Treaty Series

Treaties and international agreements
registered
or filed and recorded
with the Secretariat of the United Nations

VOLUME 1184

Recueil des Traités

Traités et accords internationaux
enregistrés
ou classés et inscrits au répertoire
au Secrétariat de l'Organisation des Nations Unies

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Treaties and international agreements registered or filed and recorded with the Secretariat of the United Nations

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(Only the Chinese and the English authentic texts registered under No. 18961 are reproduced herein. The authentic French, Russian and Spanish texts appear in volume 1185.)

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NOTE BY THE SECRETARIAT

Under Article 102 of the Charter of the United Nations every treaty and every international agreement entered into by any Member of the United Nations after the coming into force of the Charter shall, as soon as possible, be registered with the Secretariat and published by it. Furthermore, no party to a treaty or international agreement subject to registration which has not been registered may invoke that treaty or agreement before any organ of the United Nations. The General Assembly, by resolution 97 (I), established regulations to give effect to Article 102 of the Charter (see text of the regulations, vol. 859, p. VIII).

The terms "treaty" and "international agreement" have not been defined either in the Charter or in the regulations, and the Secretariat follows the principle that it acts in accordance with the position of the Member State submitting an instrument for registration that so far as that party is concerned the instrument is a treaty or an international agreement within the meaning of Article 102. Registration of an instrument submitted by a Member State, therefore, does not imply a judgement by the Secretariat on the nature of the instrument, the status of a party or any similar question. It is the understanding of the Secretariat that its action does not confer on the instrument the status of a treaty or an international agreement if it does not already have that status and does not confer on a party a status which it would not otherwise have.

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Unless otherwise indicated, the translations of the original texts of treaties, etc., published in this *Series* have been made by the Secretariat of the United Nations.

NOTE DU SECRÉTARIAT

Aux termes de l'Article 102 de la Charte des Nations Unies, tout traité ou accord international conclu par un Membre des Nations Unies après l'entrée en vigueur de la Charte sera, le plus tôt possible, enregistré au Secrétariat et publié par lui. De plus, aucune partie à un traité ou accord international qui aurait dû être enregistré mais ne l'a pas été ne pourra invoquer ledit traité ou accord devant un organe des Nations Unies. Par sa résolution 97 (I), l'Assemblée générale a adopté un règlement destiné à mettre en application l'Article 102 de la Charte (voir texte du règlement, vol. 859, p. IX).

Le terme «traité» et l'expression «accord international» n'ont été définis ni dans la Charte ni dans le règlement, et le Secrétariat a pris comme principe de s'en tenir à la position adoptée à cet égard par l'Etat Membre qui a présenté l'instrument à l'enregistrement, à savoir que pour autant qu'il s'agit de cet Etat comme partie contractante l'instrument constitue un traité ou un accord international au sens de l'Article 102. Il s'ensuit que l'enregistrement d'un instrument présenté par un Etat Membre n'implique, de la part du Secrétariat, aucun jugement sur la nature de l'instrument, le statut d'une partie ou toute autre question similaire. Le Secrétariat considère donc que les actes qu'il pourrait être amené à accomplir ne confèrent pas à un instrument la qualité de «traité» ou d'«accord international» si cet instrument n'a pas déjà cette qualité, et qu'ils ne confèrent pas à une partie un statut que, par ailleurs, elle ne posséderait pas.

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Sauf indication contraire, les traductions des textes originaux des traités, etc., publiés dans ce *Recueil* ont été établies par le Secrétariat de l'Organisation des Nations Unies.

I

Treaties and international agreements

registered

on 30 June 1980

No. 18961

Traités et accords internationaux

enregistrés

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No. 18961

MULTILATERAL

International Convention for the Safety of Life at Sea, 1974 (with annex and final act of the International Conference on Safety of Life at Sea, 1974). Conclnded at London on 1 Novemher 1974

Declaration relating to the declaration made upon accession by Kuwait to the above-mentioued Couveutiou

Authentic texts of the Convention: Chinese, English, French, Russian and Spanish.

Authentic text of the Declaration: English.

Registered by the Inter-Governmental Maritime Consultative Organization on 30 June 1980.

(*For the authentic French, Russian and Spanish texts, see volume 1185.*)

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MULTILATÉRAL

Couventiou internatiouale de 1974 pour la sauvegarde de la vie humaine eu mer (avec annexe et acte fiual de la Couférence internatiouale de 1974 sur la sauvegarde de la vie humaiue eu mer). Conclue à Loudres le 1er uovemhre 1974

Déclaratiou relative à la déclaratiou faite lors de l'adhésion par le Koweït à la Conventiou susmeutionnée

Textes authentiques de la Convention : chinois, anglais, français, russe et espagnol.

Texte authentique de la déclaration : anglais.

Enregistrées par l'Organisation intergouvernementale consultative de la navigation maritime le 30 juin 1980.

(*Pour les textes authentiques français, russe et espagnol, voir volume 1185.*)

[CHINESE TEXT — TEXTE CHINOIS]

附件一

一九七四年国际海上人命安全公约

各缔约国政府，

愿共同制订统一原则和有关规则，以增进海上人命安全，

考虑到一九六〇年国际海上人命安全公约缔结以来的发展情况，缔结一个公约，以代替该公约，可以最好地达到这一目的，

特议定下列各条：

第一条 公约的一般义务

一、各缔约国政府承担义务实施本公约及其附则的各项规定，该附则应构成本公约的组成部分。凡引用本公约时，同时也就是引用该附则。

二、各缔约国政府承担义务颁布一切必要的法律、法令、命令和规则并采取一切必要的其他措施，使本公约充分和完全生效，以便从人命安全的观点出发，保证船舶适合其预定的用途。

第二条 适用范围

本公约适用于经授权悬挂缔约国政府国旗的船舶。

第三条 法律、规则

各缔约国政府承担义务将下列各项文件送交政府间海事协商组织（以下简称海协组织）秘书长保存：

一、受权代表缔约国政府管理海上人命安全措施的非政府机构的名单，以便分送各缔约国政府，供其官员参考；

二、就本公约范围内各种事项所颁布的法律、法令、命令和规则的文本；

三、根据本公约规定所颁发证书的足够数量的样本，以便分送各缔约国政府，供其官员参考。

第四条 不可抗力情况

一、在出航时不受本公约规定约束的船舶，并不因天气恶劣或任何其他不可抗力的原因偏离原定航线而受本公约规定的约束。

二、由于不可抗力或因船长负有搭载失事船舶人员或其他人员的义务而登上船的人员，在确定本公约的任何规定适用于该船时，都不应计算在内。

第五条 紧急情况下载运人员

一、为了避免对人命安全的威胁而撤离人员时，缔约国政府可准许它的船舶载运多于本公约其他规定所允许的人数。

二、上述许可并不剥夺其他缔约国政府根据本公约享有的对到达其港口的这种船舶的任何监督权。

三、给予此项许可的缔约国政府，应将任何这种许可的通知连同当时情况的说明送交海协组织秘书长。

第六条 以前的条约和公约

一、在缔约国政府之间，本公约代替并废除一九六〇年六月十七日在伦敦签订的国际海上人命安全公约。

二、本公约缔约国政府之间目前继续有效的有关海上人命安全或其有关事项的所有其他条约、公约和协定，在其有效期间，对下列事项仍应继充分和完全有效：

㈠ 不适用本公约的船舶；

㈡ 适用本公约的船舶，但本公约未予明文规定的事项。

三、至于上述条约、公约或协定与本公约的规定有抵触时，应以本公约的规定为准。

四、本公约未予明文规定的一切事项，仍受缔约国政府的法律管辖。

第七条 经协议订立的特殊规则

所有或某些缔约国政府之间，通过协议而按照本公约订立特殊规则时，应将这种规则通知海协组织秘书长，以便分发给所有缔约国政府。

第八条 修正

一、本公约可按下列各款所述的任一程序进行修正。

二、海协组织内审议后的修正：

㈠ 缔约国政府提议的任何修正案应提交给海协组织秘书长，随后由其将该修正案在海协组织审议前至少6个月分发给海协组织所有会员和所有缔约国政府。

㈡ 按上述所提议的和分发的任何修正案，应交付海协组织海上安全委员会审议。

㈢ 缔约国政府不论是否是海协组织的会员，均有权参加海上安全委员会对修正案进行审议和通过的会议。

㈣ 修正案应在按照本款㈢项所规定而扩大的海上安全委员会（以下称海上安全委员会扩大会议）上，经到会并投票的缔约国政府的三分之二多数通过，但在表决时至少应有三分之一的缔约国政府出席。

㈤ 经按照本款㈣项通过的修正案应由海协组织秘书长通知所有缔约国政府，以供接受。

㈥ 对本公约条款或附则第一章的修正案，在其被三分之二的缔约国政府接受之日，应认为已被接受；

2.对附则的修正案，除第一章外，在下列情况下，应认为已被接受：

(1)从通知缔约国政府供其接受之日起的两年期限届满时；

(2)在海上安全委员会扩大会议上，由到会并投票的缔约国政府的三分之二多数通过时所确定的不短于一年的不同期限届满时。

但如果在上述期间内，三分之一以上的缔约国政府或商船合计吨数不少于世界商船总吨数百分之五十的缔约国政府，通知海协组织秘书长反对该修正案，那么应认为该修正案未被接受。

(七) 1.关于对公约条款或附则第一章的修正案，就那些业已接受该修正案的缔约国政府而言，应在其被认为接受之日后经过六个月生效；就该修正案被认为接受之日以后接受的各个缔约国政府而言，应在其被接受之日后经过六个月生效。

2.关于对附则的修正案，除第一章外，就所有缔约国政府而言，应在其被认为接受之日后经过六个月生效，但按照本款(六)项2目的规定对该修正案表示过反对，并且未曾撤销这种反对的缔约国政府除外。然而，在该修正案生效日之前，任何缔约国政府可通知海协组织秘书长，在该修正案生效之日算起不长于一年的期间内，或者在海上安全委员会扩大会议通过修正案时，经到会并投票的缔约国政府的三分之二多数可能确定的更为长的期间内，免于实行该修正案。

三、会议修正

(一) 应一缔约国政府的请求，并经至少有三分之一缔约国政府的同意，海协组织应召开缔约国政府会议，审议对本公约的修正案。

(二) 经此种会议由到会并投票的缔约国政府的三分之二多数通过的每一项修正案，应由海协组织秘书长通知所有缔约国政府，以供接受。

㈢ 除会议另有决定外，该修正案分别根据本条二款㈥项和㈦项所规定的程序应认为已被接受和应于生效；但在这些条款中凡提到海上安全委员会扩大会议这一名称时，应认为就是指缔约国政府会议。

四、㈠业经接受一项已生效的附则修正案的缔约国政府没有义务将本公约在所签发证书方面的利益给予经授权悬挂某一缔约国政府国旗的船舶，这一政府系按本条二款㈥项2目的规定对该修正案表示过反对，并且未曾撤销这种反对者；但这仅限于该修正案所涉及的与证书有关的事项。

㈡业经接受一项已生效的附则修正案的缔约国政府应将本公约在所签发证书方面的利益给予经授权悬挂某一缔约国政府国旗的船舶，这一政府系按本条二款㈦项2目的规定，已通知海协组织秘书长，免于实行该修正案者。

五、除另有明文规定外，按本条规定对本公约所作的任何修正案，涉及到船舶结构者，应仅适用于在该修正案生效之日或以后安放龙骨或处于相应建造阶段的船舶。

六、按照本条二款㈦项2目的规定对某项修正案的接受或反对的任何声明，或任何通知，应以书面提交给海协组织秘书长，并由其将此种文件和收到日期通知所有缔约国政府。

七、海协组织秘书长应将按照本条规定生效的任何修正案，连同每项这种修正案的生效日期，通知所有缔约国政府。

第九条 签字、批准、接受、核准和加入

一、本公约自一九七四年十一月一日起至一九七五年七月一日止在海协组织总部开放签字，以后仍可加入。各国政府可按下列方式参加本公约：

㈠ 签字并对批准、接受或核准无保留；

㈡ 签字而有待批准、接受或核准，随后再予批准、接受或核准；

㈢ 加入。

二、批准、接受、核准或加入应向海协组织秘书长交存一份相应的文件。

三、海协组织秘书长应将任何签字，或者关于批准、接受、核准或加入的任何文件的交存以及交存日期，通知本公约所有签字国政府或加入本公约的各国政府。

第十条 生效

一、本公约应在至少有二十五个国家，其商船合计吨数不少于世界商船总吨数百分之五十，按第九条规定参加本公约之日后经过十二个月生效。

二、在本公约生效日以后交存的关于批准、接受、核准或加入的任何文件，应自交存文件之日后经过三个月生效。

三、对本公约的修正案在其按第八条规定被认为接受之日以后，交存的关于批准、接受、核准或加入的任何文件应适用于修正后的公约。

第十一条 退出

一、任何缔约国政府，在本公约对该政府生效满五年后，可随时退出本公约。

二、退出本公约应向海协组织秘书长交存一份退出文件，秘书长应将收到的退出本公约的任何文件和收到日期以及退出生效日期通知所有其他缔约国政府。

三、退出本公约，应在海协组织秘书长收到退出文件一年后，或在该文件中所载较此为长的期限届满后生效。

第十二条 保存和登记

一、本公约应由海协组织秘书长保存，海协组织秘书长应将本公约核证无误的副本分发给本公约所有签字国政府或加入本公约的各国政府。

二、本公约一经生效，海协组织秘书长应按照联合国宪章一百〇二条的规定将本公约文本送交联合国秘书长，以供登记和公布。

第十三条 文字

本公约正本一份用中文、英文、法文、俄文和西班牙文写成，各种文本具有同等效力。阿拉伯文、德文和意大利文的官方译本应译就，并与签署的原本一起保存。

具名于下的经各自政府正式授权的代表特签署本公约，以昭信守。

本公约于一九七四年十一月一日订于伦敦。

附 则

第一章 总 则

第一节 适用范围、定义等

第一条 适用范围

一、除另有明文规定外，本规则仅适用于从事国际航行的船舶。

二、本规则各章适用于何种船舶与适用的范围，在各章中详加规定。

第二条 定义

除另有明文规定外，在本规则范围内各词的定义如下：

一、“规则”系指本公约附则所包含的规则。

二、“主管机关”系指船旗国政府。

三、“认可”系指经主管机关认可的。

四、“国际航行”系指由适用本公约的一国驶往该国以外港口或与此相反的航行。

五、除下列人员外，皆为旅客：

㈠船长和船员，或在船上以任何职位从事或参加该船业务的其他人员；

㈡一周岁以下的儿童。

六、客船系指载客超过12人的船舶。

七、货船系指非客船的任何船舶。

八、油船系指建造成或改建成适合于运输散装易燃液体货物的货船。

九、渔船系指用于捕捞鱼类、鲸鱼、海豹、海象或其他海洋生物资源的的船舶。

十、核能船系指设有核动力装置的船舶。

十一、“新船”系指在本公约生效之日或以后安放龙骨或处于相应建造阶段的船舶。

十二、“现有船舶”系指非新船。

十三、1浬为1852米或6080呎。

第三条 例外

一、除另有明文规定外，本规则不适用于下列船舶：

㈠军用舰艇和运兵船。

㈡总吨位小于500总吨的货船。

㈢非机动船。

㈣制造简陋的木船。

㈤非营业的游艇。

㈥渔船。

二、除在第五章内另有明文规定外，本规则不适用于专门航行于北美洲五大湖和航行于圣劳伦斯河东至罗歇尔角与安提科斯提岛西点间所绘的直线以及在安提科斯提岛北面水域东至西经63°线的船舶。

第四条 免除

一、对于通常不从事国际航行的船舶，在特殊情况下，需要进行一次国际航行时，主管机关可予免除本规则中的任何要求，但该船应符合主管机关认为适合于其所担任航次的安全要求。

二、对于具有新颖特征的任何船舶，如应用本规则第二章甲、第二章乙、第三章和第四章的任何规定会严重妨碍对发展这种特征的研究和在从事国际航行的船舶上对这些特征的采用时，主管机关可予免除这些要求。然而，任何此种船舶应符合该主管机关认为适于其预定的用途，并能保证船舶的全面安全，同时又为该船所要驶往的国家政府所接受的各项安全要求。允许任何这种免除的主管机关应把此次免除的细节和理由通知海协组织，海协组织应将其转知各缔约国政府，以供参考。

第五条 等效

一、凡本规则要求船上所应装设或配备的专门装置、材料、设备或器具，或其型式，或本规则要求应设置的任何专门设施，主管机关可准许该船上装设或配备任何其他的装置、材料、设备或器具，或其型式，或设置任何其他的设施；但须通过试验或其他方法经主管机关认定这些代替的装置、材料、设备或器具，或其型式，或其他的设施，至少与本规则所要求者具有同等效能。

二、准许采用这种代替装置、材料、设备或器具，或其型式，或其他设施的任何主管机关，应将其细节连同所作的任何试验报告送交海协组织，海协组织应将各该细节转知其他缔约国政府，以供其官员参考。

第二节 检验与证书

第六条 检查与检验

为执行及为准于免除本规则的规定而对船舶进行的检查和检验，应由船舶登记国政府官员进行，但各国政府可将这种检查或检验工作委托该国所指定的验船师或该国所认可的组织办理。无论采取何种方式办理，有关政府都应充分保证此项检查和检验的全面和有效。

第七条 客船的检验

一、客船应接受下列检验：

㈠船舶营运前的检验；

㈡每12个月一次的定期检验；

㈢必要时的额外检验。

二、上述检验应按下述规定办理：

㈠船舶营运前的检验，应包括船舶结构、机器和设备，并包括船底外部以及锅炉内外部在内的全面检查。此项检验应保证船舶的布置、材料、结构用材尺寸、锅炉和其他受压容器及其附件、主辅机、电气设备、无线电设备、机动救生艇的无线电报设备、救生艇筏的手提式无线电设备、救生设备、防火探火及灭火设备、雷达、回声测深仪、电罗径、引水员软梯、引水员机械升降器以及其他设备，完全符合本公约和主管机关为实施本公约而颁布的从事预定用途船舶的各项法律、法令、命令和规则的各项要求。此项检验还应保证船舶各部分及其设备的制造工艺在任何方面均为合格，而且该船确已按本公约和现行国际海上避碰规则的规定备有号灯、号型、以及发出音响信号和遇险信号的设备。

㈡定期检验，应包括结构、锅炉及其他受压容器、机器及设备，并包括船底外部在内的检查。此项检验应保证船舶在结构、锅炉或其他受压容

器及其附件、主辅机、电气设备、无线电设备、机动救生艇的无线电报设备、救生艇筏的手提式无线电设备、救生设备、防火探火与灭火设备、雷达、回声测深仪、电罗径、引水员软梯、引水员机械升降器以及其他设备，均处于合格状况且适合其预定的用途；此外，尚应保证该船符合本公约和主管机关为实施本公约而颁布的法律、法令、命令和规则的各项要求。船舶所配备的号灯、号型、以及发出音响信号和遇险信号的设备也应接受上述检验，以保证其符合本公约和现行国际海上避碰规则的各项要求。

㈢全面或局部检验，为船舶每经发生事故，或发现影响船舶安全，或救生设备或其他装备的效用或完整性的缺陷，或已进行任何重要的修理或换新时，都应根据情况需要进行的检验。此项检验应保证这些必要修理或换新确已切实完成，其材料与工艺在任何方面均为合格，并应保证该船在各方面均符合本公约和现行国际海上避碰规则以及主管机关为实施本公约而颁布的法律、法令、命令和规则的规定。

三、㈠本条二款所指的法律、法令、命令和规则，应在各方面都能从人命安全的观点出发，保证船舶适合其预定的用途。

㈡在上述法律、法令、命令和规则中，尤应特别规定主辅锅炉、接合部件、蒸汽管、高压容器以及内燃机的燃料舱柜要进行的初次及以后的水压试验，或其他可以接受的代替试验所必须遵照的各项要求，包括必须遵照的试验程序和连续的两次试验之间的间隔期限。

第八条 货船救生设备和其他设备的检验

除机动救生艇的无线电报设备或救生艇筏的手提式无线电设备外，第二章甲、第二章乙、第三章与第五章关于货船的救生设备、回声测深仪、电罗径和灭火设备均应依照本章第七条关于客船的初次和以后检验的规定

办理，唯该条一款㈡项规定的１２个月改为２４个月。新船的防火控制图与新船和现有船舶所配备的引水员软梯、引水员机械升降器、号灯、号型以及发出音响信号的设备亦应包括在检验范围之内，以保证它们完全符合本公约和现行国际海上避碰规则可适用部分的要求。

第九条 货船无线电设备和雷达设备的检验

适用于第四章和第五章规定的关于货船的无线电设备和雷达设备及按第三章的要求配备的机动救生艇的任何无线电报设备或救生艇筏的手提式无线电设备，均应按本章第七条对客船规定的初次和以后的检验办理。

第十条 货船船体、机器和设备的检验

货船的船体、机器与设备（货船设备安全证书、货船无线电报安全证书或货船无线电话安全证书所包括的项目除外），应在建造竣工时和嗣后按主管机关认为必要的方式和间隔期限进行检验，以保证它们在各方面都处于合格状况。此项检验应保证船舶的布置、材料、结构用材尺寸、锅炉和其他受压容器及其附件、主辅机、电力设备及其他设备在各方面都适合该船预定的用途。

第十一条 检验后状况的维持

在本章第七、八、九、十条所规定的对船舶的任何检验完成以后，凡是经过检验的结构布置、机器、设备等，非经主管机关许可，概不得变动。

第十二条 证书的签发

一、㈠客船经过检查和检验，符合第二章甲、第二章乙、第三章、第四章的要求及本规则任何其他有关要求者，应发给客船安全证书。

㈡货船经过检验，满足本章第十条关于货船检验的要求，并除有关灭火设备和防火控制图的要求外符合第二章甲和第二章乙中可适用的要求者，应发给货船构造安全证书。

㈢货船经过检查，符合第二章甲、第二章乙和第三章的有关要求及本规则任何其他有关要求者，应发给货船设备安全证书。

㈣装有无线电报设备的货船，经过检查，符合第四章的要求及本规则任何其他有关要求者，应发给货船无线电报安全证书。

㈤装有无线电话设备的货船，经过检查，符合第四章的要求及本规则任何其他有关要求者，应发给货船无线电话安全证书。

㈥对于根据和按照本规则的规定受到某项免除的船舶，除发给本款所指证书以外，尚应发给免除证书。

㈦客船安全证书、货船构造安全证书、货船设备安全证书、货船无线电报安全证书、货船无线电话安全证书和免除证书，均应由主管机关或主管机关正式授权的任何个人或组织签发。但无论由谁签发，主管机关都应对证书完全负责。

二、不论本公约中载有任何其他规定，根据和按照一九六〇年国际海上人命安全公约签发的任何证书，如在本公约对签发该证书的主管机关生效时尚在通用中，则该证书仍继续有效，直至根据该公约第一章第十四条所规定的有效期届满时为止。

三、在缔约国政府对本公约的接受生效之日以后，不得再根据和按照一九六〇年、一九四八年或一九二九年国际海上人命安全公约的规定签发证书。

第十三条 他国政府代发证书

缔约国政府可应主管机关请求对船舶进行检验；如认为该船符合本规则的要求，应按照本规则规定发给证书。如此签发的任何证书务必载明是受船舶登记国政府或船舶将登记的国家政府的委托而签发的。此项证书与根据本章第十二条所发的证书具有同等效力，并受同样的承认。

第十四条 证书有效期限

一、除货船构造安全证书、货船设备安全证书和免除证书外，各种证书的有效期限不得超过12个月，货船设备安全证书的有效期限不得超过24个月。免除证书的有效期限不得超过与该证书相关的证书的有效期限。

二、对300总吨和300总吨以上但小于500总吨的货船所发的无线电报安全证书或无线电话安全证书，如在原发证书有效期届满前两个月以内进行检验，可将此项证书收回，并签发新证书，至上述有效期限届满后12个月内有效。

三、证书期满时，如船舶不在登记国港口，主管机关可将该证书展期，但此项展期仅以能使该船完成其驶抵登记国或预定检验国家的航次为限；而且仅在正当和合理的情况下才能如此办理。

四、证书展期的期限概不得超过5个月，经过这样展期的船舶，在抵达登记国或预定检验的港口之后，不得因获得上述展期而在未领到新证书前驶离该港或该国。

五、未经根据本条前述各款加以展期的证书，主管机关可自该证书所载日期届满之日起，给予为期至多一个月的宽限期。

第十五条 证书格式

一、所有证书都应以签发国家的一种官方文字或数种官方文字写成。

二、证书格式应以本规则所附范本为准。签发的证书或其核证无误副本的印刷部分的排列应按范本正确复制；签发的证书或其核证无误副本内所列的项目应以罗马字和阿拉伯数字填写。

第十六条 证书的贴示

根据本规则签发的各项证书或其核证无误的副本都应贴示在船上显明易到的地方。

第十七条 证书的承认

一缔约国政府根据其职权所签发的证书在本公约规定范围内使用时，其他缔约国政府应予承认；各缔约国政府应承认这种证书与由其本国政府所发的同样有效。

第十八条 证书附件

一、如船舶在某一特定航次中所载人数少于客船安全证书中所载的总数，从而按照本规则规定可备置少于证书中所载的救生艇和其他救生设备，本章第十二条或第十三条所指的政府、个人或组织，可以发给证书附件。

二、在此项附件上应载明在当时情况下并无违反本规则规定之处。上述附件应附于证书之后，并仅在救生设备方面代替该证书。这种附件仅对该特定航次有效。

第十九条 监督

持有根据本章第十二条或第十三条所发证书的每艘船舶，在其他缔约国港口时，应受该国政府正式授权的官员监督，这种监督的目的，仅在于查明船上是否备有有效的证书。除有明显的理由使人相信该船或其设备的情况实质上与证书所载情况不符外，此项证书应被承认。如果发生上述与证书不符的情况，执行监督的官员应采取措施，以保证该船在符合出海时对旅客或船员都无危险的条件前不开航。如因这种监督而引起任何干涉，

执行监督的官员应将认为必需进行干涉的一切情况，立即以书面通知船舶登记国领事，并将实情报告海协组织。

第二十条 特权

任何船舶除持有相应的有效证书外，不得要求本公约所赋予的各项特权。

第三节 事 故

第二十一条 事故

一、各主管机关对其所属的受本公约规定约束的任何船舶所发生的任何事故，当其认为调查该项事故有助于确定本规则可能需要的何种修改时，即应承担义务进行调查。

二、各缔约国政府有义务将有关此项调查所获得的适当资料提供给海协组织。该组织根据此项资料所作的报告或建议，一律不得泄露有关船舶的辨认特征或国籍，或以任何方式确定或暗示任何船舶或个人承担的责任。

第二章甲 构造（分舱与稳性、机电设备）

第一节 通 则

第一条 适用范围

一、㈠除另有明文规定外，本章适用于新船。

㈡现有客船和货船应符合下列规定：

1.在一九六〇年国际海上人命安全公约生效之日或以后安放龙骨或处于相应建造阶段的船舶，主管机关应保证使其符合该公约第二章定义所指新船所适用的各项要求；

2.在一九四八年国际海上人命安全公约生效之日或以后，但在一九六〇年国际海上人命安全公约生效之日以前安放龙骨或处于相应建造阶段的

船舶，主管机关应保证使其符合一九四八年国际海上人命安全公约第二章定义所指新船所适用的各项要求；

3. 在一九四八年国际海上人命安全公约生效之日以前安放龙骨或处于相应建造阶段的船舶，主管机关应使其符合该公约第二章定义所指现有船舶所适用的各项要求；

4. 至于本公约第二章甲中的要求而在一九六〇年和一九四八年公约第二章中所未包括者，主管机关应决定那些要求适用于本公约定义所指的现有船舶。

(三)船舶在进行修理、改装、改建以及与之有关的舾装时，至少应继续符合该船原先适用的要求。在这种情况下，现有船舶一般不得低于它原已符合的对新船的要求。重大的修理、改装、改建以及与之有关的舾装，在主管机关认为合理和可行的范围内，应满足对新船的要求。

二、为了明确本章的内容：

(一)新客船是指在本公约生效之日或以后安放龙骨或处于相应建造阶段的客船，或在本公约生效之日或以后由货船改建的客船，所有其他客船均称为现有客船。

(二)新货船是指本公约生效之日或以后安放龙骨或处于相应建造阶段的货船。

三、主管机关如考虑到航程的遮蔽性及其条件，认为引用本章的某些特殊要求为不合理或不必要时，可对其本国所属的在航程中距最近陆地不超过 20 浬的个别船舶或某类船舶免除这些要求。

四、根据第三章第二十七条三款准予搭载人数超过其所备救生艇容量的客船，应符合本章第五条五款所载的分舱特种标准以及本章第四条四款

的有关渗透率的特种规定。但主管机关就航程的自然条件及情况认为该船仅需符合本章其他各条及第二章乙的规定时，可作例外。

五、客船用于特种业务，例如朝山进香，载运大量特种业务旅客者，主管机关如认为实施本章要求为不切实际时，可对其本国所属的此类船舶免除这些要求，但此类船舶应完全符合下列规定：

㈠一九七一年特种业务客船协定所附的规则；

㈡一九七三年特种业务客船舱室要求议定书所附的规则（当生效时）。

第二条 定义

除另有明文规定外，本章内各词的定义如下：

一、㈠"分舱载重线"系指用以决定船舶分舱的水线；

㈡"最深分舱载重线"系指相当于适用的分舱要求所允许的最大吃水线。

二、"船长"系指在最深分舱载重线两端的垂线间量得的长度。

三、"船宽"系指在最深分舱载重线处或其下，由一舷肋骨外缘至另一舷肋骨外缘间的最大宽度。

四、"吃水"系指在船长的中点由船型基线至有关分舱载重线间的垂直距离。

五、"舱壁甲板"系指横向水密舱壁所到达的最高一层甲板。

六、"限界线"系指在船侧由舱壁甲板上表面以下至少76毫米（3吋）处所绘的线。

七、某一处所的"渗透率"系指该处所能被水浸占的百分比。

某一处所体积伸展至限界线以上时，仅应量至该线高度为止。

八、"机器处所"系指由船型基线至限界线纵介于两端主横向水密舱壁间供安置主辅推进机械及推进所需的锅炉和一切固定煤舱的处所。

对于特殊布置的船舶，机器处所的范围可由主管机关确定之。

九、"旅客处所"系指供旅客起居和使用的处所，但不包括行李室、储藏室、食品库及邮件舱。

就本章第四条、第五条而言，在限界线以下供船员起居和使用的处所，亦应认作旅客处所。

十、在一切情况下，容积与面积均应计至船型线为止。

第二节 分舱与稳性*

（本节仅适用于客船，但第十九条也适用于货船。）

第三条 可浸长度

一、船长中任何一点的可浸长度，应由计及该船船型、吃水及其他特征的一种计算方法来确定。

二、对有连续舱壁甲板的船舶，在船长中某一点的可浸长度，是以该点为中心的最大限度的一段船长，在按本章第四条限定的假设条件下浸水时，船舶不致淹过限界线。

三、㈠对无连续舱壁甲板的船舶，船长中任何一点的可浸长度，可按假定的连续限界线来确定；此线的任何点均须在该甲板上表面（船侧）以下至少76毫米（3吋），而通至该甲板的有关舱壁及船体均须为水密。

㈡当假定的限界线有一部分低于舱壁所通达的甲板相当距离时，则对该舱壁在高出限界线而直接位于较高层甲板以下的部分，主管机关可有限度地放宽其水密程度。

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* 海协组织海大265（Ⅲ届）决议通过的作为一九六〇年安全公约第二章第二节的等效规则的客船分舱规则，如引用时，可全部用来代替本节的要求。

第四条 渗透率

一、本章第三条所述的限定的假设条件，是指限界线以下处所的渗透率。

在决定可浸长度时，对限界线以下的船舶下列各部分的整个长度范围内，应使用同一平均渗透率：

㈠本章第二条定义所指的机器处所；

㈡机器处所以前的部分；

㈢机器处所以后的部分。

二、㈠整个机器处所内的同一平均渗透率应按下列公式确定：

$$85+10\left(\frac{a-c}{v}\right)$$

式中：a——在限界线以下位于机器处所范围内按本章第二条定义所指旅客处所的容积；

c——在限界线以下位于机器处所范围内专供货物、煤或物料储藏用的甲板间处所的容积；

v——限界线以下机器处所的总容积。

㈡如用详细计算法求得的平均渗透率小于上列公式所得的数值，而主管机关认为满意时，则可采用详细计算求得的数值。在此种计算中，按本章第二条定义所指的旅客处所的渗透率应为95；一切货物、煤及物料处所应为60；双层底、燃油舱柜及其他舱柜应分别根据情况采用认可的数值。

三、除本条四款的规定外，位于机器处所以前（或以后）的整个部分的同一平均渗透率，应按下列公式确定：

$$63+35\frac{a}{v}$$

式中：a——在限界线以下位于机器处所以前（或以后）按本章第二条定义所指旅客处所的容积；

v——限界线以下位于机器处所以前（或以后）部分的总容积。

四、若船舶根据第三章第二十七条三款准予搭载超过其所备救生艇容量的人数，并按本章第一条四款要求符合特种规定者，其位于机器处所以前（或以后）的整个部分的同一平均渗透率应按下列公式确定：

$$95-35\frac{b}{v}$$

式中：b——位于机器处所以前（或以后）限界线以下以及按个别情况如肋板顶部、内底或尖舱以上，专供作装货处所、煤或燃油舱、物料储藏室、行李室及邮件舱、锚链舱及淡水舱柜的容积；

v——限界线以下位于机器处所以前（或以后）部分的总容积。

如按照船舶业务，其货舱通常并不装载任何相当数量的货物，则在计算"b"时，装货处所的任何部分均不包括在内。

五、对特殊布置的船舶，主管机关可允许或要求对位于机器处所以前或以后部分的平均渗透率作详细的计算。在作此项计算时，按本章第二条定义所指旅客处所的渗透率应为95；装置机器处所为85；一切货物、煤及物料储藏处所为60；双层底、燃油舱柜及其他舱柜的渗透率应分别根据情况采用认可的数值。

六、在两水密横舱壁间的甲板间舱内设有任何旅客或船员处所时，除完全包围于固定钢质舱壁内并专作其他用途的处所外，整个甲板间舱应视作旅客处所。若所述旅客或船员处所完全包围在固定的钢质舱壁以内，则仅需将被包围部分视作旅客处所。

第五条 许可舱长

一、船舶应按其预定的用途尽可能作有效的分舱，分舱的程度应视船舶的长度与业务而定；即船长最大而以载客为主的船舶的分舱程度为最高。

二、分舱因数——以船长中任何点为中心的最大许可舱长是以适当的因数乘其可浸长度求得之，此因数称为“分舱因数”。

分舱因数随船舶的长度而定，在一定长度下，又视船舶预定的用途而变化。此因数按下列情况顺次连续递减：

㈠当船长增加时；

㈡从适用于运货为主的船舶的因数A至适用于载客为主的船舶的因数B。

因数A与B应按下列公式（Ⅰ）与（Ⅱ）确定，其中L即本章第二条定义所指的船长：

L以米计：

$$A=\frac{58\cdot 2}{L-60}+0\cdot 18 \quad (L=131\text{及}131\text{以上})$$

L以呎计：

$$A=\frac{190}{L-198}+0\cdot 18 \quad (L=430\text{及}430\text{以上}) \qquad (\text{Ⅰ})$$

L以米计：

$$B=\frac{30\cdot 3}{L-42}+0\cdot 18 \quad (L=79\text{及}79\text{以上})$$

L以呎计：

$$B=\frac{100}{L-138}+0\cdot 18 \quad (L=260\text{及}260\text{以上}) \qquad (\text{Ⅱ})$$

三、业务的衡准——一定长度的船舶，其适用的分舱因数，应由下列公式（Ⅲ）及（Ⅳ）所求得的业务衡准数（以下简称衡准数）来确定，其中：

C_s——衡准数；

L——本章第二条定义所指的船长；

M——本章第二条定义所指机器处所的容积，加上位于内底以上机器处所以前或以后的任何固定燃油舱的容积；

P——本章第二条定义所指的限界线以下旅客处所的总容积；

V——限界线以下的船舶总容积；

$P_1 = K\,N$，其中：

N——核准该船搭载的旅客数；

K——为下列数值：

长度以米计，容积以立方米计 $K = 0.056\,L$

长度以呎计，容积以立方呎计 $K = 0.6\,L$

如K N之数值大于P与限界线以上的实际旅客处所总容积的和，则P_1应采用上述的和数或~~等~~K N，视何者为大而定。

当P_1大于P时：

$$C_s = 72\,\frac{M + 2P_1}{V + P_1 - P} \qquad (Ⅲ)$$

在其他情况时：

$$C_s = 72\,\frac{M + 2P}{V} \qquad (Ⅳ)$$

对无连续舱壁甲板的船舶，各容积应计算到决定可浸长度时所用的实际限界线。

四、本条五款所述以外的船舶分舱规则

㈠前尖舱以后的分舱：长度在131米（430呎）及131米以上的船舶，如衡准数为23或23以下者，分舱因数取A值，由公式（Ⅰ）求得；如衡准数为123或123以上者，分舱因数取B值，由公式（Ⅱ）求得；如衡准数在23与123之间，分舱因数为F，按下列公式在因数A与B之间用直线内插法求得：

$$F = A - \frac{(A-B)\ (Cs - 23)}{100} \qquad (V)$$

但衡准数如等于或大于45，同时用公式（Ⅴ）求得的分舱因数等于或小于0.65而大于0.5时，则前尖舱以后的分舱因数应取0.5。

如求得的因数F小于0.4，并经主管机关同意，此数值不能在该船机舱内适用，则此舱的分舱，可取较大的因数，但该因数不应超过0.4。

㈡前尖舱以后的分舱：长度小于131米（430呎），但不小于79米（260呎）的船舶，当其衡准数等于S时，分舱因数应取1，其中：

$$S = \frac{3574 - 25L}{13} \text{（L以米计）} = \frac{9382 - 20L}{34}$$

（L以呎计）

如衡准数为123或123以上者，分舱因素取B值，由公式（Ⅱ）求得；如衡准数在S和123之间时，则分舱因数为F，按下列公式在1与因数B之间用直线内插法求得：

$$F = 1 - \frac{(1 - B)\ (Cs - S)}{123 - S} \qquad (Ⅵ)$$

㈢前尖舱以后的分舱：长度在131米（430呎）以下但不小于79米（260呎），且其衡准数小于S的船舶，以及一切长度小于79

米（260呎）的船舶，分舱因素均取1；但在上述任一情况中，如主管机关同意此因数在该船的任何部分不实用时，则主管机关在考虑了一切情况后，可给予适当的放宽。

㈣本款㈢项的规定，亦适用于任何长度的船舶，如其核准搭载的乘客数额在12人以上，但不超过：

$\frac{L^2}{650}$（L以米计） $=\frac{L^2}{7000}$（L以呎计）或50人，视何者为小而定。

五、根据第三章第二十七条三款准予搭载人数超过其所备救生艇容量和按本章第一条四款应符合特种规定的船舶的分舱特种标准：

㈠1.以载客为主的船舶，其前尖舱以后的分舱因数应取0.5；如照本条三款及四款计算所得的因数小于0.5时，则用计算所得的数值。

2.当此种船舶的长度小于91.5米（300呎）时，如经主管机关同意，认为对某一舱采用上述因数为不实用时，可允许对该舱的长度采用较大的分舱因数，但所用因数应是在此情况下实际可行和合理的最小数值。

