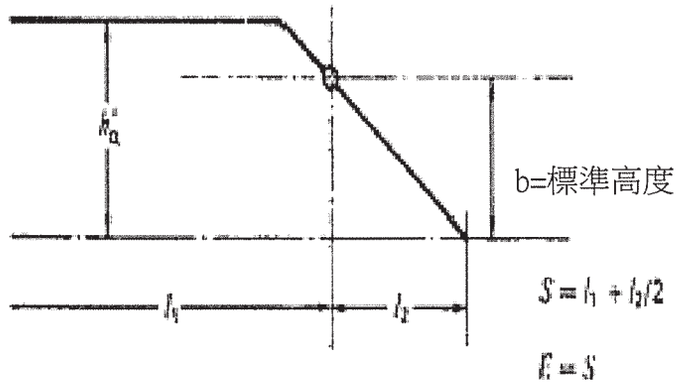


圖 34.2 上層建築的高度大於標準高度

第 35 條

上層建築的有效長度

(1) 除第（2）款規定的情況以外，標準高度的封閉上層建築的有用長度（E）應為其長度。

(2) 在所有情況下，如標準高度的封閉上層建築如第 3（10）條所許可的那樣從船側內縮，則其有用長度應為按比值 b/B_s 修正的長度，其中：

b — 上層建築長度中點處的寬度；和

B_s — 上層建築長度中點處的船寬。

如上層建築在其部分長度中內縮，此修正應僅適用於內縮部分。

(3) 如封閉上層建築的高度小於標準高度，則其有用長度應按實際高度與標準高度之比減小。如高度超過標準，上層建築有用長度不予增加（見圖 34.1 和 34.2）。

如上層建築有傾斜的端壁，且傾斜端壁以外的高度小於標準高度，則其有用長度 E 應為從圖 34.1 中所得的長度 S 按實際高度與標準高度之比折減。

設有過度舷弧但在船中 0.2L 範圍內無任何上層建築的船舶，如果其尾樓或首樓的高度小於標準高度，則可以將實際舷弧剖面與標準舷弧剖面的差值折算增加到尾樓或首樓的高度上去，此時，不應再予准許第 38（16）條為多餘舷弧規定的乾舷減小。

(4) 後升高甲板如設有完整的前端壁，則其有用長度應為其長度，最長可達到 0.6L。如前端壁不是完整的，則此後升高甲板應視為小於標準高度的尾樓。

即使後升高甲板與尾樓相連，後升高甲板最大有用長度 0.6L 也應從尾垂線量起。

(5) 末封閉的上層建築無有用長度。

第 36 條

凸形甲板

(1) 不延伸到船舷兩邊的凸形甲板或類似建築，如符合下列條件，可被認為是有用的；

（a）凸形甲板至少和上層建築一樣堅固；

（b）艙口設在凸形甲板上，艙口圍板和艙蓋符合第 13 條至第 16 條的要求，並且凸形甲板甲板邊板的寬度可設適當的走道和具有足夠的側向加強。但是，在乾舷甲板上允許有帶水密蓋的小出入開口；

（c）由凸形甲板上甲板或用堅固的固定步橋與上層建築相連的分立凸形甲板，形成前後縱通的設有檻杆的固定工作平台；

（d）通風筒由凸形甲板、水密蓋或其他相當裝置防護；

（e）在乾舷甲板露天部分的凸形甲板區域內，至少在其長度一半的範圍內裝設柵欄，或者，作為替代措施，在舷牆下部設有面積為舷牆總面積 33%的排水舷口；

（f）機艙棚由凸形甲板、至少達到標準高度的上層建築、或同樣高度和相當強度的甲板室防護；

（g）凸形甲板的寬度至少為船舶寬度的 60%；

（h）如果沒有上層建築，凸形甲板的長度至少為 0.6L。

(2) 有效凸形甲板的有效長度，應為其全長按其平均寬度與船寬 B 之比折減。

(3) 凸形甲板的標準高度為上層建築的標準高度，而不是後升高甲板的標準高度。

(4) 如凸形甲板的高度小於標準高度，則其有用長度應按實際高度與標準高度之比折減。如凸形甲板甲板上的艙口圍板高度小於第 14-1 條要求的高度，則應從凸形甲板的實際高度中減去相應於實際艙口圍板高度和要求的艙口圍板高度間的差數。

(5) 如凸形甲板高度小於標準高度且凸形甲板艙口圍板高度也小於標準高度或根本沒有艙口圍板，則因艙口圍板高度不足而對凸形甲板實際高度的減少值應取為 600mm 與艙口圍板實際高度之差值，或當不設艙口圍板時取為 600mm。當凸形甲板上只設有高度小於標準的小艙口時，不要求從凸形甲板實際高度中扣去差值，對其可允許免除標準圍板高度的要求。

(6) 在乾舷計算中，如本款要求在所有方面得到滿足，則連續的艙口可視為凸形甲板。

第（1）（b）款中所述的凸形甲板的甲板縱桁可按下述要求設置在凸形甲板側壁的外側：

（a）縱桁的設置應能在沿船的每一側有寬度至少為 450mm 的走道；

（b）縱桁應為有效支撐和加強的堅固板；

（c）縱桁應距乾舷甲板以上儘可能高。在乾舷計算時，凸形甲板的高度應至少減去 600mm 或減去凸形甲板頂端與縱桁之間的實際差值，取其大者；

（d）艙口蓋鎖緊裝置應可從縱桁或走道處前往；

（e）凸形甲板的寬度應自凸形甲板兩側壁之間量取。

(7) 如乾舷計算中計入的凸形甲板與上層建築諸如尾樓、橋樓或首樓毗鄰，則凸形甲板和上層建築的公共艙壁部分上不應設置開口。但用於諸如管系、電纜的小開口或帶有以螺栓方式裝設蓋子的人孔可以例外。

(8) 在乾舷計算中計入的凸形甲板的側壁應是完整的，但允許設有非開啟型舷窗和螺栓型人孔蓋。

第 37 條

對上層建築和凸形甲板的乾舷減除

(1) 如上層建築和凸形甲板的有用長度為 1L，則乾舷減除量應為：在長度為 24 米的船舶上為 350mm，在長度為 85 米的船舶上為 860mm，在長度為 122 米及以上的船舶上為 1070mm，船長為中間值時，減除量應按線性內插法求得。

(2) 如上層建築和凸形甲板的總有效長度小於 1L，則減除的百分數應從下表中求得：

'A'型和'B'型船舶的減除百分數

	上層建築和凸形甲板的總有效長度										
	0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1.0 L
各種上層建築的減除百分數	0	7	14	21	31	41	52	63	75.3	87.7	100

上層建築和凸形甲板長度為中間值時，其百分數應按線性內插法求得。

表 37.1

(3) 對 "B" 型船舶，如首樓的有用長度小於 0.07L，則可不作減除。

第 38 條

舷弧

通則

(1) 舷弧應自甲板邊線量至通過船長中點舷弧線所繪的與龍骨平行的線。

(2) 設計成傾斜龍骨的船舶，舷弧應量至與設計載重水線平行的線。

(3) 平甲板船和有分立上層建築的船舶，舷弧量自乾舷甲板。

(4) 對舷側上部為非正常型的船舶，如舷側上部為階梯形或有中斷時，舷弧應按船長中點處相當型深來考慮。

(5) 船舶設有標準高度的上層建築，而且其上層建築貫通乾舷甲板的全長時，舷弧應量自上層建築甲板。如上層建築的高度超過標準高度，則在每一端座標上應加上實際高度與標準高度之最小差數（Z）。同樣，在離首垂線和尾垂線 $\frac{1}{6}L$ 和 $\frac{1}{3}L$ 處的各中間座標上，應分別增加 0.444Z 和 0.111Z。如在上層建築上疊加封閉的尾樓或首樓，則允許如圖 38.1 所示按第（12）款規定的方法計取舷弧。

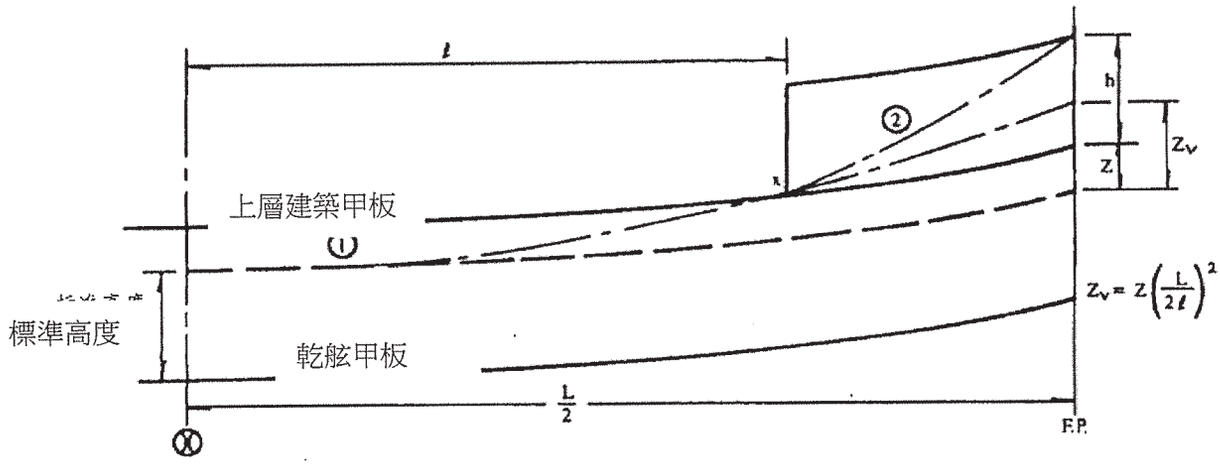


圖 38.1

(6) 如封閉的上層建築甲板至少有相同舷弧作為露天乾舷甲板，則乾舷甲板上封閉部分的舷弧不予計算。

(7) 如封閉的尾樓和首樓的高度為標準高度，並具有比乾舷甲板舷弧的大的舷弧，或者其高度大於標準高度，則乾舷甲板的舷弧應按第（12）款規定增加。

如尾樓或首樓由兩層組成，則應用圖 38.2 所示的方法。

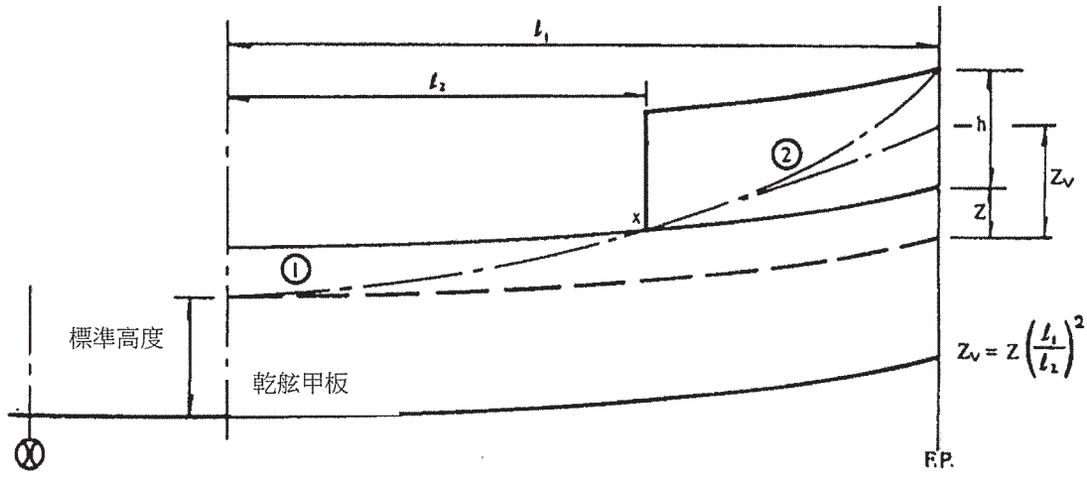


圖 38.2

圖 38.1 和 38.2 中所用定義如下：

Z　如第（5）款所述。

Z_v　為通過“X”點的假想標準拋物線（點劃線）末端縱坐標值。如果 Z_v 大於（Z+h）則取 Z_v=Z+h，此時應忽略“X”點，不考慮曲線②。

當第一層上層建築的長度大於 0.5L 時，假想標準拋物線應起始於船中，如圖 38.1 所示。

標準舷弧的剖面

(8)　標準舷弧的縱坐標值按下表確定：

標準舷弧剖面

（L 以 m 計）

	位置	縱坐標值 （ mm）	系　數
船後半部	尾垂線	$25\left(\frac{L}{3}+10\right)$	1
	距尾垂線 1/6L	$11.1\left(\frac{L}{3}+10\right)$	3
	距尾垂線 1/3L	$2.8\left(\frac{L}{3}+10\right)$	3
	船中央	0	1
船前半部	船中央	0	1
	距首垂線 1/3L	$5.6\left(\frac{L}{3}+10\right)$	3
	距首垂線 1/6L	$22.2\left(\frac{L}{3}+10\right)$	3
	首垂線	$50\left(\frac{L}{3}+10\right)$	1

表 38.1

與標準舷弧剖面有差異時的計算

(9) 如舷弧剖面不同於標準剖面，應將每一舷弧剖面在船前半部或後半部的四個縱坐標值乘以縱坐標值表中所給定的相應系數。將上述前半部或後半部的舷弧，各自乘積之和與標準舷弧相應的各自乘積之和的差數除以 8，即算得前半部或後半部舷弧的不足或多餘數。前半部和後半部舷弧的不足或多

餘數之算術平均數，即為測定舷弧之不足或多餘數。

(10) 如後半部舷弧剖面大於標準，而其前半部舷弧剖面小於標準，則多餘部分應不計，而只計其不足部分。

(11) 如前半部舷弧剖面超過標準，而後半部舷弧剖面不小於標準的 75%，對多餘部分應計取；如後半部分小於標準的 50%，則對前半部多餘不予計取；如後半部舷弧處於標準的 50% 和 75%之間，則對前半部多餘的舷弧可按比例求得。

(12) 對尾樓或首樓給予計算舷弧時，應按下式：

$$S = \frac{yL'}{3L}$$

式中： S — 計取的舷弧，可自不足舷弧中減去或加到多餘舷弧中；

y — 在首或尾垂線處上層建築的實際高度與標準高度之差；

L' — 尾樓或首樓封閉部分的平均長度，最大達 0.5L；

L — 3（1）所規定的船長

上述公式是形狀為拋物線的一條曲線，它與實際舷弧曲線在乾舷甲板處相切，並與末端縱坐標在上層建築甲板以下某一點相交，此點在上層建築甲板之下的距離等於上層建築甲板的標準高度。在該曲線任何一點以上的上層建築甲板

的高度均不得小於上層建築的標準高度。該曲線應在決定前半部和後半部舷弧剖面時使用。

(13) （a） 如上層建築未延伸到尾垂線，則其高度超出標準高度部分不能作為對舷弧的補償。

（b） 如上層建築的高度小於標準高度，該上層建築甲板應不小於假想舷弧曲線任何一點以上上層建築的最小高度。為此目的，y 應取為上層建築在首垂線/尾垂線處的實際高度與最小高度（標準高度）的差值。

（c） 對後升高甲板，僅當此後升高甲板高度大於第 33 條所規定的“其他上層建築”標準高度時才計取舷弧，並且只能按該條規定計取後升高甲板高度超出標準高度的值。

（d） 如尾樓或首樓有傾斜端壁，則計取的舷弧可取高度的超出部分，應利用第（12）款中給出的公式，y 和 L' 的值按圖 38.3 所示計取。

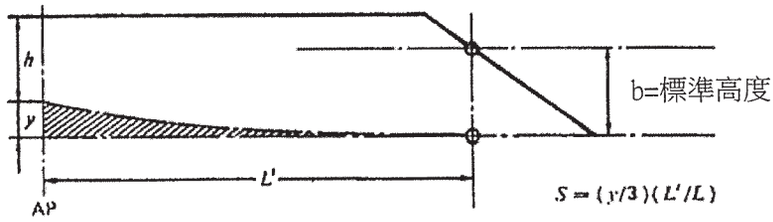


圖 38.3 多餘高度的舷弧計取

與標準舷弧剖面有差異時的修正

(14) 舷弧的修正應以舷弧的不足數或多餘數（見第（9）至（11）款）乘以

$$0.75-\frac{S_1}{2L}$$

其中：S_1 為第 34 條規定的無凸形甲板封閉的上層建築的總長 S。

舷弧不足，增加乾舷

(15) 如舷弧小於標準，對舷弧不足的修正數（見第（14）款），應加進乾舷。

舷弧多餘，減少乾舷

(16) 如船舶封閉的上層建築位於船中前後各 0.1L 處，則根據第（14）款的規定所計算的多餘舷弧修正數應從乾舷中減去；如船中沒有封閉的上層建築，則不應從乾舷中減去；如上層建築處於船中前後不及 0.1L，則從乾舷中減除的值應按線性內插法求得。對多餘舷弧的最大減除值應每 100m 船長為 125mm。

應用本款時，上層建築的高度應與其標準高度相聯繫。如該上層建築或後升高甲板低於標準高度，則減除值應按實際高度與標準高度之比。

第 39 條

最小船艏高度和儲備浮力

(1) 船艏高度（F_b）為在首垂線處自相應於核定夏季乾舷和設計縱傾的水線量到船側露天甲板上邊的垂直距離，此高度應不小於：

$$F_b = (6075(L/100) - 1875(L/100)^2 + 200(L/100)^3 \times (2.08 + 0.609C_b - 1.603C_{wf} - 0.0129(L/d_1))$$

式中： F_b 計算的最小船艏高度，mm；

L 第 3 條定義的長度，m；

B 第 3 條定義的寬度，m；

d_1 型深 D 的 85%處的吃水，m；

C_b 第 3 條定義的方形系數；

C_{wf} L/2 的前體水線面面積系數；和

A_{wf} 吃水 d_1 處 L/2 的前體水線面面積，m^2。

對勘劃木材乾舷的船舶，在應用第（1）款時應採用夏季乾舷（而非木材夏季乾舷）。

(2) 如第（1）款要求的船艏高度是由舷弧得到的，則舷弧應自首垂線量起至少延伸船長的 15%；如由設置上層建築得到的，此上層建築應自首柱延伸至首垂線後至少 0.07L 處，並應按第 3（10）條予以封閉。

(3) 適用於特殊作業要求的船舶，如不能滿足第（1）款和第（2）款的要求，主管機關可以作特殊考慮。

(4) （a） 即使首樓的長度小於 0.15L 但大於 0.07L，只要 0.07L 與首垂線之間首樓的高度不小於第 33 條所規定上層建築標準高度的一半，則首樓甲板的舷弧仍可予以計及。

（b） 如首樓的高度小於第 33 條定義的上層建築標準高度的一半，則計算的船艏高度可按下述確定（圖 39.1 和 39.2 分別說明（i）和（ii）的規定）：

（i） 如乾舷甲板有自 0.15L 之後延伸的舷弧，在首垂線後 0.15L 處取高度等於船中型深的一點為原點，作一通過首樓艙壁與甲板交點的拋物線，交於首垂線上一點，該點應不高於首樓甲板的高度（如圖 39.1 所示）。但是，如果圖 39.1 中高度 h_t 的值小於高度 h_b 的值，則在有效船艏高度中，h_t 可用 h_b 代替。