㈡不论船长是否小于91.5米（300呎），如因需要装载相当数量的货物致使前尖舱以后的分舱不可能采用0.5以下的因数时，则该船所采用的分舱标准应照下列1至5目的规定选取，但如主管机关同意，认为从任何方面强求严格遵守均属不合理时，可准其对水密舱壁作变通的布置，然而此种布置就其功能来说应为不减低整个分舱效用者为限。

1.本条三款关于衡准数的规定仍然适用，但计算P_1值时，对有铺位的旅客，K应取本条三款所确定的数值或取3.55立方米（125立方呎），视何者为大而定；对无铺位的旅客，K值应取3.55立方米（125立方呎）。

2.本条二款内的因数B应以按下列公式计算求得的因数BB代替：

L以米计：

$$BB = \frac{17 \cdot 6}{L - 33} + 0 \cdot 20 \qquad (L = 55及55以上)$$

L以呎计：

$$BB = \frac{57 \cdot 6}{L - 108} + 0 \cdot 20 \quad (L = 180及180以上)$$

3.前尖舱以后的分舱：长度在131米（430呎）及131米以上的船舶，如衡准数为23或23以下者，分舱因数取A值，由本条二款公式（Ⅰ）求得；如衡准数为123或123以上者，则分舱因数取BB值，由本款㈡项2目的公式求得；如衡准数在23与123之间，则分舱因数为F，按下列公式在A与BB之间用直线内插法求得：

$$F = A - \frac{(A - BB)(Cs - 23)}{100}$$

但如求得的因数F小于0•5时，则分舱因数应取0•5或按本条四款㈠项规定求得的因数，视何者为小而定。

4.前尖舱以后的分舱：长度在131米（430呎）以下但不小于55米（180呎）的船舶，当衡准数等于S_1时，分舱因数取1，其中：

$$S_1 = \frac{3712 - 25L}{19} \qquad (L以米计)$$

$$S_1 = \frac{1950 - 4L}{10} \qquad (L以呎计)$$

如衡准数为123或123以上者，则分舱因数取BB值，由本款㈡项2目的公式求得；如衡准数在S_1与123之间，则分舱因数为F，按下列公式在1与BB之间用直线内插法求得：

$$F = 1 - \frac{(1 - BB)(Cs - S_1)}{123 - S_1}$$

但在上述后两种情况中的任何一种，如求得的因数小于0.5时，可采用一个不超过0.5的分舱因数。

5. 前尖舱以后的分舱：长度在131米（430呎）以下，但不小于55米（180呎），且其衡准数小于8_1的船舶，以及一切长度在55米（180呎）以下的船舶，其分舱因数均取1；但若主管机关同意，认为此项分舱因数对某些个别舱为不实用时，则主管机关在考虑了一切情况后可对这些舱给予适当的放宽，但尾部最后一个舱与尽可能多的前部各舱（在前尖舱与机器处所后端舱壁之间者）的长度，均不得大于可浸长度。

第六条 关于分舱的特殊规则

一、在船舶的一部分或数部分，如其水密舱壁比其他部分通至较高的一层甲板，而在计算可浸长度时又要利用这种舱壁的升高部分时，则各该部分可采用分别的限界线，但需符合下列规定：

㈠整个船长内两侧船壳板均延伸至相当于较高限界线的甲板，且在整个船长内，此甲板下的船壳开口均应按本章第十四条作为限界线以下的开口；

㈡舱壁甲板成阶层处的相邻两舱，应各不超过其相应限界线的许可长度，且相邻两舱的总长不超过以较低限界线为基础的许可长度的两倍。

二、㈠某舱的长度可以超过按本章第五条规则所求得的许可舱长，但该舱与其相邻的前舱或后舱加在一起的总长均不应超过许可舱长的两倍或可浸长度，视何者为小而定。

㈡如果相邻两舱之一位于机器处所内，而另一舱在机器处所以外，且后者所在部分的平均渗透率与机器处所的不同，则此相邻两舱的总长，应予调整，使其适应两舱所在部分平均渗透率的平均值。

㈢如相邻两舱的分舱因数不同时，此两舱的总长应按比例来确定。

三、长度为100米(330呎)及100米以上的船舶，其前尖舱以后的主横舱壁之一应设置在距首垂线不大于许可舱长之处。

四、主横舱壁可以凹折，但整个凹折部分应处于在船内距外壳板为1／5船宽的两侧垂直面之间，船宽为本章第二条定义所指的船舶宽度，1／5船宽的距离应在最深分舱载重线的水平面上自船侧向垂直于纵中剖面的方向量取。

位于上述范围以外的任何凹折部分，应按照本条五款作为阶层处理。

五、主横舱壁可作阶层状，但应符合下列条件之一：

㈠此舱壁所分隔的两舱总长度不超过可浸长度的90%或许可舱长的两倍，但如船舶的分舱因数大于0•9者，此两舱的总长度不应超过其许可舱长；

㈡在阶层处另加分舱设置，以保持与用平面舱壁时有同等的安全程度；

㈢上面有阶层延伸的舱，其长度不超过相当于在此阶层下面76毫米(3吋)所作限界线的许可舱长。

六、主横舱壁有凹折或阶层者，应采用一等效的平面舱壁来确定其分舱。

七、若相邻两主横舱壁间的距离，或其等效平面舱壁间的距离，或通过相邻两主横舱壁的最近阶层部分的横向平面间的距离，小于3•05米(10呎)加船长的3%或10•67米(35呎)时，视何者为小而定，则只应将上述舱壁之一视为是按照本章第五条规定形成船舶分舱的部分。

八、如在一个主横水密舱内包含有局部分舱，而在任何假定的船侧破损长度达3•05米(10呎)加船长的3%或10•67米(35呎)

时，视何者为小而定，此时主水密舱的全部容积并未被水浸满，则经主管机关同意，可对此船按通常所要求的许可舱长，按比例予以放长。在此情况下，对未破损一侧所假定的有效浮力容积，不得大于对破损一侧所假定的数值。

九、如所要求的分舱因数为0·5或0·5以下者，任何相邻两舱的总长不应超过可浸长度。

第七条 破舱稳性

一、在所有营运状态下，船舶应具有足够的完整稳性，以能支持其任一不超过可浸长度的主舱浸水至最后阶段。

如相邻两主舱由按本章第六条五款㈠项条件的阶层舱壁所分隔，则船舶的完整稳性应足以支持此相邻两主舱的浸水。

如所要求的分舱因数为0·5或0·5以下但大于0·33者，其完整稳性应足以支持任意相邻两主舱的浸水。

如所要求的分舱因数为0·33或0·33以下者，其完整稳性应足以支持任意相邻三主舱的浸水。

二、㈠本条一款的要求，应按照本条三、四及六款并顾及船舶的尺度比例与设计特性以及受损舱的布置与形状以计算决定之。作此项计算时，应假定船舶的稳性处于最恶劣的预计营运状态。

㈡凡拟装设足够严密的甲板、内壳板或纵舱壁以严格限制水的流动者，在计算中对此类限制所作的适当考虑，应经主管机关同意。

㈢如主管机关对破损情况下的稳性有怀疑时，可以要求对其进行核查。

三、为了便于计算破舱稳性，容积和表面渗透率一般应按以下规定：

处　　所	渗 透 率
货物、煤或物料储藏专用处所	60
起居设备占用处所	95
机器占用处所	85
供装载液体的处所	0或95* *视何者造成较严重的后果而定。

对处于破损水面附近并未包容相当数量的起居设备或机器的处所，以及经常并未被相当数量的货物或物料占用的处所，均应假定较高的表面渗透率。

四、假定的破损范围应如下：

㈠纵向范围：3.05米（10呎）加船长的3%，或10.67米（35呎）视何者为小而定，如所要求的分舱因数为0.33或0.33以下，则假定的纵向破损范围应按需要增加，以使其包括任何两个依次排列的主横水密舱壁；

㈡横向范围（在船内于最深分舱载重线水平面上自船侧向垂直于纵中剖面的方向量计）：为本章第二条定义所指船宽的1／5距离；

㈢竖向范围：自基线向上不作限制；

㈣如任何小于本款㈠、㈡及㈢项所指的破损，会使倾斜或初稳性高度的损失更为严重，则在计算中应对此种破损情况作出假定。

五、应作有效布置使不对称浸水降至最小程度。如必须校正大倾斜角时，所采用的方法，应尽可能是自动的；但在任何情况下当横贯浸水装置设有控制设备时，此项设备应能在舱壁甲板以上操作。这种装置及其控制设备连同平衡前的最大倾角，均应为主管机关所接受的。如需设有横贯浸

水装置时，其平衡时间应不超过15分钟。有关使用横贯浸水装置的相应资料应提供给该船船长。*

六、船舶破损后以及不对称浸水情况下经采取平衡措施后，其最终状态应如下：

㈠在对称浸水情况下，当采用固定排水量法计算时，应至少有50毫米（2吋）的正值剩余稳性高度；

㈡在不对称浸水情况下，其总横倾角不得超过7°，但在特殊情况下，主管机关可允许放宽由于不对称力矩而产生的较大横倾角，可是在任何情况下其最终横倾角不应超过15°。

㈢在任何情况下，船舶浸水的终了阶段不得淹没限界线。如认为在浸水的某一中间阶段可能淹没限界线时，主管机关可要求作船舶安全所必需的研究与布置。

七、应将各种营运状态下为保持船舶具有足够的完整稳性以经受得住危害性破损所需的资料提供给船长。对需用横贯浸水装置的船舶，其倾斜计算所依据的稳性情况应通知船长，并警告船长若该船在不利情况下受损时，可能发生过度的倾斜。

八、㈠除证明在任何营运状态下，为满足上述要求所需的完整稳性高度超过计划营运状态的要求者外，主管机关不得考虑放宽对破舱稳性的要求。

㈡只是在特殊情况下，经主管机关同意，认为船舶的尺度比例、布置及其他性能对破舱后的稳性最为有利，而在该特殊情况下采用这种破舱范围是合理和可行时，方准放宽对破舱稳性的要求。

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*参阅海协组织通过的海大266（Ⅷ届）决议："关于为适应客船横贯浸水装置的要求而制定的标准方法的建议案"。

第八条 压 载

当需要用水压载时，压载水一般不得装于计划载燃油的舱内。对实际上不能避免将水装入燃油舱的船舶，则应设置经主管机关同意的油水分离装置，或为主管机关所接受的处理带油压载水的其他设施。

第九条 尖舱及机器处所的舱壁、轴隧等

一、㈠船舶须设有水密的高达舱壁甲板的前尖舱舱壁或防撞舱壁。此舱壁须装设于距首垂线不少于船长的5%而不大于3.05米（10呎）加船长的5%的处所。

㈡如船舶有长的前部上层建筑，则前尖舱舱壁应水密地延伸至舱壁甲板的上一层甲板。此延伸部分不必直接设于下面舱壁之上，但其离首垂线至少应为船长的5%，且形成阶层部分的舱壁甲板应有效地作成风雨密。

二、后尖舱舱壁，以及本章第二条定义所指机器处所与前后客货处所隔开的舱壁，均应水密地装设至舱壁甲板。但若不致减低船舶分舱的安全程度时，则后尖舱舱壁可在舱壁甲板下方作成阶层状。

三、在一切情况下，尾轴管均应封闭于具有适度容积的水密处所内。尾轴填料函压盖须装于水密尾轴隧内或与尾轴管室分开的其他水密处所内，而该处所的容积，在尾轴填料函压盖渗漏而浸水时，将不致淹没限界线。

第十条 双层底

一、双层底的设置应在适合于船舶设计及船舶正常作业要求的情况下尽量自前尖舱舱壁延伸至后尖舱舱壁。

㈠长度在50米（165呎）至61米（200呎）以下的船舶，至少应自机器处所至前尖舱舱壁或尽可能接近该处之间设置双层底。

㈡长度在61米（200呎）至76米（249呎）以下的船舶，至少应在机器处所以外设置双层底，并应延伸至前、后尖舱舱壁，或尽可能接近该处。

㈢长度在76米（249呎）及76米以上的船舶，应在船中部设置双层底，并应延伸至前、后尖舱舱壁，或尽可能接近该处。

二、凡需设置双层底时，其高度应经主管机关的同意，其内底应延续至船的两侧，以保护船底至舭部弯曲处。此项保护如能使内底边板的外缘与舭部壳板的交线，在任何部分都不低于通过一个在基线上距中线为型宽一半处与基线成25°角的横斜线与在船中处的肋骨线相交之点的水平面，即认为满意。

三、设于双层底内与货舱等排水装置有关的小窦，不应向下延伸至超过所需的深度。此窦的深度，在任何情况下不得大于中线处双层底高度减457毫米（18吋），也不得延伸至本条二款所述的水平面以下。但在螺旋桨船上，准许其轴隧后端的污水窦延伸至外底。其他的窦（如主机下的润滑油窦）如其布置与符合本条的双层底具有同等的保护作用时，经主管机关同意亦可设置。

四、专供装载液体而大小适度的水密舱，如主管机关认为当该舱的船底或船侧破损时不致因此妨碍船舶的安全者，可不设双层底。

五、适用本章第一条四款规定并在第三章第二条所指的短程国际航行范围以内的班轮，如因在其分舱因数不超过0.50的任一部分设置双层底将对该船的设计与船舶正常作业不相适应时，主管机关可准予在该部分免设双层底。

第十一条 分舱载重线的勘定、勘划与记载

一、为了保持所要求的分舱程度，应在船舶两舷勘定并勘划相当于所核准的分舱吃水载重线。若船内有专供交替载客和载货的处所者，如经船舶所有人请求，可勘定和勘划一个或数个相当于主管机关核准的交替营运状态的分舱吃水的附加载重线。

二、所勘定和勘划的分舱载重线应载入客船安全证书，并以C • 1表示主要载客情况，C • 2、C • 3等分别表示交替载客和载货情况。

三、相应于每一载重线的干舷，应与按现行国际船舶载重线公约确定的干舷在同一位置上并从同一甲板线进行测量。

四、相应于每一所认可的分舱载重线的干舷以及对其所核准的营运条件，均应清楚载明于客船安全证书内。

五、在任何情况下，任何分舱载重线均不得勘划于按船舶强度及(或)现行国际船舶载重线公约所确定的海水中最深载重线以上。

六、无论分舱载重线标志的位置如何，船舶装载概不得使按现行国际船舶载重线公约所确定的适合于所在季节和区域的载重线标志淹没于水中。

七、船舶的装载，当其在海水中时，概不得将适合于该航次及营运状态的分舱载重线淹没于水中。

第十二条 水密舱壁等的构造与初次试验

一、无论横向或纵向的每一水密分舱舱壁，其构造应能以适当的抗强裕度支持船舶在破损时可能遭受的最大水头的压力，但至少须能支持高达限界线的水头压力，此等舱壁的构造应经主管机关同意。

二、(一)舱壁上的阶层及壁凹均应水密，并与其所在处所的舱壁具有同等强度。

㈡如肋骨或横梁穿过水密甲板或舱壁时，此甲板或舱壁应在不用木材或水泥的情况下做成结构上的水密。

三、并不強制对各主要舱室进行灌水试验。但如不进行该项灌水试验，则必须进行冲水试验，此试验应在船舶进行舾装的最后阶段进行。在任何情况下，都应对水密舱壁进行全面的检查。

四、前尖舱、双层底（包括箱形龙骨）及内侧壳板均应以相当于本条一款要求的水头作试验。

五、供装载液体并形成船舶分舱部分的舱柜，应以高达最深分舱载重线或相当于该舱所在处由龙骨上面至限界线高度2/3的水头，视何者为大而定，试验其密性；但在任何情况下，试验水头不得低于该舱顶以上0.92米（3呎）。

六、本条四及五款所述的试验，其目的在于确保分舱结构布置的水密，并非作为该舱用作装载燃油或其他特殊用途的适应性试验；对此项适应性试验，可按照液体进入舱内或其连接部分的高度，要求作较严格的试验。

第十三条 水密舱壁上的开口

一、水密舱壁上的开口，应在适合船舶设计及船舶正常作业的情况下减至最少数量；此等开口均应备有认可的关闭设备。

二、㈠凡管子、流水口、电缆等通过水密分舱舱壁时，应设有保证该舱壁水密完整性的装置。

㈡非构成管系的一个组成部分的阀及旋塞不准设于水密分舱舱壁上。

㈢铅及其他易熔材料，不得用于穿过水密分舱舱壁的管系上，该处在发生火灾时此等管系的损坏将会损害舱壁的水密完整性。

三、㈠下列各处不准设门、人孔或出入口：

1.限界线以下的防撞舱壁；

2.分隔相邻货舱之间，或货舱与固定或备用煤舱之间的水密横舱壁，但本条十二款规定者除外。

(二)除本款(三)项所规定者外，在限界线以下的防撞舱壁上仅可通过一根管子，以处理前尖舱内的液体，但该管应装有能在舱壁甲板以上操作的截止阀，其阀箱应设于前尖舱内并装在防撞舱壁上。

(三)如前尖舱加以分隔以装载两种不同的液体，经主管机关同意除装设第二根管子外无其他切实办法可以代替，且考虑在前尖舱内增加分隔仍保持船舶安全时，则主管机关可允许在限界线以下的防撞舱壁上穿过二根管子；每根管子均应按本款(二)项的要求进行装设。

四、(一)装于固定和备用煤舱之间的舱壁上的水密门，应是随时可以通达的，但本条十一款(二)项所规定的甲板间煤舱门除外。

(二)应以屏隔或其他措施作成适当的布置，以防煤炭阻碍煤舱水密门的关闭。

五、在主辅推进机械包括推进所需的锅炉及一切固定煤舱的处所内，其每一主横舱壁上，除通往煤舱及轴隧的门外，不得设置多于一扇的门。如装有二根或更多的轴，其轴隧之间应设有一个互通的连接过道。若装设二根轴者，在机器处所与轴隧间仅准设一扇门；如装设二根以上轴者，则仅准设二扇门。所有此种门均须为滑动式，且应装置于使其门槛尽可能高之处。由舱壁甲板以上用于操作这些门的手动装置，如能妥善布置其必要的传动系统时，应设于机器处所以外。

六、(一)水密门应为滑动门或铰链门或其他等效型式的门。仅以螺栓紧固的平板门及需借坠落或重物坠落作用关闭的门都不应使用。

(二)滑动门可为单一手动式的，或动力和手动式的。

㈢因此，许可的水密门可分为三级：1级——铰链门；2级——手动式滑动门；3级——动力和手动式滑动门。

㈣任何水密门的操作方法，无论是否动力操作，均须于船舶向左或向右倾斜至15°时能将门关闭。

㈤对各级水密门，在看不见各该门的所有操作站处，均应设有显示该门处于开启或关闭位置的指示器。不能由总控制站关闭的任何水密门，不论其属于哪一级，应备有机械的、电动的、电话的或其他适宜的直接通信装置，使值班驾驶员能根据事先的命令与负责关闭各该水密门的人员迅速联系。

七、铰链门（1级）应装有能由舱壁两侧都能操作的速闭装置，诸如搭扣之类。

八、手动式滑动门（2级）可为横动式或竖动式。此门应能在门所在处的两侧操作其机构，此外，并能在舱壁甲板以上可到达之处用全周旋转动作或其他同样安全可靠并经认可的动作方式来进行操作。如因空间的限制，不可能从两侧操作时，则此项要求可予放宽。当船舶在正浮位置时，用手动装置将门完全关闭所需时间应不超过90秒。

九、㈠动力式滑动门（3级）可为横动式或竖动式。如要求由总控制站以动力操作的门，其传动装置的布置也应能在门所在处的两侧用动力操作。此装置应使该门于总控制站加以关闭后，如由就地控制装置开启，仍能自动关闭；也应使任一门能由就地控制系统保持关闭，以防止被上方的控制系统开启。在舱壁的两侧应设置与动力控制装置相连的就地控制手柄。其布置应使经过此门的人，能把持两侧的手柄，置于开启位置，以免关闭机械突然动作。动力式滑动门应备有可在门的两侧操作的手动装置并须在

舱壁甲板以上可到达之处用全周旋转动作或其他同样安全可靠并经认可的动作方式来进行操作。应设有音响信号装置，在此门开始关闭、继续移动直至完全关闭为止的期间发出警报。门的关闭应有充分时间以保证安全。

㈡至少应有二组独立的动力源以开关所有由其控制的门，每一动力源应能同时对各门进行操作。此二动力源应由驾驶室的总控制站进行控制，并应备有用以校验每一动力源能圆满工作的一切必要的指示器。

㈢如用液压操作时，每一动力源应包括一个能在60秒钟以内关闭所有各门的泵。此外，用于整个装置的液体贮存器，应有足够操作所有各门至少三次（即关闭——开启——关闭）的容量。所用的液体应在船舶营运中可能遭遇的任何温度下不致冻結。

十、㈠旅客、船员及工作处所的鉸链水密门（1级），仅准设置于下述甲板以上，即此甲板的底面在船侧的最低点，至少应高出最深分舱载重线2.13米（7呎）。

㈡凡水密门的门槛在最深载重线以上但在前项规定的线以下者，应为滑动式，并可为手动式的（2级）；但对于分舱因数小于0.50的从事短程国际航行的船舶，此种门应为动力式。连通冷藏货物及通风或強制通风管道的围壁通道，当穿过多于一主水密分舱舱壁时，舱壁上开口的门应为动力式。

十一、㈠有时需在航海中开启的水密门，且其门槛在最深分舱载重线以下者，应为滑动式，并应符合下列规定：

1. 当此类门的数量（轴隧入口处的门不计）超过5扇时，所有这些门及轴隧入口处或通风或強制通风管道的门，应为动力式的（3级），并应能由驾驶室的总控制站同时予以关闭；

2.当此类门的数量（轴隧入口处的门不计）多于1扇，但不得超过5扇：

(1)在舱壁甲板以下未设旅客处所的船舶，所有上述的门可为手动式的（2级）；

(2)在舱壁甲板以下设有旅客处所的船舶，所有上述的门应为动力式的（3级），并应能由驾驶室的总控制站同时予以关闭。

3.如船舶上仅有两扇此类水密门，且是通往或位于机器处所内，则主管机关可准许此两门仅为手动式的（2级）。

(二)装于舱壁甲板以下甲板间内煤舱之间的滑动水密门，有时因整理燃煤须在航海中开启者，此门应由动力操作。此类门的开启及关闭应记入主管机关所规定的航海日志中。

十二、(一)如主管机关认为是必需的，则在甲板间内分隔货舱的水密舱壁上可装设适当构造的水密门。此类门可为铰链式、滚动式或滑动式，但不应为遥控的。此类门应装在最高处并尽可能远离船壳板，在任何情况下其垂直外边缘不得位于距船壳板少于本章第二条定义所指船宽1／5的距离，此距离在最深分舱载重线水平面上向垂直于纵中剖面的方向量计。

(二)此类门应于开航前关妥，并应在航行中保持关闭；此类门在港内开启及船舶离港前关闭的时间应记入航海日志内。此类门如在航程中是可以到达的，应装有防止任意开启的装置。在提出设置此类门时，其数量及布置均应经主管机关特殊考虑。

十三、可移式板门不应用于舱壁上，但在机器处所内除外。此种板门应在船舶离港前装在原位，在航行中除紧急情况外不得取下。装复此种板门时必须审慎，以确保其接缝水密。

十四、所有水密门均应在航行中保持关闭，因船舶的操作而必需开启者除外，但应作好能随时关闭的准备。

十五、㈠凡由船员舱室通至锅炉舱、用作装设管子及任何其他用途的围壁通道或隧道，如穿过主横水密舱壁者，应为水密，并应符合本章第十六条的要求。在航行中用作通路的每一围壁通道或隧道，至少其一端的出入口须通过一围壁通道并保持水密到充分高度，使能由限界线以上处所出入。围壁通道或隧道的另一端出入口，可经过一水密门，其型式按其所在位置决定。此类围壁通道或隧道不得通过在防撞舱壁之后的第一个分舱舱壁。

㈡如提出需装设穿过主横水密舱壁的强制通风隧道或围壁通道时，应经主管机关特殊考虑。

第十四条 限界线以下船壳板上的开口

一、船壳板上的开口数量应在适合船舶设计及船舶正常作业的情况下，减至最少限度。

二、任何船壳板开口的关闭设备的布置及效用，应与其拟定的用途及装设的位置相适应，一般应经主管机关同意。

三、㈠平行于舱壁甲板边线绘一线，其最低点在最深分舱载重线以上2.5%船宽处，如甲板间内任何舷窗的窗槛低于此平行线时，则此甲板间内的一切舷窗应为永闭式。

㈡除依本款㈠项要求为永闭式者以外，凡舷窗窗槛在限界线以下者，其构造应能有效地防止任何人未经船长许可而予开启。

㈢1.平行于舱壁甲板边线绘一线，其最低点在船舶离开任何港口时的水面以上1.37米（4.5呎）加2.5%船宽，当甲板间内按本款㈡项所述的任何舷窗的窗槛低于此线时，则此甲板间的所有舷窗在船舶离港

前应关闭水密并加锁，此等舷窗在船舶到达下一个港口前不得开启。在引用本项时，如适用，则可计入适量的淡水宽限。

2.此类舷窗在港内开启的时间及船舶离港前将其关闭和加锁的时间，均应记入主管机关规定的航海日志中。

3.如某船浮于其最深分舱载重线，而有一或数个舷窗位置适用本项1.目要求时，主管机关可指明其限制平均吃水。在此吃水时若此等舷窗窗槛将高出平行于舱壁甲板边线所绘的一线，其最低点在此限制平均吃水的相应水线以上1.37米（4.5呎）加2.5%船宽，则可在此限制吃水的情况下，准许该船离港而不必事先将这类舷窗关闭和加锁，而在开往下一港口的航程中，若在海上开启该窗由船长负责。在现行国际船舶载重线公约所规定的热带地区内，此限制吃水可增加0.305米（1呎）。

四、所有舷窗均应装设有效的内部铰链舷窗盖，其布置应能便利和有效地关闭及紧固成水密；但在距首垂线1／8船长以后，且在平行于舱壁甲板边线，而其最低点在最深分舱载重线以上3.66米（12呎）加2.5%船宽所绘的线以上者，则除统舱外的旅客舱室的舷窗盖可为可移式的，但按现行国际船舶载重线公约要求永久附着于其应在位置者除外。此类可移式舷窗盖应存放于其所属的舷窗附近。

五、如舷窗及其舷窗盖位于航行时不能到达的处所，则应在离港前关闭并扣牢。

六、㈠凡专供载货或装煤的处所不得装设舷窗。

㈡供交替载货或载客的处所，可装设舷窗，但其构造须能有效地防止任何人未经船长许可而开启舷窗或舷窗盖。

㈢如在此类处所装货时，其舷窗盖应在装货前关闭水密和加锁，而此项关闭和加锁应记入主管机关所规定的航海日志中。

七、除经主管机关特准外，不应在限界线下的船壳板上装设自动通风舷窗。

八、船壳板上的流水口、卫生排泄孔及其他同类开口，应减至最少数量，或采取每个排水口供尽可能众多的卫生水管及其他管道共用，或采用其他适当的办法。

九、㈠船壳板上的所有进水孔及排水孔，均应装设防止海水意外进入船内的有效并可到达的装置。铅或其他易熔材料不得用作舷外进水或排水阀的管子或用于任何其他在发生火灾时此类管子的损坏将会造成浸水危险的处所。

㈡1.除本款㈢项规定者外，凡限界线以下处所穿过壳板的每一独立排水孔，应设有一个自动止回阀，此阀应具有由舱壁甲板以上将其关闭的可靠装置，或者代以两个无此项关闭装置的自动止回阀，其较高者应设于最深分舱载重线以上，以便在营运状态下能随时到达查验，此阀并应为经常关闭的型式。

2.如设置具有可靠关闭装置的阀，其在舱壁甲板以上的操作位置应是随时易于到达的，并应备有表明阀门开启或关闭的指示装置。

㈢与机器连通的主、辅海水进水孔及排水孔，应在管系与船壳板间或管系与附着于船壳板的组合阀箱之间装设易于接近的旋塞或阀门。

十、㈠设于限界线以下的舷门、装货门及装煤门，均应具有足够的强度，此类门须于船舶离港以前切实关闭和紧固成水密，并应在航行中保持关闭。

㈡此类门的最低点概不得低于最深分舱载重线。

十一、㈠每一出灰管、垃圾管等的船内开口，均应装以有效的盖子。

㈡如船内开口位于限界线以下，此盖应为水密的；并应在最深分舱载

重线以上易于到达的处所，在管内增设自动止回阀。当此管不使用时，其盖及阀门均应保持关闭并扣紧。

第十五条 水密门、舷窗等的构造和初次试验

一、㈠本规则所述的一切水密门、舷窗、舷门、装货门、装煤门、阀门、管子、出灰管及垃圾管的设计、材料及构造，均应经主管机关同意。

㈡竖动式水密门的门框，其底部不得有可能积聚污秽的槽，以免妨碍门的正常关闭。

㈢舱壁甲板以下海水进水孔及排水孔的所有旋塞与阀门及其舷外装置，均须用钢、青铜或其他认可的延性材料制造，不得使用普通铸铁或类似的材料。

二、每个水密门应作水头高达舱壁甲板的水压试验。此试验应在船舶投入营运以前，于该门安装前或装妥后进行。

第十六条 水密甲板、围壁通道等的构造和初次试验

一、水密甲板、围壁通道、隧道、箱形龙骨及通风管道，均应与在同一高度的水密舱壁具有同等的强度。作成水密的措施以及关闭其开口所用的装置，须经主管机关同意。水密通风管道及围壁通道应至少向上延伸至舱壁甲板。

二、在完工以后，水密甲板应作冲水或灌水试验，而水密围壁通道、隧道及通风管道则作冲水试验。

第十七条 限界线以上的水密完整性

一、主管机关可要求采取一切合理和可行的措施，以限制海水在舱壁甲板以上浸入及漫流。此类措施可包括装设局部舱壁或桁材。当局部水密舱壁或桁材装于主分舱舱壁上方的或紧靠其附近的舱壁甲板上时，应与舱

壁甲板及船壳板水密连接，以使在船舶破损倾斜的情况下限制海水沿甲板漫流。如局部水密舱壁与其下方的舱壁错开，则二者间的舱壁甲板应作成有效的水密。

二、舱壁甲板或其上一层甲板应为风雨密，意即在普通海况下不致有水透向下方。露天甲板上的所有开口，应设有足够高度和强度的围板，并须设有能迅速关闭成风雨密的有效设备。应按需要，装设排水口、栏杆及（或）流水口，以便在任何天气情况下能迅速排除露天甲板上的积水。

三、在限界线以上船壳板上的舷窗、舷门、装货门和装煤门以及关闭开口的其他装置，应就其所装设的处所及其相对于最深分舱载重线的位置，作有效的设计与构造，并应具有足够的强度。

四、在舱壁甲板以上第一层甲板以下处所内所有舷窗，应备有有效的内侧舷窗盖，其布置须能易于有效地关闭，并紧固成水密。

第十八条 客船的舱底排水设备

一、船舶均应备有有效的舱底排水装置，在海事后所有实际可能的情况下，无论船舶正浮或倾斜，须能抽除及排干任一个既非固定油舱又非固定水舱的水密舱。为此，通常应在船的两侧各设吸水管，但在船舶两端的狭窄隔舱内如设一根吸水管已足够时除外。对形状特殊的舱可要求增设吸水管。舱内布置应使水能流至吸水管。对于某些个别舱，主管机关认为不一定需要设置排水设备时，如按照本章第七条二款所示的条件计算证明无损于船舶安全者，得免予设置。冷藏舱应设置有效的排水装置。

二、㈠每船至少应有三台动力泵与舱底总管连接，其中一台可为推进机器带动的。如其衡准数为30或30以上，则应增设一台独立动力泵。

㈡此项要求列于下表：

衡 准 数	小于30者	30及30以上
主机带动泵（可用一台独立泵来代替）	1	1
独立泵	2	3

㈢卫生泵、压载泵及通用泵，如与舱底排水系统设有必要的连接者，均可作为独立的动力舱底泵。

三、如实际可行时，各动力舱底泵应置于分开的水密舱内，其布置或位置应不致使一处破损而造成各舱均易于浸水。如机器及锅炉装于两个或两个以上的水密舱内，则用作舱底排水的各泵应尽可能远隔地分布于这些舱内。

四、长度为91·5米（300呎）或91·5米以上的船舶或其衡准数为30或30以上者，当船舶在海上可能浸水的一切通常情况下其抽水布置应至少有一台动力泵可供使用。如按下列布置即可满足要求：

㈠所需各泵中的一台是可靠的可潜式应急泵，其动力源位于舱壁甲板以上；或

㈡各泵及其动力源要在整个船长内分布，在该船所要求经受的任何浸水情况下，于未破损的一舱内至少有一台泵可供使用。

五、除仅供尖舱专用的附加泵外，所需的每一舱底泵的布置应能由本条一款所要求的任何处所抽水。

六、㈠每一动力舱底泵应能使流经所需的排水总管的水流速度不小于122米／分（400呎／分）。位于机器处所内的独立动力舱底泵应有自各该处所的直接吸水管，但此种吸水管在任一处所内应不要求多于二根，

如设有二根或二根以上的此种吸水管，则至少应有一根设在左舷，另一根设在右舷。主管机关可要求在其他处所内的各独立动力舱底泵备有单独的直接吸水管。各直接吸水管应适宜地布置，而在机器处所内的直接吸水管的直径，不应小于对舱底排水总管的要求。

(二)对燃煤的船舶，除本条所要求的其他吸水管外，应在锅炉舱内加设一根适当直径及足够长度并能连接于一台独立动力泵吸水端的吸水软管。

七、(一)除直接舱底吸水管或本条六款要求的吸水管外，在机器处所内应增设一根自主循环水泵引至机器处所排水水准面的直接吸水管，此管应装有止回阀。此直接吸水管的直径对蒸汽机船至少应为循环水泵进口直径的2/3，对柴油机船则与循环水泵进口的直径相等。

(二)如主管机关认为主循环水泵作此用途为不适宜时，则应自最大可用的独立动力泵引一根直接应急舱底吸水管至机器处所排水水准面；此管的直径应与所用泵的主进水管口相同。如此连接的泵的排量应超过所要求舱底泵的排量，其超过量应经主管机关同意。

(三)海水进水阀及直接吸水管阀的阀杆，应延伸至机舱平台以上相当高度处。

(四)如燃料为煤或可能为煤，而机舱与锅炉舱之间又无水密舱壁时，则应由本款(一)项所用的任一循环水泵装一根直接通往船外的排水管，或在循环水泵排水管上装一旁通管。

八、(一)从泵接出的供货舱或机器处所排水用的一切管子，应与可供装卸水舱或油轮的管子完全加以区别。

(二)所有用于煤舱或燃油贮存舱柜内及在其下方处所，或用锅炉舱或机器处所内包括设置于澄油柜或燃油泵所在处所内的舱底水管，应为钢质或其他认可的材料。

九、舱底水总管的直径应按下列公式计算，而其实际内径可采用主管机关所接受的最接近的标准尺寸：

$$d = 1.68\sqrt{L(B+D)} + 25$$

式中：d——舱底总管内径，毫米；

L、B——按本章第二条定义所指的船长和船宽，米；

D——至舱壁甲板的型深，米；

或

$$d = \sqrt{\frac{L(B+D)}{2500}} + 1$$

式中：d——舱底总管内径，吋；

L、B——按本章第二条定义所指的船长和船宽，呎；

D——至舱壁甲板的型深，呎。

舱底支管的直径应按主管机关制订的规范确定。

十、舱底及压载管系的布置，应能防止水自海上或自压载水舱进入货舱及机器处所，或自一舱进入另一舱的可能性。对于连接舱底排水管及压载管的任何深舱，应设有特别设施，以防在装有货物时不慎灌入海水，或在装有压载水时由舱底排水管抽出压载水。

十一、应设有设施以防装有任何舱底吸水管的舱室因管子被截断时或因碰撞或搁浅而使任何其他舱室内管子受损时，使此舱浸水。因此，凡此水管的任何部分位于距船侧不足$\frac{1}{5}$船宽（在最深分舱载重线水平面上向垂直于纵中剖面的方向量计）或在箱形龙骨内者，应在其开口端所在舱室内管子上装有止回阀。

十二、所有与舱底排水设备有关的分配箱、旋塞及阀门，应设在通常情况下随时可以到达之处。其布置应使浸水时，舱底水泵之一能用于任何舱室；此外，在距船侧$\frac{1}{5}$船宽所绘一线以外的舱底泵或其与舱底水总管连

接的管子损坏时，不应使舱底水系统丧失作用。如仅有一组管子为各泵共用时，则控制舱底吸水管所需的旋塞或阀门，必须能自舱壁甲板以上操作。若除主舱底排水系统外并设有应急舱底排水系统，则该应急系统应独立于主系统，其布置应在浸水时有一泵能用于任一舱室；在此情况下，只有操作应急系统所需的旋塞及阀门，需要能在舱壁甲板以上操作。

十三、本条十二款所述的能自舱壁甲板以上操作的一切旋塞及阀门的控制器，应在其操作处所加以明显标志，并备有指示其开或关的装置。

第十九条 客船与货船的稳性资料*

一、每艘客船及货船在完工时应作倾斜试验，并确定其稳性要素。应按需要将这类可靠的资料供给船长，使其在各种营运状态下能以迅速而简便的方法获得有关船舶稳性的正确指导，此外，并应将副本一份提供给主管机关。

二、如船舶作某种改建以致对供给船长的稳性资料有实质性影响时，应提供修正的稳性资料。必要时，船舶应再作倾斜试验。

三、主管机关得准许某一船舶免作倾斜试验，但须具有由其姐妹船作倾斜试验所得的基本稳性数据，且经主管机关同意认为可由此基本数据求得所免除船舶的可靠稳性资料。

四、如参考类似船舶的已有数据，能明显表示由于该船的尺度比例及布置，在一切可能的装载情况下具有超过足够的初稳性高度时，主管机关也可准许某一船舶或某一类船舶免作倾斜试验，特别是专门设计用来载运液体货或散装矿石的船舶。

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* 参阅海协组织通过的海大167（特Ⅳ届）决议："关于船长100米以下的客船与货船完整稳性的建议案"；以及海协组织通过的对此项建议案的修正案的海大206（Ⅶ届）决议。

第二十条 海损控制示意图

船上须固定标示表明各层甲板及货舱的水密舱室界限、界限上的开口及其关闭方法与控制位置，以及用于校正浸水倾斜的装置的示意图，以供负责的高级船员参考。此外，应供给船上高级船员以载有上述资料的小册子。

第二十一条 水密门等的标志、定期操作及检查

一、本条适用于新船及现有船舶。

二、水密门、舷窗、阀门以及流水口、出灰管与垃圾管的关闭机械的操作演习，应每周举行一次。对航期超过一周的船舶，在离港前应举行一次全面演习，此后在航行中至少每周举行一次。所有船舶在主横舱壁上的一切动力水密门及铰链门需在航行中使用者，应每天进行操作。

三、㈠水密门及与其连接的所有机械与指示器、为使舱室水密所必需关闭的一切阀门及为海损控制横贯连通所必需操作的一切阀门，应在航行中定期检查每周至少一次。

㈡这类阀门、门及机械，应作适当的标志，以保证其正确使用而策最大安全。

第二十二条 航海日志的记载

一、本条适用于新船及现有船舶。

二、按照本章各条要求在航行中应保持关闭的铰链门、可移式板门、舷窗、舷门、装货门、装煤门及其他开口，均应在船舶离港前关闭。关闭的时间及开启的时间（如为本章各条所准许者），应记入主管机关所规定的航海日志中。

三、本章第二十一条所要求的所有演习及检查的记录，均应记入航海日志中，并明确记载所发现的任何缺点。

第三节 机 电 设 备*

（本节适用于客船与货船）

第二十三条 通则

一、客船上的电气设备应是：

㈠在各种紧急情况下，能保持对安全所必需的用途供电。

㈡能确保旅客、船员及船舶的安全，免受电气事故的危害。

二、货船应符合本章第二十六、二十七、二十八、二十九、三十及三十二条的规定。

第二十四条 客船上的主电源

一、每艘客船，其推进和安全所必需的辅机如系仅用电力者，至少应备有二套主发电机组。这些发电机组的功率，应是当其中任一机组停止供电时，仍能确保本章第二十三条一款㈠项所述用途的功能。

二、在仅有一个主发电站的客船上，其主配电板应设于同一主防火区内。如有一个以上的主发电站时，可允许只用一个主配电板。

第二十五条 客船上的应急电源

一、在舱壁甲板以上，机舱棚以外，应备有一独立的应急电源。其与主电源的相对位置应经主管机关同意，以确保本章第二条八款定义所指的机器处所发生火灾或其他灾难时，不致妨碍应急电源的供电和配电。应急电源不应置于防撞舱壁的前面。

二、应急电源的可用功率应足够向主管机关认为在紧急时保证旅客和船员安全所必需的用途供电，并适当考虑到这些用途可能被同时使用。对

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* 参看海协组织通过的海大２１１（ＶＩＩ届）决议“关于对货船上周期无人照管机器处所的安全措施，以补充对有人照管机器处所通常认为必需的安全措施的建议案”。

于各登艇处的甲板和舷边、所有通道、梯道及出口、机器处所及按第二章乙第三条十八款定义所指的控制站内的应急照明，对洒水泵、航行灯以及白昼信号灯（如由主电源供电者），均应予以特别考虑。此电源应能足夠36小时之用，但对经常从事短程航行的船舶，如主管机关认为能达到同等的安全程度，可以同意较少的供电时间。

三、应急电源可为：

㈠由适当原动机驱动的发电机，该原动机具有独立供油和认可的启动装置，其所用燃油闪点不低于43℃（110° F）；或

㈡能负担应急负荷而无需再充电或不致产生过分的电压降的蓄电池组。

四、㈠如应急电源为发电机，尚应备有由蓄电池组组成的临时应急电源，其能量应足夠：

1.连续供给应急照明半小时之用；

2.关闭各水密门（如系电力操作者），但不必同时关闭所有的门；

3.供应用以表示动力式水密门是否开启或关闭的指示器（如系电力操作者）；

4.供应用以预告动力式水密门即将关闭的音响信号（如系电力操作者）。

此项装置应是在主电源失效时，临时应急电源即自动地接入工作。

㈡如应急电源为蓄电池组，其布置应能在主照明供电失效时保证应急照明自动地接入工作。

五、在机器处所内，最好在主配电板上装一指示器，用以指示按照本条规定装设的任一蓄电池组正在放电。

六、㈠应急配电板应尽可能装设在靠近应急电源之处。

㈡当应急电源为发电机时，应急配电板应与应急电源装在同一处所，但于该处会妨碍应急配电板操作者例外。

㈢按本条规定装备的蓄电池组不得与应急配电板装在同一处所。

㈣主管机关可准许在正常工作时应急配电板由主配电板供电。

七、整个应急电源的布置，应是在船舶横倾22.5°和（或）纵倾10°时仍起作用。

八、应作出规定对应急电源及临时应急电源（如设有时）进行定期试验，并应包括自动装置的试验。

第二十六条 货船上的应急电源

一、5000总吨及5000总吨以上的货船

㈠凡5000总吨及5000总吨以上的货船，应有独立的应急电源，装于经主管机关同意的最高上层连续甲板以上和机舱棚以外的处所，使其当发生火灾或其他灾难致使主电源装置失效时，能确保起作用。

㈡其可用功率应足够向主管机关认为在紧急时保证全船人员安全所必需的用途供电，并适当考虑到这些用途可能被同时使用。应特别考虑下列各项：

1.各登艇处的甲板和舷边、所有通道、梯道及出口、主机处所及主发电机组处所、驾驶室及海图室内的应急照明；

2.通用警报器；

3.仅用电力的航行灯与白昼信号灯（如由主电源供电者）。

此电源应足够6小时之用。

㈢应急电源可为：

1.能负担应急负荷而无需再充电或不致产生过分的电压降的蓄电池组；

2.由适当原动机驱动的发电机，该原动机具有独立供油和经主管机关认可的启动装置，其所用燃油闪点不低于43℃（110°F）。

㈣整个应急电源的布置，应是在船舶横倾22.5°和（或）纵倾10°时仍起作用。

㈤应作出规定对全部应急电源装置进行定期试验。

二、小于5000总吨的货船

㈠凡小于5000总吨的货船，应有独立的应急电源，装于主管机关同意的处所，其电源须能供给在第三章第十九条一款㈡项、二款㈡及㈢项中所规定的降落地点及救生艇筏存放处所的照明；此外，在适当考虑到第三章第三十八条情况下尚应供应主管机关可能要求的其他用途。

㈡可用功率至少应足夠3小时使用。

㈢本条一款的㈢、㈣、㈤项亦适用于此种船舶。

第二十七条 触电、电气失火及其他电气灾害的预防措施

一、客船与货船

㈠1.电机或电器设备的一切裸露金属部分，其原来不拟通电但在漏电情况下易于变为通电者，应加以接地（接于船体）；一切电器设备的构造与安装，应使在正常使用时不致发生伤害的危险。

2.作为船舶属具供应的一切手提式电灯、工具及类似器具，其额定电压超过主管机关规定的安全电压者，其金属架应通过适当的导线接地（接于船体），但如有等效设备例如具有双层绝缘或隔离变压器者除外。主管机关可要求对用于潮湿处所的电灯、工具或类似器具采取额外的特殊预防措施。

㈡主配电板及应急配电板的布置，应使其前面和后面均易于到达，且对工作人员无危险。配电板的侧面、后面和前面（如有必要），均应作适当的防护。如为必需，应在其前后铺设不导电的地毯或格板。裸露带电部

分的对地（船体）电压超过主管机关规定的电压者，不应装在任何配电板或控制板的板面上。

㈢1.当利用船体作为配电回路系统时，应采取主管机关同意的特殊预防措施。

2.船体回路不得用于油船。

㈣1.电缆的所有金属护套和铠装，应为连续导电并应接地（接于船体）。

2.如电缆既无护套又无铠装并可能因漏电而发生火灾危险时，则主管机关应要求采取预防措施。

㈤照明装置的布置，应能防止其温度升高而损害线路，并能防止其周围的物料发生过热。

㈥线路的敷设方法，应能避免擦伤或其他损害。

㈦每一独立电路应有短路保护。每一独立电路也应有过载保护，但按照本章第三十条的规定或主管机关准许免除者除外。每一电路的载流量应连同其适当的过载保护装置的额定值或整定值一起作永久性的标示。

㈧蓄电池组应作适当的保护，主要用作蓄电池组的舱室应有适当的构造和足够的通风。

二、仅适用于客船

㈠配电系统的布置，应使任何主防火区内失火时不致妨碍对其他任何主防火区内必需的用途供电。如主馈电线路及应急馈电线路通过任何防火区时，其垂直和水平间的布置为尽可能地远离者，即可认为满足此项要求。

㈡电缆应是主管机关认可的滞燃式，主管机关为了防火或防爆，可对船舶某些特殊处所的电缆要求额外的安全防护。

㈢在易燃混合物易于聚集的处所，概不得装设电气设备，但如属于不致点燃该混合物的一种型式例如防焰（防爆）型的设备除外。

㈣在煤舱或货舱内的照明电路，应在其舱外设置切断开关。

㈤一切导线中的接头，除低压通信电路外，均应在接线盒或输出盒内进行连接。所有此种盒或接线用器的构造均应为能阻止火灾自该盒或该器内向外蔓延者。如使用插接，则仅准用认可的能保持电缆原机械性能和电气性能的方法。

㈥为了安全和应急报警系统所必需的内部通信的电缆系统应避免布置于厨房、机器处所以及其他有高度失火危险的围蔽处所，但在那些处所内需要提供通信和警报者除外。如果船舶由于结构和船小而不能符合这些要求时，应采取主管机关认为满意的措施，以保证通过厨房、机器处所以及其他有高度失火危险的围蔽处所的电缆系统具备有效的保护。

三、仅适用于货船

易生电弧的装置，不应设在指定为主要供蓄电池组用的舱室内，但此项装置为防焰（防爆）型者除外。

第二十八条 后退措施

一、客船与货船

船舶应有足够的后退动力，以确保在一切正常情况下能适当控制船舶。

二、仅适用于客船

在正常操纵情况下，使推进器于一定时间内换向，并使船舶自最大营运前进航速直至停止的机器能力，应在初次检验时作试验。

第二十九条 操舵装置*

一、客船与货船

㈠船舶应备有主管机关认为满意的主操舵装置和辅助操舵装置。

* 参阅海协组织通过的海大２１０（Ⅶ届）决议："对大型船舶操舵装置的建议案"。

㈡此主操舵装置应具有足够强度并足以在最大营运航速时操纵船舶。主操舵装置及舵杆的设计，应在最大后退速度时不致损坏。

㈢辅助操舵装置应具有足够强度和足以在可驾驶的航速下操纵船舶，并能于紧急时迅速投入工作。

㈣如为动力操作的舵，则应在主操舵站显示其正确位置。

二、仅适用于客船

㈠主操舵装置应能使船舶在以最大营运航速前进时，将舵自一舷的35°转至另一舷的35°。舵应能于最大营运航速中在28秒钟内自任一舷的35°转至另一舷的30°。

㈡主管机关在任何情况下如要求舵柄处的舵杆直径超过228·6毫米（9吋），则其辅助操舵装置应以动力操作。

㈢如主操舵装置的动力设备及其连接装置是主管机关认为满意的双套装配，且每一动力设备能使操舵装置符合本款㈠项的要求，则可不设辅助操舵装置。

㈣主管机关如要求在舵柄处的舵杆直径超过228·6毫米（9吋），则应在主管机关同意的处所另备一操舵站。主操舵站及另一操舵站的遥控操舵系统的布置，应经主管机关同意，使任一系统失效时，能运用另一系统来操纵船舶。

㈤应备有主管机关认为满意的由驾驶室传达命令至另一操舵站的设施。

三、仅适用于货船

㈠主管机关在任何情况下如要求在舵柄处的舵杆超过355·6毫米（14吋），则其辅助操舵装置应以动力操作。

㈡如动力操舵装置及其连接装置是主管机关认为满意的双套装配，且每一装置符合本条一款㈢项的要求，而此双套动力装置和连接装置一起操作时能符合本条一款㈡项的要求，则可不设辅助操舵装置。

第三十条 电动与电动液压操舵装置*

一、客船与货船

用以指示电动和电动液压操舵装置的电动机的运转指示器，应设置于主管机关所同意的适当处所。

二、一切客船（任何吨位）和5000总吨及5000总吨以上的货船

㈠电动与电动液压操舵装置应自主配电板二路供电，其中一路可经应急配电板（如装有时）。每一电路须有足夠容量能向与其正常连接的同时动作的所有电动机供电。如在舵机室内备有电路转换装置，能使任一电路供给任一电动机或几部电动机联合工作，则任一电路的容量应足供在最大负荷情况下使用。此二电路应在其全长内尽可能地远离。

㈡这些电路和电动机仅须备有短路保护装置。

三、小于5000总吨的货船

㈠以电力为唯一动力源供主、辅操舵装置的船舶，应符合本条二款㈠和㈡项的规定。如辅助操舵装置为主要供其他用途的电动机所驱动，则当主管机关对其预防措施认为满意时，可免除对二款㈡项的要求。

㈡仅须对电动或电动液压主操舵装置的电动机和电力线路备置短路保护装置。

第三十一条 客船上应急装置的位置

在客船上的应急电源、应急消防泵、应急舱底泵及用于灭火的成组二氧化碳瓶与其他为船舶安全所必需的应急装置，不应设于防撞舱壁之前。

第三十二条 驾驶室与机舱之间的通信

船上应备有两种自驾驶室传达命令至机舱的装置，其中一种应为机舱车钟。

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* 参阅海协组织通过的海大210（Ⅶ届）决议："对大型船舶操舵装置的建议案"。

第二章乙 构造（防火、探火和灭火）

第一节 通 则*

第一条 适用范围

一、在本章范围内：

㈠新客船是指在本公约生效之日或以后安放龙骨或处于相应建造阶段的客船，或在该日及以后由货船改建成的客船，所有其他客船均应被视为现有船舶。

㈡新货船是指在本公约生效之日或以后安放龙骨或处于相应建造阶段的货船。

㈢船舶在进行修理、改装、改建以及与之有关的舾装时，至少应继续符合该船原先适用的要求。在这种情况下，现有船舶一般不得低于它原已符合的对新船的要求。重大的修理、改装、改建以及与之有关的舾装在主管机关认为合理和可行的范围内，应满足对新船的要求。

二、除另有明文规定外：

㈠本章第一节第四条至第十六条适用于新船。

㈡本章第二节适用于载客超过36人的新客船。

㈢本章第三节适用于载客不超过36人的新客船。

㈣本章第四节适用于新货船。

㈤本章第五节适用于新油船。

三、㈠本章第六节适用于载客超过36人的现有客船。

㈡载客不超过36人的现有客船和现有货船应符合下列规定：

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* 参看海协组织通过的海大211（VII届）决议“关于对货船上周期无人照管机器处所的安全措施，以补充对有人照管机器处所通常认为必需的安全措施的建议案”。

1. 在一九六〇年国际海上人命安全公约生效之日或以后安放龙骨或处于相应建造阶段的船舶，主管机关应保证使之符合该公约第二章中定义为新船所适用的各项要求；

2. 在一九四八年国际海上人命安全公约生效之日或以后，但在一九六〇年国际海上人命安全公约生效之日以前安放龙骨或处于相应建造阶段的船舶，主管机关应保证使之符合一九四八年公约第二章中定义为新船所适用的各项要求；

3. 在一九四八年国际海上人命安全公约生效之日以前安放龙骨或处于相应建造阶段的船舶，主管机关应保证使之符合该公约第二章中定义为现有船舶所适用的各项要求；

四、对于本章内的要求而为一九四八年和一九六〇年公约第二章所未包含者，除了应用本条三款㈠项的要求外，其中何者适用于本公约定义所指的现有船舶应由主管机关确定。

五、主管机关如考虑到航程的遮蔽性及其条件，认为引用本章的某些特殊要求为不合理或不必要时，可对其本国所属的在航程中距最近陆地不超过２０浬的个别船舶或某类船舶免除这些要求。

六、客船用于特种业务，例如朝山进香载运大量特种业务旅客者，主管机关如认为实施本章要求为不切实际时，可对其本国所属的此类船舶免除这些要求，但此类船舶应完全符合下列规定：

㈠一九七一年特种业务客船协定所附的规则，

㈡一九七三年特种业务客船舱室要求议定书所附的规则（当生效时）

第二条 基本原则

本章的目的是要求船舶的防火、探火和灭火达到最充分可行的程度。考虑到船舶的类型和所涉及潜在火灾的危险，下列基本原则是本章各条款的基础，并体现在相应的条文中：

一、用耐热与结构性限界面，将船舶划分为若干主竖区；

二、用耐热与结构性限界面将起居处所与船舶其他处所隔开；

三、限制使用可燃材料；

四、探知火源区域内的任何火灾；

五、抑制和扑灭火源处所内的任何火灾；

六、保护脱险通道或灭火出入口；

七、灭火设备的即刻可用性；

八、易燃货物蒸发气体着火的可能性减至最低限度。

第三条 定义

除另有明文规定外，在本章范围内：

一、“不燃材料”，系指某种材料加热至约750℃（1382°F）时，既不燃烧，亦不发出足量的造成自燃的易燃蒸发气体；此系通过既定的试验程序确定，并取得主管机关的同意。除此以外的任何其他材料，皆为“可燃材料”。*

二、“标准耐火试验”系指将需要试验的舱壁或甲板的试样置于试验炉内，加温到大致相当于下列标准时间－温度曲线的一种试验，试样暴露表面面积应不少于4·65平方米（50平方呎），其高度（或甲板长度）

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*参看海协组织通过的海大270（Ⅷ届）决议“关于鉴定船用结构材料为不燃性的试验方法的建议案。”

应不少于2·44米（8呎），试样应尽可能与所设计的构件近似。并在相当位置包括至少一个接头。标准时间—温度曲线应是连接下列各点的一条光滑曲线：

自开始至满5分钟时—538℃（1000°F）

自开始至满10分钟时—704℃（1300°F）

自开始至满30分钟时—843℃（1550°F）

自开始至满60分钟时—927℃（1700°F）

三、“甲”级分隔是由符合下列要求的舱壁与甲板所组成的分隔：

㈠它们应以钢或其他等效的材料制造；

㈡它们应为适当的防挠加强；

㈢它们的构造，应在一小时的标准耐火试验至结束时能防止烟及火焰通过；

㈣它们应用认可的不燃材料隔热，使在下列时间内其背火一面的平均温度，较原温度增高不超过139℃（250°F），且在任何一点包括任何接头在内的温度较原温度增高不超过180℃（325°F）：

“甲—60”级 60分钟

“甲—30”级 30分钟

“甲—15”级 15分钟

“甲—0”级 0分钟

㈤主管机关可以要求将原型的舱壁或甲板进行一次试验，以保证满足上述完整性及温升的要求。*

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*参看海协组织通过的海大163（特Ⅳ届）及海大215（Ⅶ届）决议“关于“甲”级和“乙”级分隔耐火试验程序的建议案”。

四、“乙”级分隔是由符合下列要求的舱壁、甲板、天花板或衬板所组成的分隔：

㈠它们的构造应在最初半小时的标准耐火试验至结束时，能防止火焰通过；

㈡它们应具有这样的隔热值，使在下列时间内，其背火一面的平均温度，较原温度增高不超过139℃（250°F），且在包括任何接头在内的任何一点的温度，较原温度增高不超过225℃（405°F）：

“乙—15”级 15分钟

“乙—0”级 0分钟

㈢它们应以认可的不燃材料制成。“乙”级分隔的结构和装配所用的一切材料应为不燃材料。但是，按本章第三节和第四节的有关规定，並不排除可燃材料的使用。在此情况下，该项可燃材料在标准耐火试验最初半小时结束时应符合本款㈡项中规定的温升限度。

㈣主管机关可要求将原型分隔进行一次试验，以保证满足上述完整性和温升的要求。*

五、“丙”级分隔应以认可的不燃材料制成。它们不需要满足有关防止烟和火焰通过以及限制温升的要求。

六、连续“乙”级天花板或衬板，系指“乙”级天花板或衬板只在一个“甲”或“乙”级分隔终止者。

七、“钢或其他等效材料”。凡遇有“钢或其他等效材料”的字样，“等效材料”系指任何材料本身或由于所设隔热物，当经过标准耐火试验

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*参看海协组织通过的海大163（特Ⅳ届）及海大215（Ⅶ届）决议“关于“甲”级和“乙”级分隔耐火试验程序的建议案”。

的相应曝火时间后，在结构性和完整性上与钢具有同等的性能（例如设有适当隔热材料的铝合金）。

八、“低播焰性”系指所述表面能有效地限制火焰的蔓延，此系通过既定的试验程序确定，並取得主管机关的同意。

九、“主竖区”系指船体、上层建筑和甲板室以“甲”级分隔分成的各段，它在任何一层甲板上的平均长度一般不超过40米（131呎）。

十、“起居处所”系指用作公共处所、走廊、盥洗室、住室、办公室、船员室、理发室、单独的配膳室与橱柜，以及类似的处所。

十一、“公共处所”系指起居处所中用作大厅、餐室、休息室以及类似的固定围蔽处所的部分。

十二、“服务处所”系指用作厨房、主配膳室、储藏室（单独的配膳室与橱柜除外）、邮件舱及贵重物品室、组成机器处所的部分以外的车间，以及类似处所和通往这些处所的围壁通道。

十三、“装货处所”系指一切用作装载货物的处所（包括货油舱）以及通往这些处所的围壁通道。

十四、“特种处所”系指在舱壁甲板以上或以下用作装载在油箱内备有自用燃油的机动车辆的围蔽处所，此处所能让上述车辆驾驶进出，并有旅客进入的通路。

十五、“甲类机器处所”系指具有下列设施的一切处所：

㈠用作主推进的内燃机或作其他用途的合计总输出功率不小于373千瓦的内燃机；

㈡任何燃油锅炉或燃油装置以及通往这些处所的围壁通道。

十六、“机器处所”系指一切甲类机器处所和一切其他包括推进机械、锅炉、燃油装置、蒸汽机和内燃机、发电机和主要电动机、加油站、冷藏

机、防摇装置通风机和空气调节机械的处所，以及类似处所；连同通往这些处所的围壁通道。

十七、“燃油装置”系指准备为燃油锅炉输送燃油的设备或准备为内燃机输送加热燃油的设备，并包括用于处理表压力超过1·8公斤／厘米^2（25磅／吋^2）油类的任何压力油泵过滤器和加热器。

十八、“控制站”系指船舶无线电设备、主要航行设备或应急电源所在的处所，或者是指火警指示器或失火控制设备集中的处所。

十九、“设有限制失火危险的家具和设备的房间”，在本章第二十条内，设有限制失火危险的家具和装备的房间（无论住室、公共处所、办公室或其他类型的起居处所），应为：

㈠一切框架式家具，如书桌、衣橱、梳妆台、书柜、餐具柜，除其使用表面可用不超过2毫米（$\frac{1}{12}$吋）的可燃镶片外，完全由认可的不燃材料制成；

㈡一切可移动的家具，如椅子、沙发、桌子，其骨架由不燃材料制成；

㈢一切帷幔、窗帘及其他悬挂的纺织品材料，其阻止火焰蔓延的性能应不差于每平方米重0·8公斤（每平方码重24盎斯）的毛织品，并取得主管机关的同意；

㈣一切地板覆盖物，其阻止火焰蔓延的性能应不差于用于同一目的的等效的毛料并取得主管机关的同意；

㈤一切舱壁、衬板及天花板的外露表面，应具有低播焰性。

二十、“舱壁甲板”是横向水密舱壁所到达的最高一层甲板。

二十一、“载重量”系指船舶在比重为1·025的海水中，相应于所勘划的夏季载重线的排水量与该船空船排水量之差，以吨计。

二十二、“空船排水量”系指船舶在舱内没有货物、燃油、润滑油、压载水、淡水、给水和易耗物料，且无旅客、船员及其行李时的排水量，以吨计。

二十三、“油类／散货二用船”系指设计用来装油，并能交替装载散装固体货物的油船。

第四条 防火控制图

在所有新船和现有船舶上应有固定展示的总布置图供船员参考。图上应清楚地标明：每层甲板的各控制站，“甲”级分隔围闭的各防火区域，“乙”级分隔（如设有时）围闭的各区域，连同失火报警和探火系统、喷水器装置（如设有时）、灭火设备、各舱室和甲板等出入通道设施的细目，以及通风系统，包括风机控制位置、挡火闸位置和服务于每一区域通风机识别号码的细目。或经主管机关决定，上述细目可记入一小册子，每一高级船员一本，并应有一份放于船上易于到达的地方可随时取用。控制图和小册子应保持为最新编制的，如有改动，应尽可能立即加以更正。控制图和小册子的说明应为本国文字。如该文字既不是英文也不是法文，则应译成其中一种的文字。此外，船上灭火和抑制火灾用的所有设备和装置的保养和操作说明，应保存在一个封套内，并放在易于到达的地方，以便随时取用。

第五条 消防泵、消防总管、消火栓和消防水带

一、消防泵的总排量

㈠在客船上所需的全部消防泵，应能按以下所述的适当压力供给消防用水，其出水量应不少于指定供舱底抽输的全部舱底泵所需出水量的 2／3。

㈡在货船上，除应急泵（如设有时）外，所需的各消防泵应能按所述的适当压力供给消防用水，其出水量应不少于按第二章甲第十八条关于同

样大小的客船指定供舱底抽输的每一独立舱底水泵所需出水量的4／3，但货船所需各消防泵总排量不需超过１８０立方米／小时。

二、消防泵

㈠所有消防泵应为独立驱动。卫生泵、压载泵、舱底泵或通用泵，如非经常用来抽输油类者，均可作为消防泵；如它们偶尔用于移注燃油，则要装设适宜的转换装置。

㈡1.载客超过３６人以上的客船所需的每一消防泵的排量应不少于所需总排量的８０％除以所需的最少消防泵数，且在任何情况下，每一个这样的消防泵至少应能维持两股所需的水柱。这些消防泵应能按所需的条件向消防总管系统供水。

如设置泵数多于所需的最低数量，则这些增加的泵的排量应取得主管机关的同意。

2.所有其他类型的船舶，所需的每一消防泵（按本章第五十二条所需的任何应急泵除外）的排量应不小于所需总排量的８０％除以所需的消防泵数，且在任何情况下，每一消防泵应能按所需的条件向消防总管系统供水。

如设置泵数多于所需的数量，其排量应取得主管机关的同意。

3.如消防泵的压力可能超过消防水管、消火栓和消防水带的设计压力，则应在全部消防泵装设溢流阀。这些阀应恰当分布和调节，以防止消防总管系统内任何部分发生超压。

三、消防总管的压力

㈠消防总管和消防水管的直径应足够有效地从两个同时工作的消防泵传输所需的最大出水量；但货船例外，其消防总管的直径仅需足以出水１４０立方米／小时。

㈡在两泵同时工作并通过本条七款规定的水枪从任何相邻的消火栓传输本款㈠项所确定的水量时，在一切消火栓上应维持下述最低压力：

客船：

4000总吨及4000总吨以上……3·2公斤／厘米^2（45磅／吋^2）

1000总吨及1000总吨以上但

小于4000总吨……2·8公斤／厘米^2（40磅／吋^2）

1000总吨以下……应取得主管机关的同意

货船：

6000总吨及6000总吨以上……2·8公斤／厘米^2（40磅／吋^2）

1000总吨及1000总吨以上但

小于6000总吨……2·6公斤／厘米^2（37磅／吋^2）

1000总吨以下……应取得主管机关的同意。

四、消火栓的数目和位置

消火栓的数目和位置，应至少能将两股不是由同一消火栓发出的水柱，射至船舶在航行时旅客或船员经常到达的任何部分，而其中一股应仅用一根消防水带。

五、管子及消火栓

㈠在热力作用下易于失效的材料，除非有充分的保护，不得用作消防总管和消火栓。管子及消火栓的位置应使消防水带易于与之连接。在可能装运甲板货物的船上，消火栓的地位应随时易于到达。消防管的布置应尽可能避免被此项货物所损坏。各消防水带接头与各水枪应能完全互换使用，除非船上对每一消火栓备有一根消防水带和一支水枪。

㈡应设有一旋塞或阀门供每一消防水带使用。在消防泵工作时可以拆卸任何消防水带。

六、消防水带

消防水带应为主管机关认可的材料。并具备足够的长度射出一股水柱至可能需要使用的任一处所。其最大长度应取得主管机关的同意。每一根消防水带应配有一支水枪和必需的接头。按本章指定为“消防水带”的水带应与其必要的配件及工具。存放于供水消火栓或接头附近显著的部位。以备随时取用。此外。在载客超过３６人客船的各内部处所。消防水带应一直保持与消火栓相连接。

七、水枪

㈠在本章范围内。标准水枪的尺寸应为１２毫米（1/2吋）、１６毫米（５／８吋）和１９毫米（３／４吋）。或尽可能与之相近。如经主管机关同意。可准许使用较大直径的水枪。

㈡在起居和服务处所内。不必使用大于１２毫米（1/2吋）的水枪。

㈢在机器处所和各外部处所。水枪的尺寸应能从最小的泵在本条三款所述的压力下。从两股水柱上获得最大限度的出水量。但不必使用大于１９毫米（３／４吋）的水枪。

㈣在机器处所或类似此种处所内存在着油类溢出的危险时。其水枪应适宜于向油上喷射水雾或为两用的型式。

八、国际通岸接头

本章所要求安装在船上用于国际通岸接头的法兰的标准尺寸，应符合下表所列要求：

名　　称	尺　　寸
外　　径	178毫米（7吋）
內　　径	64毫米（2½吋）
螺栓圈直径	132毫米（5⅛吋）
法兰槽口	直径为19毫米（3／4吋）的螺栓孔四个，等距离布置于上述直径的螺栓圈上，并开槽至法兰边缘
法兰厚度	最少为14.5毫米（9／16吋）
螺栓及螺母	4副，每只直径16毫米（5／8吋），长度50毫米（2吋）

国际通岸接头应用能承受10.5公斤／厘米²（150磅／吋²）工作压力的材料制成，其一端应为平面法兰，另一端应有永久附连于其上的，适合船上消火栓或消防水带的接头。国际通岸接头应与能承受10.5公斤／厘米²（150磅／吋²）工作压力的任何材料的垫片1只，及长度为50毫米（2吋）、直径为16毫米（5／8吋）螺栓4只和垫圈8只，一同保存于船上。

第六条　杂项

一、如使用电力取暖器，应于装设位置加以固定，其构造应能使失火危险减至最低程度。凡取暖器的电热丝暴露到可能因其热度而将衣服、帷幔或其他类似的物件烧焦或着火者，概不得设置。

二、硝酸纤维素基胶片不得用于电影设备。

第七条　灭火机

一、所有灭火机应为认可的型式和设计。

㈠所需手提式液体灭火机的容量应不大于13·5升(3加仑),且不少于9升(2加仑)。其他灭火机应不超过13·5升(3加仑)液体灭火机的等同可携性,并应不低于9升(2加仑)液体灭火机的等同灭火性能。

㈡主管机关应确定灭火机的等同物。

二、应按照主管机关规定的要求配足备用药剂。

三、灭火机所盛的灭火剂,倘主管机关认为其本身或在预期使用条件下,将发出一定数量的毒气足以危害人身者,不准使用。

四、可携式泡沫器装置应包括一只能以消防水带连接于消防总管的吸入式空气泡沫枪,连同一只至少能盛装20升(4½加仑)发泡液的可携式容器和一只备用容器。泡沫枪应能每分钟至少产生1·5立方米(53立方呎)适合于扑灭油类火灾的有效泡沫。

五、灭火机应定期进行检验,并按主管机关的要求进行试验。

六、用于任何处所的手提灭火机,其中应有一只存放在该处所的入口附近。

第八条 固定式气体灭火系统

一、所采用的灭火剂,主管机关认为其本身或在预期使用条件下,将发出一定数量有毒气体足以危害人身者,不准使用。

二、如采用喷射气体灭火时,输送气体的管子应设有控制阀或旋塞,并应清楚地标明这些管子通往的舱室。应有适当的措施以防止气体因疏忽而注入任何舱室。设有这种灭火系统的货舱如用作旅客处所时,在运客期间,气体的管子接头应予以封闭。

三、管系的布置应使灭火气体能作有效的分配。

四、㈠使用二氧化碳作为装货处所的灭火剂时，所备此种气体的数量应足以发出体积至少等于该船能密封的最大货舱总容积３０％的自由气体。

㈡使用二氧化碳作为甲类机器处所的灭火剂时，所携此种气体的数量应足以发出至少等于下列两者中较大值的自由气体：

１.最大处所总容积的４０％；此容积算至机舱棚的一个水平面为止，在这个水平面上，机舱棚的水平面积等于或小于从双层底顶至机舱棚最低部分的中点处水平面积的４０％；

２.最大处所包括机舱棚在内的全部容积的３５％；

但在小于２０００总吨的货船上，上述各百分数可分别减为３５％与３０％；再者，两个或两个以上的甲类机器处所未完全隔开者，应作为一个舱室看待。

㈢在任何甲类机器处所中，空气瓶内含有的自由空气量如因失火而在该处所内施放时，会严重影响固定灭火装置的有效性者，主管机关应要求额外增加二氧化碳的数量。

㈣如甲类机器处所和装货处所均使用二氧化碳作为灭火剂时，二氧化碳气体的数量不必多于最大一个货舱的需要量或机器处所的需要量中的较大值。

㈤本款内所指的二氧化碳的容积应以每公斤相当于０·５６立方米（每磅相当于９立方呎）计算。

㈥如甲类机器处所使用二氧化碳作为灭火剂时，其固定管系应能使８５％的气体在二分钟内注入该处所。

㈦二氧化碳瓶存放室，应位于安全和随时可到达的地方，并应有经主管机关满意的有效通风。这种存放室的任何进口最好应开向开敞甲板，且

在任何情况下应与被保护处所分开。出入口的门应是气密的，构成这种存放室限界面的舱壁和甲板应是气密和适当隔热的。

五、㈠除二氧化碳或本条六款许可的蒸汽外，如在船上生产的气体作为灭火剂时，它应是燃油燃烧的气态产物，在此产物中氧气含量、一氧化碳含量、腐蚀元素以及任何固体可燃元素均需降低到容许的最少量。

㈡如在固定式灭火系统中使用这种气体作为灭火剂来保护甲类机器处所时，它应与固定式二氧化碳系统具有等效的保护作用。

㈢如在固定式灭火系统中使用这种气体作为灭火剂来保护装货处所时，应备有足够的数量，使每小时能供给自由气体的容积至少等于最大一个被保护舱室总容积的２５％，并可连续供给７２小时。

六、一般情况下，在新船的固定式灭火系统中，主管机关应不准使用蒸汽作为灭火剂。如主管机关允许使用蒸汽，则应仅用在一些限定的区域作为所需灭火剂的额外灭火剂，其条件是供给蒸汽的一个或数个锅炉的蒸发量，应对该船用蒸汽保护的最大处所的总容积每０·７５立方米每小时能提供至少应为１公斤的蒸汽（每１２立方呎每小时为１磅）。除了符合上面所提到的要求之外，该系统在其他各方面应由主管机关确定和同意。

七、向任何经常有人员出入的处所施放灭火气体时，应有自动声响警报的设施。此项警报应在气体施放前报警一段适当的时间。

八、任何这种固定式气体灭火系统的控制设施，应能易于到达和操作简便，且应成组地分装于尽可能少的处所；其所在位置应不致为被保护处所的火灾所切断。

第九条　机器处所的固定式泡沫灭火系统

一、机器处所所需的任何固定式泡沫灭火系统应能使在不超过五分钟的时间内通过固定的喷射口喷出的泡沫量足以覆盖燃油所能散布的最大单

个面积达１５０毫米（６吋）厚度。该系统所产生的泡沫应能适宜于扑灭油类火灾。应设有通过固定管系和控制阀或旋塞有效地分配泡沫至适当喷射口的设施。并应设有用固定式喷射器将泡沫有效地射到被保护处所内其他主要火灾危险处的设施。泡沫膨胀率应不超过１２：１。

二、任何这种系统的控制设施应易于到达和操作简便，且应成组地分装于尽可能少的处所。其所在位置应不致为被保护处所的火灾所切断。

第十条 机器处所的固定式高膨胀泡沫灭火系统

一、㈠机器处所所需的任何固定式高膨胀泡沫系统应能使通过固定喷射口迅速喷出的泡沫量足以按每分钟至少一米（３·３呎）的厚度注入最大一个被保护处所。所备发泡液的数量，应足够产生五倍于最大一个被保护处所容积的泡沫容积。泡沫膨胀率应不超过１０００：１。

㈡主管机关可以允许变更设备及喷出速度，但应获得等效的保护效果。

二、输送泡沫的供给管道，泡沫发生器的空气进口以及泡沫产生装置的数量，应根据主管机关的意见，使之有效地生产和分配泡沫。

三、泡沫发生器输送管道的布置，在被保护处所发生火灾时，应使泡沫发生设备不受影响。

四、泡沫发生器、发生器的动力源、发泡液以及控制这个系统的设施，应易于到达和操作简便，且应成组地设在尽可能少的处所，其所在位置，应不致为被保护处所的火灾所切断。

第十一条 机器处所的固定式压力水雾灭火系统

一、机器处所所需的任何固定式压力水雾灭火系统应备有认可型的水雾喷咀。

二、喷咀的数目和布置应取得主管机关的同意，并应保证使水按每分钟每一平方米至少 5 升（每平方呎 0·1加仑）的水量在其被保护的处所作有效而平均的分布。如认为需要增加出水率时，应取得主管机关的同意。在污水沟、舱柜顶部和燃油易于流布的其他处所，以及在机器处所内其他具有特殊失火危险处的上方，都应设置喷咀。

三、该系统可以分成若干区域，其分配阀应能从被保护处所以外易于到达的部位进行操作，且不致因失火而被立即切断。

四、该系统应以必要的压力保持充水，并应于该系统内压力降低时，供水泵即自动向系统供水。

五、水泵应能同时向任一被保护舱室内该系统的所有区域以必要的压力供水。水泵及其控制设备应装于被保护处所以外。水泵应不致因水雾系统所保护处所失火而使该系统失去作用。

六、水泵可以为独立内燃机驱动；但如由符合本公约第二章甲第二十五条或第二十六条规定的应急发电机供给动力，则该发电机的布置应在主动力损坏时，能自动起动，以使本条五款所要求的水泵立刻获得动力。如水泵由独立内燃机驱动，其所在位置应在被保护舱室失火时，不会影响对该机器的空气供应。

七、应采取措施以防止喷咀被水中的杂质或管系、喷咀、阀门和水泵的锈蚀所阻塞。

第十二条 自动喷水器、失火报警和探火系统

一、㈠任何所需的自动喷水器、失火报警和探火系统应能在任何时间立即进入工作，而不需依靠船员的操作。该系统应为湿管式，但对少量暴露管段可采用干管式，如主管机关认为这是一项必要的预防措施。该系统

的任何部位，如在使用中可能承受冰冻温度时，应有适宜的防冻措施。该系统应以必要的压力保持充水，且应按本条要求具有连续供水的设施。

㈡每一喷水器分区应有声、光信号报警设施，当任一喷水器动作时，能在一个或数个指示装置中自动发出信号。这种装置应显示出该系统所服务的任一处所发生的任何火灾征兆及其位置，并应集中于驾驶室或主消防控制站内，该处应配备一定的人员或设备，以保证该系统发出的任何警报可立刻被负责船员收到。这种报警系统的构造应能显示出该系统本身发生的任何故障。

二、㈠喷水器应分组成为若干分区，每一分区的喷水器不应多于200只，任一喷水器分区所服务的处所不得多于两层甲板，且只能布置在一个主竖区范围内，但如主管机关认为不致因此而降低船舶的防火性能者，可以允许一个喷水器分区所服务的处所多于两层甲板或其布置范围超过一个主竖区。

㈡每一喷水器分区只能用一个截止阀加以分隔。每一喷水器分区的这种停止阀应易于到达，其位置应有清楚的固定标志，并应有防止任何未经许可的人员操作这种停止阀的措施。

㈢在每一个分区的截止阀处和中心站内，均应设有指示此系统中压力的仪表。

㈣喷水器应为耐海上大气腐蚀的。在起居和服务处所中，喷水器应在68℃(155°F)至79℃(175°F)的温度范围内进入工作。但在例如干燥室等可能发生较高环境温度的处所除外。在这些处所内，喷水器的工作温度可以增加至不大于甲板顶最高温度加30℃(54°F)。

㈤在每一指示装置处应设有图或表，表示该装置所涉及的处所和有关每一分区的区段位置，并应有试验和保养的适当说明。

三、喷水器应设于顶部位置，并间隔成合适的图式，使喷水器所保护的标称面积，保持每分钟每平方米不少于 5 升（每平方呎 0·1加仑）的平均出水量。作为另一种方法，主管机关也可以准许使用能提供作适当散布的其他出水量的喷水器，其出水量业经使主管机关满意，表明其效能並不较上述为低。