（ii）如乾舷甲板有延伸不到 0.15L 的舷弧或無舷弧，在 0.07L 處從首樓甲板邊線作一平行於基線的直線交首垂線上一點（如圖 39.2 所示）。

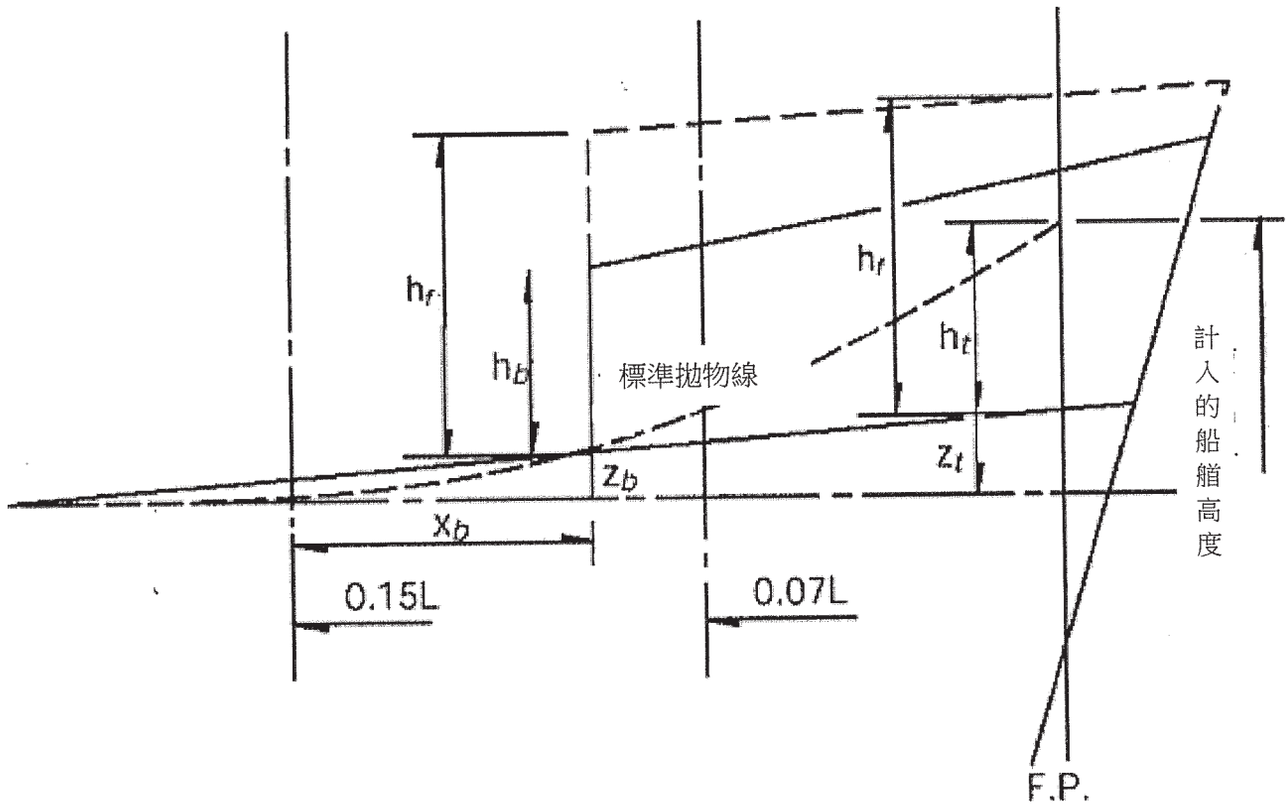


圖 39.1

$$h_t = Z_b[\frac{0.15L}{X_b}]^2 - Z_t$$

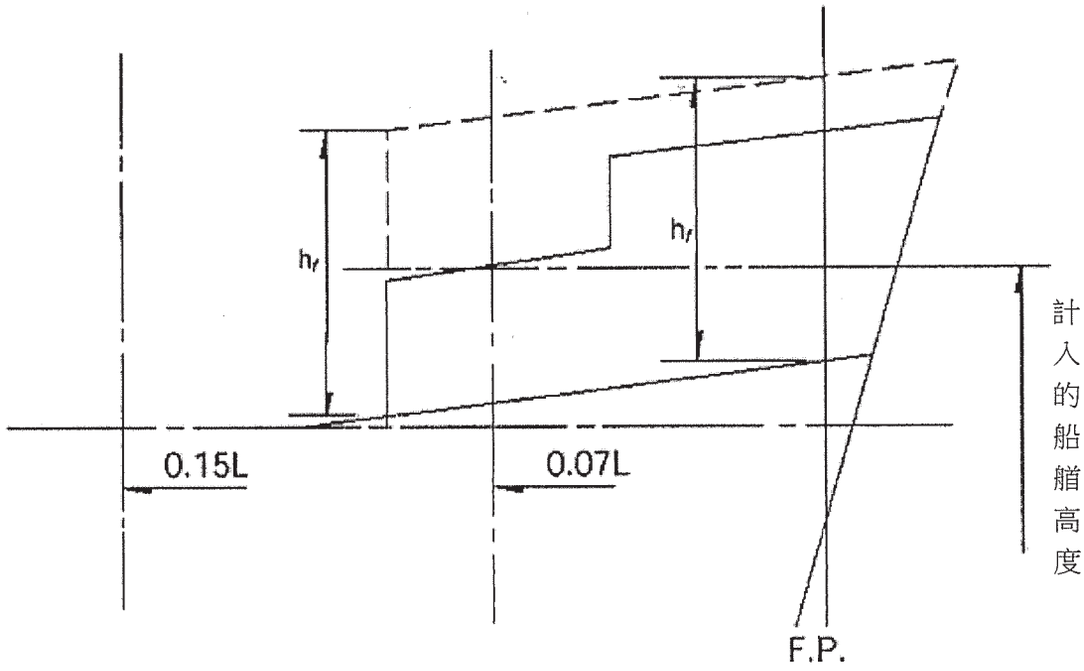


圖 39.2

h_f=第 33 條定義的上層建築標準高度的一半

(5) 除油船、化學品船和氣體運輸船以外的所有 B 型乾舷船舶，首部應有附加的儲備浮力。即在首垂線之後 0.15L 範圍內，夏季載重水線和甲板邊線之間的側投影面積（圖 39.3 中 A_1 和 A_2）和封閉上層建築（如設置）的側投影面積（A_3）之和應不小於：$(0.15 F_{min} + 4(L/3+10)) L/1000\ m^2$

其中： F_{min} 按下式計算：$F_{min}=(F_0 \times f_1)+f_2$；

F_0 表列乾舷，以 mm 計，從表 28.2 查得，在適用時須按第 27（9）或 27（10）修正；

f_1 第 30 條規定的方形系數修正；和

f_2 第 31 條規定的型深修正，mm。

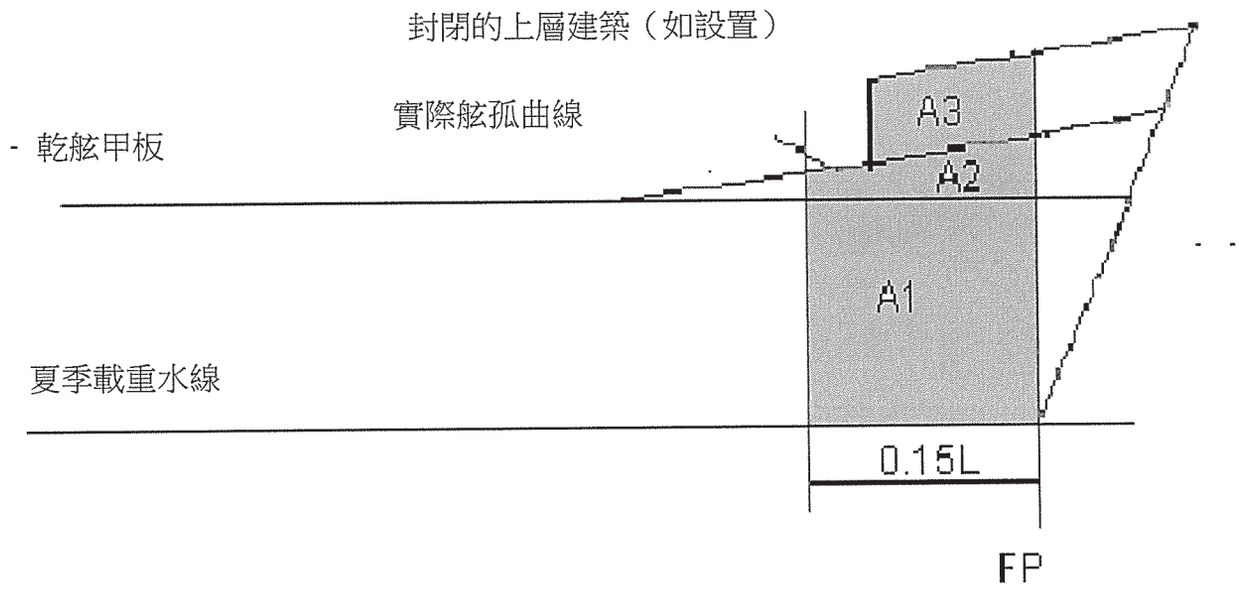


圖 39. 3

第 40 條

最小乾舷

夏季乾舷

(1) 夏季最小乾舷是將第 28 條列表中查出的乾舷，按第 27 條修正，如適用時，再按第 29、30、31、32、37、38 條修正，如第 39 條適用時，亦應按該條修正。

(2) 按第（1）款所算得的海水乾舷，但未按第 32 條規定作甲板線修正時，不得小於 50mm。對在位置 1 有艙口，其艙蓋不

符合 16（1）至（5）條或第 26 條要求的船舶，此乾舷應不小於 150mm。

熱帶乾舷

(3) 熱帶地帶的最小乾舷是從夏季乾舷內減去夏季吃水的 1/48，此夏季吃水係自龍骨上邊量至載重線標誌的圓圈中心。

(4) 按第（3）款所算得的海水乾舷，但未按第 32 條規定作甲板線修正時，不得小於 50mm。對在位置 1 有艙口，其艙蓋不符合 16（1）至（5）條或第 26 條要求的船舶，此乾舷不得小於 150mm。

冬季乾舷

(5) 冬季最小乾舷是將夏季乾舷加上夏季吃水的 1/48，此夏季吃水係自龍骨上邊量至載重線標誌的圓圈中心。

北大西洋冬季乾舷

(6) 對長度不超過 100m 的船舶，在冬季季節期進入第 52 條（附則 II）所規定的北大西洋的任何部分時，最小乾舷應是冬季乾舷另加 50mm。對於其他船舶，北大西洋冬季乾舷應為冬季乾舷。

淡水乾舷

(7) 在密度為 1.000 的淡水中，最小乾舷應為海水最小乾舷減去 $\frac{\Delta}{40T}$ cm。

式中： Δ 在夏季載重水線時的海水排水量（t）；

T 在夏季載重水線時的海水中每一釐米浸水噸數

(8) 如果在夏季載重水線時的排水量不能確定，減除數應為夏季吃水的 1/48，此夏季吃水係自龍骨上邊量至載重線標誌的圓圈中心。

第 IV 章

船舶核定木材乾舷的特殊要求

第 41 條

本章適用範圍

第 42 條至第 45 條僅適用於核定木材載重線的船舶。

第 42 條

定義

(1) *木材甲板貨*。“木材甲板貨”一詞係指在乾舷甲板或上層建築甲板的露天部分運載的木材貨物。此名詞不包括木質紙漿或類似貨物*。

(2) *木材載重線*。可以認為木材甲板貨給船舶以一定的附加浮力和增加抗禦海浪的能力。為此，運載木材甲板貨的船舶，可以允許根據第 45 條各項規定的計算減少乾舷，並根據第 6（3）和（4）條的規定，在船舷勘劃標誌。但是，為取得使用上述載運木材的特殊乾舷，木材甲板貨應符合第 44 條中規定的某些條件，並且船舶本身也應符合第 43 條中作出的有關船舶構造的某些條件。

第 43 條

船舶構造

上層建築

(1) 船舶應有首樓，其高度至少為標準高度，長度至少為 0.07L。此外，如果船長小於 100m，尾部應有高度至少為標準高度的尾樓，或者帶甲板室或堅固的鋼質罩棚的後升高甲板，且其總高度至少為標準高度。

雙層底艙

(2) 在船舶中部船長一半範圍內設置的雙層底艙，有適當的水密縱向分隔。

舷牆

(3) 船舶應裝有固定舷牆，其高度至少為 1m，上緣應特別加強並有與甲板連接的舷牆支架支撐，舷牆上設有必要的排水舷口，或者裝有同樣高度、結構特別加強的欄杆。

第 44 條

堆裝

通則

(1) 堆裝貨物的露天甲板上的開口應予安全的密閉。

通風筒和空氣管應予有效防護。

(2) 木材甲板貨應至少佈及全部可用長度，可用長度為上層建築間一個阱或幾個阱的總長度。

如果在後端無上層建築作限制，則木材應至少伸延到最後一個貨艙口的後端。

木材甲板貨應儘可能橫向分佈至船邊，對欄杆，舷牆支撐、立柱，領水員進出通道等障礙，要適當留有餘地，因而在船邊形成的任何間隙應不超出船寬平均的 4%。木材應儘可能緊密地堆裝，至少達到上層建築（非任何後升高甲板）的標準高度。

(3) 在冬季航行於冬季季節地帶的船舶上，甲板貨物在露天甲板上的高度，不得超過該船最大寬度的 1/3。

(4) 木材甲板貨應緊密地堆裝、捆綁並繫牢。在任何情況下，堆裝的木材不得妨礙船舶航行及船上必要的工作。

立柱

(5) 根據所運木材種類而需用的立柱，應在考慮船寬情況下具有足夠強度，立柱的強度不必超過舷牆的強度，立柱的間距應適合所運木材的長度和特徵，但不得超過 3m。應配備堅固的角鋼或金屬插座或同等有效設施來固定立柱。

綁索

(6) 木材甲板貨應在其全長範圍內，根據所載木材的特徵，用經主管機關批准的綁索系統有效地綁牢*。

穩性

(7) 為了在整個航行期間將船舶穩性保持在安全限度之內，要考慮到由於木材的吸水和結冰（如適用）而增加的重量，以及由於燃料和物料的消耗而減少的重量。

對船員的保護、出入機器處所等

(8) 除第 25（5）條的要求外，尚應在貨物甲板的每側設置欄杆

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* 參見經修訂的本組織最初以第 A-715（17）號大會決議通過的《載運木材甲板貨船舶安全操作規則》。

或安全索，其垂向間距不大於 350mm，其在貨物以上的高度至少 1m。

此外，應儘可能在接近船中心線處配備一條安全索，最好是鋼絲繩，並用鬆緊螺旋扣收緊。支持所有欄杆和安全索的支柱，其間距應能防止過分傾斜下垂。如果貨物是不平整的，應在貨物上鋪設一個安全的走道面，其寬度不少於 600mm，並可靠而牢固地裝在安全索下方或近安全索處。

(9) 如第（8）款所述要求不可行，可用主管機關滿意的其他替代裝置。

操舵裝置

(10) 操舵裝置應妥善加以保護，避免被貨物損壞，並儘可能便於到達。應備有可靠的設施，以便在主動操舵裝置失靈時能操縱船舶。

第 45 條

乾舷計算

(1) 最小夏季乾舷除應以下表中的百分數代替第 37 條中的修正百分數外，應按第 27（5）、27（6）、27（14）、28、29、30、31、32、37 和 38 條計算：

	上層建築的總有效長度										
	0	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L
各種上層建築的減除百分數	20	31	42	53	64	70	76	82	88	94	100

上層建築的總有效長度為中間值時，其減除百分數按線性內插法求得。

表 45.1

(2) 冬季木材乾舷，應在夏季木材乾舷上增加夏季木材型吃水的1/36。

(3) 北大西洋冬季木材乾舷應和第 40（6）條規定的北大西洋冬季乾舷相同。

(4) 熱帶木材乾舷，應從夏季木材乾舷中減去夏季木材型吃水的1/48。

(5) 淡水木材乾舷，應在夏季木材載重水線基礎上按第 40（7）條計算，或在量自龍骨上邊至夏季木材載重線的夏季木材吃水的基礎上按第 40（8）條計算。

(6) 只要按照常規 B 型乾舷來計算乾舷，減少乾舷的 B 型船可以核定木材乾舷。

(7) 當計算的冬季木材標記和（或）計算的北大西洋冬季木材標記位於減少乾舷的 B 型冬季乾舷標誌以下時，冬季木材標

記和（或）北大西洋冬季木材標記應勘劃在與減少乾舷的 B 型標記同一高度上。”

附則 II

地帶、區域和季節期

第 49 條

季節熱帶區域

2 第 7（b）款的原有條文用以下內容代替：

“（b） 區域範圍：

北面和東面，以熱帶地帶的南界為界；

南面，自澳大利亞的東海岸沿南緯 24°線至東經 154°，然後沿東經 154°子午線至南回歸線，再沿南回歸線至西經 150°，然後沿西經 150°子午線至南緯 20°，再沿南緯 20°線至與熱帶地帶的南方界限之交點；和

西面，以列入熱帶地帶的大堡礁以內的區域的界限和澳大利亞的東海岸為界。

季節期：

熱帶：自 4 月 1 日至 11 月 30 日

夏季：自 12 月 1 日至 3 月 31 日”

RESOLUTION MSC.143(77)
(adopted on 5 June 2003)

ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VI of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (hereinafter referred to as "the 1988 Load Lines Protocol") concerning amendment procedures,

HAVING CONSIDERED, at its seventy-seventh session, amendments to the 1988 Load Lines Protocol proposed and circulated in accordance with paragraph 2(a) of article VI thereof,

1. ADOPTS, in accordance with paragraph 2(d) of article VI of the 1988 Load Lines Protocol, amendments to Annex B to the 1988 Load Lines Protocol, the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with paragraph 2(f)(ii)(bb) of article VI of the 1988 Load Lines Protocol, that the said amendments shall be deemed to have been accepted on 1 July 2004, unless, prior to that date, more than one third of the Parties to the 1988 Load Lines Protocol or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of all the merchant fleets of all Parties, have notified their objections to the amendments;

3. INVITES the Parties concerned to note that, in accordance with paragraph 2(g)(ii) of article VI of the 1988 Load Lines Protocol, 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 paragraph 2(e) of article VI of the 1988 Load Lines Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 Load Lines Protocol;

5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization which are not Parties to the 1988 Load Lines Protocol.

ANNEX

AMENDMENTS TO ANNEX B TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

1 The existing text of Annex I to Annex B is replaced by the following:

"ANNEX I
REGULATIONS FOR DETERMINING LOAD LINES

CHAPTER I
GENERAL

The regulations assume that the nature and stowage of the cargo, ballast, etc., are such as to secure sufficient stability of the ship and the avoidance of excessive structural stress.

The regulations also assume that where there are international requirements relating to stability or subdivision, these requirements have been complied with.

Regulation 1
Strength and intact stability of ships

(1) The Administration shall satisfy itself that the general structural strength of the ship is adequate for the draught corresponding to the freeboard assigned.

(2) A ship which is designed, constructed and maintained in compliance with the appropriate requirements of an organization, including a classification society, which is recognized by the Administration or with applicable national standards of the Administration in accordance with the provisions of regulation 2-1, may be considered to provide an acceptable level of strength. The above provisions shall apply to all structures, equipment and fittings covered by this annex for which standards for strength and construction are not expressly provided.

(3) Ships shall comply with an intact stability standard acceptable to the Administration.

Regulation 2
Application

(1) Ships with mechanical means of propulsion or lighters, barges or other ships without independent means of propulsion, shall be assigned freeboards in accordance with the provisions of regulations 1 to 40, inclusive.

(2) Ships carrying timber deck cargoes may be assigned, in addition to the freeboards prescribed in paragraph (1), timber freeboards in accordance with the provisions of regulations 41 to 45.

(3) Ships designed to carry sail, whether as the sole means of propulsion or as a supplementary means, and tugs, shall be assigned freeboards in accordance with

the provisions of regulations 1 to 40, inclusive. Additional freeboard may be required as determined by the Administration.

(4) Ships of wood or of composite construction, or of other materials the use of which the Administration has approved, or ships whose constructional features are such as to render the application of the provisions of this Annex unreasonable or impracticable, shall be assigned freeboards as determined by the Administration.

(5) Regulations 10 to 26, inclusive, shall apply to every ship to which a minimum freeboard is assigned. Relaxations from these requirements may be granted to a ship to which a greater than minimum freeboard is assigned, on condition that the Administration is satisfied with the safety conditions provided.

(6) Where the assigned summer freeboard is increased such that the resulting draught is not more than that corresponding to a minimum summer freeboard for the same ship, but with an assumed freeboard deck located a distance below the actual freeboard deck at least equal to the standard superstructure height, the conditions of assignment in accordance with regulations 12, 14-1 through 20, 23, 24 and 25, as applicable, to the actual freeboard deck may be as required for a superstructure deck.

(7) Unless expressly provided otherwise, the regulations of this Annex shall apply to ships the keels of which are laid or which are at a similar stage of construction on or after 1 January 2005.

(8) For ships the keels of which are laid or which are at a similar stage of construction before 1 January 2005, the Administration shall ensure that the requirements which are applicable under the International Convention on Load Lines, 1966, as modified by the Protocol of 1988 relating thereto, adopted by the International Conference on Harmonized System of Survey and Certification, 1988, are complied with.

(9) High-speed craft which comply with the requirements of the International Code of Safety for High-Speed Craft, 2000 (2000 HSC Code), adopted by the Maritime Safety Committee of the Organization by resolution MSC.97(73) and which have been surveyed and certified as provided in the Code shall be deemed to have complied with the requirements of this Annex. The certificates and permits issued under the 2000 HSC Code shall have the same force and the same recognition as the certificates issued under this Annex.

Regulation 2-1
Authorization of recognized organizations

Organizations, including classification societies, referred to in article 13 of the Convention and regulation 1(2) shall comply with the guidelines adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the specifications adopted by the Organization by resolution A.789(19), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VI of the present Protocol.

Regulation 3
Definitions of terms used in the Annexes

(1) *Length*

(a) The length (L) shall be taken as 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or as the length from the fore side of the stem to the axis of the rudder stock on that waterline, if that be greater.

(b) For ships without a rudder stock, the length (L) is to be taken as 96% of the waterline at 85% of the least moulded depth.

(c) Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour (above that waterline) (see figure 3.1).

(d) In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline at 85% of the least moulded depth D_{min}, found by drawing a line parallel to the keel line of the vessel (including skeg) tangent to the moulded sheer line of the freeboard deck. The least moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side at the point of tangency (see figure 3.2).

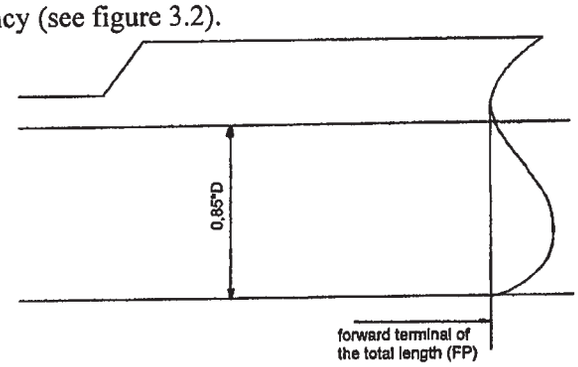

Figure 3.1

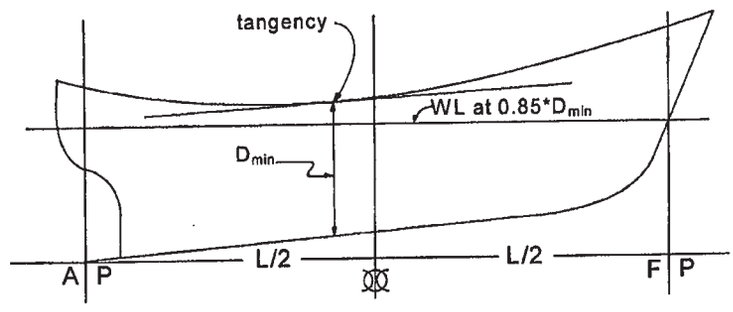

Figure 3.2

(2) *Perpendiculars.* The forward and after perpendiculars shall be taken at the forward and after ends of the length (L). The forward perpendicular shall coincide with the foreside of the stem on the waterline on which the length is measured.