四、㈠应该设有压力柜，其容积至少等于本款所述的充注水量的两倍。压力柜贮存的常备充注淡水量应等于本条五款㈡项所述水泵的一分钟排量，并应设有保持柜内空气压力的设备，当柜内常备充注淡水量被使用时，能保证柜内压力不低于喷水器的工作压力加上从柜底量至系统中最高位置喷水器的水头压力。应有在压力下补充空气和补充柜内充注淡水的适当设施。压力柜应设有显示柜内正确水位的玻璃水位表。

㈡应有防止海水进入柜内的设施。

五、㈠应设有一台专供喷水器自动连续喷水的独立动力泵。此泵应在压力柜内常备淡水完全排干之前，由于系统中压力降低而能自动进入工作。

㈡泵和管系应能维持在最高位置的喷水器所必需的压力，以保证按本条三款规定的出水量连续喷水，并足以同时复盖２８０平方米（３０００平方呎）的最小面积。

㈢泵的输出端，应装有一只试验阀连同一根开口的排水短管。该阀和管子的有效截面积，应在系统内保持本条四款㈠项所规定的压力时，足以放出该泵所要求的出水量。

㈣泵的海水进口，应尽能位于该泵所在处所。其布置应在船舶漂浮时，除检查或修理水泵外，不需因任何目的而切断水泵的海水供给。

六、喷水器泵和压力柜应位于远离任何甲类机器处所的位置，且不应位于需要由这种喷水器系统保护的任何处所内。

七、海水泵及自动失火报警和探火系统应有不少于两套的动力源。若泵的动力源为电力时，则应一为主发电机，另一为应急电源。泵的供电，应通过专设的单独馈电线，一路来自主配电板，另一路来自应急配电板。

馈电线应避免布置在厨房、机器处所和有高度失火危险的其他围闭处所，但为了通达相应的配电板而必需者除外；该线路应接通至设在喷水器泵附近的一只自动转换开关。在正常供电情况下，此开关应一直由主配电板供电，并应设计成当此路供电发生故障时，即能自动转换至由应急配电板供电。主配电板和应急配电板的开关均应有清楚的标记，并在正常情况下保持闭合状态。上述馈电线上不允许设有其他开关。报警和探火系统动力源中的一路应是应急电源。如果泵的动力源之一是内燃机时，则除应符合本条六款规定外，该机所在位置应在任何被保护处所失火时不影响对机器的空气供给。

八、喷水器系统和船上消防总管间应有连接，在连接处应设一只可锁制的截止止回阀，以防止水从喷水器系统中倒流至消防总管。

九、㈠每一喷水器分区应设有试验阀，用以放出相当于一只喷水器工作时的排水进行自动报警的试验；每一分区的试验阀应装在该分区的停止阀附近。

㈡应设有降低系统中压力来试验水泵自动工作的设施。

㈢在本条一款㈡项所述的指示装置位置之一，应设有能试验每一喷水器分区的报警和指示器的开关。

十、每一喷水器分区应备有备用喷水器头，其数量应取得主管机关的同意。

第十三条 自动失火报警和探火系统

对载客超过36人的客船的要求：

一、㈠任何所需的自动失火报警和探火系统应在任何时候和不需船员操作的情况下，能立即动作。

㈡每一探火器分区，应备有在任一探火器动作时，立即能在一个或数个指示装置中自动发出声光警报信号的设施。上述装置应显示出该系统所服务的任一处所的任何火灾征兆及其位置，并应集中于驾驶室或主防火控制站内，该处应配备一定的人员或设备，以保证该系统发出的任何警报可立刻被负责船员收到。这种报警系统的构造应能显示出该系统本身发生的任何故障。

二、探火器应分组成为若干分区。在每一分区中由该系统所服务的房间不应多于50间。所装有的探火器不应多于100只。一个探火器分区所服务的处所不得同时包括船舶的左右两舷，不得多于一层甲板，也不得超过一个主竖区；但如主管机关认为不致因此而降低船舶防火性能者，则可以准许一个探火器分区同时服务于船舶左右两舷和多于一层甲板。

三、该系统应能为任一被保护处所的不正常空气温度、不正常烟气浓度或显示初期火灾的其他因素所启动。对于测温式系统，当温度以每分钟不大于1℃（1·8°F）的速率向下述温度界限升高，在空气温度低于57℃（135°F）时不应动作，而在空气温度不超过74℃（165°F）

时即应进行动作。对于干燥室和类似的通常高温处所，根据主管机关的判断，其动作的许可温度可以较该类处所的甲板顶最高温度增加30℃（54°F）。对于测烟式系统，当通过的光束强度降低时应即动作。其降低量由主管机关决定；经主管机关同意，亦可允许采用其他同等有效的动作方法。探火系统不得用于探火以外的任何其他目的。

四、探火器可以采用脱开或闭合触点或其他适当的方法来操纵报警。探火器应装在顶部位置，并应予以适当保护以防止撞击或自然损伤。探火器应适合在海上大气中使用。探火器应装在开敞的位置，离开可能妨碍热气或烟气流向敏感元件的梁和其他部件。用闭合触点方法动作的探火器应为密闭接触型。其电路应在连续监视下以便发现故障情况。

五、要求设置探火设施的每一处所最少需装一只探火器，并且每37平方米（400平方呎）的甲板面积应有不少于一只探火器。在宽敞的处所，探火器应安排成有规则的图式，使任一探火器与另一探火器的间距不大于9米（30呎），或与舱壁的间距不大于4·5米（15呎）。

六、用于失火报警和探火系统的电气设备，至少应有二个动力源，其中之一应为应急电源。其动力应由专用的独立馈电线供给。该馈电线应接通至设在探火系统控制站中的转换开关。线路系统应避免布置在厨房、机器处所和具有高度失火危险的其他围闭处所，但为了该处所的探火或为了通达相应的配电板而必需者除外。

七、㈠在每一指示装置附近应贴示图或表，表明该装置所涉及的处所和有关每一分区的区段位置，并应有试验和保养的适当说明。

㈡应有用热气或烟气在探火器处试验探火器和指示装置是否正确动作的设施。

八、每一探火器分区应备有备用探火器头，其数量应取得主管机关的同意。对一切其他类型船舶的要求：

九、所需的一切探火系统，应能自动指示火灾的发生、征兆及其部位。指示器应集中于驾驶室或与驾驶室有直接连系的其他控制站内。主管机关可以准许将指示器分置于几个站室内。

十、客船所需的探火系统的电气设备，应有两个独立的动力源。其中之一应为应急电源。

十一、失火报警系统应能在本条九款所指的主要站室内同时发出音响和可见的信号。货舱的探火系统不需具有音响警报。

第十四条 消防员装备

消防员装备的组成：

一、个人配备包括：

㈠防护服，其材料应能保护皮肤不受火焰的热幅射，并不受蒸汽的灼伤和烫伤。衣服的外表应是防水的。

㈡长统靴和手套，由橡胶或其他绝缘材料制成。

㈢一顶能对撞击提供有效防护的硬头盔。

㈣一盏认可型的电安全灯（手提灯），其照明时间至少为三小时。

㈤一把主管机关同意的太平斧。

二、一具认可型的呼吸器，其型式可为下列之一：

㈠一具装有适宜空气泵和一段空气管的防烟盔或防烟罩，其空气管的长度应足够从开敞甲板到达货舱或机器处所的任一部分，且不受舱口或门口的妨碍。为符合本款要求，如空气管所需的长度超过３６米（１２０呎）

时，应按主管机关的决定用储压式呼吸器代替防烟盔或防烟罩或增设储压式呼吸器一具。

㈡一具储压式呼吸器，其可供使用的时限由主管机关决定。

每一呼吸器应有足够长度与强度的耐火救生绳一根，此绳应能用弹条卡钩系在呼吸器的背带上，或系在一条独立的腰带上，使在拉曳救生绳时防止呼吸器脱开。

第十五条 灭火设备的即刻可用

在一切新船和现有船舶中，灭火设备应保持良好状况，并在船舶整个航程期间能立刻使用。

第十六条 代用品的采用

本章内对任何新船和现有船舶所规定的任何特定型式的设备、用具、灭火剂或装置，如主管机关认为在不降低效能的情况下，可允许用其他型式的设备来代替。

第二节 载客超过36人客船的消防措施

第十七条 结构

船体、上层建筑、结构性舱壁、甲板及甲板室应以钢材或其他等效材料建造。为运用本章第三条七款所指的钢或其他等效材料的定义，“相应曝火时间”应按本章第二十条表列的完整性及隔热性标准来确定。例如当各种分隔诸如甲板或甲板室的两侧和两端，允许为“乙—0”级耐火完整性时，则“相应曝火时间”应为半小时。

如结构的任何部分为铝合金时，则应符合下列要求：

一、“甲”或“乙”级分隔的铝合金部件，除由主管机关认为是无负荷的结构外，在标准耐火试验的任何相应曝火时间内，其隔热层应能使结构心材的温度升高不超过其环境温度２００℃（３６０°F）。

二、应特别注意用于支承救生艇、筏的存放、降落和登乘区域以及支承“甲”和“乙”级分隔的铝合金圆柱、支柱和其他结构部件的隔热要求，以保证：

㈠对用于支承救生艇、筏区域以及“甲”级分隔的部件，在标准耐火试验的一小时之末，应适用本条一款规定的温升限度。

㈡对用于支承“乙”级分隔的部件，在标准耐火试验的半小时之末，应适用本条一款规定的温升限度。

三、甲类机器处所的顶盖及舱棚，应为足够隔热的钢结构；其上的任何开口（如有时），均应适当布置和保护，以防止火灾蔓延。

第十八条 主竖区和水平区

一、船体、上层建筑及甲板室应以“甲”级分隔分为若干主竖区。阶层和壁凹应减至最少量，但如属必需者，则亦应为“甲”级分隔。此分隔的隔热值，应符合本章第二十条中相应的表列规定。

二、舱壁甲板以上的形成主竖区限界面舱壁，只要实际可行应与直接在舱壁甲板以下的水密分舱舱壁位于同一直线上。

三、这种舱壁应由甲板延伸至甲板，并延伸至船壳或其他限界面。

四、如某一主竖区内以水平“甲”级分隔再分为水平区，用以对船上喷水器系统区域与非喷水器系统区域之间提供一适当的屏障时，此项水平分隔应延伸至相邻的两个主竖区舱壁，并延伸至该船的船壳或外部限界面，并应按本章第二十条表３所列的耐火隔热性和完整性的数值予以隔热。

五、为特殊用途而设计的船舶，例如汽车或铁路车辆渡船，如设置主竖区舱壁将影响船舶所预定的用途时，应以能控制和限制火灾的等效设施代替，并应由主管机关特殊认可。

倘若船上有特种类别的处所，则任何这种处所应符合本章第三十条的相应规定，且此规定与本章本节的其他要求有矛盾时应以第三十条的要求为准。

第十九条 主竖区内的舱壁

一、不要求为"甲"级分隔的一切舱壁，应至少为本章第二十条表列的"乙"级或"丙"级分隔。一切这种分隔可按本章第二十七条的规定，在其表面覆以可燃材料的贴面板。

二、一切走廊舱壁，当不要求为"甲"级分隔时，应为从甲板延伸至甲板的"乙"级分隔，但下列者除外：

㈠当在舱壁的两侧设置连续"乙"级天花板及（或）衬板时，连续天花板或衬板后面的舱壁部分，其所用材料应为"乙"级分隔结构所允许的厚度和成分，但在主管机关认为合理和可行的范围内，这种舱壁部分只需满足"乙"级完整性标准的要求；

㈡在具有符合本章第十二条规定的自动喷水器系统所保护的船舶上，以"乙"级材料建造的走廊舱壁可在走廊内天花板处终止。但此项天花板应为"乙"级分隔结构所允许的厚度和成分。尽管有本章第二十条的要求，在主管机关认为合理和可行的范围内，上述舱壁和天花板只需满足"乙"级完整性标准的要求。上述舱壁上的一切门和门框，应为不燃材料，其构造和安装应能提供可靠的耐火性能，并取得主管机关的同意。

三、除走廊舱壁外，一切要求为“乙”级分隔的舱壁，应由甲板延伸至甲板，并延伸至船壳或其他限界面；但如在舱壁的两侧均设有连续“乙”级天花板和（或）衬板时，此舱壁可终止于连续的天花板和衬板。

第二十条 舱壁及甲板的耐火完整性

一、除应符合本节其他条文关于舱壁及甲板耐火完整性的明确规定外，一切舱壁及甲板的最低耐火完整性应按本条表1至表4办理。如因船舶的任何特殊结构布置，致使任何分隔的最低耐火完整性数值难于从这些表中确定时，则该数值的确定应取得主管机关的同意。

二、下列要求应作为运用各表的指导原则：

㈠表1 适用于作为主竖区或水平区限界面的舱壁。

表2 适用于不作为主竖区或水平区限界面的舱壁。

表3 适用于在主竖区内形成阶层的甲板或作为水平区限界面的甲板。

表4 适用于在主竖区内不形成阶层的甲板也不作为水平区限界面的甲板。

㈡为了确定应用于相邻处所之间的限界面相应的耐火完整性标准，这些处所应按其失火危险程度分为下列①到⑭类。如因某一处所的内容和用途，在按本条规定进行分类存在疑问时，则此处所应按具有最严格的限界面要求的有关类别中的某一处所来处理。每类的名称只是举例，而不是限制。每类前面圈号内的数字是指表内相应的“列”或“行”数。

①控制站

设有应急电源和应急照明源的处所。

操舵室和海图室。

设有船舶无线电设备的处所。

失火控制和记录站。

位于推进机械处所外面的推进机械控制室。

设有集中失火报警设备的处所。

设有集中应急广播系统站和设备的处所。

②梯道

旅客和船员用的内部梯道、升降机、自动扶梯（完全设在机器处所内者除外）以及通往上述梯道等的环围。

至于仅环围于一层甲板的梯道，应作为未被防火门隔开的处所的一部分。

③走廊

旅客及船员的走廊。

④救生艇与救生筏的操作及登乘地点

作为救生艇、筏登乘与降落地点的开敞甲板处所和围蔽散步甲板处所。

⑤开敞甲板处所

救生艇、筏登乘与降落地点以外的开敞甲板处所和围蔽散步甲板处所。

露天处所（上层建筑及甲板室外面的处所）。

⑥较小失火危险的起居处所

设有限制失火危险的家具和装备的住室。

设有限制失火危险的家具和装备的公共处所。

设有限制失火危险的家具和装备的公共处所，且其甲板面积少于50平方米（540平方呎）者。

设有限制失火危险的家具和装备的办公室及诊疗室。

⑦中等失火危险的起居处所

与上述⑥同，但设有非限制失火危险的家具和装备。

设有限制失火危险的家具及装备的公共处所，但甲板面积等于或大于50平方米（540平方呎）者。

起居处所内孤立的橱柜及小储物间。

小卖部。

电影放映室及影片储藏室。

食物厨房（没有明火者）。

清洁用具橱柜（柜内不放可燃液体）。

实验室（室内不放可燃液体）。

药房。

小干燥间，且其甲板面积等于或少于4平方米（43平方呎）者。

贵重物品保管室。

⑧较大失火危险的起居处所

设有非限制失火危险的家具和装备的公共处所，且其甲板面积等于或大于50平方米（540平方呎）者。

理发室及美容室。

⑨盥洗室及类似处所

公共盥洗设施、淋浴室、洗澡室、厕所等。

小洗衣间。

室内游泳池场所。

手术室。

起居处所内孤立的服务配膳室。

个人盥洗设施应作为其所在处所的一部份。

⑩极少失火危险的舱（柜）、空室及辅机处所

构成船体结构部份的水舱。

空室及隔离空舱。

不设置具有压力润滑系统的机器的付机处所，且在该处所内禁止储藏可燃物体，例如：

通风机及空气调节机间；锚机室；舵机室；减摇装置机室；电力推进电动机间；分区配电板间及浸油式电力变压器（１０千伏安以上）以外的纯电气设备间；轴隧及管隧；泵及冷藏机（不抽送或使用易燃液体）的处所。

为上述处所服务的封闭围壁通道。

其他封闭围壁通道。例如管子及电缆的围壁通道。

⑪具有中等失火危险的辅机处所、装货处所、特种处所、货油舱与其他油舱（柜），以及其他类似处所

货油舱。

货舱、围壁通道及舱口。

冷藏舱。

燃油舱（柜），如其设在没有机器的单独处所内者。

允许储藏可燃物体的轴隧及管隧。

在⑩类中所述的辅机处所，且在该处所内允许设置压力润滑系统的机器或储藏可燃物体者。

燃油加油站。

设有浸油式电力变压器（１０千伏安以上）的处所。

设有由汽轮机及往复式蒸汽机驱动的辅发电机处所，以及功率为112千瓦和112千瓦以下小内燃机驱动的应急发电机、喷水器、洒水器或消防泵、舱底泵等。

特种处所（仅表1及表3所适用者）。

为用于上述处所的封闭围壁通道。

⑫机器处所及主厨房

主推进机械舱（电力推进电动机舱除外）及锅炉舱。

除前述⑩及⑪类的辅机处所外，设有内燃机或其他燃油、加热或泵装置的辅机处所。

主厨房及其附属设施。

上述处所的围壁通道及舱棚。

⑬储藏室、车间、配膳室等

不附属于厨房的主配膳室。

主洗衣间。

大干燥间，其甲板面积大于4平方米（4.3平方呎）者。

杂物间。

邮件舱及行李室。

垃圾间。

车间（不属于机器处所、厨房等的一部分者）。

⑭贮藏易燃液体的其他处所

灯间。

油漆间。

内装易燃液体的储藏室（包括储藏染料、药品等）。

实验室（室内放置易燃液体）。

㈢如果以一个数值表明两个处所之间的限界面的耐火完整性时，则此数值应适用于各种情况。

㈣凡未设有符合本章第十二条规定的自动喷水器系统的某一主竖区或水平区内的两个处所之间，或二个均未被此种自动喷水器系统保护的主竖区或水平区之间的限界面，在确定其所适用的耐火完整性标准时，应采用表列两个数值中的较高值。

㈤凡设有符合本章第十二条规定的自动喷水器系统的某一主竖区或水平区内的两个处所之间，或二个均由此种自动喷水器系统保护的主竖区或水平区之间的限界面，在确定其所适用的耐火完整性标准时，应采用表列两个数值中的较低值。当一个喷水器系统区域和一个非喷水器系统区域在起居处所及服务处所内相遇时，此两区域之间的分隔应采用表列两个数值中的较高值。

㈥当相邻处所属于同一类别且在表中角注为"1"者，如主管机关认为不必要时，则上述处所之间可不必设置舱壁或甲板。例如在⑫类内厨房及其附属的配膳间之间，如果配膳室的舱壁和甲板能保持厨房限界面的完整性，则不需要求设置舱壁。但无论如何，厨房及机器处所之间应设置舱壁，即使这两个处所都属于⑫类。

㈦在表中角注为"2"者，只在至少相邻处所之一是由符合本章第十二条规定的自动喷水器系统所保护时，可以允许使用较低的隔热值。

㈧尽管本章第十九条有所规定，当在表中只标有一长划时，则对限界面的材料或完整性不作特殊要求。

㈨关于⑤类处所，主管机关应确定表1还是表2中的隔热值适用于甲板室及上层建筑的末端，以及表3还是表4中的隔热值适用于露天甲板。如主管机关认为不必环围时，表1至表4的⑤类处所就不一定要求环围。

作为主竖区或水平区限界面的舱壁

表 1

处所		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
控制站	①	甲-60	甲-30	甲-30	甲-0	甲-0	甲-60	甲-60	甲-60	甲-0	甲-0	甲-60	甲-60	甲-60	甲-60
梯道	②		甲-0	甲-0	甲-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-60 甲-15	甲-0	甲-0	甲-30	甲-60	甲-15 甲-0	甲-60
走廊	③			甲-0	甲-0	甲-0	甲-0	甲-30 甲-0	甲-30 甲-0	甲-0	甲-0	甲-30	甲-60	甲-15 甲-0	甲-60
救生艇与救生筏操作及登乘处点	④				—	—	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-60	甲-0	甲-60
开敞甲板处所	⑤					—	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
较小失火危险的起居处所	⑥						甲-15 甲-0	甲-30 甲-0	甲-30 甲-0	甲-0	甲-0	甲-15 甲-0	甲-30	甲-15 甲-0	甲-30
中等失火危险的起居处所	⑦							甲-30 甲-0	甲-60 甲-15	甲-0	甲-0	甲-30 甲-0	甲-60	甲-30 甲-0	甲-60
较大失火危险的起居处所	⑧								甲-60 甲-15	甲-0	甲-0	甲-60 甲-15	甲-60	甲-30 甲-0	甲-60
盥洗室及类似处所	⑨									甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
极少失火危险的舱（柜）、空室及辅机处所	⑩										甲-0	甲-0	甲-0	甲-0	甲-0
具有中等失火危险的辅机处所、杂货处所、特种处所、货油舱与其他油舱（柜），以及其他类似处所	⑪											甲-0	甲-60	甲-0	甲-60
机器处所及主厨房	⑫												甲-60	甲-30 甲-15	甲-60
储藏室、车间、配膳间等	⑬													甲-0	甲-30
贮藏易燃液体的其他处所	⑭														甲-60

表 2

不作为主竖区或水平区限界面的舱壁

处 所	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
控制站 ①	乙-0[1]	甲-0	甲-0	甲-0	甲-0 乙-0	甲-60	甲-60	甲-60	甲-0	甲-0	甲-60	甲-60	甲-60	甲-60
梯道 ②		甲-0[1]	甲-0	甲-0	甲-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-0	甲-0	甲-15	甲-30	甲-15 甲-0	甲-30
走廊 ③			丙	甲-0	甲-0 乙-0	乙-0	乙-15 乙-0	乙-15 乙-0	乙-0	甲-0	甲-15	甲-30	甲-0	甲-30 甲-0
救生艇与救生筏操作及登乘地点 ④				—	—	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-15	甲-0	甲-15 甲-0
开敞甲板处所 ⑤					—	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0	甲-0	甲-0	甲-0 乙-0	甲-0 乙-0
较少失火危险的起居处所 ⑥						乙-0 丙	乙-15 丙	乙-15 丙	乙-0 丙	甲-0	甲-15 甲-0	甲-30	甲-0	甲-30 甲-0
中等失火危险的起居处所 ⑦							乙-15 丙	乙-15 丙	乙-0 丙	甲-0	甲-15 甲-0	甲-60	甲-15 甲-0	甲-60 甲-15
较大失火危险的起居处所 ⑧								乙-15 丙	乙-0 丙	甲-0	甲-30 甲-0	甲-60	甲-15 甲-0	甲-60 甲-15
盥洗室及类似处所 ⑨									丙	甲-0	甲-0	甲-0	甲-0	甲-0
极少失火危险的舱（柜）、空室及辅机处所 ⑩										甲-0[1]	甲-0	甲-0	甲-0	甲-0
具有中等失火危险的辅机处所、装货处所、特种处所、货油舱与其他油舱（柜），以及其他类似处所 ⑪											甲-0[1]	甲-0	甲-0	甲-30[2] 甲-15
机器处所及主厨房 ⑫												甲-0	甲-0	甲-60
储藏室、车间、配膳间等 ⑬													甲-0[1]	甲-0
贮藏易燃液体的其他处所 ⑭														甲-30[2] 甲-15

表 3

在主竖区内形成阶层的甲板或作为水平区限界面的甲板

甲板下处所 \ 甲板上处所	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
控制站 ①	甲-60	甲-60	甲-30	甲-0	甲-0	甲-15	甲-30	甲-60	甲-0	甲-0	甲-30	甲-60	甲-15	甲-60
梯道 ②	甲-15	甲-0	甲-0	甲-0	甲-0	甲-0	甲-15 甲-0	甲-15 甲-0	甲-0	甲-0	甲-0	甲-60	甲-0	甲-60
走廊 ③	甲-30	甲-0	甲-0	甲-0	甲-0	甲-0	甲-15 甲-0	甲-15 甲-0	甲-0	甲-0	甲-0	甲-60	甲-0	甲-60
救生艇与救生筏操作反登乘地点 ④	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
开敞甲板处所 ⑤	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
较小失火危险的起居处所 ⑥	甲-60	甲-30 甲-0	甲-15 甲-0	甲-0	甲-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-0	甲-0	甲-15 甲-0	甲-15	甲-0	甲-15
中等失火危险的起居处所 ⑦	甲-60	甲-60 甲-15	甲-30 甲-0	甲-15 甲-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-60 甲-15	甲-0	甲-0	甲-30 甲-0	甲-30	甲-0	甲-30
较大失火危险的起居处所 ⑧	甲-60	甲-60 甲-15	甲-60 甲-15	甲-60 甲-15	甲-0	甲-30 甲-0	甲-60 甲-15	甲-60 甲-15	甲-0	甲-0	甲-30 甲-0	甲-60	甲-15 甲-0	甲-60
盥洗室及类似处所 ⑨	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
极少失火危险的舱（柜）、室室及辅机处所 ⑩	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
具有中等失火危险的辅机处所、卷货处所、特种处所、供油舱与其他油舱(柜)，以及其他类似处所 ⑪	甲-60	甲-60	甲-60	甲-60	甲-0	甲-30 甲-0	甲-60 甲-15	甲-60 甲-15	甲-0	甲-0	甲-0	甲-30	甲-30[2] 甲-0	甲-30
机器处所及主厨房 ⑫	甲-60	甲-60	甲-60	甲-60	甲-0	甲-60	甲-60	甲-60	甲-0	甲-0	甲-60	甲-60	甲-60	甲-60
储藏室、车间、配膳间等 ⑬	甲-60	甲-60 甲-15	甲-30 甲-0	甲-15	甲-0	甲-15 甲-0	甲-30 甲-0	甲-60 甲-15	甲-0	甲-0	甲-0	甲-30	甲-0	甲-30
贮藏易燃液体的其他处所 ⑭	甲-60	甲-60	甲-60	甲-60	甲-0	甲-60	甲-60	甲-60	甲-0	甲-0	甲-60	甲-60	甲-60	甲-60

表4

在主竖区内不形成阶层的甲板也不作为水平区限界面的甲板

甲板下处所 \ 甲板上处所	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
控制站 ①	甲-30 甲-0	甲-30 甲-0	甲-15 甲-0	甲-0	甲-0 乙-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-0	甲-0	甲-0	甲-60	甲-0	甲-60 甲-15
梯　道 ②	甲-0	甲-0	甲-0	甲-0	甲-0 乙-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-30	甲-0	甲-30 甲-0
走　廊 ③	甲-15 甲-0	甲-0	甲-0 乙-0	甲-0	甲-0 乙-0	甲-0 乙-0	甲-15 乙-0	甲-15 乙-0	甲-0 乙-0	甲-0	甲-0	甲-30	甲-0	甲-30 甲-0
救生艇与救生筏操作及登乘地点 ④	甲-0	甲-0	甲-0	甲-0	—	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0	甲-0	甲-0	甲-0	甲-0
开敞甲板处所 ⑤	甲-0	甲-0	甲-0 乙-0	甲-0	—	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0	甲-0	甲-0	甲-0 乙-0	甲-0
较小失火危险的起居处所 ⑥	甲-60	甲-15 甲-0	甲-0	甲-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0	甲-0	甲-15 甲-0	甲-0	甲-15 甲-0
中等失火危险的起居处所 ⑦	甲-60	甲-30 甲-0	甲-15 甲-0	甲-15 甲-0	甲-0 乙-0	甲-0 乙-0	甲-15 乙-0	甲-30 乙-0	甲-0 乙-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-0	甲-30 甲-0
较大失火危险的起居处所 ⑧	甲-60	甲-60 甲-15	甲-60 甲-0	甲-30 甲-0	甲-0 乙-0	甲-15 乙-0	甲-30 乙-0	甲-60 乙-0	甲-0 乙-0	甲-0	甲-30 甲-0	甲-30 甲-0	甲-0	甲-30 甲-0
盥洗室及类似处所 ⑨	甲-0	甲-0	甲-0 乙-0	甲-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0 乙-0	甲-0	甲-0	甲	甲-0	甲-0
极少失火危险的舱（柜）、空室及辅机处所 ⑩	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0	甲-0
具有中等失火危险的辅机处所、卷货处所、特种处所、货油舱与其他油舱(柜)，以及其他类似处所 ⑪	甲-60	甲-60 甲-15	甲-60 甲-15	甲-30 甲-0	甲-0	甲-0	甲-15 甲-0	甲-30 甲-0	甲-0	甲-0	甲-0[1]	甲-0	甲-0	甲-30[2] 甲-15
机器处所及主厨房 ⑫	甲-60	甲-60	甲-0	甲-60	甲-0	甲-60	甲-60	甲-60	甲-0	甲-0	甲-30	甲-30	甲-0	甲-60
储藏室、车间、配膳间等 ⑬	甲-60	甲-30 甲-0	甲-15 甲-0	甲-15 甲-0	甲-0 乙-0	甲-15 甲-0	甲-30 甲-0	甲-30 甲-0	甲-0 乙-0	甲-0	甲-0	甲-0	甲-0	甲-15[2] 甲-0
贮藏易燃液体的其他处所 ⑭	甲-60	甲-60 甲-30	甲-60 甲-30	甲-60	甲-0	甲-30 甲-	甲-60 甲-15	甲-60 甲-	甲-0	甲-0	甲-30[2] 甲-0	甲-30[2] 甲-0	甲-0	甲-30[2] 甲-0

三、连续“乙”级天花板或衬板连同其甲板或舱壁可以认为全部或部分地起到分隔所要求的隔热性和完整性的作用。

四、在批准结构的防火细节时，主管机关应考虑所要求的隔热层在交接点和终止点导热的危险。

第二十一条 脱险通道

一、除机器处所外，一切旅客及船员出入处所以及在船员经常使用的处所内，应布置有梯道与梯子，以提供到达救生艇、筏登乘甲板的方便的脱险通道，特别应符合下列规定：

㈠在舱壁甲板以下，从每一水密舱或类似限界的处所或处所群，应有两个脱险通道，其中至少一个不得利用水密门。但主管机关对有关处所的性质和部位以及对经常居住或使用这些处所的人数经过恰当的考虑后，可以免除其中一个脱险通道。

㈡在舱壁甲板以上，从每一主竖区或类似限定的处所或处所群，至少应有两个脱险通道，其中至少应有一个能通达形成垂直脱险的梯道。

㈢按照本条一款㈠及㈡项要求的脱险通道应至少有一个是利用易于到达的环围的梯道。此梯道应提供连续的防火遮蔽，自其起点的一层起到达适当的救生艇、筏的登乘甲板，或到达此梯道所至的最高层，以何者为高而定。如果主管机关根据本条一款㈠项的规定允准免除时，则仅有的一个脱险通道应能提供为主管机关满意的安全通路。梯道的宽度、数目及连续性应取得主管机关的同意。

㈣自梯道环围至救生艇、筏登乘区域的出入口保护，应取得主管机关的同意。

㈤升降机不得视为构成所要求的脱险通道之一。

㈥仅用于一个处所及处处所内阳台的梯道，不得视为构成所要求的脱险通道之一。

㈦如无线电台没有通往露天甲板的直接通道，则此电台应设有两个脱险通道。

㈧不允许设置长度超过13米（43呎）的一端不通的走廊。

二、㈠在特种处所内，舱壁甲板以上或以下的脱险通道的数目及布置应取得主管机关的同意，其到达登乘甲板的通道的安全性一般应至少等效于本条一款㈠、㈡、㈢、㈣及㈤项的规定。

㈡船员经常使用的机器处所的脱险通道之一应避免直接进入任何特种处所。

三、每一机器处所应设置两个脱险通道。特别应符合下列规定：

㈠位于舱壁甲板以下的处所，其两个脱险通道应由下列情况之一所组成：

1.尽可能远离的两部钢质梯子引向该处所上部同样远离的门，并从该门设有通道通往适当的救生艇、筏的登乘甲板。其中一部梯子从该处所的下部起至该处所外面的一个安全地点，应能提供连续的防火遮蔽；或

2.一部钢质梯子引向该处所上部的一扇门，并从该门可以进到登乘甲板；以及一扇能由每一面开关的钢质门，并从该门设有通往登乘甲板的安全脱险通道。

㈡如该处所系位于舱壁甲板以上，则应设有尽可能远离的两个脱险通道。而上述通道的门应位于从该处所能通往适当的救生艇、筏登乘甲板的地方。这些通道如需要使用梯子时，应为钢质梯。

但是，对不满１０００总吨的船舶，主管机关经考虑了每一处所上部的宽度及布置后，可免除其中的一个脱险通道；而对１０００总吨或以上的船舶，若任一处所有一扇门或一部钢梯即可供提抵达登乘甲板的安全通道，则主管机关经考虑了这一处所的性质、位置以及该处所是否经常有人使用后，可免除其中的一个脱险通道。

第二十二条 起居处所与服务处所内梯道与升降机的保护

一、除主管机关特准使用其他等效材料者外，一切梯道应为钢质结构，并应环围在“甲”级分隔之内，还应在一切开口处具有有效的关闭装置，但下列者除外：

㈠仅连接两层甲板的梯道，若在一个甲板间具有适当的舱壁或门以保持甲板的完整性者，则不需环围。当梯道在一个甲板间被封闭时，其梯道环围应按照本章第二十条表列对甲板的要求加以保护。

㈡完全位于公共处所内的梯道，可装于该处所的开敞部位。

二、梯道环围应直接通至走廊，并考虑到紧急时可能使用该处的人数而应具有足够的面积，以免拥挤。如属可行，梯道环围不得直接通往住室、生活用橱（柜）或其他存有可燃物品可能起火的环围处所。

三、升降机围壁通道的装设，应能防止烟及火焰从一个甲板间通至另一个甲板间，并应设置关闭装置以控制气流及烟气的流通。

第二十三条 “甲”级分隔上的开口

一、凡电缆、管子、围壁通道、导管等，以及桁材、横梁或其他结构穿过“甲”级分隔之处，应采取措施以保证分隔的耐火性不受损害，並应遵守本条七款的规定。

二、凡必需穿过主竖区舱壁的通风导管，应在舱壁邻近装设永效的自动关闭的挡火闸，此种挡火闸还应能从舱壁的每一面都可用手关闭。其操

纵位置应易于到达，并用能反光的红色标志之。舱壁与挡火闸之间的导管应为钢质或其他等效材料，必要时并应符合本条一款的隔热标准。挡火闸应至少在舱壁的一侧装设可见的指示器，以表示挡火闸是否处于开启位置。

三、除装货处所之间、特种处所之间、储藏室之间与行李室之间的舱口以及这些处所与露天甲板之间的舱口外，一切开口应设有永久附连于其上的关闭装置。其耐火效能至少应与其所在的分隔相等。

四、"甲"级分隔上的所有门门框及其在关闭时的制牢装置，其构造应尽实际可行提供等效于其所在舱壁的耐火性以及阻止烟和火焰穿过的效能，这些门及门框应由钢材或其他等效材料建造。水密门则不需隔热。

五、每个门应能在舱壁的每一面，仅需一人即能将其开启及关闭。

六、主竖区舱壁及梯道围壁上的防火门，除动力操纵的水密门及经常锁闭的水密门外，应为在向关闭方向反向倾斜3½°时仍能将门关闭的自闭式门。门的关闭速度，需要时应能控制，以防止对人身发生不应有的危险。所有这种自闭式防火门，除经常关闭者外，应能同时地或成组地将门由控制站予以脱开，也应能个别地在门的位置处就地脱开。脱开机构的设计，应在控制系统万一损坏时，此门能自动关闭；但如采用认可的动力操纵水密门，可以认为达到这一目的。不能由控制站脱开的门背钩，不允许使用。当允许使用自由门时，它们应具有受防火门脱开系统控制的自动插上的插销装置。

七、如某一处所由符合本章第十二条规定的自动喷水器系统保护或设有连续的"乙"级天花板，则在主竖区内未形成阶层亦不作为水平区限界面的甲板上的开口应能适度地紧密关闭，并且在主管机关认为合理和实际可行的范围内。这类甲板应满足"甲"级完整性的要求。

八、对船舶外部限界面的“甲”级完整性的要求不适用于玻璃隔板、窗及舷窗。同样，对“甲”级完整性的要求也不适用于上层建筑及甲板室的外门。

第二十四条 “乙”级分隔上的开口

一、凡为了通过电缆、管子、围壁通道、导管等或为了安装通风导管端头、照明装置及类似装置而穿过“乙”级分隔之处，应采取措施以保证分隔的耐火性不受损害。

二、“乙”级分隔的门及门框以及它们的制牢装置，除在这些门的下部可以允许设置通风开口外，应提供尽可能等效于此分隔耐火性能的关闭方法。如果这种通风开口系开在门上或在门以下时，则一个或几个这种开口的总净面积不得超过0·05平方米（7 8平方吋）。如这种开口系开在门上，则此开口应设有不燃材料制成的栅格。这些门应是不燃性的。

三、对船舶外部限界面的“乙”级完整性的要求不适用于玻璃隔板、窗及舷窗。同样，对“乙”级完整性的要求也不适用于上层建筑及甲板室的外门。

四、当设有符合本章第十二条规定的自动喷水器系统时：

㈠在主竖区内未形成阶层亦不作为水平区限界面的甲板上开口应能适度地紧密关闭，并且在主管机关认为合理和实际可行的范围内，这类甲板应满足“乙”级完整性的要求。

㈡“乙”级材料的走廊舱壁上的开口，应按本章第十九条的规定加以保护。

第二十五条 通风系统

一、通风机的分布，一般应使通往各处的通风导管保持在同一主竖区内。

二、通风系统穿过甲板时，除应按照本章第二十三条有关甲板耐火完整性要求外，还应采取预防措施以减少烟及炽热气体通过该系统从一甲板间处所至另一甲板间处所的可能性。除按本条中的隔热要求外，在必要时，垂直导管应按本章第二十条相应各表的要求予以隔热。

三、一切通风系统的主要进风口及出风口应能在被通风处所的外部加以关闭。

四、除装货处所外，通风导管应用下列材料建造：

㈠截面面积不小于0·075平方米（116平方吋）的导管以及用于超过一个甲板间处所的所有垂直导管，应用钢材或其他等效材料建造。

㈡截面面积小于0·075平方米（116平方吋）的导管应用不燃材料建造。如这些导管穿过“甲”级或“乙”级分隔之处，应适当考虑保证该分隔的耐火完整性。

㈢截面面积一般不超过0·02平方米（31平方吋），长度又不大于2米（79吋）的短节导管，倘若满足下列所有条件，则不需使用不燃材料：

1.此导管是用经主管机关同意的限制失火危险的材料建造；

2.此导管只用作通风系统的末端；

3.此导管的位置，不是位于沿其长度量至穿过“甲”或“乙”级分隔处，包括“乙”级连续天花板在内，为0·6米（24吋）的范围内。

五、如梯道环围设有通风时，其导管或若干导管（如设有时），应单独从通风机室引出，而与通风系统的其他导管分开，并且不得用于其他任何处所。

六、除机器和装货处所的通风以及根据本条八款可能要求的任何交替供气的系统外，一切动力通风应设有控制装置，将其集中在能从两个尽可能

远离的地点中的任何一个地点将所有的通风机停止。用于机器处所的动力通风的控制装置，也应集中而能从两个地点加以控制，其中一个应设在机器处所的外面。用于装货处所动力通风系统的风机，应能在该处所外面的一个安全地点将其停止。

七、厨房炉灶的排气管道，在其通过起居处所或内含可燃材料的处所的地方，应按“甲”级分隔建造。每一排气管道应设有：

㈠一个易于拆下的集油器，以便于清洁；

㈡一只挡火闸，位于导管的下端；

㈢能在厨房内操纵的关闭抽风机的装置；

㈣在管道内进行灭火用的固定设施。

八、对机器处所外面的控制站，应采取实际可行的措施来保证使通风、能见度和烟气排除得以保持，以便在失火时，位于其中的机械和设备可以受到监管并继续有效地运转。应设有交替的和分开的供气设施；两个供气源的空气吸口，其分布应使两个吸口同时吸进烟气的危险性减至最小。主管机关可决定上述要求不必适用于位在开敞甲板和开口通向开敞甲板的控制站，或在具有同等效用的局部关闭装置的处所。

九、用于甲类机器处所通风的导管，一般不应通过起居处所、服务处所或控制站。但主管机关可以允许放宽此项要求，如果：

㈠导管用钢材建造，并且隔热至“甲－60”级标准；或

㈡导管用钢材建造，且在靠近穿过限界面处设有一自动挡火闸，并且从机器处所到挡火闸以外至少5米（16呎）处隔热至“甲－60”级标准。

十、用于起居处所、服务处所或控制站的通风导管，一般不得通过甲类机器处所；但如这些导管用钢材建造并在靠近穿过限界面处设有自动挡火闸者，则主管机关可以允许放宽此项要求。

第二十六条 窗与舷窗

一、除适用本章第二十三条八款及二十四条三款的规定者外，起居处所、服务处所及控制站内各舱壁上的一切窗及舷窗，其构造应能保持其所在该型舱壁的完整性要求。

二、尽管有本章第二十条各表的要求，但是：

㈠起居处所、服务处所及控制站与露天隔开的舱壁上的一切窗及舷窗应有钢材或其他适宜材料建造的框架。玻璃应用金属镶边或镶嵌加以固定。

㈡应特别注意面向露天的或环围的救生艇和救生筏登乘区域的窗的耐火完整性，并特别注意上述区域下面的窗，当这些窗的位置因失火而受损时，将会阻碍救生艇或筏的放下或人员登入者。

第二十七条 可燃材料的限制使用

一、除装货处所、邮件舱、行李室或服务处所的冷藏室外，一切衬板、地板、天花板及隔热物应为不燃材料。为了实用或美术处理而用作某一处所内部分隔的局部舱壁或甲板，也应为不燃材料。

二、用于冷却设备系统的与隔热物连用的防潮层和粘合剂以及管系装置的隔热物，不需要为不燃材料，但应保持在实际可行的最低数量，并且它们的外露表面应具有经主管机关满意的限制火焰蔓延的性质。

三、一切起居处所及服务处所内的舱壁、衬板及天花板，可以装有可燃的镶片，但此项镶片的厚度不得超过2毫米（1/12吋）；但走廊、梯道环围及控制站内的镶片除外，在这些处所内，镶片的厚度不得超过1·5毫米（1/17吋）。

四、任何起居处所及服务处所内的可燃面板、嵌条、饰片及镶片的总体积，不得超过相当于各围壁及天花板的联合面积上厚2·5毫米（1／10吋）镶片的体积。如船舶设有符合本章第十二条规定的自动喷水器系统，则上述体积可以包含一些用于建立“丙”级分隔的可燃材料。

五、走廊或梯道环围内的所有外露表面，以及起居处所、服务处所和控制站内隐蔽或不能到达处的表面，均应具有低播焰性。*

六、过道及梯道环围内的家具应保持为最低数量。

七、用于外露的内部表面上的油漆、清漆及其他表面涂料，其性质应经主管机关判断不会造成过分的失火危险，并应不致产生过量的烟或其他毒性。

八、在起居处所、服务处所及控制站内使用的甲板基层敷料(如涂敷时)应为在高温时不易着火或不会发生毒性或爆炸性危险的认可材料。**

九、废纸箱应用不燃材料制造，其边和底部应为实心。

第二十八条 杂项

适用于船舶所有部份的要求

一、穿过“甲”级或“乙”级分隔的管子，应为主管机关经考虑该分隔所需经受的温度而认可的材料。输送油类或可燃液体的管子，应为主管机关经考虑失火危险而认可的材料。在热力作用下易于失效的材料，不应用作舷边流水管、污水排泄管及其他靠近水线和因失火时该材料失效后将会造成浸水危险的部位的出水口。

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* 参看海协组织通过的海大166（特Ⅳ届）决议

“关于评定材料的防火性能的准则”。

** 参看海协组织通过的海大214（Ⅶ届）决议

“关于甲板基层敷料试验程序改进的暂行准则”。

适用于起居和服务处所、控制站、走廊和梯道的要求

二、㈠封闭在天花板、镶板或衬板后面的空隙应以紧密安装的且间距不超过1 4米（4 6呎）的挡风条作适宜的分隔。

㈡上述空隙，包括梯道、围壁通道等衬板后面的空隙，在垂直方向上，应在每层甲板处加以封堵。

三、天花板及舱壁的构造应在不减损其防火效能的情况下，使消防巡逻人员能探知隐蔽和不易到达处所的烟源，但主管机关认为该处所不致产生失火危险者可以除外。

第二十九条 自动喷水器、失火报警和探火系统或自动失火报警和探火系统

凡适用本节所规定的任何船舶，除实质上没有失火危险的处所（例如空室、盥洗室等）外，在所有起居处所和服务处所内的不论是垂直的或水平的每一独立分隔区内，以及主管机关认为必要时在控制站内，均应普遍设置下列两者之一：

一、符合本章第十二条规定的一种认可型式的自动喷水器以及失火报警和探火系统，其设置和布置足以保护上述处所；

二、符合本章第十三条规定的一种认可型式的自动失火报警和探火系统，其设置和布置足以探知上述处所内火灾的发生。

第三十条 特种处所的保护

适用于不论舱壁甲板以上或以下特种处所的规定

一、通则

㈠构成本条规定的基本原则，是在特种处所内按通常的主竖区进行划分可能不切实际，但在这些处所内必须以水平区的概念和设置有效的固定灭火系统作为基础来获得等效的保护。根据这一概念，在本条范围内，倘若水平

区的总高度不超过10米（33呎），则一个水平区可以包括多于一层甲板的若干特种处所。

㈡本章第二十三条及二十五条内所规定的为保持主竖区完整性的一切要求，应同样适用于形成分隔各水平区之间以及分隔水平区与船舶其他部分之间的限界面的各甲板和舱壁。

二、结构性保护

㈠特种处所的限界面舱壁应按本章第二十条表1⑪类处所的要求予以隔热，同时水平限界面应按该条表3⑪类处所的要求予以隔热。

㈡驾驶室应设有指示器，当进出特种处所的任一防火门关闭时，这些指示器应能显示出来。

三、固定式灭火系统*

每一特种处所，应设有人力操纵的经认可的固定式压力水雾灭火系统。此系统应能保护该处所内任何甲板与车辆平台（如设有时）的所有部分。但是主管机关可以允许使用任何其他类型的固定式灭火系统，如此项系统系经在某一特种处所内作模拟的流动汽油火灾条件的全面试验，证明其对控制上述处所内可能发生火灾的效果並不低于压力水雾灭火系统。

四、巡逻与探火

㈠在特种处所内应保持有效的巡逻制度。在整个航行期间，如果任何上述处所未保持连续的消防值班，则在该处所内应装设认可型的自动探火系统。

㈡整个特种处所应设有必要的手动报警器，并应在这些处所的每一出口处附近设置一个。

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* 参看海协组织通过的海大123（Ⅴ届）决议

“关于特种处所的固定式灭火系统的建议案”。

五、灭火设备

每一特种处所内应设有：

㈠若干附有消防水带和认可型两用水枪的消火栓，其布置应能使至少二股水柱射到该处所的任何部分，而每股水柱是由不连接于同一消火栓的单根消防水带供水；

㈡至少三具水雾器；

㈢一具符合本章第七条四款规定的可携式泡沫器装置，但船上须备有供特种处所使用的这种装置至少二具；

㈣主管机关认为足够数量的认可型手提式灭火机。

六、通风系统

㈠特种处所应设有有效的动力通风系统，每小时至少能足以更换空气10次。这些处所的动力通风系统应与其他通风系统完全分开，并且当这些处所内载有车辆时，应一直在运转。在装卸车辆期间，主管机关可以要求增加更换空气的次数。

㈡此项通风应能防止空气层化和形成空气囊。

㈢驾驶室应设有指示装置，以显示出所需通风量的任何损失或减少。

仅适用于舱壁甲板以上特种处所的补充规定

七、流水口

鉴于使用固定式压力水雾灭火系统的结果，使甲板上大量积水，因而可能导致严重的稳性损失，流水口的安设，应能保证上述积水迅速地直接排出舷外。

八、防止易燃气体着火的措施

可以形成易燃气体着火源的设备，特别是电气设备与线路，应安装在甲板以上至少为450毫米（18吋），但是，如果为了船舶安全操作的

需要，经主管机关同意上述电气设备与线路的安设低于此高度时，则此电气设备与线路应为经认可在汽油与空气爆炸性混合物中适用的一种型式。设在甲板以上超过４５０毫米（１８吋）的电气设备应是封闭的并有保护的型式，以防止火花逸出。凡援引甲板以上４５０毫米（１８吋）的高度面时应理解为在每层甲板上均载有车辆，并且可能积聚爆炸气体。

㈡电气设备及线路如果安装在排气通风导管内，则应为经认可在汽油与空气爆炸性混合物中适用的一种型式，并且任何排气导管的出口，经考虑其他可能的着火源，应设在一个安全的地点。

仅适用于舱壁甲板以下特种处所的补充规定

九、舱底抽水及排水

鉴于使用固定式压力水雾灭火系统的结果，使甲板上或双层底舱顶上大量积水，因而可能导致严重的稳性损失，主管机关可以在本公约第二章甲第十八条各项规定之外，要求增设舱底抽水与排水设施。

十、防止易燃气体着火的措施

㈠如装有电气设备及线路，它们应为在汽油与空气爆炸性混合物中适用的型式，其他可以构成易燃气体着火源的设备，不得使用。

㈡电气设备及线路，如果安装在排气通风导管内，则应为经认可在汽油与空气爆炸性混合物中适用的一种型式，并且任何排气导管的出口，经考虑其他可能的着火源，应设在一个安全的地点。

第三十一条　除特种处所外用于载运油箱中备有自用燃料的机动车辆的装货处所的保护

在任何装货处所内（特种处所除外），载有在油箱中备有自用燃料的机动车辆时，应符合以下的规定：

一、探火

应设有一个认可的探火与失火报警系统。

二、灭火装置

㈠应设有符合本章第八条规定的固定式气体灭火系统。其布置应保证气体迅速有效地注入该处所。但如果设置的是二氧化碳系统，则其所提供的自由气体的容积应至少等于此种最大的能够密封的装货处所总容积的百分之四十五。也可以设置任何能提供等效保护能力的其他固定式气体灭火系统或固定式高膨胀泡沫灭火系统。

㈡应设有供任何这种处所使用的经主管机关认为足够数量的认可型手提式灭火机。

三、通风系统

㈠在任何上述装货处所内，应设有有效的动力通风系统，每小时至少足以更换空气１０次。供此种装货处所的这一通风系统应与其他通风系统完全分开，并且当这些处所内载有车辆时，应一直在运转。

㈡此项通风应能防止空气层化和形成空气囊。

㈢驾驶室应设有指示器，以显示出所需通风量的任何损失或减少。

四、防止易燃气体着火的措施

㈠如装有电气设备及线路，它们应为在汽油与空气爆炸性混合物中适用的一种型式，其他可以构成易燃气体着火源的设备，不得使用。

㈡电气设备及线路，如果安装在排气通风导管内，则应为经认可在汽油与空气爆炸性混合物中适用的一种型式，并且任何排气导管的出口，经考虑其他可能的着火源，应设在一个安全的地点。

第三十二条 消防巡逻等的保持和灭火设备的规定

一、消防巡逻和探火、失火报警和广播系统

㈠应保持有效的巡逻制度以便迅速探知任何火灾的发生。

每一消防巡逻员必须受到训练。以熟悉船上布置以及可能指定他使用的任何设备的所在地点和操作方法。

㈡起居处所和服务处所应遍设手动失火报警器。以便消防巡逻人员能立即向驾驶室或主消防控制站报警。

㈢在主管机关认为巡逻制所不能到达的任何装货处所内应设有认可型的失火报警或探火系统。该系统应能在一个或数个适当地点或站自动显示火灾的发生或征兆及其位置。但经主管机关认为某船航程短暂。应用此项要求将属不合理者除外。

㈣船舶在海上或港口的所有时间内（非营运时除外）应配置足够的船员或设备。以保证负责船员能立即接到任何初始的失火警报。

㈤应设置由驾驶室或控制站操纵的召集船员的专用报警器。此种报警器可以是船上通用报警系统的一部分，但是它应能与旅客处所的报警系统分开而单独施放。

㈥起居处所、服务处所以及控制站应普遍设有广播系统或其他有效的通信设施。

二、消防泵和消防总管系统

船舶应设有符合本章第五条规定的消防泵、消防总管系统、消火栓和消防水带。并应符合下列要求：

㈠４０００总吨及４０００总吨以上的船舶。至少应设三台独立驱动的消防泵；小于４０００总吨的船舶至少应设二台这种消防泵。

㈡１０００总吨及１０００总吨以上的船舶，其通海阀、消防泵及其动力源的布置，应保证当任一舱室失火时不致使全部消防泵失去效用。

㈢１０００总吨及１０００总吨以上的船舶，其消防泵、消防总管和消火栓的布置，应能立即从任一位于内部的消火栓处，获得至少一股按照本章第五条三款所规定的有效水柱，同时还应采取这样的措施，通过一台所需的消防泵的自动启动来保证连续供水。

㈣１０００总吨以下的船舶，其布置应取得主管机关的同意。

三、消火栓、消防水带和水枪

㈠船舶应备有消防水带，其数量和直径应取得主管机关的同意。按本章第五条四款所要求的每一消火栓至少应备有一根消防水带，这些水带只准用于救火或在消防演习和检验时用以试验灭火设备。

㈡在起居处所、服务处所和机器处所内，消火栓的数量和位置，应在所有水密门和主竖区舱壁上所有的门皆关闭的情况下，尚可符合本章第五条四款的要求。

㈢此项布置应使至少两股水柱能射至任何装货处所在空舱时的任何部位。

㈣机器处所内所需的全部消火栓均应配备消防水带，此项水带在配有本章第五条七款所要求的水枪之外尚应配备适宜于向油上喷洒水雾的水枪，或两用水枪。此外，每一甲类机器处所至少应设有两只适宜的水雾器。*

㈤除机器处所外的船舶各部所需水带数的至少四分之一应配备喷雾水枪或两用水枪。

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* 水雾器可为一“Ｌ”形金属管组成，其长肢长约２米（６呎）能与消防水带连接，其短肢长约２５０毫米（１０吋），其上装有固定喷雾水枪或能接上一只喷雾水枪。

㈥对每一副呼吸器应配备一只水雾器，并存放于各呼吸器附近。

㈦在任何甲类机器处所内，如在其下部设有通向相邻轴隧的出入口时，应在机器处所外面接近该出入口处，设置二只配有两用水枪和水带的消火栓。若此项出入口並非通向轴隧，而是通向其他一个或数个处所，则须在该处所之一接近甲类机器处所的出入口处，设置二只配有两用水枪和水带的消火栓。倘若轴隧或相邻处所不是作为应急通道的组成部分时，则不必按此规定办理。

四、国际通岸接头

㈠１０００总吨及１０００总吨以上的船舶，至少应设有一只符合本章第五条八款规定的国际通岸接头。

㈡应备有使此项接头能用于船的任何一舷的设施。

五、起居处所、服务处所和控制站内的手提式灭火机

船舶应在其起居处所、服务处所和控制站内配备经主管机关认为合适和足量的认可型手提式灭火机。

六、装货处所内的固定式灭火装置

㈠１０００总吨及１０００总吨以上船舶的装货处所，应由符合本章第八条规定的固定式气体灭火系统保护或由能提供等效作用的固定式高膨胀泡沫灭火系统保护。

㈡如经主管机关认为某船的航程短暂，致使运用本款㈠项的要求将属不合理者，以及１０００总吨以下的船舶，其装货处所的灭火装置应取得主管机关的同意。

七、锅炉舱等的灭火设备

设有燃油锅炉或燃油装置的处所应设有下列装置：

㈠应有下列固定式灭火系统的任何一种：

1.符合本章第十一条规定的压力式水雾系统；

2.符合本章第八条规定的气体系统；

3.符合本章第九条规定的泡沫系统；

4.符合本章第十条规定的高膨胀泡沫系统。

在每一情况下，如机舱和锅炉舱没有完全分隔，或燃油能从锅炉舱流入机舱，则机舱和锅炉舱应作为一个舱室看待。

㈡每一锅炉舱内至少应设一套符合本章第七条四款规定的可携式空气泡沫装置。

㈢在每一锅炉舱的每一生火处所和燃油装置的某一部分所在的每一处所，至少应设置能喷出泡沫或其等效物的认可型手提式灭火机二具。在每一锅炉舱内应设置容量至少为136升（30加仑）的认可的泡沫型或与之等效的灭火机一具。此项灭火机应备有绕在卷筒上的足以到达锅炉舱的任何部位的软管。

㈣每一生火处所应有按主管机关所要求容量的容器一具，内装砂子、浸透苏打的锯木屑或其他认可的干燥物。此项设备亦可由一具认可型的手提式灭火机代替之。

八、内燃机型机器所在处所的灭火设备

设有内燃机的处所，不论此项机器用于主推进或用于其他目的，如其总输出功率不少于373千瓦，应设有下列装置：

㈠应有本条七款一项所要求的各灭火系统中的一种。

㈡应有符合本章第七条四款规定的可携式空气泡沫设备至少一套。

㈢在每一此种处所内，应设有每只容量至少为45升（10加仑）的认可的泡沫型灭火机或等效设备，其数目足以使泡沫或等效物能射

到燃油和滑油压力系统、传动装置和其他有失火危险的任何部份。此外，还应设有足够数量的手提式泡沫灭火机或等效设备，其布置应使该处所内任何一点到达一具灭火器的步行距离不大于10米（33呎），但每一此种处所内应至少设有此种手提式泡沫灭火机二具。

九、汽轮机或闭式蒸汽机所在处所的灭火设备

设有汽轮机或闭式蒸汽机的处所，不论此项机器用于主推进或用于其他目的，如其总输出功率不少于3 7 3千瓦者：

㈠应设有每只容量至少为45升（10加仑）的泡沫灭火机或等效设备，其数目足以使泡沫（或等效物）能射到压力滑油系统的任何部分，射到汽轮机、蒸汽机或附属传动装置的压力润滑部分的封闭罩壳以及其他有失火危险的任何部分。此种处所，如果设有符合本条七款㈠项的固定式灭火系统，并具有至少等效于本项的保护，则不再要求设置此项灭火机；

㈡应设有足够数量的手提式泡沫灭火机或等效设备，其布置应使该处所内任何一点到达一具灭火器的步行距离不大于10米（33呎），但每一此种处所内应至少设有此种手提式泡沫灭火机二具；唯在符合本条八款㈢项所规定之数外，不要求再增设此项灭火机。

十、其他机器所在处所的灭火设备

如主管机关认为有失火危险的任何机器处所，其灭火设备在本条七、八和九款无明确规定者，应在该处所内或其相邻处设置主管机关认为足够数量的认可型手提式灭火机或其他灭火设备。

十一、本节未作要求的固定式灭火设备

若装设本章本节未作要求的固定式灭火系统时，则该系统应取得主管机关同意。

十二、对机器处所的特殊要求

㈠任何甲类机器处所，如其下部与相邻轴隧设有出入口时，则除水密门外，尚应在该门的非机器处所的一侧，增设一轻型钢质挡火网门，此门应能从每一面均可操纵。

㈡在任何机器处所内如已核准设置自动和遥控系统及设备以代替船员连续值班，当主管机关考虑需要特殊预防措施时，则应装设自动探火和失火报警系统。

十三、消防员装备和个人配备

㈠符合本章第十四条的消防员装备的最低数额和由该条一款㈠、㈡及㈢项规定所组成的额外个人配备的最低套数如下：

1.两套消防员装备；并增设

2.在设有旅客处所和服务处所的甲板上，或如这种甲板多于一层时，则在这些处所最长的一层甲板上，按这些处所长度的每80米（262呎）或其零数设置两套消防员装备和两套由本章第十四条一款㈠、㈡及㈢项规定所组成的个人配备。

㈡每套消防员装备包括本章第十四条二款所规定的储压式呼吸器在内，应按主管机关认可的比例配备备用氧气瓶。

㈢消防员装备及个人配备应贮放在相互远离的若干位置，以备使用。在任一位置，应至少设有两套消防员装备与一套个人配备。

第三十三条 燃油、滑油和其他易燃油类的布置

一、燃油的布置

使用燃油的船舶，其燃油的贮藏、分配和使用的布置应能保证船舶和船上人员的安全，并应至少符合下列规定：

㈠凡燃油的闪点经认可的闪点仪测定（闭杯试验）低于60℃（140°F）者，概不得用作燃料。但应急发电机的燃油除外，其闪点应不低于43℃（110°F）。

但是，主管机关可以允许普遍使用闪点不低于43℃（110°F）的燃油，唯应采取其认为必要的附加措施，並应符合下述条件，即此类燃油的贮藏或使用处所的温度不允许升高至低于该燃油闪点的10℃（18°F）之内。

㈡在燃油系统中凡包含表压力超过1·8公斤／厘米^2（25磅／吋^2）的加热燃油的任何部分，应尽实际可能不被隐蔽，以免不易观察其缺陷和泄漏。在机器处所内燃油系统的此种部分应有足够的照明。

㈢在所有正常情况下，机器处所应有足够的通风，以防止油气聚集。

㈣燃油舱（柜）应尽实际可能是船体结构的一部分，并位于甲类机器处所之外。除双层底柜外，其他燃油舱（柜）如必须位于邻接甲类机器处所时，最好与双层底柜具有共同的限界面，而使与机器处所的共同限界面的面积减至最小程度。一般应避免使用孤立架设的燃油柜，但如使用这种油柜时，则不应位于甲类机器处所之内。

2从燃油舱（柜）溢出或渗漏的燃油可能落于热表面而构成危险的地方，不得设燃油舱（柜）。应采取预防措施，防止任何油在压力下可能从油泵、滤器或加热器溢出而与热表面相接触。

㈤每一燃油管如其损坏后会使燃油从设在双层底上方的贮油柜、澄油柜和日用油柜逸出，则应在这些油柜上装设当油柜所在处所失火时，能在此处所之外的安全地点加以关闭的旋塞或阀门。如在深油舱位于任何轴隧、管隧内或类似处所内的特殊情况下，这些深油舱上应装设阀门，但可在隧道或类似处所之外的管路上加装阀门，以便在失火时加以控制。

㈥应设有安全和有效的设施，以确定任何油舱（柜）内的存油量。可以允许使用上端引至安全地点且具有适当关闭设施的测量管。其他确定任何燃油舱（柜）存油量的设施，如它们不需在柜顶以下穿孔，且在其损坏或舱（柜）注油过量时不致因此而溢出燃油者，可允许采用。

㈦任一油舱（柜）或燃油系统的任一部分，包括注入管在内，应有防止超压的设施。任何溢流阀，以及空气管或溢流管，应引至主管机关认为安全的处所。

㈧燃油管须用钢材或其他认可材料建造。但主管机关认为确是必要的地方，可允许有限制地使用挠性管。这种挠性管及其端部附件应为具有足够强度的认可的耐火材料，且其结构应取得主管机关的同意。

二、滑油的布置

用于压力润滑系统的滑油的贮藏、分配和使用，其布置应保证船舶和船上人员的安全。在甲类机器处所以及每当实际可行时在其他机器处所，此项布置应至少符合本条一款㈡项、㈣项2目、㈤项、㈥项及㈦项的规定。

三、其他易燃油类的布置

在压力下使用于动力传动系统、控制和驱动系统以及加热系统中的其他易燃油类，其贮藏、分配和使用的布置应保证船舶和船上人员的安全。在含有点火设施的处所，此项布置至少须符合本条一款㈣项2目和一款㈥项的规定，以及符合本条一款㈧项有关强度和结构的规定。

第三十四条 机器处所内的特别布置

一、本条规定适用于甲类机器处所以及主管机关认为需要的其他机器处所。

二、㈠天窗、门、通风筒、供排气通风的烟囱开口以及机器处所的其他开口，其数量应减低到符合船舶通风以及正常、安全运行所需要的最少量。

㈡所设置的上述天窗，其盖应为钢质。应采取适当的措施，以便在发生火灾时使烟气能从被保护处所释放。

㈢除动力操纵的水密门外，所设置的上述门的布置应能在所在处所失火时，由动力操纵的关闭装置，或由设置在向关闭方向反向倾斜3 ½°时能关闭的自闭式门来保证其确实关闭，该门具有由遥控操纵脱开装置操作的永效式门背钩装置。

三、机舱棚上不应设窗。

四、下列各项应装有控制设施：

㈠天窗的开启和关闭、正常供排气通风的烟囱开口的关闭及通风筒挡火闸的关闭；

㈡释放烟气；

㈢动力操纵门的关闭或门的脱开机构，但动力操纵水密门除外；

㈣停止通风机；

㈤停止强力送风和抽风机。停止燃油驳运泵、燃油装置泵及其他类似的燃油泵。

五、通风机所需的控制应符合本章第二十五条六款的规定。任何所需的固定式灭火系统的控制，以及本条四款㈠、㈡、㈢、㈤项和本章第三十三条一款㈤项所要求的控制，应设在一个控制地点或者集中设在经主管机关同意的尽量少的地点。此项地点，应位于当它们服务的处所失火时不致被切断的位置，并应有通往开敞甲板的安全通道。

第三节 载客不超过36人的客船的消防措施

第三十五条 结构

一、船体、上层建筑、结构性舱壁、甲板及甲板室应以钢材或其他等效材料建造。

二、如采用按本章第四十条二款规定的防火措施时，上层建筑可用诸如铝合金之类的材料建造。但应做到：

㈠当进行标准耐火试验时，对于“甲”级分隔金属心材的温升，要适当考虑到该材料的机械性能；

㈡用于船上有关部分的可燃材料的数量要适当地减至主管机关认为满意的程度；天花板（即甲板顶部的衬板）要为不燃材料。

㈢要采取适当的措施，以保证在发生火灾时，救生艇筏的存放、降落和登乘装置，如同用钢材建造的上层建筑同样有效，

㈣锅炉与机器处所的顶盖与舱棚均为用足够隔热的钢材建造；且其上的开口（如设有时）要作适当的布置和保护，以防止火灾蔓延。

第三十六条 主竖区

一、船体、上层建筑和甲板室应分为若干主竖区，阶层和壁凹应减至最少量，但如属必要时，则应为“甲”级分隔。

二、舱壁甲板以上形成主竖区限界面的舱壁，只要实际可行，应与直接在舱壁甲板以下的水密分舱舱壁位于同一直线上。

三、这种舱壁应由甲板延伸至甲板，并延伸至船壳板或其他限界面。

四、为特殊用途而设计的船舶，例如汽车或铁路车辆渡船，如设置这种舱壁将影响船舶所预定的用途时，应以能控制和限制火灾的等效设施代替，并应由主管机关特殊认可。

第三十七条 "甲"级分隔上的开口

一、凡电缆、管子、围壁通道、导管等以及桁材横梁或其他结构穿过"甲"级分隔之处，应采取措施以保证分隔的耐火性不受损害。

二、凡必需穿过主竖区舱壁的导管，应在舱壁附近装设永效的自动关闭的挡火闸。此挡火闸还应能从舱壁的两面都可用手关闭。其操纵位置应易于到达，并用反光的红色加以标志。在舱壁与挡火闸之间的导管应为钢质或其他等效材料。必要时並应符合本条一款的隔热标准。挡火闸应至少在舱壁的一侧装设可见的指示器，以表示挡火闸是否处于开启位置。

三、除装货处所之间、贮藏室之间和行李室之间的舱口以及这些处所与露天甲板之间的舱口以外，一切开口应设有永久附连于其上的关闭装置，其耐火效能至少应与其所在的分隔相等。

四、"甲"级分隔上所有的门，门框及其在关闭时的制牢装置。其构造应就实际可行提供等效于其所在舱壁的耐火性以及阻止烟和火焰穿过的效能。水密门则不需隔热。

五、每个门应能在舱壁的任何一面，仅需一人即能将其开启。

六、主竖区舱壁及梯道围壁上的防火门，除动力操纵的水密门和经常锁闭的水密门外，应为在向关闭方向反向倾斜 3 ½ ° 时仍能将门关闭的自闭式门。所有这种防火门，除经常关闭者外，应能同时地或成组地由控制站予以脱开，也应能个别地在门的位置处就地脱开。脱开机构的设计，应于控制系统万一损坏时，此门能自动关闭；但如采用认可的动力操纵水密门，可以认为达到这一目的。不能由控制站脱开的门背钩，不允许使用。当允许使用自由门时，它们应具有受防火门脱开系统所控制的自动插上的插销装置。

第三十八条 “甲”级分隔的耐火完整性

在本节要求的“甲”级分隔处，主管机关在决定所需要的隔热值时，应遵循本章第二节的规定。但可以接受低于该节所规定的隔热值。

第三十九条 起居处所与机器、装货及服务处所的分隔

分隔起居处所与机器、装货及服务处所的限界面舱壁和甲板，应以“甲”级分隔建造。这些舱壁和甲板应具有经主管机关考虑到相邻处所的性质而认为满意的隔热值。

第四十条 起居和服务处所的保护

起居和服务处所应按本条一或二款的规定予以保护。

一、㈠在起居处所内，所有围蔽舱壁除要求为“甲”级分隔者外，应由不燃材料的“乙”级分隔建造，但其表面可根据本款㈡项贴以可燃材料。

㈡所有走廊舱壁应由甲板延伸至甲板。“乙”级舱壁上的门可允许有通风开口，最好设在门的下部。所有其他围蔽舱壁应垂直地由甲板延伸至甲板，並横向通至船壳或其他限界面，但设置能保证防火完整性的不燃材料天花板或衬板除外，在这种情况下，舱壁可延伸至天花板或衬板为止。

㈢除装货处所、邮件舱、行李室或服务处所的冷藏室外，一切衬板、地板、天花板和隔热物应为不燃材料。任何起居处所或公共处所的可燃板面、嵌条、饰片及镶片的总体积不得超过相当于各围壁及天花板联合面积上厚2·54毫米（1／10吋）镶片的体积。走廊或梯道环围和隐蔽或不能到达处的所有外露表面，均应具有低播焰性。*

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* 参看海协组织通过的海大166（特Ⅳ届）决议

“评定材料的防火性能的准则”。

二、㈠起居处所内的所有走廊舱壁应为钢质或由“乙”级隔板建造。

㈡应装设认可型的探火系统，其布置应能探知一切适宜于供旅客或船员使用或服务的围蔽处所内火灾的发生(实际上无失火危险的处所除外)，并将火灾的发生或征兆以及失火地点在船员最易观察到的一处（站）或数处（站）自动显示出来。

第四十一条 甲板敷料*

起居处所、控制站、梯道及走廊内的甲板基层敷料，应为认可的不易着火的材料。

第四十二条 起居处所与服务处所内梯道与升降机的保护

一、在起居和服务处所内的一切梯道和脱险设施应为钢质或其他适宜的材料。

二、供旅客及服务用的升降机围壁通道以及旅客处所采光及通风用的垂直围壁通道等，应为“甲”级分隔。各门应为钢质或其他等效材料，当其关闭时，应至少提供与其所在围壁通道相等的耐火效能。

第四十三条 控制站和储藏室的保护

一、控制站应与该船其他部分以“甲”级舱壁及甲板隔开。

二、行李室、邮件舱、储藏室、油漆间与灯间、厨房及类似处所的限界面舱壁应为“甲”级分隔。储存高度易燃物品的处所应位于火灾时对旅客及船员危害最小的地方。

第四十四条 窗与舷窗

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*参看海协组织通过的海大２１４（Ⅷ届）决议

“关于甲板基层敷料试验程序改进的暂行准则”。

一、起居处所与露天隔开的舱壁上的一切窗及舷窗应具有由钢材或其他适宜材料建造的框架。玻璃应以金属镶边加以固定。

二、起居处所内舱壁上的一切窗及舷窗，其构造应能保持其所在该型舱壁的完整性要求。

第四十五条 通风系统

机器处所的动力通风应能从机器处所以外易于到达的地点予以停止。

第四十六条 构造细节

一、船上任何部分不得使用以硝酸纤维素或其他高度易燃物为基体的油漆、清漆或其类似配制品。

二、穿过"甲"级或"乙"级分隔的管子，应为主管机关经考虑各该分隔所需经受的温度而认可的材料。输送油类或可燃液体的管子，应为主管机关经考虑失火危险而认可的材料。在热力作用下易于失效的材料，不应用作舷边流水管、污水排泄管及其他靠近水线和因失火时该材料失效后将会造成浸水危险的部位的出水口。

三、凡内设主推进机械、燃油锅炉或总输出功率为746千瓦或746千瓦以上的辅助内燃机的处所，应采取以下的措施：

㈠天窗应能从该处所的外部加以关闭。

㈡玻璃天窗应设置永久附连于其上的钢质或其他等效材料的外盖。

㈢此项处所的舱棚上如主管机关许可设置窗户，应是不能开启式的，并应设置永久附连于其上的钢质或其他等效材料的外盖。

㈣本款㈠、㈡及㈢项所指的窗或天窗应使用金属丝增强的玻璃。

第四十七条 探火系统和灭火设备

一、巡逻和探火

㈠所有船舶应保持有效的巡逻制度，以便迅速探知任何火灾的发生。在旅客和船员起居处所内应遍设手动失火报警器，以便消防巡逻人员能立即向驾驶室或消防控制站报警。

㈡在主管机关认为巡逻制度不能包括的任何部位，应设有认可型的失火报警或探火系统，该系统应能在一个或数个适当的地点或站自动显示火灾的发生或征兆及其位置；但经主管机关认为该船航程短暂，运用此项要求将属不合理者除外。

㈢无论新船或现有船舶，在海上或在港口的所有时间内（非营运时除外），应配备足够的船员或设备，以保证负责船员能立即接到任何初始的失火警报。

二、消防泵与消防总管系统

船舶应设有符合本章第五条规定的消防泵、消防总管系统、消火栓和消防水带，并应符合下列要求：

㈠４０００总吨及４０００总吨以上的船舶，至少应设三台独立驱动的消防泵，小于４０００总吨的船舶至少应设二台这种消防泵。

㈡１０００总吨及１０００总吨以上的船舶，其通海阀、消防泵及其动力源的布置，应保证当任何一舱失火时不致使全部消防泵失去效用。

㈢１０００总吨以下的船舶，其布置应取得主管机关的同意。

三、消火栓、水带与水枪

㈠船舶应备有主管机关认为足够数目的消防水带。按本章第五条四款所要求的每一消火栓至少应备有一根消防水带，这些水带只准用于救火或在消防演习和检验时用以试验灭火设备。

㈡在起居处所、服务处所和机器处所内，消火栓的数目和位置，应在所有水密门和主竖区舱壁上所有的门皆关闭的情况下，尚可符合本章第五条四款的要求。

㈢此项布置应使至少两股水柱能射至任何装货处所在空舱时的任何部位。

㈣设有燃油锅炉或内燃机型推进机器的船舶上，其机器处所内的一切所需的消火栓均应配有水带，该水带附有按本章第五条七款所要求的水枪。

四、国际通岸接头

㈠１０００总吨及１０００总吨以上的船舶，至少应设有一只符合本章第五条八款规定的国际通岸接头。

㈡应备有使此项接头能用于船的任何一舷的设施。

五、起居处所及服务处所内的手提式灭火机

船舶应在其起居处所及服务处所内设置经主管机关认为合适和足量的认可型手提式灭火机。

六、装货处所内的固定式灭火装置

㈠１０００总吨及１０００总吨以上船舶的装货处所，应由符合本章第八条规定的固定式气体灭火系统保护。

㈡如主管机关认为某船的航程短暂，致使运用本款㈠项的要求为不合理者，以及１０００总吨以下的船舶，其装货处所的灭火装置应取得主管机关的同意。

七、锅炉舱等的灭火设备

在设有燃油主、辅锅炉的处所或设有燃油装置或澄油柜的处所内，应设有下列装置：

㈠应有下列固定式灭火装置的任何一种：

1.符合本章第十一条规定的压力式水雾系统；

2.符合本章第八条规定的气体灭火装置；

3.符合本章第九条规定的固定式泡沫装置（为扑救花铁板以上的火灾，主管机关可要求设置固定的或可移动的压力水雾或泡沫喷射装置）。

在每一情况下，如机舱与锅炉舱没有完全分隔，或燃油能从锅炉舱流入机舱污水沟者，则机舱与锅炉舱应作为一个舱室看待。

㈡在每一锅炉舱的每一生火处所和燃油装置的某一部分所在的每一处所，应至少设置能喷出适于扑灭油火的泡沫或其他认可的灭火剂的认可型手提式灭火机两具。在每一锅炉舱内应设容量至少为136升（30加仑）的认可的泡沫型灭火机一具或等效设备。此项灭火机应备有绕在卷筒上足以到达锅炉舱的任何部位和燃油装置任何部分所在的处所的软管。

㈢每一生火处所内应有按主管机关所要求的容量的容器一具，内装砂子、浸苏打的锯木屑或其他认可的干燥物。此项设备亦可由一具认可型手提式灭火机代替之。

八、内燃机型机器所在处所的灭火设备

船舶采用内燃机型的机器，不论该机器用于主推进或用于辅助用途，如其总输出功率不少于746千瓦，则应设有下列装置：

㈠应有本条七款㈠项所要求的固定式装置中的一种。

㈡在每一机器处所内应设置容量至少为45升（10加仑）的认可的泡沫型灭火机一具或等效设备，并就机器输出功率每746千瓦或其零数设认可的手提式泡沫型灭火机一具，但所设手提式泡沫型灭火机的总数不得少于二具，亦不必超过六具。

九、在汽轮机及不需任何固定式装置处所的灭火设备

主管机关对于由水密舱壁与锅炉舱隔开的汽轮机所在处所内的灭火设备，应加以特殊考虑。

十、消防员装备与个人配备

㈠符合本章第十四条的消防员装备的最低数额和由该条一款㈠、㈡及㈢项的规定所组成的额外个人配备的最低套数如下：

1.两套消防员装备；并增设

2.在设有旅客处所和服务处所的甲板上，或如这种甲板多于一层时，则在这些处所最长的一层甲板上，按这些处所长度的每８０米（２６２呎）或其零数设置两套消防员装备和两套由本章第十四条一款㈠、㈡及㈢项的规定所组成的个人配备。

㈡包括本章第十四条二款所规定的储压式呼吸器在内的每套消防员装备，应按主管机关认可的比例，配备备用氧气瓶。

㈢消防员装备及个人配备应贮放在相互远离的若干位置，以备使用。在任一位置，应至少设有两套消防员装备与一套个人配备。

第四十八条 脱险通道

一、除机器处所外，一切旅客和船员出入处所以及船员经常使用的处所内，应布置有梯道与梯子，以提供到达救生艇登艇甲板的方便脱险通道。特别应符合下列规定：

㈠在舱壁甲板以下，从每一水密舱或类似限定的处所或处所群，应有两个脱险通道，其中至少一个不得利用水密门。但主管机关对有关处所的性质和部位以及对经常居住或使用这些处所的人数经过恰当的考虑后，可以免除其中一个脱险通道。