(3) *Amidships.* Amidships is at the middle of the length (L).

(4) *Breadth.* Unless expressly provided otherwise, the breadth (B) is the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material.

(5) *Moulded depth*

(a) The moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. In wood and composite ships the distance is measured from the lower edge of the keel rabbet. Where the form at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

(b) In ships having rounded gunwales, the moulded depth shall be measured to the point of intersection of the moulded lines of deck and sides, the lines extending as though the gunwale were of angular design.

(c) Where the freeboard deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth shall be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part.

(6) *Depth for freeboard (D)*

(a) The depth for freeboard (D) is the moulded depth amidships, plus the freeboard deck thickness at side.

(b) The depth for freeboard (D) in a ship having a rounded gunwale with a radius greater than 4% of the breadth (B) or having topsides of unusual form is the depth for freeboard of a ship having a midship section with vertical topsides and with the same round of beam and area of topside section equal to that provided by the actual midship section.

(7) *Block coefficient*

(a) The block coefficient (C_b) is given by:

$$C_b = \frac{\nabla}{L \cdot B \cdot d_1} \text{ ; where}$$

∇ is the volume of the moulded displacement of the ship, excluding appendages, in a ship with a metal shell, and is the volume of displacement to the outer surface of the hull in a ship with a shell of any other material, both taken at a moulded draught of d_1; and where

d_1 is 85% of the least moulded depth.

(b) When calculating the block coefficient of a multi-hull craft, the full breadth (B) as defined in paragraph (4) is to be used and not the breadth of a single hull.

(8) *Freeboard.* The freeboard assigned is the distance measured vertically downwards amidships from the upper edge of the deck line to the upper edge of the related load line.

(9) *Freeboard deck.*

(a) The freeboard deck is normally the uppermost complete deck exposed to weather and sea, which has permanent means of closing all openings in the weather part thereof, and below which all openings in the sides of the ship are fitted with permanent means of watertight closing.

(b) Lower deck as a freeboard deck

At the option of the owner and subject to the approval of the Administration, a lower deck may be designated as the freeboard deck provided it is a complete and permanent deck continuous in a fore and aft direction at least between the machinery space and peak bulkheads and continuous athwartships.

(i) When this lower deck is stepped the lowest line of the deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck.

(ii) When a lower deck is designated as the freeboard deck, that part of the hull which extends above the freeboard deck is treated as a superstructure so far as concerns the application of the conditions of assignment and the calculation of freeboard. It is from this deck that the freeboard is calculated.

(iii) When a lower deck is designated as the freeboard deck, such deck as a minimum shall consist of suitably framed stringers at the ship sides and transversely at each watertight bulkhead which extends to the upper deck, within cargo spaces. The width of these stringers shall not be less than can be conveniently fitted having regard to the structure and the operation of the ship. Any arrangement of stringers shall be such that structural requirement can also be met.

(c) Discontinuous freeboard deck, stepped freeboard deck.

(i) Where a recess in the freeboard deck extends to the sides of the ship and is in excess of one metre in length, the lowest line of the exposed deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck (see figure 3.3).

(ii) Where a recess in the freeboard deck does not extend to the sides of the ship, the upper part of the deck is taken as the freeboard deck.

(iii) Recesses not extending from side to side in a deck below the exposed deck, designated as the freeboard deck, may be disregarded, provided all openings in the weather deck are fitted with weathertight closing appliances.

(iv) Due regard shall be given to the drainage of exposed recesses and to free surface effects on stability.

(v) Provisions of subparagraphs (i) through (iv) are not intended to apply to dredgers, hopper barges or other similar types of ships with large open holds, where each case requires individual consideration.

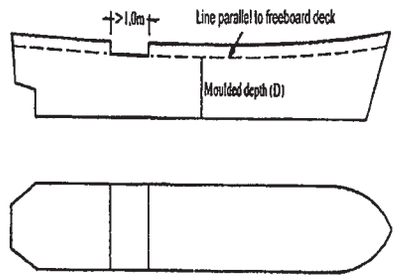

Figure 3.3

(10) *Superstructure*

(a) A superstructure is a decked structure on the freeboard deck, extending from side to side of the ship or with the side plating not being inboard of the shell plating more than 4% of the breadth (B).

(b) An enclosed superstructure is a superstructure with:

(i) enclosing bulkheads of efficient construction;

(ii) access openings, if any, in these bulkheads fitted with doors complying with the requirements of regulation 12;

(iii) all other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing.

A bridge or poop shall not be regarded as enclosed unless access is provided for the crew starting from any point on the uppermost complete exposed deck or higher to reach machinery and other working spaces inside these superstructures by alternative means which are available at all times when bulkhead openings are closed.

(c) The height of a superstructure is the least vertical height measured at side from the top of the superstructure deck beams to the top of the freeboard deck beams.

(d) The length of a superstructure (S) is the mean length of the part of the superstructure which lies within the length (L).

(e) Bridge. A bridge is a superstructure which does not extend to either the forward or after perpendicular.

(f) Poop. A poop is a superstructure which extends from the after perpendicular forward to a point which is aft of the forward perpendicular. The poop may originate from a point aft of the aft perpendicular.

(g) Forecastle. A forecastle is a superstructure which extends from the forward perpendicular aft to a point which is forward of the after perpendicular. The forecastle may originate from a point forward of the forward perpendicular.

(h) Full superstructure. A full superstructure is a superstructure which, as a minimum, extends from the forward to the after perpendicular.

(i) Raised quarterdeck. A raised quarterdeck is a superstructure which extends forward from the after perpendicular, generally has a height less than a normal superstructure, and has an intact front bulkhead (sidescuttles of the non-opening type fitted with efficient deadlights and bolted man hole covers) (see figure 3.4). Where the forward bulkhead is not intact due to doors and access openings, the superstructure is then to be considered as a poop.

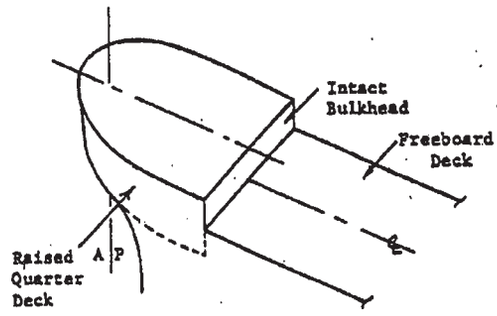

Figure 3.4

(11) *Superstructure deck.* A superstructure deck is a deck forming the upper boundary of a superstructure.

(12) *Flush deck ship.* A flush deck ship is one which has no superstructure on the freeboard deck.

(13) *Weathertight.* Weathertight means that in any sea conditions water will not penetrate into the ship.

(14) *Watertight.* Watertight means capable of preventing the passage of water through the structure in either direction with a proper margin of resistance under the pressure due to the maximum head of water which it might have to sustain.

(15) *Well.* A well is any area on the deck exposed to the weather, where water may be entrapped. Wells are considered to be deck areas bounded on two or more sides by deck structures.

Regulation 4
Deck line

The deck line is a horizontal line 300 mm in length and 25 mm in breadth. It shall be marked amidships on each side of the ship, and its upper edge shall normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell (as illustrated in figure 4.1), provided that the deck line may be placed with reference to another fixed point on the ship on condition that the freeboard is correspondingly corrected. The location of the reference point and the identification of the freeboard deck shall in all cases be indicated on the International Load Line Certificate.

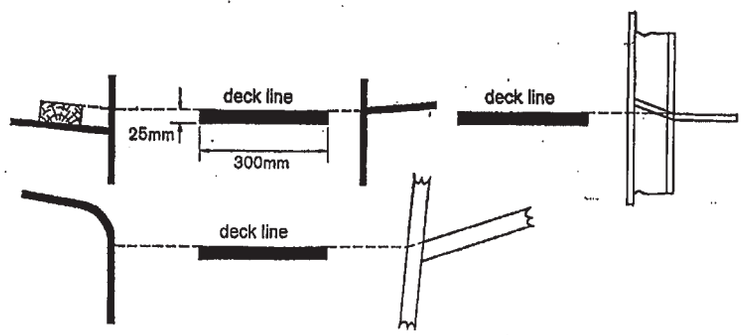

Figure 4.1 Deck line

Regulation 5
Load line mark

The load line mark shall consist of a ring 300 mm in outside diameter and 25 mm wide which is intersected by a horizontal line 450 mm in length and 25 mm in breadth, the upper edge of which passes through the centre of the ring. The centre of the ring shall be placed amidships and at a distance equal to the assigned summer freeboard measured vertically below the upper edge of the deck line (as illustrated in figure 6.1).

Regulation 6
Lines to be used with the load line mark

(1) The lines which indicate the load line assigned in accordance with these regulations shall be horizontal lines 230 mm in length and 25 mm in breadth which extend forward of, unless expressly provided otherwise, and at right angles to, a vertical line 25 mm in breadth marked at a distance 540 mm forward of the centre of the ring (as illustrated in figure 6.1).

(2) The following load lines shall be used:

(a) The Summer Load Line indicated by the upper edge of the line which passes through the centre of the ring and also by a line marked S.

(b) The Winter Load Line indicated by the upper edge of a line marked W.

(c) The Winter North Atlantic Load Line indicated by the upper edge of a line marked WNA.

(d) The Tropical Load Line indicated by the upper edge of a line marked T.

(e) The Fresh Water Load Line in summer indicated by the upper edge of a line marked F. The Fresh Water Load Line in summer is marked abaft the vertical line. The difference between the Fresh Water Load Line in summer and the Summer Load Line is the allowance to be made for loading in fresh water at the other load lines.

(f) The Tropical Fresh Water Load Line indicated by the upper edge of a line marked TF and marked abaft the vertical line.

(3) If timber freeboards are assigned in accordance with these regulations, the timber load lines shall be marked in addition to ordinary load lines. These lines shall be horizontal lines 230 mm in length and 25 mm in breadth which extend abaft unless expressly provided otherwise, and are at right angles to, a vertical line 25 mm in breadth marked at a distance 540 mm abaft the centre of the ring (as illustrated in figure 6.2).

(4) The following timber load lines shall be used:

(a) The Summer Timber Load Line indicated by the upper edge of a line marked LS.

(b) The Winter Timber Load Line indicated by the upper edge of a line marked LW.

(c) The Winter North Atlantic Timber Load Line indicated by the upper edge of a line marked LWNA.

(d) The Tropical Timber Load Line indicated by the upper edge of a line marked LT.

(e) The Fresh Water Timber Load Line in summer indicated by the upper edge of a line marked LF and marked forward of the vertical line. The difference between the Fresh Water Timber Load Line in summer and the Summer Timber Load Line is the allowance to be made for loading in fresh water at the other timber load lines.

(f) The Tropical Fresh Water Timber Load Line indicated by the upper edge of a line marked LTF and marked forward of the vertical line.

(5) Where the characteristics of a ship or the nature of the ship's service or navigational limits make any of the seasonal lines inapplicable, these lines may be omitted.

(6) Where a ship is assigned a greater than minimum freeboard so that the load line is marked at a position corresponding to, or lower than, the lowest seasonal load line assigned at minimum freeboard in accordance with the present Protocol, only the Fresh Water Load Line need be marked.

(7) Where a Winter North Atlantic Load Line is identical with the Winter Load Line corresponding to the same vertical line, this load line shall be marked W.

(8) Alternative/additional load lines required by other international conventions in force may be marked at right angles to and abaft the vertical line specified in paragraph (1).

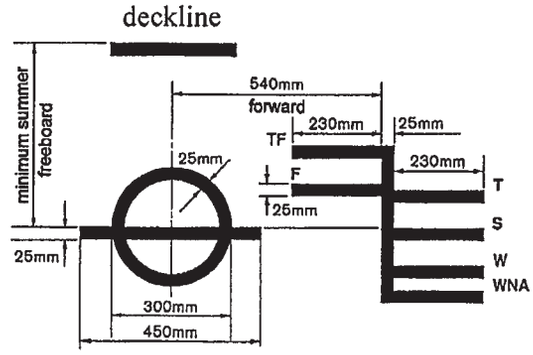

Figure 6.1 Load line mark and lines to be used with this mark

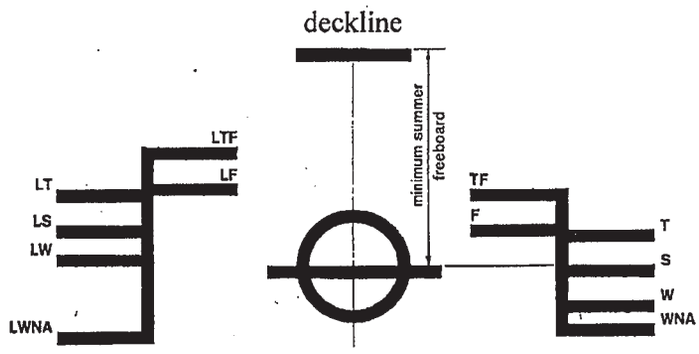

Figure 6.2 Timber load line mark and lines to be used with this mark

Regulation 7
Mark of assigning Authority

The mark of the Authority by whom the load lines are assigned may be indicated alongside the load line ring above the horizontal line which passes through the centre of the ring, or above and below it. This mark shall consist of not more than four initials to identify the Authority's name, each measuring approximately 115 mm in height and 75 mm in width.

Regulation 8
Details of marking

The ring, lines and letters shall be painted in white or yellow on a dark ground or in black on a light ground. They shall also be permanently marked on the sides of the ships to the satisfaction of the Administration. The marks shall be plainly visible and, if necessary, special arrangements shall be made for this purpose.

Regulation 9
Verification of marks

The International Load Line Certificate shall not be delivered to the ship until the officer or surveyor acting under the provisions of article 13 of the Convention has certified that the marks are correctly and permanently indicated on the ship's sides.

CHAPTER II
CONDITIONS OF ASSIGNMENT OF FREEBOARD

Regulation 10
Information to be supplied to the master

(1) The master of every new ship shall be supplied with information to arrange for the loading and ballasting of his ship in such a way as to avoid the creation of any unacceptable stresses in the ship's structure, provided that this requirement need not apply to any particular length, design or class of ship where the Administration considers it to be unnecessary.

(2) Information shall be provided to the master in a form that is approved by the Administration or a recognised organization. Stability information, and loading information also related to ship strength when required under paragraph (1), shall be carried on board at all times together with evidence that the information has been approved by the Administration.

(3) A ship which is not required under the International Convention for Safety of Life at Sea in force to undergo an inclining test upon its completion shall:

(a) be so inclined and the actual displacement and position of the centre of gravity shall be determined for the lightship condition;

(b) if the Administration so approves, have its inclining test on completion dispensed with, provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for the ship can be obtained from such basic data;

(c) if the Administration decides that the performance of an inclining experiment is not practicable or safe or yields inaccurate results due to the specific proportions, arrangements, strength or hull form of a ship, have the ship's lightship characteristics determined by a detailed weight estimate confirmed by a lightweight survey;

(d) have such information supplied for the use of its master as is necessary to enable the master, by rapid and simple processes, to obtain accurate guidance as to the stability of the ship under all conditions likely to be encountered in normal service; and

(e) carry on board at all times its approved stability information together with evidence that the information has been approved by the Administration.

(4) Where any alterations are made to a ship so as to materially affect the loading or stability information supplied to the master, amended information shall be provided. If necessary the ship shall be re-inclined.

Regulation 11
Superstructure end bulkheads

Bulkheads at exposed ends of enclosed superstructures shall be of an acceptable level of strength.

Regulation 12
Doors

(1) All access openings in bulkheads at ends of enclosed superstructures shall be fitted with doors of steel or other equivalent material, permanently and strongly attached to the bulkhead, and framed, stiffened and fitted so that the whole structure is of equivalent strength to the un-pierced bulkhead and weathertight when closed. The means for securing these doors weathertight shall consist of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves, and the doors shall be so arranged that they can be operated from both sides of the bulkhead.

(2) Unless otherwise permitted by the Administration, doors shall open outwards to provide additional security against the impact of the sea.

(3) Except as otherwise provided in these regulations, the height of the sills of access openings in bulkheads at ends of enclosed superstructures shall be at least 380 mm above the deck.

(4) Portable sills shall be avoided. However, in order to facilitate the loading/unloading of heavy spare parts or similar, portable sills may be fitted on the following conditions:

(a) they shall be installed before the ship leaves port; and

(b) they shall be gasketed and fastened by closely spaced through bolts.

Regulation 13
Position of hatchways, doorways and ventilators

For the purpose of these regulations, two positions of hatchways, doorways and ventilators are defined as follows:

Position 1 - Upon exposed freeboard and raised quarter decks, and upon exposed superstructure decks situated forward of a point located a quarter of the ship's length from the forward perpendicular.

Position 2 - Upon exposed superstructure decks situated abaft a quarter of the ship's length from the forward perpendicular and located at least one standard height of superstructure above the freeboard deck.

Upon exposed superstructure decks situated forward of a point located a quarter of the ship's length from the forward perpendicular and located at least two standard heights of superstructure above the freeboard deck.

Regulation 14
Cargo and other hatchways

(1) The construction and means for securing the weathertightness of cargo and other hatchways in position 1 and 2 shall be at least equivalent to the requirements of regulation 16, unless the application of regulation 15 to such hatchways is granted by the Administration.

(2) Coamings and hatchway covers to exposed hatchways on decks above the superstructure deck shall comply with the requirements of the Administration.

Regulation 14-1
Hatchway coamings

(1) The coamings of hatchways shall be of substantial construction in accordance with their position, and their height above the deck shall be at least as follows:

(a) 600 mm if in position 1; and

(b) 450 mm if in position 2.

(2) In the case of hatchways which comply with regulation 16(2) through (5), the height of these coamings may be reduced, or the coamings omitted entirely, on condition that the Administration is satisfied that the safety of the ship is not thereby impaired in any sea conditions.

Regulation 15
Hatchways closed by portable covers and secured weathertight by tarpaulins and battening devices

Hatchway covers

(1) The width of each bearing surface for hatchway covers shall be at least 65 mm.

(2) Where covers are made of wood, the finished thickness shall be at least 60 mm in association with a span of not more than 1.5 m.

(3) Where covers are made of mild steel the strength shall be calculated in accordance with the requirement of regulation 16(2) to (4) and the product of the maximum stress thus calculated and the factor 1.25 shall not exceed the minimum upper yield point strength of the material. They shall be so designed as to limit the deflection to not more than 0.0056 times the span under these loads.

Portable beams

(4) Where portable beams for supporting hatchway covers are made of mild steel, the strength shall be calculated with assumed loads not less than 3.5 t/m^2 on hatchways in position 1 and not less than 2.6 t/m^2 on hatchways in position 2 and the product of the maximum stress thus calculated and the factor 1.47 shall not exceed the minimum upper yield point strength of the material. They shall be so designed as to limit the deflection to not more than 0.0044 times the span under these loads.

(5) The assumed loads on hatchways in position 1 may be reduced to 2 t/m^2 for ships 24 m in length and shall be not less than 3.5 t/m^2 for ships 100 m in length. The corresponding loads on hatchways in position 2 may be reduced to 1.5 t/m^2 and 2.6 t/m^2, respectively. In all cases, values at intermediate lengths shall be obtained by linear interpolation.

Pontoon covers

(6) Where pontoon covers used in place of portable beams and covers are made of mild steel, the strength shall be calculated in accordance with the requirement of regulation 16(2) to (4) and the product of the maximum stress thus calculated and the factor 1.47 shall not exceed the minimum upper yield point strength of the material. They shall be so designed as to limit the deflection to not more than 0.0044 times the span. Mild steel plating forming the tops of covers shall be not less in thickness than 1% of the spacing of stiffeners or 6 mm if that be greater.

(7) The strength and stiffness of covers made of materials other than mild steel shall be equivalent to those of mild steel to the satisfaction of the Administration.

Carriers or sockets

(8) Carriers or sockets for portable beams shall be of substantial construction, and shall provide means for the efficient fitting and securing of the beams. Where

rolling types of beams are used, the arrangements shall ensure that the beams remain properly in position when the hatchway is closed.

Cleats

(9) Cleats shall be set to fit the taper of the wedges. They shall be at least 65 mm wide and spaced not more than 600 mm centre to centre; the cleats along each side or end shall be not more than 150 mm from the hatch corners.

Battens and wedges

(10) Battens and wedges shall be efficient and in good condition. Wedges shall be of tough wood or other equivalent material. They shall have a taper of not more than 1 in 6 and shall be not less than 13 mm thick at the toes.

Tarpaulins

(11) At least two layers of tarpaulin in good condition shall be provided for each hatchway in position 1 or 2. The tarpaulins shall be waterproof and of ample strength. They shall be of a material of at least an approved standard weight and quality.

Securing of hatchway covers

(12) For all hatchways in position 1 or 2 steel bars or other equivalent means shall be provided in order efficiently and independently to secure each section of hatchway covers after the tarpaulins are battened down. Hatchway covers of more than 1.5 m in length shall be secured by at least two such securing appliances.

Regulation 16
Hatchways closed by weathertight covers of steel or other equivalent materials

(1) All hatchways in position 1 and 2 shall be fitted with hatch covers of steel or other equivalent material. Except as provided in regulation 14(2), such covers shall be weathertight and fitted with gaskets and clamping devices. The means for securing and maintaining weathertightness shall be to the satisfaction of the Administration. The arrangements shall ensure that the tightness can be maintained in any sea conditions, and for this purpose tests for tightness shall be required at the initial survey, and may be required at renewal and annual surveys or at more frequent intervals.

Hatch cover minimum design loads

(2) For ships of 100 m in length and above:

(a) Position 1 hatch covers located in the forward quarter of the ship's length shall be designed for wave loads at the forward perpendicular, calculated from the following equation:

$$\text{Load} = 5 + (L_H\text{-}100)a \text{ in } t/m^2$$

where :

L_H is L for ships of not more than 340 m but not less than 100 m in length and equal to 340 m for ships of more than 340 m in length;

L is the length of the ship (meters), as defined in regulation 3;

a is given in table 16.1,

and reduced linearly to 3.5 t/m^2 at the end of the forward quarter's length, as shown in table 16.2. The design load used for each hatch cover panel shall be that determined at its midpoint location.

(b) All other position 1 hatch covers shall be designed to 3.5 t/m^2.

(c) Position 2 hatch covers shall be designed to 2.6 t/m^2.

(d) Where a position 1 hatchway is located at least one superstructure standard height higher than the freeboard deck, it may be designed to 3.5 t/m^2.

	a
Type B freeboard ships	0.0074
Ships assigned reduced freeboard by regulation 27(9) or (10)	0.0363

Table 16.1

(3) For ships 24 m in length:

(a) Position 1 hatch covers located in the forward quarter of the ship's length shall be designed for wave loads of 2.43 t/m^2 at the forward perpendicular and reduced linearly to 2 t/m^2 at the end of the forward quarter's length as shown in table 16.2. The design load used for each hatch cover panel shall be that determined at its midpoint location.

(b) All other position 1 hatch covers shall be designed to 2 t/m^2.

(c) Position 2 hatch covers shall be designed to 1.5 t/m^2.

(d) Where a position 1 hatchway is located at least one superstructure standard height higher than the freeboard deck, it may be designed to 2 t/m^2.

(4) For ships between 24 m and 100 m in length, and for positions between FP and 0.25L, wave loads shall be obtained by linear interpolation of the values shown in table 16.2.

	Longitudinal position		
	FP	0.25L	Aft of 0.25L
L>100 m			
Freeboard deck	Equation in 16(2)(a)	3.5 t/m^2	3.5 t/m^2
Superstructure deck	3.5 t/m^2		2.6 t/m^2
L=100 m			
Freeboard deck	5 t/m^2	3.5t/m^2	3.5 t/m^2
Superstructure deck	3.5 t/m^2		2.6 t/m^2
L=24 m			
Freeboard deck	2.43 t/m^2	2 t/m^2	2 t/m^2
Superstructure deck	2 t/m^2		1.5 t/m^2

Table 16.2

(5) All hatch covers shall be designed such that:

(a) the product of the maximum stress determined in accordance with the above loads and the factor of 1.25 does not exceed the minimum upper yield point strength of the material in tension and the critical buckling strength in compression;

(b) the deflection is limited to not more than 0.0056 times the span;

(c) steel plating forming the tops of covers is not less in thickness than 1% of the spacing of stiffeners or 6 mm if that be greater; and

(d) an appropriate corrosion margin is incorporated.

Securing arrangements

(6) The means for securing and maintaining weathertightness by other means than gaskets and clamping shall be to the satisfaction of the Administration.

(7) Hatch covers which rest on coamings shall be located in their closed position by means capable of withstanding horizontally acting loads in any sea conditions.

Regulation 17
Machinery space openings

(1) Machinery space openings in position 1 or 2 shall be properly framed and efficiently enclosed by steel casings of ample strength, and where the casings are not protected by other structures their strength shall be specially considered. Access openings in such casings shall be fitted with doors complying with the requirements of regulation 12(1), the sills of which shall be at least 600 mm above the deck if in position 1, and at least 380 mm above the deck if in position 2.

Other openings in such casings shall be fitted with equivalent covers, permanently attached in their proper positions.

(2) Where machinery casings are not protected by other structures, double doors (i.e. inner and outer doors complying with the requirements of regulation 12(1)) shall be required for ships assigned freeboards less than those based on table 28.2 of regulation 28. An inner sill of 230 mm in conjunction with the outer sill of 600 mm shall be provided.

(3) Coamings of any fiddley, funnel or machinery space ventilator in an exposed position on the freeboard deck or superstructure deck shall be as high above the deck as is reasonable and practicable. In general, ventilators necessary to continuously supply the machinery space shall have coamings of sufficient height to comply with regulation 19(3), without having to fit weathertight closing appliances. Ventilators necessary to continuously supply the emergency generator room, if this is considered buoyant in the stability calculation or protecting opening leading below, shall have coamings of sufficient height to comply with regulation 19(3), without having to fit weathertight closing appliances.

(4) Where due to ship size and arrangement this is not practicable, lesser heights for machinery space and emergency generator room ventilator coamings, fitted with weathertight closing appliances in accordance with regulation 19(4), may be permitted by the Administration in combination with other suitable arrangements to ensure an uninterrupted, adequate supply of ventilation to these spaces.

(5) Fiddley openings shall be fitted with strong covers of steel or other equivalent material permanently attached in their proper positions and capable of being secured weathertight.

Regulation 18
Miscellaneous openings in freeboard and superstructure decks

(1) Manholes and flush scuttles in position 1 or 2 or within superstructures other than enclosed superstructures shall be closed by substantial covers capable of being made watertight. Unless secured by closely spaced bolts, the covers shall be permanently attached.

(2) Openings in freeboard decks other than hatchways, machinery space openings, manholes and flush scuttles shall be protected by an enclosed superstructure, or by a deckhouse or companionway of equivalent strength and weathertightness. Similarly, any such opening in an exposed superstructure deck, in the top of a deckhouse on the freeboard deck which gives access to a space below the freeboard deck or a space within an enclosed superstructure shall be protected by an efficient deckhouse or companionway. Doorways in such companionways or deckhouses that lead or give access to stairways leading below, shall be fitted with doors in accordance with regulation 12(1). Alternatively, if stairways within a deckhouse are enclosed within properly constructed companionways fitted with doors complying with regulation 12(1), the external door need not be weathertight.

(3) Openings in the top of a deckhouse on a raised quarterdeck or superstructure of less than standard height, having a height equal to or greater than the standard quarterdeck height, shall be provided with an acceptable means of closing but need not be protected by an efficient deckhouse or companionway as defined in the regulation, provided that the height of the deckhouse is at least the standard height of a superstructure. Openings in the top of the deck house on a deck house of less than a standard superstructure height may be treated in a similar manner.

(4) In position 1 the height above the deck of sills to the doorways in companionways shall be at least 600 mm. In position 2 it shall be at least 380 mm.

(5) Where access is provided from the deck above as an alternative to access from the freeboard deck in accordance with regulation 3(10)(b), then the height of sills into a bridge or poop shall be 380 mm. The same shall apply to deckhouses on the freeboard deck.

(6) Where access is not provided from above, the height of the sills to doorways in deckhouses on the freeboard deck shall be 600 mm.

(7) Where the closing appliances of access openings in superstructures and deckhouses are not in accordance with regulation 12(1), interior deck openings shall be considered exposed (i.e. situated in the open deck).

Regulation 19
Ventilators

(1) Ventilators in position 1 or 2 to spaces below freeboard deck or decks of enclosed superstructures shall have coamings of steel or other equivalent material, substantially constructed and efficiently connected to the deck. Ventilators in position 1 shall have coamings of a height of at least 900 mm above the deck; in position 2 the coamings shall be of a height at least 760 mm above the deck. Where the coaming of any ventilator exceeds 900 mm in height it shall be specially supported.

(2) Ventilators passing through superstructures other than enclosed superstructures shall have substantially constructed coamings of steel or other equivalent material at the freeboard deck.

(3) Ventilators in position 1 the coamings of which extend to more than 4.5 m above the deck, and in position 2 the coamings of which extend to more than 2.3 m above the deck, need not be fitted with closing arrangements unless specifically required by the Administration.

(4) Except as provided in paragraph (3), ventilator openings shall be provided with weathertight closing appliances of steel or other equivalent material. In ships of not more than 100 m in length the closing appliances shall be permanently attached; where not so provided in other ships, they shall be conveniently stowed near the ventilators to which they are to be fitted.

(5) In exposed locations, the height of coamings may be increased to the satisfaction of the Administration.

Regulation 20
Air pipes

(1) Where air pipes to ballast and other tanks extend above the freeboard or superstructure decks, the exposed parts of the pipes shall be of substantial construction; the height from the deck to the point where water may have access below shall be at least 760 mm on the freeboard deck and 450 mm on the superstructure deck.

(2) Where these heights may interfere with the working of the ship, a lower height may be approved, provided that the Administration is satisfied that the closing arrangements and other circumstances justify a lower height.

(3) Air pipes shall be provided with automatic closing devices.

(4) Pressure-vacuum valves (PV valves) may be accepted on tankers.

Regulation 21
Cargo ports and other similar openings

(1) Cargo ports and other similar openings in the sides of ships below the freeboard deck shall be fitted with doors so designed as to ensure the same watertightness and structural integrity as the surrounding shell plating. Unless otherwise granted by the Administration, these opening shall open outwards. The number of such openings shall be the minimum compatible with the design and proper working of the ship.

(2) Unless otherwise permitted by the Administration, the lower edge of openings referred to in paragraph (1) shall not be below a line drawn parallel to the freeboard deck at side, which is at its lowest point at least 230 mm above the upper edge of the uppermost load line.

(3) Where it is permitted to arrange cargo ports and other similar openings with their lower edge below the line specified in paragraph (2), additional features shall be fitted to maintain the watertight integrity.

(4) The fitting of a second door of equivalent strength and watertightness is one acceptable arrangement. A leakage detection device shall be provided in the compartment between the two doors. Drainage of this compartment to the bilges, controlled by a readily accessible screw down valve, shall be arranged. The outer door shall open outwards.

(5) Arrangements for bow doors and their inner doors, side doors and stern doors and their securings shall be in compliance with the requirements of a recognised organization, or with the applicable national standards of the Administration which provide an equivalent level of safety.

Regulation 22
Scuppers, inlets and discharges

(1) (a) Discharges led through the shell either from spaces below the freeboard deck or from within superstructures and deckhouses on the freeboard deck fitted with doors complying with the requirements of regulation 12 shall, except as provided in paragraph (2), be fitted with efficient and accessible means for preventing water from passing inboard. Normally each separate discharge shall have one automatic non-return valve with a positive means of closing it from a position above the freeboard deck. Where the inboard end of the discharge pipe is located at least 0.01L above the Summer Load Line, the discharge may have two automatic non-return valves without positive means of closing. Where that vertical distance exceeds 0.02L, a single automatic non-return valve without positive means of closing may be accepted. The means for operating the positive action valve shall be readily accessible and provided with an indicator showing whether the valve is open or closed.

(b) One automatic non-return valve and one sluice valve controlled from above the freeboard deck instead of one automatic non-return valve with a positive means of closing from a position above the freeboard deck, is acceptable.

(c) Where two automatic non-return valves are required, the inboard valve shall always be accessible for examination under service conditions (i.e., the inboard valve shall be above the level of the Tropical Load Line). If this is not practicable, the inboard valve need not be located above the Tropical Load Line, provided that a locally controlled sluice valve is fitted between the two automatic non-return valves.

(d) Where sanitary discharges and scuppers lead overboard through the shell in way of machinery spaces, a locally operated positive closing valve at the shell, together with a non-return valve inboard, is acceptable. The controls of the valves shall be in an easily accessible position.

(e) The position of the inboard end of discharges shall be related to the Summer Timber Load Line when a timber freeboard is assigned.

(f) The requirements for non-return valves are applicable only to those discharges which remain open during the normal operation of a ship. For discharges which are to be kept closed at sea, a single screw down valve operated from the deck is acceptable.

(g) Table 22.1 provides the acceptable arrangements of scuppers, inlets and discharges.

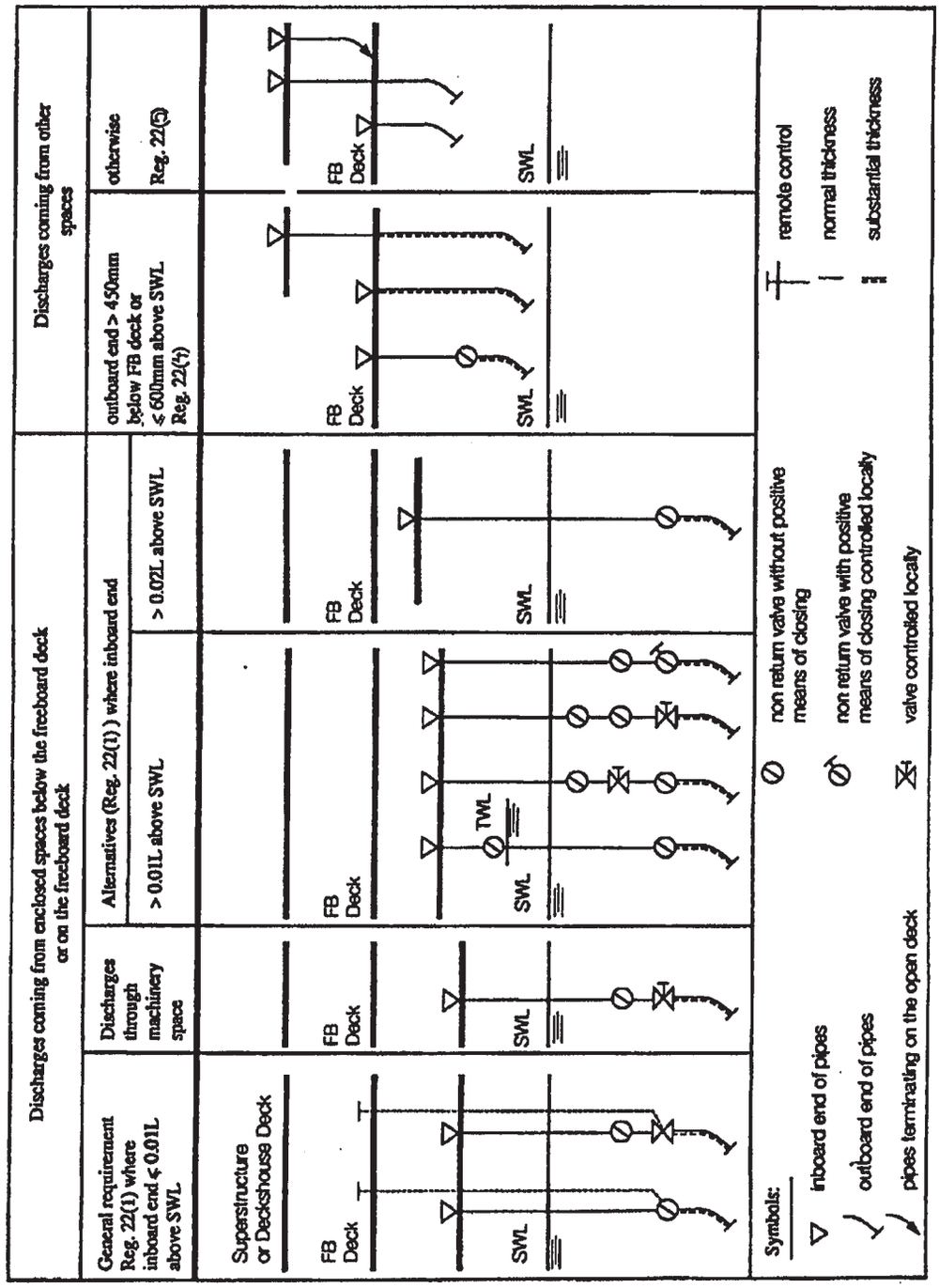

Table 22.1

(2) Scuppers led through the shell from enclosed superstructures used for the carriage of cargo shall be permitted only where the edge of the freeboard deck is not immersed when the ship heels 5° either way. In other cases the drainage shall be led inboard in accordance with the requirements of the International Convention for the Safety of Life at Sea in force.

(3) In manned machinery spaces, main and auxiliary sea inlets and discharges in connection with the operation of machinery may be controlled locally. The controls shall be readily accessible and shall be provided with indicators showing whether the valves are open or closed.

(4) Scuppers and discharge pipes originating at any level and penetrating the shell either more than 450 mm below the freeboard deck or less than 600 mm above the Summer Load Line shall be provided with a non-return valve at the shell. This valve, unless required by paragraph (2), may be omitted if the piping is of substantial thickness (see paragraph (7) below).

(5) Scuppers leading from superstructures or deckhouses not fitted with doors complying with the requirements of regulation 12 shall be led overboard.

(6) All shell fittings and the valves required by this regulation shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. All pipes to which this regulation refers shall be of steel or other equivalent material to the satisfaction of the Administration.

(7) Scupper and discharge pipes:

(a) For scupper and discharge pipes, where substantial thickness is not required:

(i) for pipes having an external diameter equal to or less than 155 mm, the thickness shall not be less than 4.5 mm;

(ii) for pipes having an external diameter equal to or more than 230 mm, the thickness shall not be less than 6 mm.

Intermediate sizes shall be determined by linear interpolation.

(b) For scupper and discharge pipes, where substantial thickness is required:

(i) for pipes having an external diameter equal to or less than 80 mm, the thickness shall not be less than 7 mm;

(ii) for pipes having an external diameter of 180 mm, the thickness shall not be less than 10 mm;

(iii) for pipes having an external diameter equal to or more than 220 mm, the thickness shall not be less than 12.5 mm.

Intermediate sizes shall be determined by linear interpolation.

Regulation 22-1
Garbage chutes

(1) Two gate valves controlled from the working deck of the chute instead of the non-return valve with a positive means of closing from a position above the freeboard deck which comply with the following requirements are acceptable:

(a) the lower gate valve shall be controlled from a position above the freeboard deck. An interlock system between the two valves shall be arranged;

(b) the inboard end shall be located above the waterline formed by an 8.5° heel to port or starboard at a draft corresponding to the assigned summer freeboard, but not less than 1,000 mm above the summer waterline. Where the inboard end exceeds 0.01L above the summer waterline, valve control from the freeboard deck is not required, provided the inboard gate valve is always accessible under service conditions; and

(c) alternatively, the upper and lower gate valves may be replaced by a hinged weathertight cover at the inboard end of the chute together with a discharge flap. The cover and flap shall be arranged with an interlock so that the discharge flap cannot be operated until the hopper cover is closed.

(2) The entire chute, including the cover, shall be constructed of material of substantial thickness.

(3) The controls for the gate valves and/or hinged covers shall be clearly marked: "Keep closed when not in use".

(4) Where the inboard end of the chute is below the freeboard deck of a passenger ship or the equilibrium waterlines of a cargo ship to which damage stability requirements apply, then:

(a) the inboard end hinged cover/valve shall be watertight;

(b) the valve shall be a screw-down non-return valve fitted in an easily accessible position above the deepest load line; and

(c) the screw-down non-return valve shall be controlled from a position above the bulkhead deck and provided with open/closed indicators. The valve control shall be clearly marked: "Keep closed when not in use".

Regulation 22-2
Spurling pipes and cable lockers

(1) Spurling pipes and cable lockers shall be watertight up to the deck exposed to weather.

(2) Where means of access are provided, they shall be closed by a substantial cover and secured by closely spaced bolts.

(3) Spurling pipes through which anchor cables are led shall be provided with permanently attached closing appliances to minimize water ingress.

Regulation 23
Side scuttles, windows and skylights

(1) Side scuttles and windows, together with their glasses, deadlights and storm covers , if fitted, shall be of an approved design and substantial construction. Non-metallic frames are not acceptable.

(2) Side scuttles are defined as being round or oval openings with an area not exceeding 0.16 m^2. Round or oval openings having areas exceeding 0.16 m^2 shall be treated as windows.

(3) Windows are defined as being rectangular openings generally, having a radius at each corner relative to the window size and round or oval openings with an area exceeding 0.16 m^2.

(4) Side scuttles to the following spaces shall be fitted with hinged inside deadlights:

(a) spaces below freeboard deck;

(b) spaces within the first tier of enclosed superstructures; and

(c) first tier deckhouses on the freeboard deck protecting openings leading below or considered buoyant in stability calculations.

Deadlights shall be capable of being closed and secured watertight if fitted below the freeboard deck and weathertight if fitted above.

(5) Side scuttles shall not be fitted in such a position that their sills are below a line drawn parallel to the freeboard deck at side and having its lowest point 2.5% of the breadth (B), or 500 mm, whichever is the greatest distance, above the Summer Load Line (or Timber Summer Load Line if assigned).

(6) If the required damage stability calculations indicate that the side scuttles would become immersed at any intermediate stage of flooding or the final equilibrium waterline, they shall be of the non-opening type.

(7) Windows shall not be fitted in the following locations:

(a) below the freeboard deck;

(b) in the first tier end bulkheads or sides of enclosed superstructures; or

(c) in first tier deckhouses that are considered buoyant in the stability calculations.

(8) Side scuttles and windows at the side shell in the second tier shall be provided with hinged inside deadlights capable of being closed and secured weathertight if

the superstructure protects direct access to an opening leading below or is considered buoyant in the stability calculations.

(9) Side scuttles and windows in side bulkheads set inboard from the side shell in the second tier which protect direct access below to spaces listed in paragraph (4) shall be provided with either hinged inside deadlights or, where they are accessible, permanently attached external storm covers which are capable of being closed and secured weathertight.

(10) Cabin bulkheads and doors in the second tier and above separating side scuttles and windows from a direct access leading below or the second tier considered buoyant in the stability calculations may be accepted in place of deadlights or storm covers fitted to the side scuttles and windows.

(11) Deckhouses situated on a raised quarter deck or on the deck of a superstructure of less than standard height may be regarded as being in the second tier as far as the requirements for deadlights are concerned, provided that the height of the raised quarter deck or superstructure is equal to or greater than the standard quarter deck height.

(12) Fixed or opening skylights shall have a glass thickness appropriate to their size and position as required for side scuttles and windows. Skylight glasses in any position shall be protected from mechanical damage and, where fitted in position 1 or 2, shall be provided with permanently attached deadlights or storm covers.