㈡在舱壁甲板以上，从每一主竖区或类似限定的处所或处所群，至少应有两个实用的脱险通道，其中至少应有一个能通达形成垂直脱险的梯道。

㈢至少有一个脱险通道应为利用易于到达的环围的梯道，此梯道应自其起点的一层至救生艇登艇甲板之间设有尽可能连续的防火遮蔽。梯道的宽度、数目及连续性应取得主管机关的同意。

二、在机器处所内，从每一机舱、轴隧和锅炉舱应设有两个脱险通道，其中一个可为水密门。在未设水密门的机器处所内，该两个脱险通道应为两具尽可能远离的钢梯，通至舱棚上同样远离的门，从该处至登艇甲板应设有通路。不足２０００总吨的船舶，主管机关经考虑到舱棚的宽度及布置，可免除此项要求。

第四十九条 用于内燃机的燃油

供船上任何固定装置用的内燃机，其所用燃油经认可的闪点仪测定的闪点（闭杯试验），概不得等于或低于４３℃（110°F）。

第五十条 机器处所的特殊布置

一、应有设施以停用于机器处所及装货处所的通风机和关闭通达各该处所的一切门道、通风筒、烟囱周围的环状空间，或这些处所的其他开口。此项设施，在失火时应能从各该处所的外部操纵。

二、强力送风机或抽风机、燃油驳运泵和燃油装置泵以及其他类似的燃油泵的驱动机械，应于有关处所的外部装设遥控装置，以便于在风机或泵所在处所失火时，可将其停止。

三、设在双层底上方的储油柜、澄油柜或日用油柜的每一吸油管上，应装设当该油柜所在处所失火时能从有关处所的外部加以关闭的旋塞或阀。如在深油舱位于任何轴隧或管隧内的特殊情况下，这些深油舱上应装设阀门，但可在隧道外的管路上加装一阀门，以便在失火时加以控制。

第四节 货船的消防措施*

第五十一条 除本章第五节所包括的油船以外的4000总吨及4000总吨以上的货船的一般要求

一、船体、上层建筑、结构性舱壁、甲板及甲板室应以钢材建造，但在特殊情况下，如主管机关经考虑了失火危险后，可以核准采用其他适宜的材料。

二、在起居处所内，走廊舱壁应为钢质或以“乙”级绝热板建造。

三、在起居处所范围内构成机器处所和装货处所顶盖的甲板上，其甲板敷料应为不易着火者。**

四、露天甲板以下的内部梯道应为钢质或其他适宜材料。起居处所范围内供船员用的升降机围壁通道应为钢质或等效材料。

五、厨房、油漆间、灯具间及舱面物料间的舱壁，如毗邻于起居处所或应急发电机室（如设有时），应为钢质或等效材料。

六、在起居处所及机器处所内不得使用以硝酸纤维素或其他高度易燃物为基体的油漆、清漆及类似的配制品。

七、输送油类或可燃液体的管子，应为主管机关经考虑失火危险而认可的材料。在热力作用下易于失效的材料，不应用作舷边流水管、污水排

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* 参看海协组织通过的海大211（Ⅶ届）决议“关于对货船上周期无人照管机器处所的安全措施，以补充对有人照管机器处所通常认为必需的安全措施的建议案。”

** 参看海协组织通过的海大214（Ⅶ届）决议“关于甲板基层敷料试验程序改进的暂行准则”。

泄管及其他靠近水线和因失火时该材料失效后将造成浸水危险的部位的出水口。

八、机器处所的动力通风应能从机器处所以外易于到达的地点予以停止。

第五十二条 灭火系统和设备

一、适用范围

凡总吨小于本条所提及的船舶，按本条所列项目设置消防设备时，应取得主管机关的同意。

二、消防泵和消防总管系统

船舶应设置符合本章第五条规定的消防泵、消防总管系统、消火栓和消防水带，并应符合下列要求：

㈠１０００总吨及１０００总吨以上的船舶应设置二台独立驱动的消防泵；

㈡在１０００总吨及１０００总吨以上的船舶上，如任何一舱失火会使所有的泵失去其效用时，则应有供应消防用水的另一种设施。在２０００总吨及２０００总吨以上的船舶上，此项另一种设施应为独立驱动的固定应急泵。此项应急泵应能供应两股水柱至主管机关认为满意的程度。

三、消火栓、水带和水枪

㈠在１０００总吨及１０００总吨以上的船舶上，所需设置的每根配齐接头和水枪的消防水带数目，应按船长每３０米（１００呎）配备一根及备用一根；但总数决不应少于五根。该数目不包括任何机舱或锅炉舱所需的水带。主管机关可就该船类型和业务性质增加所需的水带数目，以保证具有足够的数量供随时随地取用；

㈡在起居处所、服务处所和机器处所内，消火栓的数目和布置应符合本章第五条四款的要求；

㈢船上此项布置应使至少两股水柱能射至任何装货处所在空舱时的任何部位；

㈣设有燃油锅炉或内燃机型推进机械的船舶上，其机器处所内的一切消火栓均应配有水带，该水带附有按本章第五条七款所要求的水枪。

四、国际通岸接头

㈠１０００总吨及１０００总吨以上的船舶，至少应设有一只符合本章第五条八款规定的国际通岸接头。

㈡应备有使此项接头能用于船的任何一舷的设施。

五、起居处所与服务处所内的手提式灭火机

船舶应在其起居处所与服务处所内设置经主管机关认为合适及足量的认可型手提式灭火机，在任何情况下，１０００总吨及１０００总吨以上的船舶，其数目不得少于五只。

六、装货处所内的固定式灭火装置

㈠２０００总吨及２０００总吨以上船舶的装货处所，应由符合本章第八条规定的固定式灭火系统保护。

㈡如为下述情况之一，主管机关可准许任何船舶的货舱（油船的货油舱除外）免除本款㈠项的要求：

1.货舱设有钢质舱口盖，且一切通风筒及通往货舱的其他开口具有有效的关闭装置；

2.该船是专门建造用以运送矿砂、煤或谷类等货物者；

3.经主管机关认为该船的航程短暂，实施此项要求为不合理者。

㈢每艘船舶，当装载按其性质和数量根据本公约第七章第七条规定为客船所不允许装载的爆炸品时，除应符合本条要求外，尚应符合以下要求：

1.任何载有爆炸品的舱室不得使用蒸汽。在本项范围内，“舱室”一词是指位于两个相邻固定舱壁之间的所有处所，包括下层货舱以及位于其上的一切装货处所；

2.此外，在每一载有爆炸品的舱室及其相邻的装货舱室内的每一装货处所应设有探烟或探火系统。

七、锅炉舱等的灭火设备

1000总吨及1000总吨以上的船舶，凡设有燃油主、辅锅炉的处所或在设有燃油装置或澄油柜的处所内，应设有下列装置：

㈠应有下列固定式灭火装置的任何一种：

1.符合本章第十一条规定的压力水雾系统；

2.符合本章第八条规定的灭火装置；

3.符合本章第九条规定的固定式泡沫装置（为扑救花铁板以上的火灾，主管机关可要求设置固定的或可移动的压力水雾或泡沫喷射装置）。

在每一情况下，如机舱与锅炉舱没有完全分隔或燃油能从锅炉舱流入机舱污水沟者，则机舱与锅炉舱应作为一个舱看待。

㈡在每一锅炉舱的每一生火处所和燃油装置的某一部分所在的每一处所，应至少设置能排出适于扑灭油火的泡沫（或其他认可的灭火剂）的认可型手提式灭火机两具。此外，对锅炉的每一喷油咀至少应设置容量为9升（2加仑）的上述灭火机一具，但对每一锅炉舱增设之灭火机总容量不必超过45升（10加仑）；

㈢每一生火处所应有按主管机关所要求的容量的容器一具，内装砂子、浸苏打的锯木屑或其他认可的干燥物。此项设备亦可由一具认可型手提式灭火机代替。

八、内燃机型机器所在处所的灭火设备

1000总吨及1000总吨以上的船舶，如采用内燃机型机器，不论此项机器用于主推进或用于辅助用途，如其总输出功率不少于746千瓦者，应设有下列装置：

㈠应有本条七款㈠项所要求的固定装置中的一种。

㈡在每一机器处所内，应设置容量不少于45升（10加仑）的认可的泡沫型的灭火机一具或等效设备，并就机器输出功率每746千瓦或其零数设认可的手提式泡沫型灭火机一具，但所设手提式泡沫型灭火机的总数不得少于二具，亦不必超过六具。

九、在汽轮机及不需任何固定式装置处所内的灭火设备

主管机关对于由水密舱壁与锅炉舱隔开的汽轮机所在处所内的灭火设备，应加以特殊考虑。

十、消防员装备及个人配备

㈠无论是新船或现有船舶，最少应配备符合本章第十四条要求的两套消防员装备。此外，主管机关可以要求在大型船舶上增加若干套个人配备，以及在油船及诸如工厂船等特殊船舶上增加若干套消防员装备。

㈡每套消防员装备包括本章第十四条二款所规定的储压式呼吸器在内，应按主管机关认可的比例，配备备用氧气瓶。

㈢消防员装备及个人配备应贮放在易于到达的地点，以备使用；如消防员装备及个人配备多于一套时，应贮放在相互远离的若干位置。

第五十三条 脱险通道

一、除机器处所外，一切船员和旅客出入处所以及船员经常使用的处所内，应布置有梯道与梯子，以提供到达救生艇登艇甲板的方便脱险通道。

二、在机器处所内，从每一机舱、轴隧和锅炉舱应设有两个脱险通道，其中一个可为水密门。在未设水密门的机器处所内，该两个脱险通道应为两具尽可能远离的钢梯，通至舱棚上同样远离的门，从该处至登艇甲板应设有通路。不足２０００总吨的船舶，主管机关经考虑到舱棚的宽度及布置，可免除此项要求。

第五十四条 机器处所的特殊布置

一、应有设施以停止用于机器处所及装货处所的通风机和关闭通达各该处所的一切门道、通风筒、烟囱周围的环状空间，或这些处所的其他开口。此项设施，在失火时应能从各该处所的外部操纵。

二、强力送风机或抽风机、燃油驳运泵和燃油装置泵以及其他类似的燃油泵的驱动机械，应在有关处所的外部装设遥控装置，以便于在风机或泵所在处所失火时，可将其停止。

三、设在双层底上方的储油柜、澄油柜或日用油柜的每一吸油管上应装设当该油柜所在处所失火时能从有关处所的外部加以关闭的旋塞或阀。如在深油舱位于任何轴隧或管隧内的特殊情况下，这些深油舱上应装设阀门，但可在隧道外的管路上加装一阀门，以便在失火时加以控制。

第五节 油船的消防措施

第五十五条 适用范围

一、本节适用于载运具有经认可的闪点仪测定（闭杯试验），其闪点不超过60℃(140°F)同时其雷特蒸汽压低于大气压的原油和石油产品，以及载运具有同样失火危险的液体产品的所有新油船。

二、此外，本节所包括的所有船舶应符合本章第五十二、五十三、五十四条的要求，但第五十二条六款不必运用于已符合本章第六十条要求的油船。

三、除本条一款所指货物外，如需装载带有额外失火危险的其他货物时，应采取经主管机关同意的额外安全措施。

四、除非所有货舱已排空无油和已排除了油气，或除非在每种情况下主管机关对所采取的安排认为满意，否则油类／散货两用船不得装载固体货物。

第五十六条 处所的位置和分隔

一、甲类机器处所应位于货油舱和含油污水舱的后方，并须用隔离空舱、货油泵舱或燃油舱与之隔开；这类机器处所还应位于货油泵舱和隔离空舱的后方，但不必位于燃油舱的后方。然而，货油泵舱的下部可以凹入上述机器处所，以便安置货油泵，其条件是凹入部分的顶板高度一般不超过龙骨上面型深的1/3；但载重量不超过25000吨的船舶除外，在这种船舶上，如能证明为便于进入壁凹部分和便于妥善布置管系的需要，上述深度是不切实际的，则主管机关可以准许凹入部分超过上述高度，但不得超过龙骨上面型深的一半。

二、起居处所、货油主控制站、控制站及服务处所均应位于所有货油舱、含油污水舱、货油泵舱和用以隔开货油舱、含油污水舱与甲类机器处所的隔离空舱后方。分隔货油泵舱（包括货油泵舱的入口）与起居处所、服务处所和控制站的任何公共舱壁，其构造应为“甲－60”级。如认为必要时，起居住处所、控制站、甲类以外的机器处所以及服务处所可以允许位于所有货油舱、含油污水舱、货油泵舱和隔离空舱的前方，但须具备经主管机关认为等效的安全标准及适用的灭火装置。

三、如经证明有必要把驾驶处所布置在货油舱区域的上方，则此处所只能是用于驾驶目的，并且必须用一个高度至少为二米的开敞处所使之与货油舱甲板隔开。此外，这种驾驶处所的防火还应符合第五十七条一款及二款所指明的对控制处所的要求，以及本节中可适用的其他规定。

四、应设有使甲板上溢油与起居和服务区域隔开的设施。这个设施可以是安装一个具有适当高度延伸到两舷的连续的固定挡板。对于具有尾部装油设施的船舶，此项挡油布置应予特别考虑。

五、环围起居处所和服务处所的上层建筑和甲板室的外部限界面，包括支承这些起居处所的悬架甲板，其面向货油舱的全部限界面及该限界面之后三米之内，应隔热至“甲－60”级。对于这种上层建筑和甲板室的两侧，此项隔热标准应通达主管机关认为必要的高度。

六、设有起居处所和服务处所的上层建筑和甲板室，其面向货舱的限界面应符合下列规定：

㈠此种限界面上不允许设门，但如门所通向的那些处所不与起居处所和服务处所相通，例如货油控制站、粮食库和储藏室，则主管机关可以允许设门。如设置此类门时，该处所的限界面应隔热至“甲－60”级。在此种限界面上可以设置供搬移机器用的由螺栓固紧的板门。

㈡在这种限界面上的舷窗应为永闭型的（不能开启的）。驾驶室的窗可以是非永闭型的（能开启的）。

㈢主甲板上第一层建筑内的舷窗，应装有钢质或等效材料的内盖。

本款的各项要求，除通向驾驶室处所的出入口外，如属可行，也应适用于上层建筑和甲板室自其前端向后纵向量至五米距离的限界面上。

第五十七条 构造

一、㈠船体、上层建筑、结构性舱壁、甲板及甲板室应以钢材或其它等效材料建造。

㈡包括围壁通道的各个货油泵舱与甲类机器处所之间的舱壁应为“甲”级，且不得有低于“甲－0”级或者在各方面与其等效的贯穿装置，但货油泵轴压盖及类似压盖的贯穿装置除外。

㈢形成把甲类机器处所和包括围壁通道的货油泵舱分别与起居处所和服务处所分隔的舱壁和甲板，应为“甲－60”级。这种舱壁和甲板以及甲类机器处所和货油泵舱的任何限界面上，不得开设窗和舷窗。

㈣本款㈡及㈢项的要求，并不排除为货油泵舱照明而安装的认可型固定气密照明围罩，只要这种围罩具有足够的强度，并能保持“甲”级舱壁的完整性和气密性。此外，对完全位于机器处所之内的控制室，并不排除其使用窗户。

㈤控制站应与邻接的围蔽处所用“甲”级舱壁和甲板予以分隔。这种控制站限界面的隔热标准，须经主管机关考虑其邻接处所的失火危险性后而认为满意者。

㈥甲类机器处所舱棚上的门应为自闭式，并应符合本条二款㈦项的有关规定。

㈦甲类机器处所内部限界面上的隔热表面，应不渗透油和油气。

㈧甲板基层敷料，如使用时，应为经认可的不易着火的材料。*

㈨内部梯道应为钢质或其他适宜材料。

㈩邻接起居处所的厨房、油漆间、灯具间及舱面物料间的舱壁，应为钢质或其他等效材料。

(十一)用于外露的内部表面上的油漆、清漆和其他表面涂料，其性质应经主管机关判断不会造成过分的失火危险，并应不致产生过量的烟或其他毒性。

(十二)输送油类或可燃液体的管子，应为经主管机关考虑失火危险而认可的材料。在热力作用下易于失效的材料，不应用作舷边流水管、污水排泄管和其他靠近水线和因失火时该材料失效后将会造成浸水危险的部位的出水口。

(十三)机器处所的动力通风，应能从机器处所以外易于到达的地点予以停止。

(十四)甲类机器处所和货油泵舱的天窗，应符合本条一款(三)项关于窗和舷窗的规定；此外，天窗的布置应能易于从其所使用处所的外面将其关闭。

二、在起居处所、服务处所以及控制站内，应符合下列条件：

(一)走廊的舱壁，包括门，应为“甲”或“乙”级分隔，从甲板延伸到甲板。如在舱壁的两侧都设有连续“乙”级天花板和（或）衬板时，则该舱壁可终止于连续的天花板或衬板。住室和公共处所内在这种舱壁上的门，可在其下半部装有百叶窗。

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* 参看海协组织通过的海大２１４（Ⅶ届）决议

“关于甲板基层敷料试验程序改进的暂行准则”。

㈡封闭在天花板、镶板或衬板后面的空隙，应以紧密安装的且间距不大于14米（46呎）的挡风条作分隔。

㈢天花板、衬板、舱壁及隔热物，除冷藏舱所用的绝缘外，均应为不燃材料。与隔热物一起使用的防潮层和胶合剂，以及用于冷冻系统管路附件的绝缘物，不需用不燃材料，但应尽量保持在最低数量，并且它们的外露表面应具有主管机关满意的抗火焰传播的性能。

㈣构架包括舱壁的基板和其连接件，以及衬板、天花板及挡风条（如装有时），均应为不燃材料。

㈤走廊和梯道环围内的所有外露表面，以及隐蔽或不能到达的处所内的表面，均应具有低播焰性。*

㈥舱壁、衬板及天花板上可以装有可燃的镶片，此镶片的厚度不应超过2毫米；但装在走廊、梯道环围和控制站内的镶片除外，在这些处所内，镶片厚度不得超过1·5毫米。

㈦只穿过一层甲板的梯道，至少须在一层甲板处用“甲”或“乙”级分隔和自闭式门加以保护，以限制火焰从一层甲板迅速传播到另一层甲板。船员升降机的围壁应为“甲”级分隔。如梯道和升降机围壁穿过一层以上的甲板，则应在各层甲板处用“甲”级分隔加以包围，并用钢质自闭式门予以保护。自闭式门不应装有门背钩，但若门背钩装置装有永效型的遥控脱开装置，则可以利用。

三、用于甲类机器处所的通风导管，一般不应通过起居处所、服务处所或控制站，但主管机关可以允许放宽此项要求，如果：

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* 参看海协组织通过的海大166（特Ⅳ届）决议

“关于评定材料的防火性能的准则”。

㈠导管用钢制成，且每个导管隔热至“甲－６０”级；或

㈡导管用钢制成，且在靠近穿过限界处设有一自动挡火闸，并从甲类机器处所到挡火闸以外至少５米（１６呎）之处隔热至“甲－６０”级。

四、用于起居处所、服务处所或控制站的通风导管，一般不得通过甲类机器处所，但如导管用钢材建造，并在靠近穿过限界面处装有自动挡火闸者，则主管机关可允许放宽此项要求。

第五十八条 通风

一、凡货油舱甲板上能放出油气的开口，其布置和安装位置应使油气进入含有着火源的围蔽处所或积聚在可能构成着火危险的甲板机械和设备附近的可能性减至最小程度。在每一情况下，油气出口在甲板以上的高度及油气排放的速度，应与任何油气出口离开任何甲板室开口或着火源的距离一并加以考虑。

二、通风入口与出口，以及甲板室和上层建筑限界面上的其它开口，其布置应与本条一款的规定相配合。尤其是用于机器处所的这种通风孔应位于尽可能靠后的位置。当船舶设有艉部装卸货油设备时，对这个问题必须作适当的考虑。诸如电气设备一类的着火源，其布置应避免发生爆炸的危险。

三、货油泵舱应用机械通风，其从抽风机排出的油气要引导至露天甲板上的安全地点。这些舱的通风须有足够的能量，使易燃气体积聚的可能性减至最小程度。依据该处所的总容积，每小时换气次数至少需２０次。各通风导管的布置应使该处所的全部空间获得有效的通风。此项通风应为吸入式。

第五十九条 脱险设施

除本章第五十三条一款的要求外，主管机关还应考虑供人员从每一房舱撤离的应急脱险设施的有效性。

第六十条 货油舱的保护

一、对于载重量为１００００公吨及１００００公吨以上的油船和载重量为５００００公吨及５００００公吨以上的油类／散货二用船，其货油舱甲板区域和货油舱的保护应由按照本节第六十一及第六十二条要求装设的一个固定式甲板泡沫系统和一个固定式惰性气体系统来获得。但主管机关根据公约第一章第五条经考虑该船的布置和设备后，可以同意采用其他能提供等效于上述系统的保护的固定式联合装置来代替上述装置。

二、凡认为等效而建议用来代替甲板泡沫系统的系统，应为：

㈠能够熄灭喷出的油火，并能阻止尚未燃烧的溢油着火；

㈡能够在破裂的货油舱内扑救火焰。

三、凡认为等效而建议用来代替固定式惰性气体系统的系统，应为：

㈠在空载正常航行的全航程中以及必要的舱内作业中，能防止爆炸混合物在完整的货油舱内作危险的积聚。

㈡设计成使该系统本身产生静电而着火的危险减至最小程度。

四、对于载重量小于１００００吨 的油船以及载重量小于50000吨 的油类／散货两用船，主管机关在执行本章第五十二条六款的要求时，可同意采用能在内部或外部向货油舱喷射泡沫的泡沫系统。此种装置的细节应取得主管机关的同意。

第六十一条 固定式甲板泡沫系统

本章第六十条一款述及的固定式甲板泡沫系统，应设计成：

一、提供泡沫的装置应能把泡沫输送到全部货油舱区域，并且能送入甲板已经破裂的任何货油舱内。

二、此项系统应能简易而迅速地操作。系统的主控制站应适当布置在货油舱区域以外，靠近居住处所，並在被保护区域万一发生火灾时能易于到达和进行操作的地点。

三、泡沫溶液的供给速率应不少于下列两项中的较大值：

㈠按货舱甲板面积每平方米每分钟0·6升，此处货舱甲板面积是指船舶的最大宽度乘以全部货油舱处所的纵向总长；

㈡按具有最大水平截面面积的单个货油舱，每平方米每分钟6升。

应供给足量的泡沫浓缩剂，以保证当采用按本款㈠项或㈡项（取其较大者）规定的溶液供给速率时，至少能产生泡沫20分钟。泡沫膨胀率（即所产生的泡沫体积与水和发泡浓缩剂的溶液的体积之比率）一般不应超过12比1。如本来就是产生低膨胀泡沫的系统，但其膨胀率稍为超过12比1者，则所需泡沫溶液的数量仍按膨胀率为12比1的系统计算。如采用中等膨胀率的泡沫时（膨胀率在50比1至150比1之间），泡沫的使用速率及炮式喷射器装置的能量，应取得主管机关认为同意。

四、来自固定式泡沫系统的泡沫，须用若干炮式喷射器和泡沫喷枪来供送。每一炮式喷射器应至少供送所需泡沫速率的50%。

五、㈠炮式喷射器的数目和位置应符合本条一款的要求。任一炮式喷射器的能量，即每分钟使用泡沫混合液的升数，应至少为被该炮式喷射器所保护的甲板面积平方米数的三倍，而这个面积系完全位于该炮式喷射器的前方。

㈡从炮式喷射器到它前方所保护区域最远端的距离，应不大于该炮式喷射器在平静空气中射程的７５％。

六、在尾楼前端左右两侧或面向货油舱甲板的起居处所的左右两侧应各装设一具炮式喷射器和用于泡沫喷枪的软管接头。喷枪在灭火操作中应具有动作灵活性，并覆盖由该炮式喷射器所屏护的区域。

七、在紧接每一炮式喷射器前方的泡沫液总管和消防总管上，应装设阀门，用来切断这些总管路的破损管段。

八、按所需输出量操作甲板泡沫系统时，须同时能从消防总管按所需压力使用所需最少数目的水柱。

第六十二条 惰性气体系统

本章第六十条一款述及的惰性气体系统应能于需要时随即向货油舱供送一种气体或混合气体。这种气体含氧量很少，可使货油舱内的大气呈为惰性，亦即不能传播火焰。

这种系统应满足下列条件：

一、在正常操作时应能消除新鲜空气进入货油舱，但人员准备进入货油舱时除外。

二、空货油舱应能用惰性气体进行清除，以减少卸油后货油舱内的碳氢化合物含量。

三、洗舱应能在一种惰性化的大气中进行。

四、当卸油时，该系统应能保证有按本条六款所指体积的气体可供使用。在其他时间，应能保证有符合本条七款的足量气体可供连续使用。

五、应设有能用新鲜空气同样也能用惰性气体对货油舱进行清除的适宜设施。

六、该系统应能提供至少为货油泵最大总排量的125%的惰性气体。

七、在正常运行条件下，当各货油舱正在充填或已经充填惰性气体时，货油舱内应能保持正压力。

八、供清除用的排气口应适当地设置在开敞的大气中，其一般要求与本章第五十八条一款所述油船上货油舱的透气口相同。

九、应装有一台洗涤器，用来有效地把气体冷却，并去除固体和硫的燃烧产物。

十、至少应装有二只鼓风机，当其合并使用时至少能供送本条六款规定的气体量。

十一、所供给的惰性气体的含氧量，按体积计通常不应超过5%。

十二、应有防止碳氢化合物气体或油气从各货油舱回到机器处所或烟道内及防止产生过高压力或真空的设施。此外，在洗涤器处或在甲板上要装设有效的水封装置。在每一货油舱的惰性气体支管上须装有截止阀或等效的控制设备。这个系统的设计应使产生静电而着火的危险减至最小程度。

十三、应装有仪表，以便在供送惰性气体的全部时间内，对位于鼓风机排出端的惰性气体总管内的气体，能连续指示和固定记录其压力和含氧量。这种仪表最好安装在货油控制室内（如设有时），但无论如何要安装在使负责货油操作的船员易于到达的处所。应备有适用于测量氧气和碳氢化合物气体或油气的可携式仪表及必要的货油舱配件，以便监控货油舱内的各种气体含有量。

十四、应备有指示惰性气体总管内温度与压力的设备。

十五、应设有报警器以指示：

㈠惰性气体总管内气体含氧量增高；

㈡惰性气体总管内气体压力降低；

㈢供给甲板水封（如设有这种装置时）的压力降低；

㈣惰性气体总管内气体温度增高；

㈤送往洗涤器的水压力降低。

并且，应设有当达到本款㈢、㈣及㈤项的预定限度时使该系统自动关闭的装置。

十六、凡装有惰性气体系统的任何船舶的船长，应备有一份使用说明书，其中包括有关该系统的操作、安全要求和职业卫生要求。

第六十三条 货油泵舱

每一货油泵舱应设有能在泵舱外面易于到达的地点予以操作的固定式灭火系统。该系统应使用水雾或经主管机关认为满意的其他合适的灭火剂。

第六十四条 消防水带用的水枪

所有配备的消防水带用的水枪应为一种认可的带有关闭装置的两用型式（即水雾／水柱型）。

第六节 现有客船的特殊消防措施

（在本章本节的范围内所有引用（１９４８）条文之处是指一九四八年国际海上人命安全公约第二章中的规则条文；除另有说明外，所有引用（１９６０）条文之处是指一九六〇年国际海上人命安全公约第二章的规则条文）

第六十五条 适用范围

任何载客超过３６人的客船，至少应符合下列规定：

一、在一九五二年十一月十九日以前安放龙骨的船舶，应符合本节第六十六条至八十五条的规定。

二、在一九五二年十一月十九日及其以后，但在一九六五年五月二十六日以前安放龙骨的船舶，应符合一九四八年国际海上人命安全公约中关于该公约对新船所适用的消防措施的规定；同时，应符合本节第六十八条二和三款、第七十五条、第七十七条二款、第七十八条、第八十条二款、第八十一条二至七款、第八十四条与第八十五条的规定。

三、在一九六五年五月二十六日及其以后，但在本公约生效前安放龙骨的船舶，除非符合本章第一节和第二节的要求，应符合一九六〇年国际海上人命安全公约中关于该公约对新船所适用的消防措施的规定，并应符合本节第六十八条二和三款，第八十条二款、第八十一条二、三和四款及第八十五条的规定。

第六十六条 构造

船体构件应为符合第二十七条（１９４８）的钢质或其他适当的材料；但是，如果主管机关对结构性的防火措施认为满意时，则一些不包含起居处所的孤立甲板室和露天甲板可为木质。

第六十七条 主竖区

现有客船应由“甲”级分隔分成符合第二十八条（１９４８）规定的若干主竖区。经按第二十六条三款四项（１９４８）的规定，考虑了毗邻处所的性质，这种分隔应尽可能具有足够的隔热值。

第六十八条 主竖区舱壁的开口

一、现有客船应实质上符合第二十九条（１９４８）的规定。

二、防火门应为钢质或等效材料，可带有或不带有不燃的隔热物。

三、如穿过主竖区分隔的通风围壁和导管的截面面积为０·０２平方米（３１平方吋）或以上时，应采用下列补充规定：

㈠围壁和导管的截面面积在0·02平方米（31平方吋）与0·075平方米（116平方吋）之间者，其挡火闸应为永效的自动关闭型，或者此种围壁和导管在分隔的两侧，应至少都有457毫米（18吋）的一段应隔热至满足所在舱壁的要求。

㈡围壁和导管的截面面积超过0·075平方米（116平方吋）者，其挡火闸应为永效的自动关闭型。

第六十九条 起居处所与机器处所、装货处所、服务处所的分隔

现有客船应符合第三十一条（1948）的规定。

第七十条 有关Ⅰ、Ⅱ、Ⅲ法的运用

船上每一起居处所及服务处所，应符合本条一、二、三或四款中某一款所规定的全部要求。

一、当对某一船舶考虑接受为第Ⅰ法时，应设置在实质上符合第三十条一款（1948）规定的不燃的“乙”级舱壁系统，并依照第三十九条一款（1948）的规定最大限度地使用不燃材料。

二、当对某一船舶考虑接受为第Ⅱ法时：

㈠应设置在实质上符合第四十二及四十八条（1948）规定的自动喷水器及失火报警系统。

㈡各种可燃材料的使用，应尽量减少到合理和可行的程度。

三、当对某一船舶考虑接受为第Ⅲ法时，应设置在实质上符合第三十条二款（1948）规定的从甲板到甲板的阻火舱壁系统，连同一在实质上符合第四十三条（1948）规定的自动探火系统。可燃及高度易燃材料的使用应按第三十九条二款和第四十条七款（1948）的规定加以限制。如火警巡逻时间间隔不超过20分钟，则可以允许不受第三十九条二款和第四十条七款（1948）要求的限制。

四、当对某一船舶考虑接受为第Ⅲ法时：

㈠在起居处所内应设置若干额外的“甲”级分隔，以使这些处所的主竖区平均长度减少到约２０米（６５·５呎）；及

㈡应设置在实质上符合第四十三条（１９４８）规定的自动探火系统；

㈢在起居处所内，走廊和房间舱壁的所有外露表面及其覆盖层应具有限制火焰蔓延的能力；

㈣可燃材料的使用应按第三十九条二款（１９４８）的规定加以限制。如火警巡逻时间间隔不超过２０分钟，则可以允许不受第三十九条二款（１９４８）要求的限制；

㈤应设置从甲板到甲板的若干额外的不燃烧的“乙”级分隔，以形成阻火舱壁系统，在这些舱壁系统内，除公共处所外，任何舱室的面积一般不超过３００平方米（３２００平方呎）。

第七十一条　垂直梯道的保护

梯道应符合第三十三条（１９４８）的规定；但如有特殊困难，主管机关对梯道环围可允许使用不燃的“乙”级分隔及门以代替“甲”级分隔及门。此外，主管机关可以例外地允许保留木制梯道，但该梯道必须由喷水器保护，並被完满地环围。

第七十二条　升降机（旅客及服务）、采光及通风用垂直围壁通道等的保护

现有客船应符合第三十四条（１９４８）的规定。

第七十三条　控制站的保护

现有客船应符合第三十五条（１９４８）的规定；但是，如果由于控制站的分布或结构不能完全符合规定时，例如操舵室用木结构，则主管机关可允许使用孤立架设的不燃的“乙”级分隔，来保护该控制站的限界面。在

此种情况下，如紧接控制站下面的处所能构成重大火灾危险，则二者间的甲板应完全按“甲”级分隔隔热。

第七十四条 储藏室等的保护

现有客船应符合第三十六条（1948）的规定。

第七十五条 窗与舷窗

机舱及锅炉舱的天窗应能从这些处所的外部予以关闭。

第七十六条 通风系统

一、除装货处所及机器处所的通风外，所有动力通风应在机器处所之外和易于到达的地方设置若干主控制站，其位置应为不需走达超过三个站就能停止机器及装货处所以外的所有通风机。机器处所的通风应设置一个可在机器处所外面操纵的主控制站。

二、厨房炉灶的排气导管，在其通过起居处所的管段，应装设有效的隔热物。

第七十七条 杂项

一、现有客船应符合第四十条一款、二款及六款（1948）的规定。但第四十条一款㈠项（1948）中的规定除外，在此情况下，可以20米（65·5呎）代替13·73米（45呎）。

二、燃油泵应装设位于油泵所在处所外部的遥控装置，以便在该油泵所在处所发生火灾时，能将燃油泵停止。

第七十八条 电影胶片

船上电影设备不得使用硝酸纤维素基胶片。

第七十九条 示意图

示意图的设置应符合第四十四条（1948）的规定。

第八十条 消防泵、消防总管系统、消火栓与消防水带。

一、应符合第四十五条（１９４８）的规定。

二、只要实际可行，消防总管应能立即供水，例如采用保持压力的方法或用遥控消防泵的方法但此种遥控装置应操纵方便并能易于到达。

第八十一条 探火与灭火的要求

通则

一、应符合第五十条一款至十五款（１９４８）的要求，尚须遵守本条的规定。

巡逻、探火及通信系统

二、本节所要求的每一消防巡逻员应受到训练，以熟悉船上布置以及可能指定他使用的任何设备的所在地点和操作方法。

三、应设置召集船员的专用报警器，此种报警器可以是船上通用报警系统的一部分。

四、起居处所、公共处所以及服务处所应普遍设有广播系统或其他有效的通信设施。

机器与锅炉处所

五、灭火机的数目、类型和分布应符合第六十四条七款㈡项、七款㈢项及八款㈡项（１９６０）的规定。

国际通岸接头

六、应符合第六十四条四款（１９６０）的规定。

消防员装备

七、应符合第六十四条十款（１９６０）的规定。

第八十二条 消防设备的即刻获用

应符合第六十六条（１９６０）的规定。

第八十三条 脱险通道

应符合第五十四条（１９４８）的规定。

第八十四条 应急电源

除应急电源的位置应依照第二十五条一款（１９６０）的要求外，其余应符合第二十二条一款、二款及三款（１９４８）的规定。

第八十五条 应变演习与操练

在进行一九六〇年国际海上人命安全公约第三章第二十六条所述的消防演习时，应要求每一船员证明他熟悉船上的布置和设施、本身职责以及可能指定他使用的任何设备。在这方面，要求船长熟悉情况并指导船员。

第三章 救生设备等

第一条 适用范围

一、除另有明文规定外，本章适用于从事国际航行的新船，并分为三节如下：

第一节 客船和货船。

第二节 客船。

第三节 货船。

二、从事国际航行的现有船舶，其龙骨系在一九六〇年国际海上人命安全公约生效之日或以后安放或处于相应的建造阶段者，应适用该公约第三章对该公约定义所指的新船所适用的各项要求。

三、从事国际航行的现有船舶，其龙骨系在一九六〇年国际海上人命安全公约生效之日以前安放或处于相应的建造阶段者，同时又尚不符合该公约第三章对有关新船的规定，在此种情况下，对每艘船舶的装备，应由

主管机关加以考虑，以期在合理和可行的范围内尽早地使该船在实质上符合该公约第三章的要求。本章第二十七条二款㈠项要求中的但书部分，仅在下述情况下可适用于本款所指的现有船舶：

㈠符合本章第四、八、十四、十八和十九条以及第二十七条一款与二款的规定；

㈡按第二十七条二款规定所载的救生筏均符合本章第十五条或第十六条，以及第十七条的要求；

㈢船上总人数不应由于配置救生筏而增加，除非该船完全符合下列规定：

1. 本公约第二章甲第二节的要求；

2. 本公约第二章乙第二十一条一款㈢项和㈣项或第四十八条一款㈢项所适用的要求；

3. 本章第二十九条一、二、五及六款的要求。

第一节 通 则

（本节对于客船与货船均适用）

第二条 定义

本章内的定义如下：

一、“短程国际航行”，系指在该航线中，船舶距离能够安全安置旅客和船员的港口或地点不超过２００浬，且自启航国最后停靠港至最终目的港之间不超过６００浬的国际间航行。

二、“救生筏”，系指符合本章第十五条或第十六条的救生筏。

三、“认可的降落装置”，系指经主管机关认可的能从登筏处所将一载满核定乘员及属具的救生筏降落下水的装置。

四、“执证救生艇员”，系指执有根据本章第三十二条规定所发给的合格证书的任何船员。

五、“救生浮具”，系指设计供支持在水中的一定数目的人员并在构造上能保持本身形状及性能的漂浮设备（救生艇、救生筏、救生圈、救生衣除外）。

第三条 免除

一、主管机关如考虑到航程的遮蔽性及其条件，认为实施本章的全部要求为不合理或不必要时，可对在航程中驶距最近陆地不超过20浬的个别船舶或某类船舶免除本章要求中的那些认为不合理或不必要的部分。

二、客船用于特种业务，例如朝山进香，载运大量特种业务旅客者，主管机关如认为实施本章要求为不切实际时，可对其本国所属的此类船舶免除这些要求，但此类船舶应完全符合下列规则的规定：

㈠一九七一年特种业务客船协定的附则；

㈡一九七三年特种业务客船舱室要求议定书所附的规则（当生效时）。

第四条 救生艇、救生筏和救生浮具的即刻可用性

一、对适用本章船舶的救生艇、救生筏和救生浮具所订规则的总原则是在紧急时这些救生设备应即刻可用。

二、为求能即刻可用，救生艇、救生筏和救生浮具应符合下列条件：

㈠即使在不利的纵倾及横倾15°的情况下，它们亦应能安全并迅速地被降落下水；

㈡应能迅速而秩序良好地登入救生艇或救生筏；

㈢各救生艇、救生筏或救生浮具的布置，应不妨碍其它救生艇、救生筏和救生浮具的操作。

三、在船舶离港前及在整个航行时间内，一切救生设备应保持可用状态，并可以随时使用。

第五条 救生艇的构造

一、一切救生艇均应建造恰当，其形状及尺度比例应使其在海浪中具有充裕的稳性，并于载足全部乘员及属具时，具有足够的干舷。一切救生艇当载足全部乘员及属具而破漏通海时，仍应能保持正稳性。

二、㈠一切救生艇应有刚性舷侧和应仅有内部浮力。主管机关可核准具有刚性顶棚的救生艇，但这种顶棚应可在内外两面都能便于开启，且不得妨碍迅速登艇和离艇以及艇的降落和操纵。

㈡机动救生艇可设置经主管机关同意的防止海水进入首部的装置。

㈢一切救生艇的长度应不小于7·3米（24呎），但由于船舶的大小或其它原因，主管机关认为设置这样的救生艇为不合理或不切实际者除外，但在任何情况下，船上救生艇的长度应不小于4·9米（16呎）。