Regulation 24
Freeing ports

(1) (a) Where bulwarks on the weather portions of freeboard or superstructure decks form wells, ample provision shall be made for rapidly freeing the decks of water and for draining them.

(b) Except as provided in paragraphs (1)(c) and (2), the minimum freeing port area (A) on each side of the ship for each well on the freeboard deck shall be that given by the following formulae in cases where the sheer in way of the well is standard or greater than standard.

The minimum area for each well on superstructure decks shall be one-half of the area given by the following formulae:

Where the length of bulwark (l) in the well is 20 m or less:

$$A = 0.7 + 0.035\, l \text{ m}^2;$$

where l exceeds 20 m:

$$A = 0.07\, l \text{ m}^2.$$

l need in no case be taken as greater than 0.7L.

If the bulwark is more than 1.2 m in average height, the required area shall be increased by 0.004 m^2 per metre of length of well for each 0.1 m difference in height. If the bulwark is less than 0.9 m in average height, the required area may be decreased by 0.004 m^2 per m of length of well for each 0.1 m difference in height.

(c) In ships with no sheer, the area calculated according to paragraph (b) shall be increased by 50%. Where the sheer is less than the standard, the percentage shall be obtained by linear interpolation.

(d) On a flush deck ship with a deckhouse amidships having a breadth at least 80% of the beam of the ship and the passageways along the side of the ship not exceeding 1.5 m in width, two wells are formed. Each shall be given the required freeing port area based upon the length of each well.

(e) Where a screen bulkhead is fitted completely across the ship at the forward end of a midship deckhouse, the exposed deck is divided into two wells and there is no limitation on the breadth of the deckhouse.

(f) Wells on raised quarterdecks shall be treated as being on freeboard decks.

(g) Gutter bars greater than 300 mm in height fitted around the weather decks of tankers in way of cargo manifolds and cargo piping shall be treated as bulwarks. Freeing ports shall be arranged in accordance with this regulation. Closures attached to the freeing ports for use during loading and discharge operations are to be arranged in such a way that jamming cannot occur while at sea.

(2) Where a ship fitted with a trunk does not comply with the requirements of regulation 36(1)(e) or where continuous or substantially continuous hatchway side coamings are fitted between detached superstructures, the minimum area of the freeing port openings shall be calculated from the following table:

Breadth of hatchway or trunk in relation to the breadth of ship	**Area of freeing ports in relation to the total area of the bulwarks**
40% or less	20%
75% or more	10%

The area of freeing ports at intermediate breadths shall be obtained by linear interpolation.

(3) The effectiveness of the freeing area in bulwarks required by paragraph (1) depends on the free flow area across the deck of a ship.

The free flow area on deck is the net area of gaps between hatchways, and between hatchways and superstructures and deckhouses up to the actual height of the bulwark.

The freeing port area in bulwarks shall be assessed in relation to the net free flow area as follows:

(a) If the free flow area is not less than the freeing area calculated from paragraph (2) as if the hatchway coamings were continuous, then the minimum freeing port area calculated from paragraph (1) shall be deemed sufficient.

(b) If the free flow area is equal to, or less than the area calculated from paragraph (1), the minimum freeing area in the bulwarks shall be determined from paragraph (2).

(c) If the free flow area is smaller than calculated from paragraph (2), but greater than calculated from paragraph (1), the minimum freeing area in the bulwark shall be determined from the following formula:

$$F = F_1 + F_2 - f_p \text{ m}^2$$

where:

F_1 is the minimum freeing area calculated from paragraph (1);
F_2 is the minimum freeing area calculated from paragraph (2); and
f_p is the total net area of passages and gaps between hatch ends and superstructures or deckhouses up to the actual height of bulwark.

(4) In ships having superstructures on the freeboard deck or superstructure decks, which are open at either or both ends to wells formed by bulwarks on the open decks, adequate provision for freeing the open spaces within the superstructures shall be provided.

The minimum freeing port area on each side of the ship for the open superstructure (A_s) and for the open well (A_w), shall be calculated in accordance with the following procedure:

(a) Determine the total well length (l_t) equal to the sum of the length of the open deck enclosed by bulwarks (l_w) and the length of the common space within the open superstructure (l_s).

(b) To determine A_s:

(i) calculate the freeing port area (A) required for an open well of length l_t in accordance with paragraph (1) with standard height bulwark assumed;

(ii) multiply by a factor of 1.5 to correct for the absence of sheer, if applicable, in accordance with paragraph (1)(c);

(iii) multiply by the factor (b_o/l_t) to adjust the freeing port area for the breadth (b_o) of the openings in the end bulkhead of the enclosed superstructure;

(iv) to adjust the freeing port area for that part of the entire length of the well which is enclosed by the open superstructure, multiply by the factor:

$$1 - (l_w/l_t)^2$$

where l_w and l_t are defined in paragraph (4)(a);

(v) to adjust the freeing port area for the distance of the well deck above the freeboard deck, for decks located more than 0.5 h_s above the freeboard deck, multiply by the factor :

$0.5\ (h_s/h_w)$

where h_w is the distance of the well deck above the freeboard deck and h_s is one standard superstructure height.

(c) To determine A_w:

(i) the freeing port area for the open well (A_w) shall be calculated in accordance with paragraph (b)(i), using l_w to calculate a nominal freeing port area (A'), and then adjusted for the actual height of the bulwark (h_b) by the application of one of the following area corrections, whichever is applicable:

for bulwarks greater than 1.2 m in height:

$$A_c = l_w((h_b - 1.2)/0.10)(0.004)\ m^2;$$

for bulwarks less than 0.9 m in height:

$$A_c = l_w((h_b - 0.9)/0.10)(0.004)\ m^2;$$

for bulwarks between 1.2 m and 0.9 m in height there is no correction (i.e. $A_c = 0$);

(ii) the corrected freeing port area ($A_w = A' + A_c$) shall then be adjusted for absence of sheer, if applicable, and height above freeboard deck as in paragraphs (b)(ii) and (b)(v), using h_s and h_w.

(d) The resulting freeing port areas for the open superstructure (A_s) and for the open well (A_w) shall be provided along each side of the open space covered by the open superstructure and each side of the open well, respectively.

(e) The above relationships are summarised by the following equations, assuming l_t, the sum of l_w and l_s, is greater than 20 m:

freeing port area A_w for the open well:

$$A_w = (0.07l_w + A_c)\ (\text{sheer correction})\ (0.5h_s/h_w);$$

freeing port area A_s for the open superstructure:

$$A_s = (0.07l_t)\ (\text{sheer correction})\ (b_o/l_t\ (1 - (l_w/l_t)^2)\ (0.5h_s/h_w);$$

where l_t is 20 m or less, the basic freeing port area is $A = 0.7 + 0.035l_t$ in accordance with paragraph (1).

(5) The lower edges of freeing ports shall be as near the deck as practicable. Two-thirds of the freeing port area required shall be provided in the half of the well nearest the lowest point of the sheer curve. One third of the freeing port area required shall be evenly spread along the remaining length of the well. With zero or little sheer on the exposed freeboard deck or an exposed superstructure deck the freeing port area shall be evenly spread along the length of the well.

(6) All freeing port openings in the bulwarks shall be protected by rails or bars spaced approximately 230 mm apart. If shutters are fitted to freeing ports, ample

clearance shall be provided to prevent jamming. Hinges shall have pins or bearings of non-corrodible material. Shutters shall not be fitted with securing appliances.

Regulation 25
Protection of the crew

(1) The deckhouses used for the accommodation of the crew shall be constructed to an acceptable level of strength.

(2) Guard rails or bulwarks shall be fitted around all exposed decks. The height of the bulwarks or guard rails shall be at least 1 m from the deck, provided that where this height would interfere with the normal operation of the ship, a lesser height may be approved, if the Administration is satisfied that adequate protection is provided.

(3) Guard rails fitted on superstructure and freeboard decks shall have at least three courses. The opening below the lowest course of the guard rails shall not exceed 230 mm. The other courses shall be not more than 380 mm apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck. In other locations, guardrails with at least two courses shall be fitted. Guard rails shall comply with the following provisions:

(a) fixed, removable or hinged stanchions shall be fitted about 1.5 m apart. Removable or hinged stanchions shall be capable of being locked in the upright position;

(b) at least every third stanchion shall be supported by a bracket or stay;

(c) where necessary for the normal operation of the ship, steel wire ropes may be accepted in lieu of guard rails. Wires shall be made taut by means of turnbuckles; and

(d) where necessary for the normal operation of the ship, chains fitted between two fixed stanchions and/or bulwarks are acceptable in lieu of guard rails.

(4) Satisfactory means for safe passage required by regulation 25-1 (in the form of guard rails, lifelines, gangways or underdeck passages, etc.) shall be provided for the protection of the crew in getting to and from their quarters, the machinery space and any other spaces used in the essential operation of the ship.

(5) Deck cargo carried on any ship shall be so stowed that any opening which is in way of the cargo and which gives access to and from the crew's quarters, the machinery space and all other parts used in the essential operation of the ship can be closed and secured against water ingress. Protection for the crew in the form of guard rails or lifelines shall be provided above the deck cargo if there is no convenient passage on or below the deck of the ship.

Regulation 25-1
Means for safe passage of crew

(1) The safe passage of crew shall be provided by at least one of the means prescribed in table 25-1.1 below:

Type of ship	Locations of access in ship	Assigned summer freeboard	Acceptable arrangements according to type of freeboard assigned***			
			Type 'A'	Type 'B-100'	Type 'B-60'	Type 'B' and 'B+'
All ships other than oil tankers*, chemical tankers* and gas carriers*	**1.1 Access to midship quarters** 1.1.1 Between poop and bridge, or 1.1.2 Between poop and deckhouse containing living accommodation or navigating equipment, or both.	≤3,000 mm	(a) (b) (e)	(a) (b) (e)	(a) (b) (c)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (c)(iv) (d)(i) (d)(ii) (d)(iii) (e) (f)(i) (f)(ii) (f)(iv)
		> 3,000 mm	(a) (b) (e)	(a) (b) (e)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	
	1.2 Access to ends 1.2.1 Between poop and bow (if there is no bridge), 1.2.2 Between bridge and bow, or 1.2.3 Between a deckhouse containing living accommodation or navigating equipment, or both, and bow, or 1.2.4 In the case of a flush deck ship, between crew accommodation and the forward and after ends of ship.	≤ 3,000 mm	(a) (b) (c)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	
		>3,000 mm	(a) (b) (c)(i) (d)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (d)(i) (d)(ii) (e) (f)(i) (f)(ii)	(a) (b) (c)(i) (c)(ii) (c)(iv) (d)(i) (d)(ii) (d)(iii) (e) (f)(i) (f)(ii) (f)(iv)	
Oil tankers*, chemical tankers* and gas carriers*	**2.1 Access to bow** 2.1.1 Between poop and bow or 2.1.2 Between a deckhouse containing living accommodation or navigating equipment, or both, and bow, or 2.1.3 In the case of a flush deck ship, between crew accommodation and the forward ends of ship.	≤ $(A_f + H_s)$**	(a) (e) (f)(i) (f)(v)			
		> $(A_f + H_s)$**	(a) (e) (f)(i) (f)(ii)			
	2.2 Access to after end In the case of a flush deck ship, between crew accommodation and the after end of ship.	As required in 1.2.4 for other types of ships				

Table 25-1.1

* Oil tankers, chemical tankers and gas carriers as defined in regulations II-1/2.12, VII/8.2 and VII/11.2, respectively, of the International Convention for the Safety of Life at Sea, 1974, as amended.

** A_f: the minimum summer freeboard calculated as type 'A' ship regardless of the type freeboard actually assigned.
H_s: the standard height of superstructure as defined in regulation 33.

*** Arrangements (a)-(f) are described in paragraph (2) below. Locations (i)-(v) are described in paragraph (3) below.

(2) Acceptable arrangements referred to in table 25-1.1 are defined as follows:

(a) A well lighted and ventilated under-deck passageway (with a clear opening of at least 0.8 m wide and 2 m high), as close as practicable to the freeboard deck, connecting and providing access to the locations in question.

(b) A permanent and efficiently constructed gangway, fitted at or above the level of the superstructure deck, on or as near as practicable to the centre line of the ship, providing a continuous platform at least 0.6 m in width and a non-slip surface and with guard rails extending on each side throughout its length. Guard rails shall be at least 1 m high with three courses and constructed as required in regulation 25(3). A foot-stop shall be provided.

(c) A permanent walkway at least 0.6 m in width, fitted at freeboard deck level and consisting of two rows of guard rails with stanchions spaced not more than 3 m. The number of courses of rails and their spacing shall be in accordance with regulation 25(3). On type 'B' ships, hatchway coamings not less than 0.6 m in height may be accepted as forming one side of the walkway, provided that two rows of guard rails are fitted between the hatchways.

(d) A wire rope lifeline not less than 10 mm in diameter, supported by stanchions not more than 10 m apart, or a single hand rail or wire rope attached to hatch coamings, continued and supported between hatchways.

(e) A permanent gangway that is:

(i) located at or above the level of the superstructure deck;

(ii) located on or as near as practicable to the centre line of the ship;

(iii) located so as not to hinder easy access across the working areas of the deck;

(iv) providing a continuous platform at least 1 m in width;

(v) constructed of fire resistant and non-slip material;

(vi) fitted with guard rails extending on each side throughout its length; guard rails shall be at least 1 m high with courses as required by regulation 25(3) and supported by stanchions spaced not more than 1.5 m apart;

(vii) provided with a foot-stop on each side;

(viii) having openings, with ladders where appropriate, to and from the deck. Openings shall not be more than 40 m apart; and

(ix) having shelters set in way of the gangway at intervals not exceeding 45 m if the length of the exposed deck to be traversed

exceeds 70 m. Every such shelter shall be capable of accommodating at least one person and be so constructed as to afford weather protection on the forward, port and starboard sides.

(f) A permanent walkway located at the freeboard deck level, on or as near as practicable to the centre line of the ship, having the same specifications as those for a permanent gangway listed in (e), except for foot-stops. On type 'B' ships (certified for the carriage of liquids in bulk) with a combined height of hatch coaming and fitted hatch cover of not less than 1 m in height, the hatchway coamings may be accepted as forming one side of the walkway, provided that two rows of guard rails are fitted between the hatchways.

(3) Permitted transverse locations for arrangements in paragraphs (2)(c), (d) and (f) above, where appropriate:

(i) at or near the centre line of the ship; or fitted on hatchways at or near the centre line of the ship;

(ii) fitted on each side of the ship;

(iii) fitted on one side of the ship, provision being made for fitting on either side;

(iv) fitted on one side of the ship only;

(v) fitted on each side of the hatchways, as near to the centre line as practicable.

(4) (a) Where wire ropes are fitted, turnbuckles shall be provided to ensure their tautness.

(b) Where necessary for the normal operation of the ship, steel wire ropes may be accepted in lieu of guard rails.

(c) Where necessary for the normal operation of the ship, chains fitted between two fixed stanchions are acceptable in lieu of guard rails.

(d) Where stanchions are fitted, every third stanchion shall be supported by a bracket or stay.

(e) Removable or hinged stanchions shall be capable of being locked in the upright position.

(f) A means of passage over obstructions such as pipes or other fittings of a permanent nature, shall be provided.

(g) Generally, the width of the gangway or deck-level walkway should not exceed 1.5 m.

(5) For tankers less than 100 m in length, the minimum width of the gangway platform or deck-level walkway fitted in accordance with paragraphs (2)(e) or (f) above, respectively, may be reduced to 0.6 m.

Regulation 26
Special conditions of assignment for type 'A' ships

Machinery casings

(1) Machinery casings on type 'A' ships, as defined in regulation 27, shall be protected by one of the following arrangements:

(a) an enclosed poop or bridge of at least standard height; or

(b) a deckhouse of equal height and equivalent strength.

(2) Machinery casings may, however, be exposed if there are no openings giving direct access from the freeboard deck to the machinery space. A door complying with the requirements of regulation 12 is acceptable in the machinery casing, provided that it leads to a space or passageway which is as strongly constructed as the casing and is separated from the stairway to the engine-room by a second weathertight door of steel or other equivalent material.

Gangway and access

(3) A fore and aft permanent gangway, constructed in accordance with the provisions of regulation 25-1(2)(e), shall be fitted on type 'A' ships at the level of the superstructure deck between the poop and the midship bridge or deckhouse where fitted. The arrangement contained in regulation 25-1(2)(a) is considered an equivalent means of access to carry out the purpose of the gangway.

(4) Safe access from the gangway level shall be available between separate crew accommodations and also between crew accommodations and the machinery space.

Hatchways

(5) Exposed hatchways on the freeboard and forecastle decks or on the tops of expansion trunks on type 'A' ships shall be provided with efficient watertight covers of steel or other equivalent material.

Freeing arrangements

(6) Type 'A' ships with bulwarks shall have open rails fitted for at least half the length of the weather deck or other equivalent freeing arrangements. A freeing port area, in the lower part of the bulwarks, of 33% of the total area of the bulwarks, is an acceptable equivalent freeing arrangement. The upper edge of the sheer strake shall be kept as low as practicable.

(7) Where superstructures are connected by trunks, open rails shall be fitted for the whole length of the exposed parts of the freeboard deck.

CHAPTER III
FREEBOARDS

Regulation 27
Types of ships

(1) For the purposes of freeboard computation, ships shall be divided into type 'A' and type 'B'.

Type 'A' ships

(2) A type 'A' ship is one which:

(a) is designed to carry only liquid cargoes in bulk;

(b) has a high integrity of the exposed deck with only small access openings to cargo compartments, closed by watertight gasketed covers of steel or equivalent material; and

(c) has low permeability of loaded cargo compartments.

(3) A type 'A' ship, if over 150 m in length, to which a freeboard less than type 'B' has been assigned, when loaded in accordance with the requirements of paragraph (11), shall be able to withstand the flooding of any compartment or compartments, with an assumed permeability of 0.95, consequent upon the damage assumptions specified in paragraph (12), and shall remain afloat in a satisfactory condition of equilibrium, as specified in paragraph (13). In such a ship, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(4) A type 'A' ship shall be assigned a freeboard not less than that based on table 28.1.

Type 'B' ships

(5) All ships which do not come within the provisions regarding type 'A' ships in paragraphs (2) and (3) shall be considered as type 'B' ships.

(6) Type 'B' ships, which in position 1 have hatch covers which are permitted by the Administration to comply with the requirements of regulation 15 (other than paragraph (6)) or which are fitted with securing arrangements accepted under the provisions of regulation 16(6), shall be assigned freeboards based upon the values given in table 28.2, increased by the values given in table 27.1:

Freeboard increase over tabular freeboard for type 'B' ships, for ships with hatch covers complying with the provisions of regulation 15 (other than paragraph (6))

Length of ship (m)	Freeboard increase (mm)	Length of ship (m)	Freeboard increase (mm)	Length of ship (m)	Freeboard increase (mm)
108 and below	50	139	175	170	290
109	52	140	181	171	292
110	55	141	186	172	294
111	57	142	191	173	297
112	59	143	196	174	299
113	62	144	201	175	301
114	64	145	206	176	304
115	68	146	210	177	306
116	70	147	215	178	308
117	73	148	219	179	311
118	76	149	224	180	313
119	80	150	228	181	315
120	84	151	232	182	318
121	87	152	236	183	320
122	91	153	240	184	322
123	95	154	244	185	325
124	99	155	247	186	327
125	103	156	251	187	329
126	108	157	254	188	332
127	112	158	258	189	334
128	116	159	261	190	336
129	121	160	264	191	339
130	126	161	267	192	341
131	131	162	270	193	343
132	136	163	273,	194	346
133	142	164	275	195	348
134	147	165	278	196	350
135	153	166	280	197	353
136	159	167	283	198	355
137	164	168	285	199	357
138	170	169	287	200	358

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.
Ships above 200 m in length shall be dealt with by the Administration.

Table 27.1

(7) Type 'B' ships, which in position 1 have hatchways fitted with hatch covers complying with the requirements of regulation 16(2) through (5), shall, except as provided in paragraphs (8) to (13) inclusive, be assigned freeboards based on table 28.2.

(8) Any type 'B' ship of over 100 m in length may be assigned freeboards less than those required under paragraph (7), provided that, in relation to the amount of reduction granted, the Administration is satisfied that:

(a) the measures provided for the protection of the crew are adequate;

(b) the freeing arrangements are adequate;

(c) the covers in position 1 and 2 comply with the provisions of regulation 16(1) through (5) and (7); and

(d) the ship, when loaded in accordance with the requirements of paragraph (11), shall be able to withstand the flooding of any compartment or compartments, with an assumed permeability of 0.95, consequent upon the damage assumptions specified in paragraph (12), and shall remain afloat in a satisfactory condition of equilibrium, as specified in paragraph (13). In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(9) In calculating the freeboards for type 'B' ships which comply with the requirements of paragraphs (8), (11), (12) and (13), the values from table 28.2 shall not be reduced by more than 60% of the difference between the tabular values in tables 28.1 and 28.2 for the appropriate ship lengths.

(10) (a) The reduction in tabular freeboard allowed under paragraph (9) may be increased up to the total difference between the values in table 28.1 and those in table 28.2 on condition that the ship complies with the requirements of:

(i) regulation 26, other than paragraph (5), as if it were a type 'A' ship;

(ii) paragraphs (8), (11) and (13); and

(iii) paragraph (12), provided that throughout the length of the ship any one transverse bulkhead will be assumed to be damaged, such that two adjacent fore and aft compartments shall be flooded simultaneously, except that such damage will not apply to the boundary bulkheads of a machinery space.

(b) In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

Initial condition of loading

(11) The initial condition of loading before flooding shall be determined as follows:

(a) The ship is loaded to its summer load waterline on an imaginary even keel.

(b) When calculating the vertical centre of gravity, the following principles apply:

(i) homogeneous cargo is carried;

(ii) all cargo compartments, except those referred to under subparagraph (iii), but including compartments intended to be partially filled, shall be considered fully loaded except that in the case of fluid cargoes each compartment shall be treated as 98% full;

(iii) if the ship is intended to operate at its summer load waterline with empty compartments, such compartments shall be considered empty, provided the height of the centre of gravity so calculated is not less than as calculated under subparagraph (ii);

(iv) 50% of the individual total capacity of all tanks and spaces fitted to contain consumable liquids and stores is allowed for. It shall be assumed that for each type of liquid at least one transverse pair or a single centreline tank has maximum free surface, and the tank or combination of tanks to be taken into account shall be those where the effect of free surfaces is the greatest; in each tank the centre of gravity of the contents shall be taken at the centre of volume of the tank. The remaining tanks shall be assumed either completely empty or completely filled, and the distribution of consumable liquids between these tanks shall be effected so as to obtain the greatest possible height above the keel for the centre of gravity;

(v) at an angle of heel of not more than 5° in each compartment containing liquids, as prescribed in subparagraph (ii), except that in the case of compartments containing consumable fluids, as prescribed in subparagraph (iv), the maximum free surface effect shall be taken into account. Alternatively, the actual free surface effects may be used, provided the methods of calculation are acceptable to the Administration;

(vi) weights shall be calculated on the basis of the following values for specific gravities:

salt water	1.025
fresh water	1.000
oil fuel	0.950
diesel oil	0.900
lubricating oil	0.900.

Damage assumptions

(12) The following principles regarding the character of the assumed damage apply:

(a) The vertical extent of damage in all cases is assumed to be from the base line upwards without limit.

(b) The transverse extent of damage is equal to B/5 or 11.5 m, whichever is the lesser, measured inboard from the side of the ship perpendicularly to the centreline at the level of the summer load waterline.

(c) If damage of a lesser extent than specified in subparagraphs (a) and (b) results in a more severe condition, such lesser extent shall be assumed.

(d) Except where otherwise required by paragraph (10)(a), the flooding shall be confined to a single compartment between adjacent transverse

bulkheads, provided that the inner longitudinal boundary of the compartment is not in a position within the transverse extent of assumed damage. Transverse boundary bulkheads of wing tanks, which do not extend over the full breadth of the ship shall be assumed not to be damaged, provided that they extend beyond the transverse extent of assumed damage prescribed in subparagraph (b).

If in a transverse bulkhead there are steps or recesses of not more than 3 m in length, located within the transverse extent of assumed damage as defined in subparagraph (b), such transverse bulkhead may be considered intact and the adjacent compartment may be floodable singly. If, however, within the transverse extent of assumed damage there is a step or recess of more than 3 m in length in a transverse bulkhead, the two compartments adjacent to this bulkhead shall be considered as flooded. The step formed by the afterpeak bulkhead and the afterpeak tank top shall not be regarded as a step for the purpose of this regulation.

(e) Where a main transverse bulkhead is located within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3 m, the double bottom or side tanks adjacent to the stepped portion of the main transverse bulkhead shall be considered as flooded simultaneously. If this side tank has openings into one or several holds, such as grain feeding holes, such hold or holds shall be considered as flooded simultaneously. Similarly, in a ship designed for the carriage of fluid cargoes, if a side tank has openings into adjacent compartments, such adjacent compartments shall be considered as empty and as being flooded simultaneously. This provision is applicable even where such openings are fitted with closing appliances, except in the case of sluice valves fitted in bulkheads between tanks and where the valves are controlled from the deck. Manhole covers with closely spaced bolts are considered equivalent to the unpierced bulkhead, except in the case of openings in topside tanks making the topside tanks common to the holds.

(f) Where the flooding of any two adjacent fore and aft compartments is envisaged, main transverse watertight bulkheads shall be spaced at least $1/3\ L^{2/3}$ or 14.5 m, whichever is the lesser, in order to be considered effective. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads shall be assumed as non-existent in order to achieve the minimum spacing between bulkheads.

Condition of equilibrium

(13) The condition of equilibrium after flooding shall be regarded as satisfactory provided:

(a) The final waterline after flooding, taking into account sinkage, heel and trim, is below the lower edge of any opening through which progressive downflooding may take place. Such openings shall include air pipes, ventilators (even if they comply with regulation 19(4)) and openings which are closed by means of weathertight doors (even if they comply with regulation 12) or hatch covers (even if they comply with regulation 16(1)

through (5)), and may exclude those openings closed by means of manhole covers and flush scuttles (which comply with regulation 18), cargo hatch covers of the type described in regulation 27(2), remotely operated sliding watertight doors, and sidescuttles of the non-opening type (which comply with regulation 23). However, in the case of doors separating a main machinery space from a steering gear compartment, watertight doors may be of a hinged, quick-acting type kept closed at sea whilst not in use, provided also that the lower sill of such doors is above the summer load waterline.

(b) If pipes, ducts or tunnels are situated within the assumed extent of damage penetration as defined in paragraph (12)(b), arrangements shall be made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable in the calculation for each case of damage.

(c) The angle of heel due to unsymmetrical flooding does not exceed 15°. If no part of the deck is immersed, an angle of heel of up to 17° may be accepted.

(d) The metacentric height in the flooded condition is positive.

(e) When any part of the deck outside the compartment assumed flooded in a particular case of damage is immersed, or in any case where the margin of stability in the flooded condition may be considered doubtful, the residual stability is to be investigated. It may be regarded as sufficient if the righting lever curve has a minimum range of 20° beyond the position of equilibrium with a maximum righting lever of at least 0.1 m within this range. The area under the righting lever curve within this range shall be not less than 0.0175 m.rad. The Administration shall give consideration to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within the range of residual stability.

(f) The Administration is satisfied that the stability is sufficient during intermediate stages of flooding.

Ships without means of propulsion

(14) A lighter, barge or other ship without independent means of propulsion shall be assigned a freeboard in accordance with the provisions of these regulations. Barges which meet the requirements of paragraphs (2) and (3) may be assigned type 'A' freeboards:

(a) The Administration should especially consider the stability of barges with cargo on the weather deck. Deck cargo can only be carried on barges to which the ordinary type 'B' freeboard is assigned.

(b) However, in the case of barges which are unmanned, the requirements of regulations 25, 26(3), 26(4) and 39 shall not apply.

(c) Such unmanned barges which have on the freeboard deck only small access openings closed by watertight gasketed covers of steel or equivalent material may be assigned a freeboard 25% less than those calculated in accordance with these regulations.

Regulation 28
Freeboard tables

Type 'A' ships

(1) The tabular freeboard for type 'A' ships shall be determined from table 28.1:

Table 28.1
Freeboard table for type 'A' ships

Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)
24	200	51	455	78	814
25	208	52	467	79	828
26	217	53	478	80	841
27	225	54	490	81	855
28	233	55	503	82	869
29	242	56	516	83	883
30	250	57	530	84	897
31	258	58	544	85	911
32	267	59	559	86	926
33	275	60	573	87	940
34	283	61	587	88	955
35	292	62	600	89	969
36	300	63	613	90	984
37	308	64	626	91	999
38	316	65	639	92	1014
39	325	66	653	93	1029
40	334	67	666	94	1044
41	344	68	680	95	1059
42	354	69	693	96	1074
43	364	70	706	97	1089
44	374	71	720	98	1105
45	385	72	733	99	1120
46	396	73	746	100	1135
47	408	74	760	101	1151
48	420	75	773	102	1166
50	443	77	800	104	1196
105	1212	168	2240	231	2880
106	1228	169	2254	232	2888
107	1244	170	2268	233	2895
108	1260	171	2281	234	2903
109	1276	172	2294	235	2910
110	1293	173	2307	236	2918
111	1309	174	2320	237	2925
112	1326	175	2332	238	2932
113	1342	176	2345	239	2939
114	1359	177	2357	240	2946
115	1376	178	2369	241	2953
116	1392	179	2381	242	2959

117	1409	180	2393	243	2966
118	1426	181	2405	244	2973
119	1442	182	2416	245	2979
120	1459	183	2428	246	2986
121	1476	184	2440	247	2993
122	1494	185	2451	248	3000
123	1511	186	2463	249	3006
124	1528	187	2474	250	3012
125	1546	188	2486	251	3018
126	1563	189	2497	252	3024
127	1580	190	2508	253	3030
128	1598	191	2519	254	3036
129	1615	192	2530	255	3042
130	1632	193	2541	256	3048
131	1650	194	2552	257	3054
132	1667	195	2562	258	3060
133	1684	196	2572	259	3066
134	1702	197	2582	260	3072
135	1719	198	2592	261	3078
136	1736	199	2602	262	3084
137	1753	200	2612	263	3089
138	1770	201	2622	264	3095
139	1787	202	2632	265	3101
140	1803	203	2641	266	3106
141	1820	204	2650	267	3112
142	1837	205	2659	268	3117
143	1853	206	2669	269	3123
144	1870	207	2678	270	3128
145	1886	208	2687	271	3133
146	1903	209	2696	272	3138
147	1919	210	2705	273	3143
148	1935	211	2714	274	3148
149	1952	212	2723	275	3153
150	1968	213	2732	276	3158
151	1984	214	2741	277	3163
152	2000	215	2749	278	3167
153	2016	216	2758	279	3172
154	2032	217	2767	280	3176
155	2048	218	2775	281	3181
156	2064	219	2784	282	3185
157	2080	220	2792	283	3189
158	2096	221	2801	284	3194
159	2111	222	2809	285	3198
160	2126	223	2817	286	3202
161	2141	224	2825	287	3207
162	2155	225	2833	288	3211
163	2169	226	2841	289	3215
164	2184	227	2849	290	3220
165	2198	228	2857	291	3224
166	2212	229	2865	292	3228
167	2226	230	2872	293	3233
294	3237	318	3325	342	3387
295	3241	319	3328	343	3389
296	3246	320	3331	344	3392
297	3250	321	3334	345	3394
298	3254	322	3337	346	3396
299	3258	323	3339	347	3399
300	3262	324	3342	348	3401
301	3266	325	3345	349	3403
302	3270	326	3347	350	3406
303	3274	327	3350	351	3408
304	3278	328	3353	352	3410
305	3281	329	3355	353	3412
306	3285	330	3358	354	3414
307	3288	331	3361	355	3416

308	3292	332	3363	356	3418
309	3295	333	3366	357	3420
310	3298	334	3368	358	3422
311	3302	335	3371	359	3423
312	3305	336	3373	360	3425
313	3308	337	3375	361	3427
314	3312	338	3378	362	3428
315	3315	339	3380	363	3430
316	3318	340	3382	364	3432
317	3322	341	3385	365	3433

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation. Ships above 365 m in length shall be dealt with by the Administration.

Type 'B' ships

(2) The tabular freeboard for type 'B' ships shall be determined from table 28.2:

Table 28.2
Freeboard table for type 'B' ships

Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)
24	200	70	721	116	1609
25	208	71	738	117	1630
26	217	72	754	118	1651
27	225	73	769	119	1671
28	233	74	784	120	1690
29	242	75	800	121	1709
30	250	76	816	122	1729
31	258	77	833	123	1750
32	267	78	850	124	1771
33	275	79	868	125	1793
34	283	8d	887	126	1815
35	292	81	905	127	1837
36	300	82	923	128	1859
37	308	83	942	129	1880
38	316	84	960	130	1901
39	325	85	978	131	1921
40	334	86	996	132	1940
41	344	87	1015	133	1959
42	354	88	1034	134	1979
43	364	89	1054	135	2000
44	374	90	1075	136	2021
45	385	91	1096	137	2043
46	396	92	1116	138	2065
47	408	93	1135	139	2087
48	420	94	1154	140	2109
49	432	95	1172	141	2130
50	443	96	1190	142	2151
51	455	97	1209	143	2171
52	467	98	1229	144	2190
53	478	99	1250	145	2209
54	490	100	1271	146	2229
55	503	101	1293	147	2250
56	516	102	1315	148	2271
57	530	103	1337	149	2293
58	544	104	1359	150	2315
59	559	105	1380	151	2334
60	573	106	1401	152	2354
61	587	107	1421	153	2375
62	601	108	1440	154	2396
63	615	109	1459	155	2418
64	629	110	1479	156	2440
65	644	111	1500	157	2460
66	659	112	1521	158	2480
67	674	113	1543	159	2500
68	689	114	1565	160	2520
69	705	115	1587	161	2540

162	2560	225	3660	288	4490
163	2580	226	3675	289	4502
164	2600	227	3690	290	4513
165	2620	228	3705	291	4525
166	2640	229	3720	292	4537
167	2660	230	3735	293	4548
168	2680	231	3750	294	4560
169	2698	232	3765	295	4572
170	2716	233	3780	296	4583
171	2735	234	3795	297	4595
172	2754	235	3808	298	4607
173	2774	236	3821	299	4618
174	2795	237	3835	300	4630
175	2815	238	3849	301	4642
176	2835	239	3864	302	4654
177	2855	240	3880	303	4665
178	2875	241	3893	304	4676
179	2895	242	3906	305	4686
180	2915	243	3920	306	4695
181	2933	244	3934	307	4704
182	2952	245	3949	308	4714
183	2970	246	3965	309	4725
184	2988	247	3978	310	4736
185	3007	248	3992	311	4748
186	3025	249	4005	312	4757
187	3044	250	4018	313	4768
188	3062	251	4032	314	4779
189	3080	252	4045	315	4790
190	3098	253	4058	316	4801
191	3116	254	4072	317	4812
192	3134	255	4085	318	4823
193	3151	256	4098	319	4834
194	3167	257	4112	320	4844
195	3185	258	4125	321	4855
196	3202	259	4139	322	4866
197	3219	260	4152	323	4878
198	3235	261	4165	324	4890
199	3249	262	4177	325	4899
200	3264	263	4189	326	4909
201	3280	264	4201	327	4920
202	3296	265	4214	328	4931
203	3313	266	4227	329	4943
204	3330	267	4240	330	4955
205	3347	268	4252	331	4965
206	3363	269	4264	332	4975
207	3380	270	4276	333	4985
208	3397	271	4289	334	4995
209	3413	272	4302	335	5005
210	3430	273	4315	336	5015
211	3445	274	4327	337	5025
212	3460	275	4339	338	5035
213	3475	276	4350	339	5045
214	3490	277	4362	340	5055
215	3505	278	4373	341	5065
216	3520	279	4385	342	5075
217	3537	280	4397	343	5086
218	3554	281	4408	344	5097
219	3570	282	4420	345	5108
220	3586	283	4432	346	5119
221	3601	284	4443	347	5130
222	3615	285	4455	348	5140
223	3630	286	4467	349	5150
224	3645	287	4478	350	5160

351	5170	356	5220	361	5268
352	5180	357	5230	362	5276
353	5190	358	5240	363	5285
354	5200	359	5250	364	5294
355	5210	360	5260	365	5303

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.
Ships above 365 m in length shall be dealt with by the Administration.

Regulation 29
Correction to the freeboard for ships under 100 m in length

The tabular freeboard for a type 'B' ship of between 24 m and 100 m in length having enclosed superstructures with an effective length of up to 35% of the length of the ship shall be increased by:

$$7.5\,(100 - L)\left(0.35 - \frac{E_1}{L}\right) \quad \text{(mm)}$$

where L is the length of the ship in m; and

E_1 is the effective length E of superstructure in m as defined in regulation 35, but excluding the length of trunks.

Regulation 30
Correction for block coefficient

Where the block coefficient (C_b) exceeds 0.68, the tabular freeboard specified in regulation 28 as modified, if applicable, by regulations 27(8), 27(10) and 29 shall be multiplied by the factor:

$$\frac{C_b + 0.68}{1.36}$$

The block coefficient is not to be taken greater than 1.0.

Regulation 31
Correction for depth

(1) Where D exceeds $\frac{L}{15}$ the freeboard shall be increased by $\left(D - \frac{L}{15}\right)$ R mm, where R is $\frac{L}{0.48}$ at lengths less than 120 m and 250 at 120 m length and above.

(2) Where D is less than $\frac{L}{15}$ no reduction shall be made, except in a ship with an enclosed superstructure covering at least 0.6L amidships, with a complete trunk, or combination of detached enclosed superstructures and trunks which extend all fore and aft, where the freeboard shall be reduced at the rate prescribed in paragraph (1).

(3) Where the height of the superstructure or trunk is less than the corresponding standard height, the calculated reduction shall be corrected in the ratio of the height of the actual superstructure or trunk to the applicable standard height, as defined in regulation 33.

Regulation 32
Correction for position of deck line

Where the actual depth to the upper edge of the deck line is greater or less than *D*, the difference between the depths shall be added to or deducted from the freeboard.

Regulation 32-1
Correction for recess in freeboard deck

(1) Where a recess is arranged in the freeboard deck, and it does not extend to the sides of the ship, the freeboard calculated without regard to the recess shall be corrected for the consequent loss of buoyancy. The correction shall be equal to the value obtained by dividing the volume of the recess by the waterplane area of the ship at 85% of the least moulded depth (see figure 32-1.1).

(2) The correction shall be an addition to the freeboard obtained after all other corrections have been applied, except bow height correction.

(3) Where the freeboard, corrected for lost buoyancy as above, is greater than the minimum geometric freeboard determined on the basis of a moulded depth measured to the bottom of the recess, the latter value may be used.

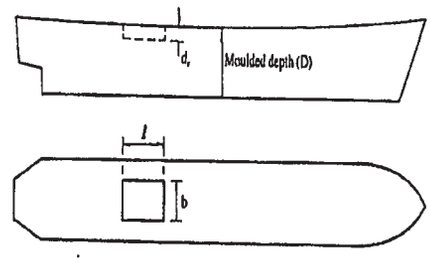

Figure 32-1.1

Correction is the addition to freeboard equal to:

$$\frac{l \times b \times d_r}{WP\ Area\ at\ 0.85D}$$

Regulation 33
Standard height of superstructure

The standard height of a superstructure shall be as given in the following table:

Standard height (in m)		
L (m)	Raised quarterdeck	All other superstructures
30 or less	0.9	1.8
75	1.2	1.8
125 or more	1.8	2.3

Table 33.1

The standard heights at intermediate lengths of the ship shall be obtained by linear interpolation.

Regulation 34
Length of superstructure

(1) Except as provided in paragraph (2), the length of a superstructure (S) shall be the mean length of the parts of the superstructure which lie within the length (L).

Where a superstructure bulkhead is recessed, the effective length of the superstructure shall be reduced by an amount equal to the area of the recess in plan view divided by the breadth of the superstructure at the midlength of the recess. Where the recess is unsymmetrical about the centreline, the largest portion of the recess shall be considered as applying to both sides of the ship. A recess need not be decked over.

(2) Where the end bulkhead of an enclosed superstructure extends in a fair convex curve beyond its intersection with the superstructure sides, the length of the superstructure may be increased on the basis of an equivalent plane bulkhead. This increase shall be two-thirds of the fore and aft extent of the curvature. The maximum curvature which may be taken into account in determining this increase is one-half the breadth of the superstructure at the point of intersection of the curved end of the superstructure with its side.

Where there is an extension to a superstructure, which extension has a breadth on each side of the centre line at least 30% of the breadth of the ship, the effective length of the superstructure may be increased by considering an equivalent superstructure bulkhead in the form of a parabola. This parabola shall extend from the extension at the centreline and pass through the junction of the actual superstructure bulkhead with the sides of the extension and extend to the sides of the ship. This parabola shall be completely contained within the boundary of the superstructure and its extensions.

If the superstructure is set-in from the side, up to the limit allowed under regulation 3(10), the equivalent bulkhead should be calculated on the basis of the actual breadth of the superstructure (and not the breadth of the ship).

(3) Superstructures which have sloped end bulkheads shall be dealt with in the following manner:

(a) When the height of superstructure, clear of the slope, is equal to or smaller than the standard height, length S is to be obtained as shown in figure 34.1.

(b) When the height is greater than the standard, length S is to be obtained as shown in figure 34.2.

(c) The foregoing will apply only when the slope, related to the base line, is 15° or greater. Where the slope is less than 15°, the configuration shall be treated as sheer.

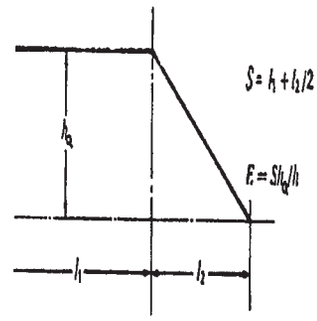

Figure 34.1 Height of superstructure equal to or smaller than the standard height h

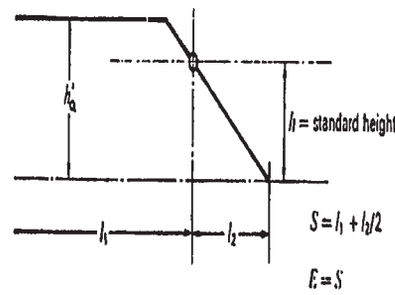

Figure 34.2 Height of superstructure greater than the standard height

Regulation 35
Effective length of superstructure

(1) Except as provided for in paragraph (2), the effective length (E) of an enclosed superstructure of standard height shall be its length.

(2) In all cases where an enclosed superstructure of standard height is set-in from the sides of the ship as permitted in regulation 3(10), the effective length shall be the length modified by the ratio of b/B_s, where:

b is the breadth of the superstructure at the middle of its length; and

B_s is the breadth of the ship at the middle of the length of the superstructure.

Where a superstructure is set-in for a part of its length, this modification shall be applied only to the set-in part.

(3) Where the height of an enclosed superstructure is less than the standard height, the effective length shall be its length reduced in the ratio of the actual height to the standard height. Where the height exceeds the standard, no increase shall be made to the effective length of the superstructure (see figures 34.1 and 34.2).