三、满载乘员及属具后，其重量超过20300公斤（20英吨）或按本章第七条计算其载乘容量超过150人的救生艇，均不得予以认可。

四、额定乘员多于60人但不超过100人的一切救生艇，均应为符合本章第九条要求的机动救生艇或符合本章第十条认可的机械推进救生艇。额定乘员超过100人的一切救生艇，均应为符合本章第九条要求的机动救生艇。

五、一切救生艇应具有足够的强度，使其在载足全部乘员及属具后能安全降落水中。一切救生艇的强度，应使其在经受超载25%的情况下，不致产生剩余变形。

六、一切救生艇的平均舷弧高度应至少等于该艇长度的4%。舷弧在形状上应近似于抛物线。

七、额定乘员100人或100人以上的救生艇，其浮力容积应增加至主管机关同意的数值。

八、一切救生艇均应具有自然浮力，或装设水密空气箱或其他等效的不腐蚀且不受原油或石油产品不利影响的浮力材料，当艇内浸水和破漏通海时，仍足以将艇及其属具浮起。此外，并须至少以相当于艇容积1/10的水密空气箱或其他不腐蚀且不受原油或石油产品不利影响的等效浮力材料作为附加浮力。主管机关可以准许水密空气箱内充填以不腐蚀且不受原油或石油产品不利影响的浮力材料。

九、一切救生艇的横座板和边座板应尽可能置于艇内低处。

十、除由木板制造的救生艇外，一切救生艇按本章第六条所确定的立方容量的方形系数应不小于0.64；如救生艇在载足全部乘员及属具后，主管机关对其具有充足的初稳性高度和干舷认为满意，则任一此种救生艇的方形系数可小于0.64。

第六条 救生艇的立方容量

一、救生艇的立方容量，应以辛氏（施氏）法则或其他能提供同等准确程度的方法确定。方尾救生艇的容量应当作尖尾救生艇来计算。

二、例如，借助于辛氏法则计算时，救生艇容量的立方米（或立方呎）数，可按下述公式求得：

$$\text{容积}=\frac{L}{12}(4A+2B+4C)$$

L为救生艇长度，以米（或呎）计，自首柱处金属或木质艇壳板的内边量至尾柱处艇壳板的内边；方尾救生艇的长度则量至艇尾端板的内边。

A、B、C分别代表将L均分为四等分时距前端1/4长度处、中点及距后端1/4长度处各横截面的面积（救生艇两末端的横截面积可省略不计）。

面积A、B、C系对三个横截面依次运用下列公式求得的平方米（或平方呎）数：

$$面积=\frac{h}{12}(a+4b+2c+4d+e)$$

h为深度，从米（或呎）计，自龙骨处木壳板或金属壳板内边量至舷缘平面，或在某些情况下按照以下规定量至一个较低的平面。

a、b、c、d、e表示在深度的最高和最低两点以及将h四等分的三个点处救生艇的水平宽度，以米（或呎）计。（a和e为h两端处的宽度，c为h的中点处宽度）。

三、若在位于距救生艇两端1／4长度处的两点量得舷缘的舷弧高度超过艇长的1%时，则计算横截面积A或C的深度应为艇中点深度加1%艇长。

四、如救生艇中点的深度超过艇宽的45%，则计算艇中点横截面积B所用的深度应为艇宽的45%，同时在计算长度1／4处横截面积A与C的所用的深度应为横截面B所用的深度加1%艇长，但计算面积A与C所用的深度无论如何不得超过各该处的实际深度。

五、如救生艇深度大于1.22米（4呎）时，则运用本规则所求得的人数应按1.22米与实际深度的比例相应减少，直至救生艇浮于水面载乘该数目的穿着救生衣的人员试验满意为止。

六、主管机关应以适宜公式对两端甚尖的和体形甚肥的救生艇所准许载乘的人数予以限制。

七、若用长、宽、深的积乘以0.6所得的容量数显然不大于用上述方法求得者，则主管机关可用此公式勘定木板制造的救生艇的容量。各项尺度应计量如下：

长度——自艇壳板的外边与首柱相交处量至尾柱的相应一点处，对方尾救生艇则量至艇尾端板的后边。

宽度——在艇的最宽处量自艇壳板的外边。

深度——在艇中点由龙骨处艇壳板的里边量至舷缘的水平面，但计算立方容量时所采用的深度概不得超过宽度的45%。

在一切情况下，船舶所有人有权要求用准确的丈量方法以确定救生艇的立方容量。

八、机动救生艇或其他机械推进救生艇立方容量的求得，应从总容量中减去发动机及其属件或其他机械推进装置的齿轮箱所占用的容量；在设有无线电报设备和探照灯及其附件时，则也应减去其所占用的容量。

第七条 救生艇的乘员定额

救生艇的额定乘员应等于其容量的立方米（立方呎）除以下列数字所得的最大整数：

对长度为7·3米（24呎）

或7·3米以上的救生艇……0·283（如容量以立方呎计时为10）；

对长度为4·9米

（16呎）的救生艇……0·396（如容量以立方呎计时为14）；

对长度为4·9米

（16呎）或4·9米以

上但不超过7·3米

（24呎）的救生艇……介于0·396与0·283之间（如容量以立方呎计时介于14与10之间），以内插法确定之。

但求得的人数，概不得超过以成年人穿着救生衣可坐下，且在任何方面不致妨碍划桨或其它推进机械设备操作的人数。

第八条 机动救生艇配备的数目

一、每艘客船应每舷各配备符合本章第九条要求的机动救生艇至少一艘。

但如客船的额定乘员连同船员的总数不超过30人时，则仅要求一艘这种救生艇。

二、除油船、捕鲸工厂船、鱼类加工或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶以外，1600总吨及1600总吨以上的每艘货船，应配备符合本章第九条要求的机动救生艇至少一艘。

三、每艘1600总吨及1600总吨以上的油船，每艘捕鲸工厂船、鱼类加工或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，应于每舷各配备符合本章第九条要求的机动救生艇至少一艘。

第九条 机动救生艇细则

一、机动救生艇应符合下述条件：

㈠应装设一压燃式发动机并保持于随时可用状态；此发动机在任何情况下应能易于启动，并应备足按本条一款㈢项规定的航速供连续24小时运转的燃料。

㈡发动机及其属件应作适当围蔽，以确保在恶劣天气条件下使用，发动机的罩壳应为耐火的。发动机应设有倒车装置。

㈢当载足全部乘员和属具时，艇在平静水中前进的航速应为：

1.客船、油船、捕鲸工厂船、鱼类加工或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，按本章第八条所要求配备的机动救生艇，航速至少为6节。

2.任何其它船舶的机动救生艇，航速至少为4节。

二、若机动救生艇用以支持发动机及其属件与探照灯和无线电报设备及其附件（如设有时）的内部浮力装置的容量，超过发动机及其属件与探照灯和无线电报设备及其附件（如设有时）移去后所能载乘乘员按其比率每人以0·0283立方米或1立方呎计算所需的内部浮力装置的容量，则机动救生艇内部浮力装置的容量应增加上述差数，以高于按本章第五条所要求的容量。

第十条 除机动救生艇外的其他机械推进救生艇的细则

除机动救生艇外，其他机械推进救生艇应符合下述条件：

一、其推进机械应为认可的型式，且应具有足够的功率，以使救生艇在降落下水后能迅速离开船边，并能在不良天气条件下保持航向。如果机械是用人力操作的，则应使未经训练的人员亦能使用，并须在艇内浸水后仍能操作。

二、应装有在推进机械运转时，舵手能随时使艇倒退的装置。

三、除机动救生艇外的其他机械推进救生艇的内部浮力容量应予增加，以补偿推进机械的重量。

第十一条 救生艇的属具

一、每艘救生艇的正常属具应包括：

㈠单座可浮桨1套，备用可浮桨2支及可浮舵桨1支；桨架或桨叉一套半，以短绳或链条系于救生艇上；带钩艇篙1支；

㈡每一艇底孔备艇底塞2枚，以短绳或链条系于救生艇上（备有合格自动阀者，则不要求艇底塞）；水瓢1只；以认可的材料制成的水桶2只；

㈢装于救生艇上的舵1具，舵柄1根；

㈣太平斧2把，救生艇每端各1把；

(五)灯 1 盏，备有足供 1 2 小时点燃的油料；适用的火柴 2 盒，装于水密容器内；

(六)桅 1 支或数支，备齐镀锌钢丝牵索及帆（橙色）；

(七)除有发光剂的或具有适当照明装置的有效罗经 1 具，装于罗经柜内；

(八)装于救生艇外围的链环状救生把手索 1 根；

(九)认可尺度的海锚 1 只；

(十)足够长度的艇首缆 2 根，一根用索环及索眼栓系于救生艇的前端，以便脱开；另一根系固于救生艇首柱上，以备使用；

(十一)容器 1 只，内装植物油、鱼油或动物油 4 • 5 升（ 1 加仑）。此容器的构造，须能易于将油散布于水面，并设置成能将其连着于海锚上；

(十二)经主管机关核定的口粮，按救生艇额定乘员每人 1 份。口粮应保存于气密贮存器中，而贮存器则收藏于水密容器内；

(十三)水密容器数个，内装供救生艇额定乘员每人 3 升（ 6 品脱）的淡水；或水密容器数个，内装供每人 2 升（ 4 品脱）的淡水，并连同能提供每人 1 升（ 2 品脱）饮水的一种认可型海水除盐器；附有短绳的不锈水勺 1 个；不锈饮料量杯 1 个；

(十四)能于高空发出明亮红光的认可型降落伞信号 4 支；发出明亮红光的认可型手持火焰信号 6 支；

(十五)能产生大量橙黄色烟雾（供白昼用）的认可型漂浮发烟信号 2 只；

(十六)当艇翻覆时须有能供人员把附于救生艇上的认可设施，其式样为：舭龙骨或龙骨扶栏，连同经龙骨底系固于两舷缘的把手索或其它认可的装置；

(十七)装于水密箱内的认可的急救药包 1 套；

(六)适于发摩氏信号的防水手电筒1只，连同备用电池1副及备用灯泡1只，装在同一水密容器内；

(七)认可型式的日光信号镜1面；

(八)装有开罐头器的折刀1把，以短绳系于救生艇上；

(九)轻质可浮的引缆索2根；

(十)认可型手摇泵1具；

(十一)适于贮存细小物件的柜1只；

(十二)哨笛或同等的音响号具1只；

(十三)钓鱼用具1套；

(十四)颜色鲜明易见的认可型遮盖1具，能用以保护艇上乘员免受暴露所引起的伤害；

(十五)第五章第十六条提及的救生信号解说图表1份。

二、如主管机关考虑到船舶所从事航行的时间，认为本条一款(六)、(十)、(七)、(八)及(十四)项为不必要时，主管机关可准予免除这些项目。

三、尽管本条一款有所规定，机动救生艇或其他认可型机械推进救生艇不需设桅、帆以及多于半套的桨，但应配备带钩艇篙2支。

四、一切救生艇应设有供人员由水中攀登救生艇的适宜装置。

五、每艘机动救生艇应配备能喷射适于扑灭油类火灾的泡沫或其他适宜物质的认可型手提灭火设备。

第十二条 救生艇属具的制牢

除带钩艇篙应散置以供撑开救生艇外，一切救生艇属具应适当地系牢于救生艇内。其系缚方法应保证属具的制牢并不致妨碍吊艇钩或阻碍迅速登艇。一切救生艇属具应尽可能小巧轻便，并包扎合适而紧凑。

第十三条 救生艇筏用的手提式无线电设备

一、除在每舷都配备一艘机动救生艇而艇上均设有符合本章第十四条及第四章第十三条要求的无线电报设备的船舶外，一切船舶应配备一台供救生艇筏用的符合第四章第十四条要求的认可型手提无线电报设备；所有这种设备应集中保存于海图室或其他适宜处所，以备在紧急情况时立即搬入某艇或其他艇内。但3 0 0 0总吨及3 0 0 0总吨以上的油船，其救生艇分置于船中部和尾部时，这种设备应保存于离该船主发报机最远的那些救生艇附近的适宜处所。

二、如主管机关考虑到船舶从事航行的时间，认为供救生艇筏用的手提无线电报设备为不必要时，可允许免设此项设备。

第十四条 机动救生艇无线电报设备及探照灯

一、㈠凡从事非短程国际航行的国际航行客船、捕鲸工厂船、鱼类加工或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，如其船上总人数超过1 9 9人但不足1 5 0 0人，应在根据本章第八条所要求配备的各机动救生艇中，至少有一艘设置符合本条及第四章第十三条要求的无线电报设备。

㈡如此类船舶上总人数为1 5 0 0人或1 5 0 0人以上者，则根据本章第八条所要求配备的每艘机动救生艇上均应设置此项无线电报设备。

二、此无线电报设备应安装在足以容纳此项设备和使用人员的舱室内。

三、其布置应使发信机及收信机的有效操作不受运转中发动机的干扰，无论电池是否在充电。

四、无线电的电池不得用作任何发动机启动马达或点火系统的电源。

五、机动救生艇的发动机应装设有供无线电电池再充电及作其他用途的发电机。

六、一切客船上按本章第八条一款所要求配备的每艘机动救生艇，以及一切捕鲸工厂船、鱼类加工或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶上按该条三款所要求配备的每艘机动救生艇，均应装设探照灯。

七、探照灯应包括至少为80瓦的灯泡、有效的反射镜以及电源；该电源可对距离180米（200码）处宽度约18米（60呎）的浅色物体作有效照明总共达6小时，并至少应能连续使用3小时。

第十五条 气胀式救生筏的要求

一、每只气胀式救生筏的构造，当其在充气胀满并在撑足顶篷的情况下漂浮时，在海浪中应当稳定。

二、救生筏的构造，应使其自18米（60呎）高处投掷下水时，救生筏及其属具均不致损坏。如救生筏要存放于船上高出水面18米（60呎）以上的处所时，则该救生筏应为曾从至少等于其存放处所高度进行过满意的投掷试验的型式。

三、救生筏的构造应设有在充气时能自动撑起的顶篷，此顶篷应能保护乘员免受暴露所引起的伤害，并应备有收集雨水的设备。篷顶应装设有海水电池发光的电灯，筏内也应设有同样的电灯。救生筏顶篷的颜色应鲜明易见。

四、救生筏应备有首缆，并应沿筏体外围牢固地装设链环状把手索。沿救生筏内侧也应装设把手索。

五、救生筏若充气时处于翻覆位置，应能由一个人即可扶正。

六、救生筏的每一开口处，应设置能使落水人员便于攀登入筏的有效设施。

七、救生筏应装于能在海上各种条件下保持经久耐用的包裹或其他容器内。处于包裹或其他容器内的救生筏应能自然浮起。

八、救生筏浮力的安排，应以隔壁组成偶数的若干独立隔舱，半数的隔舱应能支持该筏的额定乘员露出水面，或采取其他等效的设施，以确保在救生筏损坏或局部充气失效时仍有合理的富裕浮力。

九、救生筏与包裹或其他容器，及其属具的总重量，应不超过180公斤（400磅）。

十、每只气胀式救生筏的额定乘员应等于：

㈠当充气后，其主浮胎（不包括篷柱以及横座位在内，如设有时）的容量以立方分米计时除以96（以立方呎计时除以3·4）后所得的最大整数；

㈡当充气后，其以平方厘米计的筏底面积（可包括横座位在内，如设有时）除以3720（以平方呎计时除以4）所得的最大整数；

上述㈠、㈡两项中，取其小者。

十一、救生筏的筏底应为水密，并应充分隔热以御寒冷。

十二、救生筏所充气体应对乘员无害，并应使用拉绳或其他同等简单而有效的方法使筏自动充气。应备有设施以使本章第十七条要求的充气泵或风箱可用来维持气压。

十三、救生筏的材料及其构造应经认可，其构造应使筏在一切海况下能经受暴露漂浮达30天。

十四、按本条十款计算载乘量少于6人的救生筏，概不得认可。气胀式救生筏按该款计算可载乘的最多人数应由主管机关审定，但无论如何不得多于25人。

十五、救生筏应能在66℃至-30℃（150° F至-22° F）的温度范围内使用。

十六、㈠救生筏的存放应在紧急时能即刻取用。存放的方式，应使其在船舶万一下沉时能从其存放处所自由浮起、充气并能无阻碍地脱离船舶。

㈡如用绳索绑扎，则应在绑绳上装有经主管机关认可的静水压力的或同等性质的自动脱开装置。

㈢本章第三十五条三款所要求的救生筏可予栓牢。

十七、救生筏应装设便于被拖带的装置。

第十六条 刚性救生筏的要求

一、每一刚性救生筏的结构应使其自存放位置投掷下水时，无论救生筏或其属具均不致损坏。

二、救生筏的甲板面积，应位于乘员能在筏内受到保护的部位内。救生筏额定乘员的每一乘员所占此项甲板面积至少应为3720平方厘米（4平方呎）。甲板的性质，应能尽量防止海水进入，并应有效地支持乘员浮出水面。

三、救生筏应装置颜色鲜明易见的顶篷或等效装置，当救生筏以任何一面浮着时，此顶篷或等效装置应能保护乘员免受暴露所引起的伤害。

四、救生筏属具的存放，应在筏以任何一面浮着时均能便于取用。

五、客船配备的救生筏及其属具的总重量，应不超过180公斤（400磅）。货船配备者，如其能自船的两舷降落下水或备有以机械放落下水的装置时，则其重量可超过180公斤（400磅）。

六、当救生筏以任何一面浮着时，不论什么时候都必须有效和稳定。

七、对救生筏所准许载乘的每一乘员，至少应配置96立方分米（3·4立方呎）的空气箱或等效的浮力，此项空气箱须尽可能置于接近筏的边缘。

八、救生筏须备有首缆，并应沿其外围牢固地装设链环状把手索。沿筏的内侧也应装设把手索。

九、救生筏的每一开口处，应设置能使落水人员攀登入筏的有效设施。

十、救生筏的构造，应不致受原油及石油产品的影响。

十一、救生筏应设有一个电池型的浮灯，并用短绳系于救生筏上。

十二、救生筏应设有便于被拖带的装置。

十三、救生筏的存放，应在船舶万一下沉时能自由浮起。

第十七条 气胀式与刚性救生筏的属具

一、每只救生筏的正常属具应包括：

㈠系有至少30米（100呎）长浮索的救生浮环1个；

㈡额定乘员不多于12人的救生筏应备折刀1把，水瓢1只；对额定乘员为13人或13人以上者应备折刀2把，水瓢2只；

㈢海绵2块；

㈣海锚2只，一只固定地系于救生筏上，另一只备用；

㈤手划桨2支；

㈥能修理浮力隔舱上穿孔的工具包1套；

㈦充气泵或充气器1具，但符合本章第十六条的救生筏除外；

㈧开罐头刀3把；

㈨认可的急救药包1套，置于水密箱内；

㈩不锈饮料量杯1个；

(十一)适于发送摩氏信号的防水手电筒1只，连同备用电池1副及备用灯泡1只，装在同一水密容器内；

(十二)日光信号镜1面及信号哨笛1个；

(十三)能于高空发出明亮红光的认可型降落伞遇险信号2支；

(十四)能发出明亮红光的认可型手持火焰信号6支；

(十五)钓鱼用具1套；

(十六)经主管机关核定的口粮，按救生筏的额定乘员每人1份；

(十七)水密容器数个，内装按救生筏的额定乘员每人1·5升(3品脱)的淡水，其中每人所需的半升(1品脱)可用能生产等量淡水的适当的海水除盐器代替；

(十八)预防晕船药片，按该救生筏认为适合载乘的人数，每人6片；

(十九)在救生筏内备救生须知数份；

(二十)第五章第十六条所指的救生信号解说图表1份。

二、从事短程国际航行的客船，如主管机关在考虑到其航程的时间认为本条一款所列的全部项目为不必要时，可准许这种船舶所载救生筏中的一只或多只，但不少于该船所载救生筏数量的1／6，配置本条一款(一)项至(七)项、(十一)项和(十九)项所列的属具，以及同款(十三)项和(十四)项所列属具的半数；而该船所载的其余救生筏则配置同款(一)项至(七)项以及(十九)项所列的属具。

第十八条 救生筏的使用训练

主管机关应尽量在合理和可行的情况下采取措施，以确保载有救生筏的船舶的船员，受到降落及使用救生筏的训练。

第十九条 救生艇与救生筏的登乘

一、应设置供登入救生艇的适当装置，包括：

㈠每副吊艇架处设梯子1具，以供登入在水面上的救生艇；但除客船、捕鲸工厂船、鱼类加工船或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶以外，在船舶每舷设有至少一具梯子的情况下，主管机关可准许以认可的装置来代替这些每副吊艇架处的梯子；

㈡供救生艇及其降落装置在准备和进行降落过程中用的照明设备，以及供救生艇所降落的水面直至降落过程完成所需的照明设备；

㈢供警告旅客和船员即将弃船的报警装置；

㈣防止船舶的任何排水进入救生艇的装置。

二、也应设有供登入救生筏的适当装置，包括：

㈠便于登入浮于水面的救生筏的足够数量的梯子，但除客船、捕鲸工厂船、鱼类加工船或制罐头工厂船以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶以外，主管机关可准许以认可的装置来代替部分或全部这些梯子；

㈡如所载救生筏备有认可的降落装置，则应有供救生筏及其降落装置在准备和进行降落过程中用的照明设备，以及供救生筏所降落的水面直至降落过程完成所需的照明设备；

㈢未备有认可降落装置的救生筏，则在其存放地点应备置照明设备；

㈣供警告旅客及船员即将弃船的报警装置；

㈤在救生筏的固定降落地点包括在认可降落装置的下方，均应设有防止船舶的任何排水进入救生筏的装置。

第二十条 救生艇、救生筏和救生浮具的标记

一、在救生艇上应以经久的显明字迹标明其尺度和乘员定额。救生艇所从属的船舶名称及船籍港应漆于艇首两侧。

二、在救生浮具上应以同样方式标明乘员定额。

三、应以同样方式将乘员定额标明于气胀式救生筏以及其包裹或容器上。每只气胀式救生筏尚须标明出厂号码及制造厂名，以供查明其所有人。

四、每只刚性救生筏应标明所从属的船舶名称，船籍港以及乘员定额。

五、救生艇、救生筏或救生浮具，概不得标明超出按本章所述方法核定的乘员人数。

第二十一条 救生圈的细则

一、救生圈应满足下列要求：

㈠应以软木块或其他等效材料制成；

㈡应能于淡水中支承至少14.5公斤（32磅）的铁块达24小时之久；

㈢应不受原油或石油产品的不利影响；

㈣应具有鲜明易见的颜色；

㈤应以正楷字体标明其所从属的船舶名称和船籍港。

二、禁止使用灯心草、软木刨片、软木粒或其他任何松散的粒状材料填充的救生圈，或其浮力需要依靠充气空气室的救生圈。

三、用塑料或其他合成化合物制造的救生圈，当其接触海水或石油产品时，或在大海航行中遇到温度变化或气候变化的情况下，应能保持其浮性及耐久性。

四、救生圈应装有牢固系住的链环状把手索，船舶每舷至少应有一个救生圈上装有长度不少于27.5米（15噚）的可浮救生索。

五、在客船上，不少于总数一半的救生圈，且在任何情况下不少于六个救生圈，以及在货船上至少为总数一半的救生圈，应设以有效的自亮浮灯。

六、本条五款所要求的自亮浮灯应能不致被水熄灭。该灯应能点亮不少于4 5分钟的时间，且其光强，在上半球的所有方向，应不少于2 支国际烛光单位。此项浮灯应保持在其所从属的救生圈附近，并附有必要的连接装置。油船上采用的自亮浮灯应为认可型的电池式*。

七、一切救生圈应设置在船上人员易于到达之处。按本条五款要求带有自亮浮灯的救生圈中，至少有两个是同时还配备有效的自发烟雾信号的救生圈，此项烟雾信号应能产生颜色鲜明易见的烟雾，持续时间至少为1 5分钟；此类救生圈应能自驾驶室迅速抛投。

八、救生圈应能随时迅速取下，不得以任何方式作永久制牢。

第二十二条 救生衣

一、船舶应载有供船上每个人员一件认可型救生衣；此外，除非这些救生衣能适用于儿童，否则尚应配备足够数量的儿童救生衣。在每件救生衣上应有表明已经主管机关认可的适当标志。

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*在给定的大气条件下，预期的灯光能见距离如下：

大气传送因素	气象的能见距离，哩	灯光的能见距离，哩
0 • 3	2 • 4	0 • 9 6
0 • 4	3 • 3	1 • 0 5
0 • 5	4 • 3	1 • 1 5
0 • 6	5 • 8	1 • 2 4
0 • 7	8 • 4	1 • 3 4
0 • 8	1 3 • 4	1 • 4 5
0 • 9	2 8 • 9	1 • 5 7

二、除本条一款所要求的救生衣外，在客船上尚应配备相当于船上总人数5%的救生衣。此项救生衣应存放在甲板上显明易见之处。

三、认可型救生衣应符合下列要求：

㈠应以恰当的工艺和材料制成；

㈡其结构应尽可能消除由于穿着错误而引起的一切危险，但救生衣可反穿者除外；

㈢应能将在水中筋疲力尽或失去知觉的人的脸部托出水面，并能使其身体从垂直位置向后倾斜而保持脸部高于水面；

㈣应能将落水人员的身体，从任何位置转动至使其身体由垂直位置向后倾斜的安全漂浮位置；

㈤应不受原油或石油产品的不利影响；

㈥应具有鲜明易见的颜色；

㈦应备有认可型的哨笛，并用细绳牢固系结；

㈧具备上述性能的救生衣，其浮力应在浸入淡水24小时后不得降低5%以上。

四、依靠充气作浮力的救生衣，可准许除客船及油船以外的所有船舶的船员使用，但应符合下列条件：

㈠有二个独立的充气室；

㈡用器械和口均能充气；

㈢在任一空气室单独充气时，能符合本条三款的各项要求。

五、救生衣应存放于容易到达之处，其位置应明显标示。

第二十三条 抛绳设备

一、船舶应备有认可型式的抛绳设备。

二、此设备应能相当准确地将绳抛射不少于230米（250码），并应包括不少于4个抛射体和4根抛射绳。

第二十四条 船舶遇险信号

船舶应备有经主管机关同意的能于白天和夜间发出有效的遇险信号的设备，包括至少12支能于高空发出明亮红光的降落伞信号。

第二十五条 应变部署表与应变部署

一、应将应变时须承担的专门任务指派给每个船员。

二、应变部署表应指明所有专门任务，并应特别指明每个船员必须到达的岗位以及必须执行的任务。

三、每艘客船的应变部署表须为主管机关认可的格式。

四、应变部署表应在船舶开航以前制订完毕。并应将此表副本张贴在船舶各个部位，尤其是船员住所内。

五、应变部署表应指明对船员中的不同人员所指定的下列有关任务：

㈠水密门、阀门的关闭及流水孔、出灰管、防火门的机械装置的关闭；

㈡装备救生艇（包括救生艇筏用的手提无线电设备）及其他救生设备；

㈢救生艇的降落；

㈣其他救生设备的一般准备工作；

㈤旅客的集合；

㈥依据船舶防火控制图的灭火任务。

六、应变部署表应指明在应变时指定给业务部门人员有关旅客的各项任务。这些任务应包括：

㈠向旅客告警；

㈡查看旅客是否适当地穿好衣服，以及是否正确地穿好救生衣；

㈢召集旅客于各集合地点；

㈣维持通道及梯道上的秩序，并一般地控制旅客走动；

㈤保证毛毯送到救生艇上。

七、应变部署表指明的依照本条五款㈥项有关灭火的任务应包括下列细目：

㈠指定对付火灾的消防队员的配员；

㈡指定有关操作灭火设备和装置的专门任务。

八、应变部署表应规定召集全体船员至救生艇、救生筏及消防岗位的明确信号，并应列出这些信号的全部细则。这些信号应由气笛和气雷施放。此外，除短程国际航行的客船及船长小于45.7米（150呎）的货船外，尚应补充其他电动的信号。所有这些信号均应能由驾驶台操纵。

第二十六条 应变演习与操练

一、㈠在客船上，在可行时应每周集合船员作一次救生演习和消防演习。对国际航行而非短程国际航行的客船，应在离开最后出发港后作一次如上的应变演习。

㈡在货船上，应在间隔不超过一个月的时间集合船员作一次救生演习和消防演习。但若在一港调换船员达25%以上时，则应于离该港后24小时内集合船员，作一次救生演习和消防演习。

㈢在货船上作月度应变演习的时候，救生艇的属具应经检查，并确保其完整。

㈣举行应变演习的日期，以及在船上进行任何消防训练和消防操练的细节，应记载于主管机关规定的航海日志内；如某周（对客船）或某月（对货船）未举行应变演习或仅举行部分应变演习时，则应记述其原因和

举行的范围，对货船救生艇属具的检查报告应记入航海日志，按本条三款所作的救生艇扬出及降落的时间亦应记入该航海日志。

二、客船除从事短程国际航行者外，须于离港后24小时内举行旅客应变演习一次。

三、各组救生艇应在依次的救生演习中轮流使用，而每艘救生艇均应在每四个月内，至少扬出一次以及如属合理和可行时至少降落一次。此项应变演习与检查的安排，务使船员彻底了解和熟练其应执行的任务，包括所载救生筏的操纵与操作的教练。

四、召集旅客至集合地点的紧急信号，应以气笛或气雷连续发出七个或七个以上的短声继以一长声。此外，在客船上，除从事短程国际航行者外，应补充分布在全船而由驾驶室操纵的其他的电动信号。一切对于旅客所发的信号的意义，连同应变时对旅客行动的简明指示，应以几种相应的文字清晰地写在牌上，张贴在旅客舱室内及其他旅客住所内的明显之处。

第二节 限客船适用

第二十七条 救生艇、救生筏与救生浮具

一、客船应配备二艘附连于吊艇架的救生艇（船舶每舷各1艘）以供紧急时使用。这些艇应为认可的型式，其长度不得超过8·5米（28呎）。如完全符合本章中对救生艇的要求，则这些艇可计入本条二款及三款所要求的艇数；此外如尚完全符合本章第九条的要求及第十四条的相应要求，则可计入本章第八条所要求的艇数。当船在海上时，这些艇须保持随时可用状态。为满足二十九条八款的规定在船上救生艇两侧所要求装置的设备，对于用以满足本条要求的二艘救生艇，应免于装设。

二、从事国际航行而非短程国际航行的客船，应配备：

㈠每舷救生艇总容量应能容纳船上人员总数的一半。

但是，主管机关得准以同样总容量的救生筏来代替救生艇，但无论如何，每舷应配备足够容纳不少于船上所有人员37.5%的救生艇。

㈡总容量足够容纳船上人员总数25%的救生筏连同能容纳船上人员总数3%的救生浮具。

但是，如该船的分舱因数为0.33或0.33以下时，得准许以船上总人数25%的浮具来代替该总人数25%的救生筏和3%的救生浮具。

三、㈠从事短程国际航行的客船，应按其长度照本章第二十八条表中甲栏所列的副数配备吊艇架。每副吊艇架应附连一艘救生艇，而这些救生艇至少须提供表中丙栏所要求的最小容量，或足够容纳船上所有人员所需的容量（若较前者为小时）。

但是，如主管机关认为对短程国际航行的某一艘船舶设置第二十八条表中甲栏所要求的吊艇架副数为不切实际或不合理时，主管机关可以特准较少的吊艇架副数，但此数须不少于该表乙栏所规定的最低数量，并且船上救生艇的总容量要至少等于丙栏所要求的最小容量，或足够容纳船上所有人员所需的容量（若较前者为小时）。

㈡若如此配备的救生艇不足以容纳船上所有人员，则应增加设置于吊艇架下的救生艇或加设救生筏，务使船上救生艇及救生筏的容量足够容纳船上所有人员。

㈢不管本款㈡项如何规定，任何短程国际航行船上所载的人数，不应超过按本款㈠及㈡项所备救生艇的总容量。但主管机关考虑到旅客运输量的需要，并且仅在符合第二章甲第一条四款的规定时才可例外。

(四)如按本款(三)项的规定，主管机关业已准许载运超过其救生艇容量的人员，并认为在该船上存放按本款(二)项所要求配备的救生筏为不可行时，可准许减少救生艇的数量。

但须：

1.长度为58米（190呎）及58米以上的船舶，其救生艇的数量不应少于4只，船的每舷应各配2只；长度少于58米（190呎）的船舶，不应少于2只，船的每舷各1只；

2.救生艇和救生筏的数量，应经常保持足够容纳船上所有的人员。

(五)每艘从事短程国际航行的客船，除按本款规定要求配备救生艇及救生筏外，还应增加配备足够容纳该船救生艇所容总人数10%的救生筏。

(六)每艘从事短程国际航行的客船，还应配备相当于船上人员总数至少5%的救生浮具。

(七)持有短程国际航行证书的个别船舶或某类船舶，若符合第二章甲第一条四款的规定，且备有供船上人员75%的救生艇以及在其他方面又符合本款的规定时，则主管机关可准其作超过600哩但不超过1200哩的航行。

第二十八条 短程国际航行船舶的吊艇架副数与救生艇容量表

下表按船舶长度确定：

（甲）短程国际航行船舶配备的吊艇架最少副数，每副吊艇架按本章第二十七条的规定必须附连救生艇1艘；

（乙）短程国际航行船舶按本章第二十七条规定可特准的较少吊艇架副数：

（丙）短程国际航行船舶所需救生艇的最小容量。

船舶登记长度		（甲）	（乙）	（丙）	
米	呎	最少吊艇架副数	特准较少吊艇架副数	救生艇最小容量	
				立方米	立方呎
31至37以下	100至120以下	2	2	11	400
37至43以下	120至140以下	2	2	18	650
43至49以下	140至160以下	2	2	26	900
49至53以下	160至175以下	3	3	33	1150
53至58以下	175至190以下	3	3	38	1350
58至63以下	190至205以下	4	4	44	1550
63至67以下	205至220以下	4	4	50	1750
67至70以下	220至230以下	5	4	52	1850
70至75以下	230至245以下	5	4	61	2150
75至78以下	245至255以下	6	5	68	2400
78至82以下	255至270以下	6	5	76	2700
82至87以下	270至285以下	7	5	85	3000
87至91以下	285至300以下	7	5	94	3300
91至96以下	300至315以下	8	6	102	3600
96至101以下	315至330以下	8	6	110	3900
101至107以下	330至350以下	9	7	122	4300
107至113以下	350至370以下	9	7	135	4750
113至119以下	370至390以下	10	7	146	5150
119至125以下	390至410以下	10	7	157	5550
125至133以下	410至435以下	12	9	171	6050
133至140以下	435至460以下	12	9	185	6550
140至149以下	460至490以下	14	10	202	7150
149至159以下	490至520以下	14	10	221	7800
159至168以下	520至550以下	16	12	238	8400

（丙）栏附注：如船舶长度小于31米（100呎）或大于168米（550呎），则最少吊艇架副数及救生艇总容量，应由主管机关规定。

第二十九条 救生艇、救生筏与救生浮具的存放与操作

一、救生艇及救生筏的存放，应按下述条件并得到主管机关的同意：

㈠须能于最短可能的时间内，且不超过30分钟，全部降落水中；

㈡不得以任何方式妨碍任一其他救生艇、救生筏或救生浮具的迅速操作，或妨碍船上人员在降放地点的集合或登入艇筏；

㈢救生艇与要求备有认可降落装置的救生筏，在载乘全部人员及属具后，即使在不利的纵倾情况下并在向任何一舷横倾15°时，应能被降落水中；

㈣不要求备有认可降落装置的救生筏以及救生浮具，即使在不利的纵倾情况下并在向任何一舷横倾15°时，应能被降落水中。

二、每艘救生艇应附连于一副独立的吊艇架。

三、救生艇可存放在多于一层的甲板上，但仅以能采取正确措施防止存放于下层甲板的救生艇被存放于上一层甲板的救生艇所纠缠者为限。

四、救生艇及要求备有认可降落装置的救生筏，不得置于首部。艇与筏的存放位置，应特别注意距推进器及船体后部陡斜悬空部分的距离，以确保安全降落。

五、吊艇架须为认可的设计型式，并应安置于主管机关认为满意的适宜地位。吊艇架安排于一层或多层甲板时，应使存放于下层的救生艇能安全降落，不致受任何其他吊艇架操作的妨碍。

六、吊艇架应为：

㈠所操作的救生艇在转出状态下的重量不超过2300公斤（2•25英吨）时用摇出式或重力式；

㈡所操作的救生艇在转出状态下的重量超过2300公斤（2•25英吨）时用重力式。

七、吊艇架、吊艇索、滑车及一切其他装置的强度，应在救生艇载有放艇船员时能被转出舷外，然后在载足全部人员及属具后，在船舶向任何一舷横倾15°及纵倾10°的情况下能被安全降落。

八、为了在船舶横倾15°时便于救生艇的降落，应设置滑檐或其他适当装置。

九、应设置将救生艇贴靠并系留在船舷的装置，以便乘员安全登艇。

十、救生艇以及本章第二十七条所要求的应急艇，均须使用钢丝吊艇索连同认可型式的绞车；用于应急艇的绞车，须能迅速收回该艇。如主管机关认为使用白棕绳吊艇索或其他认可材料的吊艇索为合适时，可特准采用与绞车连用或不与绞车连用的白棕绳吊艇索或其他认可材料的吊艇索（但应急艇应由能迅速收回该艇的绞车来操作）。

十一、在吊艇架横张索上至少应设置救生索2条，吊艇索及救生索的长度，应能于船舶在最小航海吃水并向任何一舷横倾15°时足以达到水面。吊艇索的下滑车应装以适当的链环或长链环，以供连接吊艇钩，但装有认可型的联动脱钩装置者例外。

十二、如设有机动装置用以收回救生艇者，仍应配备有效的手动装置。若吊艇架系通过吊艇索的动作而复原时，则应设有安全装置，在吊艇架回到原位限制器前能自动切断动力，以防止钢丝吊艇索或吊艇架受到过渡应力。

十三、附连于吊艇架的救生艇，其吊艇索须随时可用，并应设有将救生艇与吊艇索迅速但不必同时脱开的装置。吊艇索与救生艇的连接点高于艇舷边的高度，应确保救生艇在降落中的稳定。

十四、㈠从事国际航行而非短程国际航行的客船按本章第二十七条二款㈠项配备救生艇及救生筏者，应按主管机关意见配备足够的认可降落装

置，使按上述二款㈠项要求供容纳船上一切人员的那些救生筏连同救生艇，载乘其额定乘员，在平静的环境下，能于30分钟内降落水中。为此配备的认可降落装置应尽可能平均分配在船的两舷，且每舷决不少于一具。但是，本章第二十七条二款㈡项所要求供船上全部人员25%的附加救生筏，则不必备置此项降落装置；唯船上如备有认可降落装置时，则按照上述二款㈡项所配备的救生筏，应为能用此装置降落水中的型式。

㈡从事短程国际航行的客船所需备置的认可降落装置的数量，应由主管机关决定。分配给每个这种装置的救生筏数量，不应多于主管机关认为该装置在平静的环境下，能于30分钟内将满载准许容纳的人员降落水中的筏数。

第三十条 甲板、救生艇与救生筏等的照明

一、在客船的不同部位，应配备电力的或等效系统的足供一切安全需要的照明，特别是在存放救生艇与救生筏的甲板上。第二章甲第二十五条所要求的自给应急电源，应能在必要的处所供电给本照明系统，以及本章第十九条第一款㈡项、二款㈡项和㈢项所要求的照明。