Where the height, clear of the slope, of a superstructure which has sloped end bulkheads is less than the standard height, its effective length E shall be its length S as obtained from figure 34.1, reduced in the ratio of the actual height to the standard height.

Where a poop or forecastle of less than standard height is fitted on a ship with excessive sheer but without any superstructure within 0.2L amidships, credit may be given to the height of the poop or forecastle by increasing the actual height by the difference between the actual and the standard sheer profiles. The deduction for excess sheer in accordance with regulation 38(16) is not to be granted.

(4) The effective length of a raised quarter deck, if fitted with an intact front bulkhead, shall be its length up to a maximum of 0.6L. Where the bulkhead is not intact, the raised quarter deck shall be treated as a poop of less than standard height.

The maximum effective length of 0.6L of a raised quarterdeck is to be measured from the after perpendicular, even where a poop is fitted in conjunction with the raised quarterdeck.

(5) Superstructures which are not enclosed shall have no effective length.

Regulation 36
Trunks

(1) A trunk or similar structure which does not extend to the sides of the ship shall be regarded as efficient on the following conditions:

(a) the trunk is at least as strong as a superstructure;

(b) the hatchways are in the trunk deck, the hatchway coamings and covers comply with the requirements of regulations 13 to 16 inclusive and the width of the trunk deck stringer provides a satisfactory gangway and sufficient lateral stiffness. However, small access openings with watertight covers may be permitted in the freeboard deck;

(c) a permanent working platform fore and aft fitted with guard rails is provided by the trunk deck, or by detached trunks connected to superstructures by efficient permanent gangways;

(d) ventilators are protected by the trunk, by watertight covers or by other equivalent means;

(e) open rails are fitted on the weather parts of the freeboard deck in way of the trunk for at least half their length or, alternatively, freeing port area in the lower part of the bulwarks, subject to regulation 24(2), of 33% of the total area of the bulwarks is provided;

(f) the machinery casings are protected by the trunk, by a superstructure of at least standard height, or by a deckhouse of the same height and of equivalent strength;

(g) the breadth of the trunk is at least 60% of the breadth of the ship; and

(h) where there is no superstructure, the length of the trunk is at least 0.6L.

(2) The full length of an efficient trunk reduced in the ratio of its mean breadth to B shall be its effective length.

(3) The standard height of a trunk is the standard height of a superstructure other than a raised quarter deck.

(4) Where the height of a trunk is less than the standard height, its effective length shall be reduced in the ratio of the actual to the standard height. Where the height of hatchway coamings on the trunk deck is less than that required under regulation 14-1, a reduction from the actual height of trunk shall be made which corresponds to the difference between the actual and the required height of coaming.

(5) Where the trunk height is less than standard and the trunk hatch coamings are also of less than standard height, or omitted entirely, the reduction from the actual height of trunk on account of insufficient hatch coaming height shall be taken as the difference between 600 mm and the actual height of coaming, or 600 mm if no hatch coamings are fitted. Reduction in the actual height of trunk shall not be required in cases where only small hatches with less than standard height are fitted in the trunk deck for which dispensation from the requirement of standard coaming height may be given.

(6) Continuous hatchways may be treated as a trunk in the freeboard computation, provided the provisions of this paragraph are complied with in all respects.

The trunk deck stringer referred to in paragraph (1)(b) may be fitted outboard of the trunk side bulkhead in association with the following:

(a) the stringer so formed is to provide a clear walkway of at least 450 mm in width on each side of the ship;

(b) the stringer is to be of solid plate, efficiently supported and stiffened;

(c) the stringer is to be as high above the freeboard deck as practicable. In the freeboard calculation, the trunk height is to be reduced by at least 600 mm or by the actual difference between the top of the trunk and the stringer, whichever is greater;

(d) hatch cover securing appliances are to be accessible from the stringer or walkway; and

(e) the breadth of the trunk is to be measured between the trunk side bulkheads.

(7) Where the trunk adjoining the superstructures such as poop, bridge or forecastle is included in the calculation of freeboard, openings shall not be arranged in that part of the bulkhead which is common for the trunk and superstructure. A relaxation may be made for small openings such as for piping, cable or manholes with covers attached by means of bolts.

(8) The sides of a trunk included in the calculation of freeboard shall be intact. Side scuttles of the non-opening type and bolted manhole covers may be allowed.

Regulation 37
Deduction for superstructures and trunks

(1) Where the effective length of superstructures and trunks is 1L, the deduction from the freeboard shall be 350 mm at 24 m length of ship, 860 mm at 85 m length and 1,070 mm at 122 m length and above. Deductions at intermediate lengths shall be obtained by linear interpolation.

(2) Where the total effective length of superstructures and trunks is less than 1L, the deduction shall be a percentage obtained from the following table:

Percentage of deduction for type 'A' and 'B' ships

	Total effective length of superstructures and trunks										
	0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1 L
Percentage of deduction for all types of superstructure	0	7	14	21	31	41	52	63	75.3	87.7	100

Percentages at intermediate lengths of superstructures and trunks shall be obtained by linear interpolation.

Table 37.1

(3) For ships of type 'B' where the effective length of a forecastle is less than 0.07L no deduction is allowed.

Regulation 38
Sheer

General

(1) The sheer shall be measured from the deck at side to a line of reference drawn parallel to the keel through the sheer line amidships.

(2) In ships designed with a rake of keel, the sheer shall be measured in relation to a reference line drawn parallel to the design load waterline.

(3) In flush deck ships and in ships with detached superstructures the sheer shall be measured at the freeboard deck.

(4) In ships with topsides of unusual form in which there is a step or break in the topsides, the sheer shall be considered in relation to the equivalent depth amidships.

(5) In ships with a superstructure of standard height which extends over the whole length of the freeboard deck, the sheer shall be measured at the superstructure deck. Where the height exceeds the standard, the least difference (Z) between the actual and standard heights shall be added to each end ordinate. Similarly, the intermediate ordinates at distances of 1/6L and 1/3L from each perpendicular shall be increased by 0.444Z and 0.111Z, respectively. Where there is an enclosed poop or forecastle superimposed on the superstructure, sheer credit shall be allowed for such a poop or forecastle, according to the method of paragraph (12) as shown in figure 38.1.

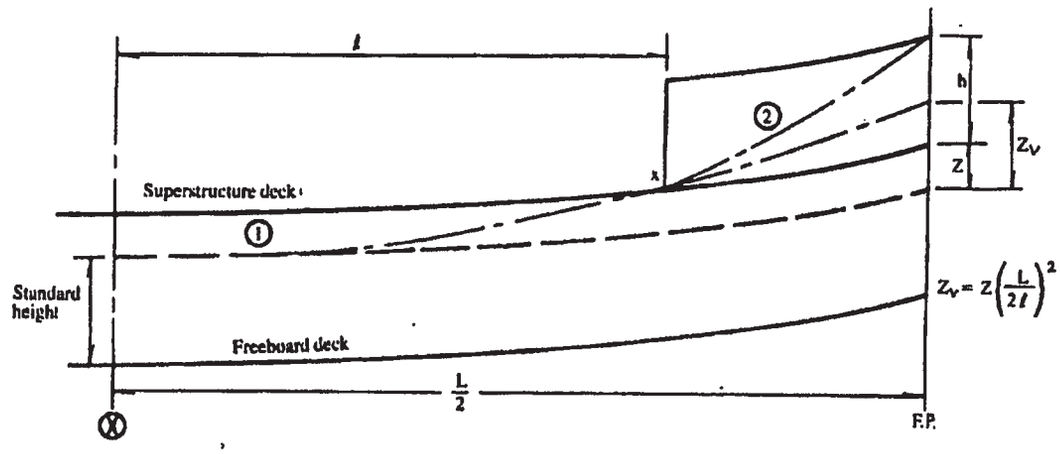

Figure 38.1

(6) Where the deck of an enclosed superstructure has at least the same sheer as the exposed freeboard deck, the sheer of the enclosed portion of the freeboard deck shall not be taken into account.

(7) Where an enclosed poop or forecastle is of standard height with greater sheer than that of the freeboard deck, or is of more than standard height, an addition to the sheer of the freeboard deck shall be made as provided in paragraph (12).

Where a poop or forecastle consists of two layers, the method shown in figure 38.2 shall be used.

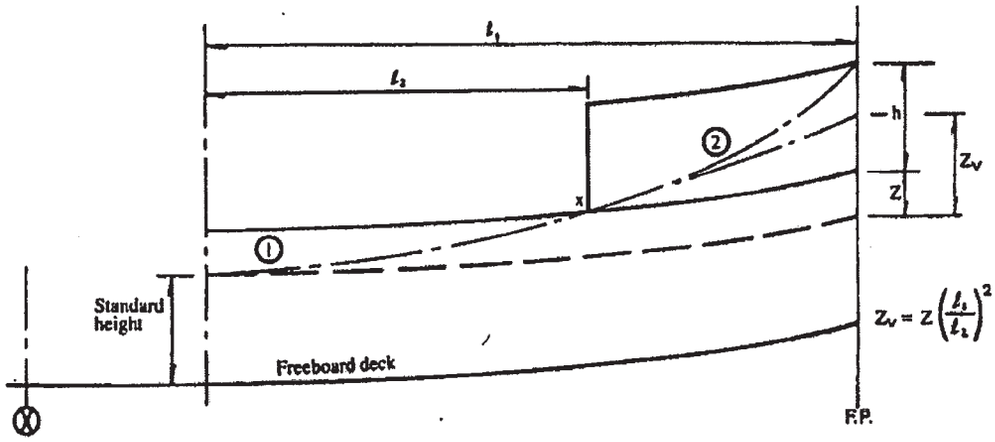

Figure 38.2

In figures 38.1and 38.2, the following definitions apply:

Z is as defined in paragraph (5); and

Z_V is the end ordinate of a virtual standard parabolic curve taken through the point "X". If Z_V is greater than (Z + h), the end ordinate shall be (Z + h), in which case point "X" shall be disregarded and curve (2) not taken into account.

When the length of the first tier superstructure is greater than 0.5*l*, the virtual standard parabolic curve shall commence at amidships as indicated in figure 38.1.

Standard sheer profile

(8) The ordinates of the standard sheer profile are given in the following table:

Standard sheer profile
(where L is in m)

	Station	Ordinate (in mm)	Factor
After half	After perpendicular	$25\ (\frac{L}{3}+10)$	1
	1/6 L from A.P.	$11.1\ (\frac{L}{3}+10)$	3
	1/3 L from A.P.	$2.8\ (\frac{L}{3}+10)$	3
	Amidships	0	1
Forward half	Amidships	0	1
	1/3 L from F.P.	$5.6\ (\frac{L}{3}+10)$	3
	1/6 L from F.P.	$22.2\ (\frac{L}{3}+10)$	3
	Forward perpendicular	$50\ (\frac{L}{3}+10)$	1

Table 38.1

Measurement of variation from standard sheer profile

(9) Where the sheer profile differs from the standard, the four ordinates of each profile in the forward or after half shall be multiplied by the appropriate factors given in the above table of ordinates. The difference between the sums of the respective products and those of the standard divided by 8 measures the deficiency or excess of sheer in the forward or after half. The arithmetical mean of the excess or deficiency in the forward and after halves measures the excess or deficiency of sheer.

(10) Where the after half of the sheer profile is greater than the standard and the forward half is less than the standard, no credit shall be allowed for the part in excess and deficiency only shall be measured.

(11) Where the forward half of the sheer profile exceeds the standard, and the after portion of the sheer profile is not less than 75% of the standard, credit shall be allowed for the part in excess. Where the after part is less than 50% of the standard no credit shall be given for the excess sheer forward. Where the after sheer is between 50% and 75% of the standard, intermediate allowances may be granted for excess sheer forward.

(12) Where sheer credit is given for a poop or forecastle the following formula shall be used:

$$s = \frac{yL'}{3L}$$

where: s is the sheer credit, to be deducted from the deficiency, or added to the excess of sheer;

y is the difference between actual and standard height of superstructure at the after or forward perpendicular;

L' is the mean enclosed length of poop or forecastle up to a maximum length of 0.5 L; and

L is the length of the ship as defined in regulation 3(1).

The above formula provides a curve in the form of a parabola tangent to the actual sheer curve at the freeboard deck and intersecting the end ordinate at a point below the superstructure deck a distance equal to the standard height of a superstructure. The superstructure deck shall not be less than standard height above this curve at any point. This curve shall be used in determining the sheer profile for forward and after halves of the ship.

(13) (a) Any excess in the height of a superstructure which does not extend to the after perpendicular cannot be regarded as contributing to the sheer allowance.

(b) Where the height of a superstructure is less than standard, the superstructure deck shall not be less than the minimum height of the superstructure above the virtual shear curve at any point. For this purpose y shall be taken as the difference between the actual and minimum height of the superstructure at the after/forward perpendicular.

(c) For a raised quarterdeck credit may be given only when the height of this quarterdeck is greater than the standard height of 'other superstructures' as defined in regulation 33, and only for the amount by which the actual height of the raised quarterdeck exceeds that standard height.

(d) When a poop or a forecastle has sloping end bulkheads, the sheer credit may be allowed on account of excess height. The formula given in paragraph (12) shall be used, the values for y and L' being as shown in figure 38.3.

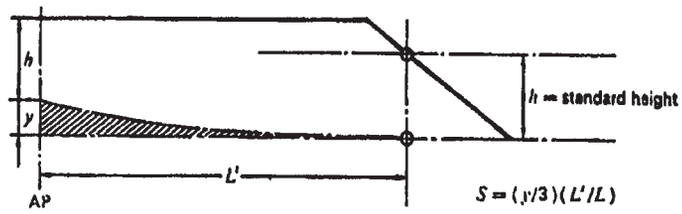

Figure 38.3 Sheer credit S for excess height

Correction for variations from standard sheer profile

(14) The correction for sheer shall be the deficiency or excess of sheer (see paragraphs (9) to (11) inclusive), multiplied by

$$0.75 - \frac{S_1}{2L}$$

where S_1 is the total length S of enclosed superstructures as defined in regulation 34 without trunks.

Addition for deficiency in sheer

(15) Where the sheer is less than the standard, the correction for deficiency in sheer (see paragraph (14)) shall be added to the freeboard.

Deduction for excess sheer

(16) In ships where an enclosed superstructure covers 0.1L before and 0.1L abaft amidships, the correction for excess of sheer as calculated under the provisions of paragraph (14) shall be deducted from the freeboard; in ships where no enclosed superstructure covers amidships, no deduction shall be made from the freeboard; where an enclosed superstructure covers less than 0.1L before and 0.1L abaft amidships, the deduction shall be obtained by linear interpolation. The maximum deduction for excess sheer shall be at the rate of 125 mm per 100 m of length.

In applying this paragraph, the height of the superstructure shall be related to its standard height. Where the height of the superstructure or raised quarterdeck is less than standard, the reduction shall be in the ratio of the actual to the standard height thereof.

Regulation 39
Minimum bow height and reserve buoyancy

(1) The bow height (F_b), defined as the vertical distance at the forward perpendicular between the waterline corresponding to the assigned summer freeboard and the designed trim and the top of the exposed deck at side, shall be not less than:

$$F_b = (6075(L/100) - 1875(L/100)^2 + 200(L/100)^3) \times (2.08 + 0.609C_b - 1.603C_{wf} - 0.0129(L/d_t))$$

where:

F_b is the calculated minimum bow height, in mm;
L is the length, as defined in regulation 3, in m;
B is the moulded breadth, as defined in regulation 3, in m;
d_1 is the draught at 85% of the depth D, in m;
C_b is the block coefficient, as defined in regulation 3;
C_{wf} is the waterplane area coefficient forward of L/2: $C_{wf} = A_{wf}/\{(L/2) \times B\}$;
A_{wf} is the waterplane area forward of L/2 at draught d_1, in m^2.

For ships to which timber freeboards are assigned, the summer freeboard (and not the timber summer freeboard) is to be assumed when applying paragraph (1).

(2) Where the bow height required in paragraph (1) is obtained by sheer, the sheer shall extend for at least 15% of the length of the ship measured from the forward perpendicular. Where it is obtained by fitting a superstructure, such superstructure shall extend from the stem to a point at least 0.07L abaft the forward perpendicular, and shall be enclosed as defined in regulation 3(10).

(3) Ships which, to suit exceptional operational requirements, cannot meet the requirements of paragraphs (1) and (2) of this regulation may be given special consideration by the Administration.

(4) (a) The sheer of the forecastle deck may be taken into account, even if the length of the forecastle is less than 0.15L, but greater than 0.07L, provided that the forecastle height is not less than one half of standard height of superstructure as defined in regulation 33 between 0.07L and the forward perpendicular.

(b) Where the forecastle height is less than one half of the standard height of superstructure, as defined in regulation 33, the credited bow height may be determined as follows:

(i) Where the freeboard deck has sheer extending from abaft 0.15L, by a parabolic curve having its origin at 0.15L abaft the forward perpendicular at a height equal to the midship depth of the ship, extended through the point of intersection of forecastle bulkhead and deck, and up to a point at the forward perpendicular not higher than the level of the forecastle deck (as illustrated in figure 39.1). However, if the value of the height denoted h_t in figure 39.1 is smaller than the value of the height denoted h_b then h_t may be replaced by h_b in the available bow height.

(ii) Where the freeboard deck has sheer extending for less than 0.15L or has no sheer, by a line from the forecastle deck at side at 0.07L extended parallel to the base line to the forward perpendicular (as illustrated in figure 39.2).

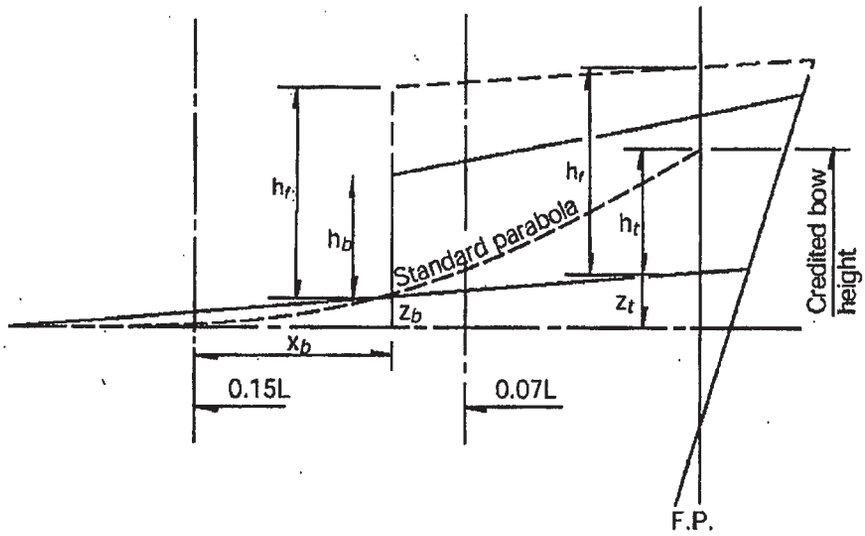

Figure 39.1

$$h_t = Z_b\left(\frac{0.15L}{x_b}\right)^2 - Z_t$$

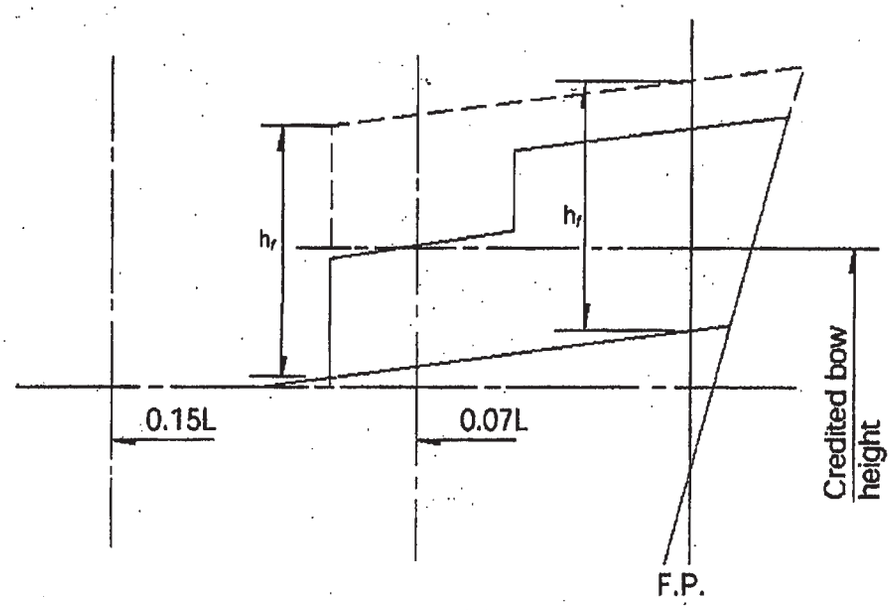

Figure 39.2

h_f = Half standard height of superstructure as defined in regulation 33.

(5) All ships assigned a type 'B' freeboard, other than oil tankers , chemical tankers and gas carriers , shall have additional reserve buoyancy in the fore end. Within the range of 0.15L abaft of the forward perpendicular, the sum of the projected

area between the summer load waterline and the deck at side (A1 and A2 in figure 39.3) and the projected area of an enclosed superstructure, if fitted, (A3) shall not be less than:

$$(0.15F_{min} + 4(L/3 + 10))L/1000 \text{ m}^2,$$

where:

F_{min} is calculated by: $F_{min} = (F_0 \times f_1) + f_2$;
F_0 is the tabular freeboard, in mm, taken from table 28.2, corrected for regulation 27(9) or 27(10), as applicable;
f_1 is the correction for block coefficient given in regulation 30; and
f_2 is the correction for depth, in mm, given in regulation 31 .

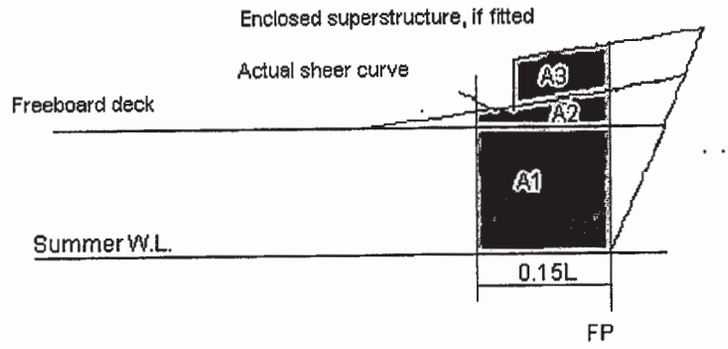

Figure 39.3

Regulation 40
Minimum freeboards

Summer freeboard

(1) The minimum freeboard in summer shall be the freeboard derived from the tables in regulation 28, as modified by the corrections in regulations 27, as applicable, 29, 30, 31, 32, 37, 38 and, if applicable, 39.

(2) The freeboard in salt water, as calculated in accordance with paragraph (1), but without the correction for deck line, as provided by regulation 32, shall not be less than 50 mm. For ships having in position 1 hatchways with covers which do not comply with the requirements of regulation 16(1) through (5) or regulation 26, the freeboard shall be not less than 150 mm.

Tropical freeboard

(3) The minimum freeboard in the Tropical Zone shall be the freeboard obtained by a deduction from the summer freeboard of one forty-eighth of the summer draught measured from the top of the keel to the centre of the ring of the load line mark.

(4) The freeboard in salt water, as calculated in accordance with paragraph (3), but without the correction for deck line, as provided by regulation 32, shall not be less

than 50 mm. For ships having in position 1 hatchways with covers which do not comply with the requirements of regulation 16(1) through (5) or regulation 26, the freeboard shall be not less than 150 mm.

Winter freeboard

(5) The minimum freeboard in winter shall be the freeboard obtained by an addition to the summer freeboard of one forty-eighth of summer draught, measured from the top of the keel to the centre of the ring of the load line mark.

Winter North Atlantic freeboard

(6) The minimum freeboard for ships of not more than 100 m in length which enter any part of the North Atlantic defined in regulation 52 (Annex II) during the winter seasonal period shall be the winter freeboard plus 50 mm. For other ships, the winter North Atlantic freeboard shall be the winter freeboard.

Fresh water freeboard

(7) The minimum freeboard in fresh water of unit density shall be obtained by deducting from the minimum freeboard in salt water:

$$\frac{\Delta}{40T} \text{ (cm)}$$

where: Δ is the displacement in salt water in tonnes at the summer load waterline; and

T is the tonnes per centimetre immersion in salt water at the summer load waterline.

(8) Where the displacement at the summer load waterline cannot be certified, the deduction shall be one forty-eight of summer draught, measured from the top of the keel to the centre of the ring of the load line mark.

CHAPTER IV
SPECIAL REQUIREMENTS FOR SHIPS ASSIGNED TIMBER FREEBOARD

Regulation 41
Application of this chapter

Regulations 42 to 45 inclusive apply only to ships to which timber load lines are assigned.

Regulation 42
Definitions

(1) *Timber deck cargo.* The term "timber deck cargo" means a cargo of timber carried on an uncovered part of a freeboard deck. The term does not include wood pulp or similar cargo*.

(2) *Timber load line.* A timber deck cargo may be regarded as giving a ship a certain additional buoyancy and a greater degree of protection against the sea. For that reason, ships carrying a timber deck cargo may be granted a reduction of freeboard calculated according to the provisions of regulation 45 and marked on the ship's side in accordance with the provisions of regulations 6(3) and (4). However, in order that such special freeboard may be granted and used, the timber deck cargo shall comply with certain conditions which are laid down in regulation 44, and the ship itself shall also comply with certain conditions relating to its construction which are set out in regulation 43.

Regulation 43
Construction of the ship

Superstructure

(1) Ships shall have a forecastle of at least standard height and a length of at least 0.07L. In addition, if the ship is less than 100 m in length, a poop of at least standard height, or a raised quarterdeck with a deckhouse of at least the same total height shall be fitted aft.

Double bottom tanks

(2) Double bottom tanks, where fitted within the midship half length of the ship, shall have adequate watertight longitudinal subdivision.

Bulwarks

(3) The ship shall be fitted either with permanent bulwarks at least 1 m in height, specially stiffened on the upper edge and supported by strong bulwark stays attached to the deck and provided with necessary freeing ports, or with efficient rails of the same height and of specially strong construction.

Regulation 44
Stowage

General

(1) Openings in the deck exposed to weather over which cargo is stowed shall be securely closed and battened down.

The ventilators and air pipes shall be efficiently protected.

(2) Timber deck cargoes shall extend over at least the entire available length which is the total length of the well or wells between superstructures.

Where there is no limiting superstructure at the after end, the timber shall extend at least to the after end of the aftermost hatchway.

The timber deck cargo shall extend athwartships as close as possible to the ship's side, due allowance being made for obstructions such as guard rails, bulwark stays, uprights, pilot access, etc., provided that any gap thus created at the side of the ship shall not exceed a mean of 4% of the breadth. The timber shall be stowed as solidly as possible to at least the standard height of the superstructure other than any raised quarterdeck.

(3) On a ship within a seasonal winter zone in winter, the height of the deck cargo above the deck exposed to weather shall not exceed one third of the extreme breadth of the ship.

(4) The timber deck cargo shall be compactly stowed, lashed and secured. It shall not interfere in any way with the navigation and necessary work of the ship.

Uprights

(5) Uprights, when required by the nature of the timber, shall be of adequate strength considering the breadth of the ship; the strength of the uprights shall not exceed the strength of the bulwark and the spacing shall be suitable for the length and character of timber carried, but shall not exceed 3 m. Strong angles or metal sockets or equally efficient means shall be provided for securing the uprights.

Lashings

(6) Timber deck cargo shall be effectively secured throughout its length by a lashing system acceptable to the Administration for the character of the timber carried*.

Stability

(7) Provision shall be made for a safe margin of stability at all stages of the voyage, regard being given to additions of weight, such as those arising from absorption of water or icing, if applicable, and to losses of weight such as those arising from consumption of fuel and stores.

Protection of crew, access to machinery spaces, etc.

(8) In addition to the requirements of regulation 25(5), guard-rails or lifelines not more than 350 mm apart vertically shall be provided on each side of the cargo deck to a height of at least 1 m above the cargo.

In addition a lifeline, preferably wire rope set up taut with a stretching screw, shall be provided as near as practicable to the centreline of the ship. The stanchion supports to all guard-rails and lifelines shall be so spaced as to prevent undue sagging. Where the cargo is uneven, a safe walking surface of not less than 600 mm in width shall be fitted over the cargo and effectively secured beneath or adjacent to the lifeline.

(9) Where the requirements prescribed in paragraph (8) are impracticable, alternative arrangements satisfactory to the Administration shall be used.

Steering arrangements

(10) Steering arrangements shall be effectively protected from damage by cargo and, as far as practicable, shall be accessible. Efficient provision shall be made for steering in the event of a breakdown in the main steering arrangements.

Regulation 45
Computation for freeboard

(1) The minimum summer freeboards shall be computed in accordance with regulations 27(5), 27(6), 27(14), 28, 29, 30, 31, 32, 37 and 38, except that regulation 37 is modified by substituting the following percentages for those given in regulation 37:

	Total effective length of superstructure										
	0	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L
Percentage of deduction for all types of superstructure	20	31	42	53	64	70	76	82	88	94	100

Percentages at intermediate lengths of superstructure shall be obtained by linear interpolation.

Table 45.1

(2) The Winter Timber Freeboard shall be obtained by adding to the Summer Timber Freeboard one thirty-sixth of the moulded summer timber draught.

(3) The Winter North Atlantic Timber Freeboard shall be the same as the Winter North Atlantic Freeboard prescribed in regulation 40(6).

(4) The Tropical Timber Freeboard shall be obtained by deducting from the Summer Timber Freeboard one forty-eighth of the moulded summer timber draught.

(5) The Fresh Water Timber Freeboard shall be computed in accordance with regulation 40(7), based on the summer timber load waterline or with regulation 40(8), based on the summer timber draught measured from the top of the keel to the summer timber load line.

(6) Timber freeboards may be assigned to ships with reduced type 'B' freeboards, provided the timber freeboards are calculated on the basis of the ordinary type 'B' freeboard.

(7) The Timber Winter mark and/or the Timber Winter North Atlantic mark shall be placed at the same level as the reduced type 'B' Winter mark when the computed Timber Winter mark and/or the computed Timber Winter North Atlantic mark fall below the reduced type 'B' Winter mark."

ANNEX II
ZONES, AREAS AND SEASONAL PERIODS

Regulation 49 - Seasonal tropical areas

2 The existing text of paragraph 7(b) is replaced by the following:

"(b) An area bounded:

on the north and east by the southern boundary of the Tropical Zone;

on the south by the parallel of latitude of 24°S from the east coast of Australia to longitude 154°E, thence by the meridian of longitude 154°E to the Tropic of Capricorn and thence by the Tropic of Capricorn to longitude 150°W, thence by the meridian of longitude 150°W to latitude 20°S and thence by the parallel of latitude 20°S to the point where it intersects the southern boundary of the Tropical Zone; and

on the west by the boundaries of the area within the Great Barrier Reef included in the Tropical Zone and by the east coast of Australia.

Seasonal periods:

TROPICAL: 1 April to 30 November
SUMMER: 1 December to 31 March."

海安會第MSC.172（79）號決議

（2004年12月9日通過）

《1966年國際載重線公約1988年議定書》

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，

還憶及《1966年國際載重線公約》的1988年議定書（以下簡稱1988年載重線議定書）關於修正程序的第VI條，

在其第七十九屆會議上**審議了**根據1988年載重線議定書第VI條第2（a）款建議並散發的1988年載重線議定書的修正案，

1. 根據1988年載重線議定書第VI條第2（d）款，**通過了**1988年載重線議定書附則B的修正案，正文列於本決議之附件；

2. **決定**，根據1988年載重線議定書第VI條第2（f）（ii）（bb）款，上述修正案將於2006年1月1日視為已被接受，除非在該日期以前，有超過三分之一的1988年載重線議定書當事國或者合計商船總噸位佔世界商船總噸位不少於50%的當事國通知其反對修正案；

3. **提請**當事國注意，根據1988年載重線議定書第VI條第2（g）（ii）款，修正案在根據上文第2段被接受後，將於2006年7月1日生效；

4. **要求**秘書長根據1988年載重線議定書第VI條第2（e）款，將本決議及其所附修正案正文的核正無誤副本轉送1988年載重線議定書的所有當事國；

5. **還要求**秘書長將本決議及其附件的副本轉送所有非1988年載重線議定書當事國的本組織成員國。

附件

《1966年國際載重線公約1988年議定書》附件B修正案

附件III

證書

國際載重線證書格式

1 在國際載重線證書格式中，在以“本證書有效期至”開始的一節與以“簽發於”開始的一節之間增加以下新的一節：

“本證書所依據之檢驗的完成日期為.....。”

日/月/年

國際載重線免除證書格式

2 在國際載重線免除證書格式中，在以“本證書有效期至”開始的一節與以“簽發於”開始的一節之間增加以下新的一節：

“本證書所依據之檢驗的完成日期為.....。”

日/月/年

RESOLUTION MSC.172(79)

(adopted on 9 December 2004)

AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VI of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (hereinafter referred to as the "1988 Load Lines Protocol") concerning amendment procedures,

HAVING CONSIDERED, at its seventy-ninth session, amendments to the 1988 Load Lines Protocol proposed and circulated in accordance with paragraph 2(a) of article VI thereof,

1. ADOPTS, in accordance with paragraph 2(d) of article VI of the 1988 Load Lines Protocol, amendments to Annex B to the 1988 Load Lines Protocol, the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with paragraph 2(f)(ii)(bb) of article VI of the 1988 Load Lines Protocol, that the said amendments shall be deemed to have been accepted on 1 January 2006, unless, prior to that date, more than one third of the Parties to the 1988 Load Lines Protocol or Parties 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 the Parties concerned to note that, in accordance with paragraph 2(g)(ii) of article VI of the 1988 Load Lines Protocol, the amendments shall enter into force on 1 July 2006 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with paragraph 2(e) of article VI of the 1988 Load Lines Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 Load Lines Protocol;

5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Parties to the 1988 Load Lines Protocol.

ANNEX

AMENDMENTS TO ANNEX B TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966

ANNEX III

CERTIFICATES

Form of International Certificate on Load Lines

1 In the form of the International Load Line Certificate, the following new section is inserted between the section commencing with the words "This certificate is valid until" and the section commencing with the words "Issued at":

"Completion date of the survey on which this certificate is based: ....."
(dd/mm/yyyy)

Form of International Exemption Certificate on Load Lines

2 In the form of the International Load Line Exemption Certificate, the following new section is inserted between the section commencing with the words "This certificate is valid until" and the section commencing with the words "Issued at":

"Completion date of the survey on which this certificate is based: ....."
(dd/mm/yyyy)

海安會第MSC.223（82）號決議

（2006年12月8日通過）

經修正的《1966年國際載重線公約1988年議定書》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，

進一步憶及《1966年國際載重線公約1988年議定書》（以下稱《1988年載重線議定書》）關於修正程序的第VI條，

在其第八十二屆會議上，**審議了**按照《1988年載重線議定書》第VI條第2（a）款提出並散發的《1988年載重線議定書》的修正案，

1. 根據《1988年載重線議定書》第VI條第2（d）款，**通過**《1988年載重線議定書》的修正案，其正文列於本決議附件；

2. 根據《1988年載重線議定書》第VI條第2（f）（ii）（bb）款，**決定**所述修正案將在2008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《1988年載重線議定書》締約方，或其合計商船隊總噸位不少於世界商船隊總噸位50%的締約方通知反對該修正案；

3. **請**各締約方注意，根據《1988年載重線議定書》第VI條第2（g）（ii）款，在按照上述第2款被接受後，該修正案將於2008年7月1日生效；

4. **要求**秘書長，依照《1988年載重線議定書》第VI條第2（e）款，將本決議及其附件所載修正案的核證無誤副本發送至《1988年載重線議定書》各締約方；

5. **進一步要求**秘書長將本決議及其附件文本發送至《1988年載重線議定書》非締約方的本組織會員。

附件

經修正的《1966年國際載重線公約的1988年議定書》的修正案

附件B

經1988年議定書修訂的公約的附件

附則I

載重線核定規則

第II章

勘定乾舷的條件

第22條 － 泄水孔，進水孔和排水孔

1 在該條第（4）款中，將提及“第（2）款”改為“第（1）款”。

第III章

乾舷

第39條 － 最小船艏高度和儲備浮力

2 在該條第（1）款中，將“D_1為型深 D 的 85%處的吃水，m”字樣改為“D_1為最小型深的 85%處的吃水，m”。

RESOLUTION MSC.223(82)

(adopted on 8 December 2006)

AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966, AS AMENDED

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VI of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (hereinafter referred to as the "1988 Load Lines Protocol") concerning amendment procedures,

HAVING CONSIDERED, at its eighty-second session, amendments to the 1988 Load Lines Protocol proposed and circulated in accordance with paragraph 2(a) of article VI thereof,

1. ADOPTS, in accordance with paragraph 2(d) of article VI of the 1988 Load Lines Protocol, amendments to the 1988 Load Lines Protocol, the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with paragraph 2(f)(ii)(bb) of article VI of the 1988 Load Lines Protocol, that the said amendments shall be deemed to have been accepted on 1 January 2008, unless, prior to that date, more than one third of the Parties to the 1988 Load Lines Protocol or Parties 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 the Parties concerned to note that, in accordance with paragraph 2(g)(ii) of article VI of the 1988 Load Lines Protocol, the amendments shall enter into force on 1 July 2008 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with paragraph 2(e) of article VI of the 1988 Load Lines Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 Load Lines Protocol;

5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Parties to the 1988 Load Lines Protocol.

ANNEX

AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966, AS AMENDED

ANNEX B
ANNEXES TO THE CONVENTION AS MODIFIED BY THE PROTOCOL OF 1988 RELATING THERETO

ANNEX I
REGULATIONS FOR DETERMINING LOAD LINES

CHAPTER II
CONDITIONS OF ASSIGNMENT OF FREEBOARD

Regulation 22 – Scuppers, inlets and discharges

1 In paragraph (4) of the regulation, the reference to "(2)" is replaced by reference to "(1)".

CHAPTER III
FREEBOARDS

Regulation 39 – Minimum bow height and reserve buoyancy

2 In paragraph (1) of the regulation, the words "d_1 is the draught at 85% of the depth D, in metres;" are replaced by the words "d_1 is the draught at 85% of the least moulded depth, in metres;".

海安會第 MSC.270（85）號決議

（2008 年 12 月 4 日通過）

通過經修正的《1966 年國際載重線公約 1988 年議定書》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，

進一步憶及《1966 年國際載重線公約 1988 年議定書》（下文稱《1988 年載重線議定書》）關於修正程序的第 VI 條，

在其第八十五屆會議上，**審議了**按照議定書第 VI 條第 2（a）款建議並散發的《1988 年載重線議定書》的修正案，

1. 按照《1988 年載重線議定書》第 VI 條第 2（d）款，**通過**《1988 年載重線議定書》的修正案，其文本載於本決議的附件中；

2. 按照《1988 年載重線議定書》第 VI 條第 2（f）（ii）（bb）款，**決定**上述修正案將於 2010 年 1 月 1 日視為已被接受，除非在該日期前有超過三分之一的《1988 年載重線議定書》締約國或其合計商船總噸位不少於世界商船總噸位 50%的締約國表示反對該修正案；

3. **請**各有關締約國注意：按照《1988 年載重線議定書》第 VI 條第 2（g）（ii）款，該修正案將在按上述第 2 段被接受後於 2010 年 7 月 1 日生效；

4. **要求**秘書長依照《1988 年載重線議定書》第 VI 條第 2(e)款，將本決議及載於附件的修正案文本的核證無誤副本送發《1988 年載重線議定書》的所有締約國；

5. **進一步要求**秘書長將本決議及其附件的副本送發非《1988 年載重線議定書》締約國的本組織會員。

附件

經修正的《1966 年國際載重線公約 1988 年議定書》的修正案

附則 B

經《1988 年議定書》修訂的公約附則

附則 I

載重線核定規則

第 I 章

總則

第 1 條 — 船舶的強度與完整穩性

1 將第（3）款的現有文字改為：

“（3）*遵約*

（a） 2010 年 7 月 1 日之前建造的船舶須符合主管機關可接受的完整穩性標準。

（b） 2010 年 7 月 1 日或以後建造的船舶須起碼符合《2008 年完整穩性規則》A 部分的要求。”

第 3 條 － 附則中所用術語的定義

2 在現有第（15）款之後，增加新的第（16）款如下：

“（16）*2008 年完穩規則*係指以第 MSC.267（85）號決議通過的《2008 年國際完整穩性規則》，該規則包括引言、A 部分（須作為強制性規定看待）和 B 部分（須作為建議性規定看待），條件是：

.1 該規則引言和 A 部分的修正案應按照現《公約》關於附則除第 I 章以外的適用修正程序的第 VIII 條規定予以通過、生效和施行；及

.2 該規則 B 部分的修正案應由海上安全委員會按照其議事規則予以通過。”

RESOLUTION MSC.270(85)
(adopted on 4 December 2008)

ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION ON LOAD LINES, 1966, AS AMENDED

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VI of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (hereinafter referred to as the "1988 Load Lines Protocol") concerning amendment procedures,

HAVING CONSIDERED, at its eighty-fifth session, amendments to the 1988 Load Lines Protocol proposed and circulated in accordance with paragraph 2(a) of article VI thereof,

1. ADOPTS, in accordance with paragraph 2(d) of article VI of the 1988 Load Lines Protocol, amendments to the 1988 Load Lines Protocol, the text of which is set out in the Annex to the present resolution;

2. DETERMINES, in accordance with paragraph 2(f)(ii)(bb) of article VI of the 1988 Load Lines Protocol, that the said amendments shall be deemed to have been accepted on 1 January 2010, unless, prior to that date, more than one third of the Parties to the 1988 Load Lines Protocol or Parties 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 the Parties concerned to note that, in accordance with paragraph 2(g)(ii) of article VI of the 1988 Load Lines Protocol, the amendments shall enter into force on 1 July 2010 upon their acceptance in accordance with paragraph 2 above;

4. REQUESTS the Secretary-General, in conformity with paragraph 2(e) of article VI of the 1988 Load Lines Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 Load Lines Protocol;

5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Parties to the 1988 Load Lines Protocol.

ANNEX

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ANNEX I
REGULATIONS FOR DETERMINING LOAD LINES

CHAPTER I
GENERAL

Regulation 1 – Strength and intact stability of ships

1 The existing text of paragraph (3) is replaced by the following:

"(3) *Compliance*

(a) Ships constructed before 1 July 2010 shall comply with an intact stability standard acceptable to the Administration.

(b) Ships constructed on or after 1 July 2010 shall, as a minimum, comply with the requirements of part A of the 2008 IS Code."

Regulation 3 – Definitions of terms used in the Annexes

2 The following new paragraph (16) is added after the existing paragraph (15):

"(16) *2008 IS Code* means the International Code on Intact Stability, 2008, consisting of an introduction, part A (the provisions of which shall be treated as mandatory) and part B (the provisions of which shall be treated as recommendatory), as adopted by resolution MSC.267(85), provided that:

.1 amendments to the introduction and part A of the Code are adopted, brought into force and take effect in accordance with the provisions of article VI of the 1988 Load Lines Protocol concerning the amendment procedure applicable to Annex B to the Protocol; and

.2 amendments to part B of the Code are adopted by the Maritime Safety Committee in accordance with its Rules of Procedure."