二、旅客或船员所在的每一主舱室的出口，须以应急灯作经常不断的照明。此项应急灯电源的布置，须能于主发电机失效时由本条一款所述的应急电源供电。

第三十一条 救生艇与救生筏的配员

一、每艘救生艇应由一名驾驶员或执证救生艇员负责指挥，并应指派一名副的负责人。负责人员应有该救生艇的艇员名单，并应注意在其指挥下的人员是否熟悉他们的各项任务。

二、每艘机动救生艇应指派一名能操作发动机的人员。

三、备有无线电及探照灯装置的每艘救生艇，应指派一名能使用该项设备的人员。

四、所配备的每只救生筏，应指派一名能熟练地操纵及运用它的人员，但从事短程国际航行的船舶，主管机关认为不切实际时可以例外。

第三十二条 执证救生艇员

一、在客船上，为符合本章规定而配备的每艘救生艇，其执证救生艇员的人数至少应如下表所规定：

救生艇额定乘员	执证救生艇员最少人数
41人以下	2
41人至61人	3
62人至85人	4
85人以上	5

二、对各救生艇分配执证救生艇员的事项，由船长自行决定。

三、合格证书应由主管机关授权颁发。为了取得此项证书，申请人须证明其曾受过救生艇和其他救生设备降落下水以及使用划桨和推进机械的一切操作训练，须证明其熟悉救生艇及其他救生属具等的实际操作。还须证明其能理解和回答关于各种救生设备的口令。

第三十三条 救生浮具

一、各型救生浮具除满足下列条件者外，不得予以认可：

㈠其尺度及强度，应能自其存放处所投入水中而不受损伤；

㈡其重量应不超过180公斤（400磅），但备有主管机关认为满意的适当装置，能使其下水而无需用手抬起者除外；

㈢应为认可的材料及构造；

㈣当任何一面向上浮起时，均应有效和稳定；

(五)其空气箱或等效浮力设备应尽可能安放在浮具的边缘，且此浮力不得依靠充气；

(六)须装有首缆，并应沿其外围牢固地装设链环状把手索。

二、对救生浮具所核定的人数应等于：

(一)以14.5除其于淡水中能支持的铁块的公斤数（或以32除磅数）；

(二)以305除其周长的毫米数（或等于其周长的呎数）。

视何者为小而定。

第三十四条 应配备的救生圈数量

客船所配备的最少救生圈数量应按下表规定：

船长		最少救生圈数
米	呎	
61以下	200以下	8
61至122以下	200至400以下	12
122至183以下	400至600以下	18
183至244以下	600至800以下	24
244及244以上	800及800以上	30

第三节 仅适用于货船

第三十五条 救生艇与救生筏的数量与容量

一、(一)除捕鲸工厂船、鱼类加工或制罐头工厂船以及运载捕鲸、鱼类加工或制罐头工业的从业人员的船舶外，每艘货船均应在每舷配备总容量足以容纳船上所有人员的救生艇，此外尚应配备足以容纳船上人员总数一半的救生筏。

但是，若此类货船从事于邻近国家间的国际航线，主管机关如认为在该航线条件下，强制配备救生筏为不合理或不必要时，可以对该范围内个别船舶或某类船舶免除此项要求。

㈡1.除应遵照本款㈡项2目规定外，每艘3 0 0 0总吨及3 0 0 0总吨以上的油轮应配备不少于四艘救生艇，二艘置于尾部，二艘置于中部，如中部没有上层建筑，则全部救生艇均应置于尾部。

2.中部没有上层建筑的3 0 0 0总吨及3 0 0 0总吨以上的油轮，如果符合下列条件，主管机关可准许仅配备二艘救生艇：

(1)船舶尾部的每一舷配备救生艇1艘；

(2)每艘救生艇的长度不得超过8 • 5米（2 8呎）；

(3)每艘救生艇应尽实际可能靠前放置，其位置须使救生艇尾端至少在推进器之前相当于一倍半救生艇的长度之处；

(4)每艘救生艇应在安全和可行的条件下尽可能放置于靠近海面处所。

二、㈠每艘捕鲸工厂船、鱼类加工船或制罐头工厂船，以及每艘载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，均应配备：

1.每舷救生艇的总容量能容纳船上所有人员的半数；

但是，主管机关可准许以同样总容量的救生筏来代替救生艇，然而无论如何船舶每舷应配备足够容纳不少于船上所有人员3 7 • 5 %的救生艇。

2.总容量足够容纳船上所有人员半数的救生筏。

但是，鱼类加工船或制罐头工厂船如配备完全符合本章要求的救生艇为不切实际时，则主管机关可以允许以其他小艇代替；但此种小艇应提供不少于本条所要求的容量，并应具有本章对救生艇所要求的最少浮力及属具。

㈡每艘捕鲸工厂船、鱼类加工船或制罐头工厂船，以及每艘载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，应配备小艇2艘（每舷1艘），以供紧急时使用，这些艇应为认可的型式，且其长度不得大于8 • 5米

（２８呎）。如其完全符合于本章对救生艇的要求，则可计入本款的艇数；此外，如其也符合于第九条及第十四条的相应要求，则可计入第八条的艇数。当船在海上时，这些艇应经常保持随时可用状态。为满足第三十六条七款的规定在船上救生艇两侧所要求装置的设备，对于用以满足本条要求的两只小艇上，应免于装设。

三、船中部没有上层建筑而其登记长度为１５０米（４９２呎）及１５０米以上的每艘货船，除本条一款㈠项所要求的救生筏之外，尚应配备一只至少能容纳六人的救生筏，此筏应在合理和可行的条件下，尽量靠前放置。

第三十六条　吊艇架及降落装置

一、货船上救生艇及救生筏的存放，应得到主管机关的同意。

二、每艘救生艇应附连于一副独立的吊艇架。

三、要求备有认可的降落装置的救生艇和救生筏，最好应存放于尽可能靠近起居和服务处所的地方。其存放位置应使其确能安全降落水中，特别应该注意距推进器及船体的陡斜悬空部分的距离，以尽可能使艇与筏能从船舷平直部分降落水中。如果置于船的前部，则应存放于防撞舱壁之后有遮蔽的地方，对此，主管机关应对吊艇架的强度给予特别的考虑。

四、吊艇架的设计，须经认可，并应置于主管机关认为满意的适当地位。

五、１６００总吨及１６００总吨以上的油轮、捕鲸工厂船、鱼类加工船或制罐头工厂船，以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶，其所有吊艇架均应为重力式。其他船舶的吊艇架应为：

㈠所操作的救生艇在转出状态下的重量不超过2300公斤（2·25英吨）时，用摇出式或重力式；

㈡所操作的救生艇在转出状态下的重量超过2300公斤（2·25英吨）时，用重力式。

六、吊艇架、吊艇索、滑车及一切其他装置的强度，应在救生艇载有放艇船员时能被转出舷外，然后在载足全部人员及属具后在船舶向任何一舷横倾15°及纵倾10°的情况下能被安全降落。

七、为了在船舶横倾15°时便于救生艇的降落，应设置滑檩或其他适当装置。

八、应设置将救生艇贴靠并系留在船舷的装置，以便乘员安全登艇。

九、救生艇以及本章第三十五条二款㈡项所要求的应急小艇，均须使用钢丝吊艇索与认可型式的绞车；而用于应急小艇的绞车，须能迅速收回该艇。如主管机关认为使用白棕绳吊艇索或其他认可材料的吊艇索为合适时，可特准采用与绞车连用或不与绞车连用的白棕绳吊艇索或其他认可材料的吊艇索（但应急小艇应由能迅速收回该艇的绞车来操作）。

十、在吊艇架横张索上至少应设置救生索两条，吊艇索及救生索的长度，应能于船舶在最小航海吃水并向任何一舷横倾15°时足以达到水面。吊艇索的下滑车应装以适当的链环或长链环，以供连接吊艇钩，但装有认可型的联动脱钩装置者例外。

十一、如设有机动装置用以收回救生艇者，仍应配备有效的手动装置，若吊艇架系通过吊艇索的动作而复原时，则须设有安全装置，在吊艇架回到原位限制器前能自动切断动力，以防止钢丝吊艇索或吊艇架受到过度应力。

十二、救生艇的吊艇索须随时可用，应设有将救生艇与吊艇索迅速但不必同时脱开的装置。吊艇索与救生艇的连接点高于艇舷边的高度，应确保救生艇在降落中的稳定。

十三、捕鲸工厂船、鱼类加工船或制罐头工业船，以及载运捕鲸、鱼类加工或制罐头工业的从业人员的船舶按第三十五条二款㈠项2目的要求配备救生艇与救生筏者，不需对救生筏配备认可的降落装置，但应按照主管机关的意见，对按该条二款㈠项1目要求配备的救生筏，配备足够数量的认可降落装置，使其在载乘额定乘员，在平静的环境下，能于30分钟内降落水中。如此配备的认可降落装置，应尽可能平均地分配在船的两舷。如船上要求备有认可的降落装置，则配备在船上的每只救生筏，应为能由此装置降落水中的型式。

第三十七条 应配备的救生圈数量

至少应配备符合本章第二十一条要求的救生圈8个。

第三十八条 应急照明

本章第十九条一款㈡项、二款㈡项及㈢项所要求的照明，应由按照第二章甲第二十六条所要求的应急电源至少能供电3小时。对1600总吨及1600总吨以上的货船，主管机关应确保对走廊、梯道和出口所作照明，务使船上所有人员在通往艇筏降落地点及存放地点时不受阻碍。

第四章 无线电报与无线电话

第一节 适用范围与定义

第一条 适用范围

一、除另有明文规定外，本章适用于一切适用本规则的船舶。

二、本章不适用于在北美洲五大湖以及与其接连的，东至加拿大魁北克省蒙特利尔的圣拉姆伯特船闸下游出口处为止的水域及支流内航行的船舶，而该船舶在其他情况下应适用本规则。*

三、本章的规定，概不妨碍遇险船舶或遇险救生艇筏自行采用任何方法以引起注意，表明其位置及求得救助。

第二条 名词与定义

用于本章的下列名词，其含义解释如下。用于本章的，同时在无线电规则内也有定义的一切其他名词，其含义与该规则所定的定义相同：

一、“无线电规则”系指随时可生效的最新国际电信公约所附的或认为所附的无线电规则。

二、“无线电报自动报警器”系指业经认可并能响应无线电报报警信号的自动报警接收设备。

三、“无线电话自动报警器”系指业经认可并能响应无线电话报警信号的自动报警接收设备。

四、“无线电话台”、“无线电话装置”和“无线电话值班”，除另有明文规定外，应考虑属于中频频带。

五、“无线电报务员”系指特有符合无线电规则规定的至少一级或二级无线电报务员证书或水上活动业务无线电通信报务员一般证书，并从事于符合本章第三条或第四条规定的船舶无线电报台工作的人员。

六、“无线电话务员”系指持有符合无线电规则规定的适当证书的人员。

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* 此类船舶按为安全目的利用无线电的有关特殊要求办理，此要求载于加拿大与美利坚合众国的有关协议内。

七、“现有设备”系指：

㈠不管各个主管机关接受公约的生效日期如何，凡在本公约生效之日以前，已全部安装于船上的设备；

㈡设备的一部分在本公约生效之日以前已安装上船，而其余部分由相同部件来代替或由符合本章要求的各部件所组成。

八、“新设备”系指非现有设备的任何设备。

第三条 无线电报台

任何吨位的客船与1600总吨及1600总吨以上的货船，除按本章第五条得予免除者外，应设置符合本章第九和第十条规定的无线电报台。

第四条 无线电话台

300总吨及300总吨以上但小于1600总吨的货船，除设有符合本章第九和第十条规定的无线电报台外，如未能得到本章第五条的免除，则应设置符合本章第十五和第十六条规定的无线电话台。

第五条 对第三条与第四条的免除

一、各缔约国政府虽认为对本章第三条与第四条的执行不宜有所放宽，但主管机关可准许个别客船或个别货船，部分地及(或)有条件地免除或全部免除本章第三条或第四条的要求。

二、按本条一款所准许的免除，仅对从事某一航线的船舶，如其离岸最大距离、航程的远近、不存在一般航行危险及影响安全的其他情况均导致使其完全适用本章第三条或第四条为不合理或不必要时，才应予以核准。对个别船舶决定可否免除时，主管机关应考虑该项免除对那些为所有船舶安全所进行的遇险业务在总效果上的影响。主管机关应牢记，对按本章第

三条规定获得免除的船舶，须要求其设置符合本章第十五和十六条规定的无线电话台作为免除的条件。

各主管机关应于每年一月一日后，尽早向海协组织提交前一年度内按本条一及二款所有核准免除的报告，并阐明核准这些免除的理由。

第二节 值 班

第六条 无线电报值班

一、按照本章第三或第四条的规定设置无线电报台的每艘船舶，当其在海上时，至少应配备无线电报务员一名。如未设置无线电报自动报警器，则应由一名无线电报务员用耳机或扬声器在无线电报遇险频率上连续守听，并须按本条四款的规定办理。

二、按照本章第三条的规定设置无线电报台的每艘客船，如设有无线电报自动报警器，当其在海上时，则应由一名无线电报务员用耳机或扬声器在无线电报遇险频率上守听，并须按本条四款的规定办理。其守听时间如下：

㈠如载客或核准载客为250人或250人以下者，每日守听累计至少8小时；

㈡如载客或核准载客在250人以上并航行于两连续港口间航程时间超过16小时者，每日守听累计至少16小时。在此情况下，船上应至少配备两名无线电报务员；

㈢如载客或核准载客在250人以上而航行于两个连续港口间航程时间少于16小时者，每日守听累计至少8小时。

三、㈠按照本章第三条的规定设置无线电报台的每艘货船，如设有无线电报自动报警器，当其在海上时，应由一名无线电报务员用耳机或扬声

器在无线电报遇险频率上守听，每日累计至少8小时，并须按本条四款的规定办理。

㈡3 0 0总吨及3 0 0总吨以上而小于1 6 0 0总吨并按本章第四条设置无线电报台的每艘货船，若设有无线电报自动报警器，当其在海上时，应由一名无线电报务员用耳机或扬声器于主管机关可能决定的时间内在无线电报遇险频率上守听，并须按本条四款的规定办理。但主管机关应考虑到每当实际可行时，须要求其作每日累计至少8小时的守听值班。

四、㈠在本条所要求的无线电报务员在无线电报遇险频率上守听的时间内，如该员正在处理其他频率上的业务或执行其他重要无线电任务时，可以中断此项守听，但仅以不能使用分股耳机或扬声器者为限。在无线电规则所规定的静默时间内，应由一名无线电报务员用耳机或扬声器始终保持此项守听值班。

本条中"重要无线电任务"一词包括对下述设备的紧急修理：

1.用于安全的无线电通信设备；

2.船长指令的无线电助航设备。

㈡除本款㈠项的规定外，在配有多名报务员的客船以外的船舶上，报务员尚可在特殊情况下，即在不能使用分股耳机或扬声器的情况下，按船长的指令中断守听，以进行为防止下述设备发生紧急故障所需的维修工作：

——用于安全的无线电通信设备；

——无线电助航设备；

——其他电子助航设备，包括其修理；

但应：

1.按照有关主管机关的意见，该报务员是适合于胜任和执行这些任务的；

2.该船装有满足无线电规则要求的接收选择器；

3.在无线电规则所规定的静默时间内，有一名无线电报务员用耳机或扬声器始终保持此项守听值班。

五、当设有无线电报自动报警器的所有船舶在海上未按本条二、三及四款的规定进行守听时，以及在测向工作的时间内每当实际可行时，均应将无线电报自动报警器开启工作。

六、本条所规定的守听时间，包括经主管机关确定的守听时间，均须在无线电规则所指定的无线电报业务时间内优先执行。

第七条 无线电话值班

一、按照本章第四条设置无线电话台的每艘船舶，为了安全的目的，应至少配备无线电话务员一名（该员可为持有无线电话证书的船长、驾驶员或其他船员），当该船在海上时，应在船上通常驾驶的地方，通过利用扬声器、滤波扬声器或无线电话自动报警器的无线电话遇险频率值班收信机，在无线电话遇险频率上保持连续值班。

二、按照本章第三条或第四条的规定设置无线电报台的每艘船舶，当其在海上时，应在主管机关指定的地方，通过利用扬声器、滤波扬声器或无线电话自动报警器的无线电话遇险频率值班收信机，在无线电话遇险频率上保持连续值班。

第八条 甚高频无线电话值班

按照第五章第十八条的规定设有甚高频无线电话站的每艘船舶，应按该条述及的缔约国政府所可能要求的时间和频道，在驾驶室内保持守听值班。

第三节 技 术 要 求

第九条 无线电报台

一、无线电报台应设置在没有外来机械干扰或其他噪音的有害干扰，而影响对无线电信号的正常接收的地方，并应尽可能设置在船内高处，使其可获得最大可能的安全程度。

二、无线电报工作室应足够宽敞和通风良好，使主用和备用无线电报设备能有效地工作，并不应用作任何会妨碍无线电报台工作的用途。

三、至少有一名无线电报务员的住室应尽可能靠近无线电报工作室。在新船上，此住室不应设在无线电报工作室内。

四、无线电报工作室与驾驶室及另一驾驶处所（如设有时）之间，应装设有效的双向呼唤和双向声话通信系统。此系统应与船上的主通信系统分开。

五、无线电报设备应设于能防水或防高温和低温的有害影响的处所，并应在遇险即刻使用和修理情况下，能易于到达。

六、应备有一可靠的同心秒针的时钟，其盘面直径不得少于 *1 2 • 5* 厘米（*5* 吋），字盘面上应有表示按无线电规则为无线电报业务所规定的静默时间的标志。此钟应牢固地装于无线电报工作室内，其位置应使无线电报务员自无线电报操作位置或无线电报自动报警接收机试验位置能容易而准确地看见整个时钟字盘。

七、在无线电报工作室内，应备有可靠的应急照明灯，该灯由固定装置的电灯所组成，其位置应对主用及备用无线电报设备的操作控制及按本条六款要求的时钟能提供良好的照明。在新设备内，如该灯由本章第十条一款㈢项所要求的备用电源供电时，除非无线电报工作室的布局不许可，则应由设于无线电报工作室主门附近及无线电报操作处所的双路开关控制。此开关须以清晰标志指明其用途。

八、在无线电报工作室内，应备有按本章第十条一款㈢项所要求的备用电源供电并设有足够长度软线的检查灯，或备有手电筒。

九、无线电报台应备置必要的备件、工具以及测试设备，使无线电报设备能在海上经常保持于良好的工作状态。测试设备应包括一只或数只测量交流电压、直流电压及电阻的仪表。

十、如设有独立的应急无线电报工作室，则本条四、五、六、七及八款的要求均应适用。

第十条 无线电报设备

一、除本条内另有明文规定外，应按下列规定：

㈠无线电报台应包括主用设备及备用设备，在电源上应互相分开而彼此独立。

㈡主用设备应包括主用发信机、主用收信机、无线电话遇险频率值班收信机及主用电源。

㈢备用设备应包括备用发信机、备用收信机及备用电源。

㈣应设置主用天线和备用天线；如主管机关对任一船舶认为设置备用天线为不切实际或不合理时，可准该船免装备用天线，但在此情况下，应备有整套装妥的适当备用天线，以备随时架设。此外，在任何情况下，须备有足够的天线导线及绝缘子，使能架设适当的天线。

如主用天线悬于易受抖动的支柱之间，则应予以适当保护以防断线。

二、货船上的无线电设备（1600总吨及1600总吨以上的货船，在一九五二年十一月十九日或以后安装的设备除外），如其主用发信机符合于备用发信机的所有要求，则不必另设备用发信机。

三、㈠主用及备用发信机，应能迅速地与主用天线连线和调谐，如设有备用天线时亦应如此。

㈡主用及备用收信机，应能迅速地与其所需使用的任何天线连接。

四、备用设备的所有部件，应尽可能设置在船内高处，使其可获得最大可能的安全程度。

五、主用及备用发信机，应能在无线电报遇险频率上，按无线电规则对该频率所指定使用的某一发射类型进行发射。此外，主用发信机应能于核准的频带在405千赫和535千赫之间至少二个工作频率上，按无线电规则对这些频率所指定使用的各种发射类型进行发射。备用发信机可由一台按无线电规则所规定的并限制使用的船舶应急发信机所组成。

六、主用及备用发信机如按无线电规则规定为调制发射者，则应具有不少于70%的调制深度及在450赫至1350赫之间的音频。

七、当主用及备用发信机连接于主用天线时，应具有下列最小正常射程，意即在昼间以及正常情况和环境下，于所规定的射程内，它们应能在船与船之间发送清晰可辨的信号*（如收信机处的场强有效值至少为每米50微伏时，通常将能收到清晰可辨的信号）。

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* 在无场强的直接测量时，下列数据可作为近似地确定正常射程的参考。

正常射程浬数	米－安培＋	天线总功率（瓦特）＋＋
200	128	200
175	102	125
150	76	71
125	58	41
100	45	25
75	34	14

	最小正常射程距数	
	主发信机	备用发信机
所有客船与1600总吨及1600总吨以上的货船	150	100
1600总吨以下的货船	100	75

＋此数值表示天线在最深载重水线以上的最大高度米数与天线电流安培数（有效值）的乘积。

表中第二栏所列数值，相当于下式比值的平均值：

$$\frac{\text{天线有效高度}}{\text{天线最大高度}} = 0 \cdot 47$$

此比值随天线附近情况而变，其变化范围约在0·3与0·7之间。

＋＋表中第三栏所列数值，相当于下式比值的平均值：

$$\frac{\text{天线幅射功率}}{\text{天线总功率}} = 0 \cdot 08$$

此比值依天线有效高度及天线电阻的值而发生较大的变化。

八、㈠主用及备用收信机应能对无线电报遇险频率及按无线电规则对该频率所指定的各种发射类型进行接收。

㈡此外，主用收信机应能对用作发送报时信号、气象通报及主管机关可能认为有关航行安全所必需的其他通信的各种频率及各种发射类型进行接收。

㈢无线电话遇险频率值班收信机应预先调整在遇险频率上。如驾驶室没有无线电话报警信号装置，则该收信机应设有滤波组件或抑制扬声器的器械。此器械应易于接入和断开，当遇到保持守听值班将会干扰船舶安全航行的情况时，则可根据船长的意见，使用该项器械。

㈣1.无线电话发信机（如设有时），应设有产生无线电话报警信号的自动装置，其设计应能防止由于误动作而开动，并须符合本章第十六条五款的要求。该装置应随时能停止工作，以便能立即发送遇险通信。

2.应作好布置，以便在遇险频率以外的其他频率上，使用一根适当的仿真天线，定期检查产生无线电话报警信号的自动装置是否正常工作。

九、主用收信机当其接收输入低至50微伏时应有足够的灵敏度，使在耳机内或借助于扬声器能产生信号。备用收信机当其接收输入低至100微伏时，应有足够的灵敏度，能产生同样的信号。

十、当船舶在海上时，应随时有足够的电力供给主用设备按本条七款所规定的正常射程范围进行工作，并供构成无线电报台组成部分的任何电池组充电。主用设备的供电电压，在新船上应保持在其额定电压的±10%以内；在现有船舶上应尽可能保持接近于其额定电压，如实际可能，则保持在±10%以内。

十一、备用设备应设有与船上推进动力及船舶电力系统不相连属的独立电源。

十二、㈠备用电源最好应以能由船舶电力系统充电的蓄电池组组成，在所有情况下，应能迅速投入运用，并且使备用发信机及收信机在正常工作条件下能至少连续工作六小时；此外尚须供给本条十三及十四款所列的任何附加负荷。*

㈡备用电源的容量，应足以使备用发信机和甚高频装置（如设有时）能同时工作至少六小时，但有一个开关装置能保证其仅作交替工作者除外。甚高频对于备用电源的使用，应仅限于遇险、紧急和安全的通信。作为另一办法，亦可设一个独立的备用电源供甚高频装置使用。

* 为了确定备用电源供给的负荷，建议以下式作为参考：

1／2发信机按键（点划）耗电流＋1／2发信机启键（间断）耗电流＋收信机以及与备用电源连接的附加电路的耗电流。

十三、备用电源应用来供电给备用设备及本条十八款所规定的报警信号自动拍发器（如为电动者）。

备用电源也可用来供电给：

㈠无线电报自动报警器；

㈡本章第九条七款所规定的应急照明灯；

㈢无线电测向仪；

㈣甚高频装置；

㈤产生无线电话报警信号的装置（如设有时）；

㈥按无线电规则所规定的使能从发射转换为接收，或从接收转换为发射的任何设备。

除应按本条十四款的规定办理外，备用电源不得用于本款规定以外的用途。

十四、虽在本条十三款有所规定，但主管机关可核准在货船内将备用电源供给被全部限制在船舶上部的少量小功率应急电路，例如艇甲板上的应急照明；其条件是这些电路须在必要时能随时被切断，并且此备用电源具有足够容量来承担此项附加负荷。

十五、备用电源及其配电板，应尽可能设置在船内高处，并须便于无线电报务员迅速到达。如为可能，配电板应置于无线电室内；如不可能，则应能予以照明。

十六、当船舶在海上时，不论构成主用设备组成部分或备用设备组成部分的蓄电池组，均应每日充电使其达到正常充足状态。

十七、应采取一切措施尽可能消除船上电气设备及其他设备对无线电产生干扰的原因，并抑制其干扰。如必要，应采取措施保证接于广播收音

机的天线不致干扰无线电报设备的有效或正确的工作。在设计新船时，对此项要求应特别注意。

十八、除手控拍发无线电报报警信号装置外，还应备有无线电报报警信号自动拍发器，以键控主用及备用发信机来发送无线电报报警信号。此拍发器须能随时被停止动作，以便对发信机立即进行手控拍发信号。如拍发器为电动者，应能由备用电源供电工作。

十九、当船舶在海上时，如备用发信机未用于通信，则应每日以仿真天线进行试验；并且，如设有备用天线，则在每航次中用备用天线至少试验一次。备用电源亦应每日试验。

二十、构成无线电报设备组成部分的一切属具，应是可靠的，其结构应易于到达，以便进行维护保养。

二十一、虽在本章第四条有所规定，主管机关可对1600总吨以下的货船，准许对本规则及本章第九条的全部要求予以放宽，但对其无线电报台的标准应尽可能不低于本章第十五及十六条对无线电话台所规定的同等的标准。特别对300总吨及300总吨以上而少于500总吨的货船，主管机关不需要求配备下列设备：

㈠备用收信机；

㈡现有设备中的备用电源；

㈢预防主用天线受抖动而断线的保护装置；

㈣独立于主通信系统的无线电报台与驾驶室之间的通信装置；

㈤发射射程大于75浬。

第十一条 无线电报自动报警器

一、一九六五年五月二十六日以后安装的任何无线电报自动报警器，应符合下列最低要求：

㈠如无任何干扰，且在接收输入的信号强度大于1 0 0微伏而小于1伏时，此自动报警器应在不需人工调整的情况下，能由海岸电台、船舶应急发信机和救生艇筏的发信机根据无线电规则在无线电报遇险频率上拍发的任何无线电报报警信号所开动。

㈡在无任何干扰时，此自动报警器应能由连续三长划或四长划的信号所开动，其条件是每一长划的时间在3 • 5秒至尽可能近于6秒内变化，而长划之间的间隔时间在1 • 5秒与一最好不超过10毫秒的最低可能值之间变化。

㈢报警器不应被天电和其收到的实际上未构成上述本款㈡项所指公差限度内的无线电报警信号以外的任何信号所开动。

㈣无线电报自动报警的选择性，应在无线电报遇险频率向每边扩展不少于4千赫不大于8千赫的频带宽度内，提供一个在实际上是均匀的灵敏度，并在该频带宽度以外，提供一个在符合最佳技术实践的条件下能尽速降低的灵敏度。

㈤如可能，当存在天电或干扰信号时，无线电报自动报警器应能自动调整，使其在合理的短时间内，达到能迅速辨别无线电报报警信号的状态。

㈥当无线电报自动报警器被无线电报报警信号所开动或当其万一失效时，应能在无线电报工作室、无线电报务员住室及驾驶室上发出连续的可听警告。如可能，当其整个报警接收系统的任何部分失效时，也应能发出警告。只应设置一个停止此项警告的开关，而此开关应设在无线电报工作室内。

㈦为了经常对无线电报自动报警器进行试验，该报警器应包括预先调谐至无线电报遇险频率的振荡器和拍发器，以产生本款上述㈠项所指的最低强度无线电报报警信号。为了守听由无线电报自动报警器所接收下来的信号，还应备有耳机插座。

(八)无线电报自动报警器，应能承受相当于船舶在海上所经历的恶劣情况下的振动、湿度及温度变化，并应能在这些情况下继续工作。

二、在认可某种新型无线电报自动报警器之前，有关主管机关应通过相当于实际操作情况下的实效试验，以证实该设备符合本条一款的规定。

三、当装有无线电报自动报警器的船舶在海上时，须由无线电报务员每24小时至少试验该报警器的效能一次。如其处于不正常工作状态，则无线电报务员应将此事报告给船长或驾驶室上的值班驾驶员。

四、无线电报务员应定期检查无线电自动报警器收信机是否正常工作，在检查时，接通其正常天线，收听信号，并与主用设备在无线电报遇险频率上所收到的相同信号作比较。

五、当无线电报自动报警器与天线连接时，应尽可能使其不影响测向仪的准确性。

第十二条 测向仪

一、(一)第五章第十二条所要求的测向仪，应能有效地收听信号并具有最小的接收机噪音，还应能有效地测定方位，从而可以确定真方位及真方向。

(二)测向仪应能接收由无线电规则对遇险和测向以及水上无线电示位标所指定的各种无线电报频率的信号。

(三)如无干扰时，测向仪应有足够的灵敏度，使其能对场强低至每米50微伏的信号测出准确的方位。

(四)如实际可能，测向仪应设置在机械干扰或其他噪音干扰尽可能少的地方，以免妨碍有效地测定方位。

(五)如实际可能，测向仪天线系统的设置，应使其方位的有效测定，尽可能不受由于其他天线、吊杆、钢丝旗绳或其他大型金属物的靠近而引起的妨碍。

(六)在测向仪与驾驶室之间，应装设有效的双向呼唤及双向声话通信装置。

(七)所有初装的测向仪均应校准至主管机关满意的程度，当任何天线或甲板上任何建筑物的位置变更可能明显影响测向仪的准确性时，应以方位进行核对或重行校准。校准表应每经一年或近于每经一年的期间核对一次。校准或任何有关准确性的核对，均应留存记录。

二、(一)在无线电话遇险频率上进行搜索的无线电设备应能在该频率上测取测向方位，并应在首部两舷各30°的弧度范围内不存在方向模糊点。

(二)安装和试验本条所涉及的设备时，应考虑国际无线电咨询委员会的有关建议。

(三)应采取一切合理步骤以保证本款所要求的搜索能力。如由于技术上的困难而不能达到此种搜索能力时，主管机关可容许个别船舶免除本款要求。

第十三条 装于机动救生艇上的无线电报设备

一、按第三章第十四条所要求的无线电报设备应包括发信机、收信机及电源，其设计应能于紧急时由不熟练的人员使用。

二、发信机应能在无线电报遇险频率上，用按无线电规则对该频率所指定的发射类型进行发射。该发信机还应能以按无线电规则指定供救生艇筏使用的发射类型在4000千赫至27500千赫的频带范围内进行发射。

三、发信机如按无线电规则规定为调制发射者，则应具有不少于70%的调制深度及在450赫至1350赫之间的音频。

四、发信机除应备有手控发报电键外，尚应设置供发送无线电报报警及遇险信号用的自动拍发器。

五、发信机利用固定天线在无线电报遇险频率上发射时，应具有25浬的最小正常射程（按本章第十条七款的规定）*。

六、收信机应能对无线电报遇险频率及按无线电规则对该频率所指定的各种发射类型进行接收。

七、电源应由容量足供发信机在正常工作状态下连续工作四小时用的蓄电池组所组成。如电池为充电型式者，则应备有便于自船舶电源充电的装置。此外，并应备有在救生艇业已下水后对电池充电的装置。

八、当第三章第十四条所要求的无线电报设备和探照灯的电力均取于同一电池组时，此电池组应有足够的容量，以供探照灯所需的附加负荷。

九、要设置固定式天线及连同架设此天线至最大可能高度的装置。此外，如实际可能，应备有以风筝或气球支持的天线。

十、当船舶在海上时，应由无线电报务员每经一周用适宜的仿真天线试验发信机；如其电池为充电型式者，则应将电池充足。

第十四条 救生艇筏的手提无线电设备

一、第三章第十三条所要求的无线电设备，应包括发信机、收信机、天线及电源，其设计应能在紧急时由不熟练的人员使用。

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* 在无场强测量时，如天线在水线上的高度与天线电流（有效值）的乘积为10米—安，则可假定获得了此射程。

二、此设备应为便于携带、水密，能浮于海面以及能被投于海中而不致损坏。新的设备应尽可能轻便紧凑，并最好能对救生艇及救生筏均为适用。

三、发信机应能在无线电报遇险频率上以按无线电规则对该频率所指定的发射类型进行发射，并能在无线电报频率上4 0 0 0千赫至27500千赫的频带内以按无线电规则指定供救生艇筏使用的某一发射类型进行发射。但主管机关可准许该发信机能在无线电话遇险频率上并能以按无线电规则对该频率所指定的某一发射类型进行发射，用来作为按无线电规则对救生艇筏所指定的在无线电报频率上4 0 0 0千赫至2 7 5 0 0千赫频带内发射的一种替代或附加措施。

四、发信机如按无线电规则规定为调制发射者，应具有不少于70%的调制深度；而在以无线电报发射者，则应具有4 5 0赫至1 3 5 0赫之间的音频。

五、发信机除应备有手控发报电键外，尚应设置供发送无线电报报警及遇险信号用的自动拍发器。如发信机能在无线电话遇险频率上发射，则应装设符合本章第十六条五款要求的自动装置，用以发送无线电话报警信号。

六、收信机应能对无线电报遇险频率及按无线电规则对该频率所指定的各种发射类型进行接收。如发信机能在无线电话遇险频率上进行发射，则收信机也应能对该频率及按无线电规则对该频率所指定的某种发射类型进行接收。

七、天线应自行支撑或能以救生艇桅杆架设至最大可能高度。此外，如实际可能，最好应备有由风筝或气球支持的天线。

八、发信机应对本条一款所要求的天线供以充足的射频功率*，并最好由手摇发电机供电。如以电池供电，则此电池应符合主管机关所规定的条件，以确保其为耐久型式和具有足够容量。

九、当船舶在海上时，应由无线电报务员或无线电话务员每经一周用适当的仿真天线试验发信机，如其电池为充电型式者，则应将电池充足。

十、本条规定的新设备，系指本公约生效后供给船上的设备。

第十五条 无线电话台

一、无线电话台应设在船舶的上部，并应置于最大可能避免噪音的处所，以免妨碍通信及信号的正确收听。

二、在无线电话台与驾驶室之间应有有效的通信联系。

三、应牢固地装设一只可靠的时钟，其位置应放在能从无线电话操作位置容易看清整个字盘的处所。

四、应备有可靠的应急照明灯，其电源应与无线电话设备的正常照明供电系统分开，且应固定布置使能对无线电话设备的操作控制、本条三款要求的时钟以及本条六款要求的解说图片提供充分的照明。

五、如电源由电池或电池组组成时，则无线电话台应备有测定充电状态的仪表。

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* 如能实现下列条件，即可认为满足本条的要求：

输入至末级阳极的功率至少为10瓦特，或在500千赫输出至由一有效电阻为15欧母及一电容为100×10^{-12}法拉相串联的仿真天线的射频功率至少为2瓦特（A2发射类型）。其调制深度至少应为70%。

六、载列无线电话遇险程序的简明解说图片，应张贴在从无线电话操作位置能全部见到的地点。

第十六条 无线电话装置

一、无线电话装置应包括发射和接收设备以及适当的电源（以下分别称为“发信机”、“收信机”、“无线电话遇险频率值班收信机”和“电源”）。

二、发信机应能在无线电话遇险频率上，以及在1605千赫至2850千赫频带间的至少另一频率上，按无线电规则对这些频率所指定的各种发射类型进行发射。在正常工作情况下，双边带发射或全载波单边带（即A3H）发射，在峰值强度处应至少有70%的调制深度。减幅载波单边带（A3A）或抑止载波单边带（A3J）发射的调制，其相互调制分量应不超过无线电规则所规定的值。

三、㈠500总吨及500总吨以上但小于1600总吨的货船，其发信机应具有150浬的最小正常射程，即在昼间以及正常情况和环境下，发信机应能在此射程*范围上，在船与船之间发送清晰可辨的信号（如在收信机上，由未调制载波所产生的场强有效值至少为每米25微伏时，通常将能收到清晰可辨的信号）。

㈡300总吨及300总吨以上但小于500总吨的货船：

1. 对现有设备，其发信机的最小正常射程应至少为75浬；

2. 对新设备，其发信机在天线上所产生的功率应至少为15瓦特（未调制载波）。

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*在无场强测量时，如天线上的功率为15瓦特（未调制载波），并具有27%的天线效率，则可假定获得了此射程。

四、发信机应设有产生无线电话报警信号的自动装置，其设计应能防止由于误动作而开动。该装置应随时能停止工作，以便能立即发送遇险通信。应作好布置，以便在无线电话遇险频率以外的其他频率上，使用适当的仿真天线，定期检查该自动装置是否正常工作。

五、本条四款所要求的装置，应符合下列要求：

㈠各音调的频率容限为±1.5%；

㈡各音调持续时间容限为±50毫秒；

㈢连续音调间的间隔时间，不应超过50毫秒；

㈣强音波幅与弱音波幅的比值，应在1至1.2的范围内。

六、本条一款所要求的收信机应能在无线电话遇险频率上，以及在1605千赫至2850千赫频带间供海上无线电话台使用的至少另一频率上，按无线电规则对这些频率指定的各种发射类型进行接收。此外，收信机尚应能在其他频率上，按无线电规则所指定的各种发射类型，对由无线电话发送的气象通报和由主管机关可能认为有关航行安全所必须的其他通信进行接收。当接收输入低至50微伏时，收信机仍应有足够的灵敏度通过扬声器来产生信号。

七、无线电话遇险频率值班收信机应预先调整在遇险频率上。如没有无线电话报警装置，则该收信机应设有滤波组件或抑制扬声器的器械。此器械应易于接入和断开，当遇到保持守听值班将会干扰船舶航行安全时，可根据船长的意见，使用该项器械。

八、如采用手控开关以使由发射迅速转换至接收，则在实际可行的情况下，该开关的控制装置，应设在送话器上或电话机的送受话器上。

九、当船舶在海上时，应随时有足供无线电话装置按本条三款所规定的正常射程进行工作的主用电源。如设置电池组，则在一切情况下应具有

充足的容量，以供发信机及收信机在正常工作状态下至少连续工作六小时。5 0 0总吨及5 0 0总吨以上而小于1 6 0 0吨的货船，其无线电话装置设于一九五二年十一月十九日或以后者，应在船内上部备有备用电源，但其主用电源已在此位置者除外。

十、备用电源（如设有时）仅可用以供电给：

㈠无线电话装置；

㈡本章第十五条四款要求的应急照明灯；

㈢本条四款要求的用以产生无线电话报警信号的装置；

㈣甚高频设备。

十一、虽在本条十款有所规定，但主管机关可核准将备用电源（如备有时）用于测向仪（如设有时），以及用于完全限制在船舶上部的若干小功率应急电路，例如艇甲板上的应急照明；但这些附加负荷能随时被切断，并且此备用电源具有足够容量来承担这些负荷。

十二、当船舶在海上时，所备的任何电池，均应保持充足状态，以满足本条九款的要求。

十三、应设置一根天线。如该天线悬于易受抖动的支杆之间，则500总吨及5 0 0总吨以上但小于1 6 0 0总吨的货船上，应予保护以防断线。此外，应备有整套装妥能随时替换的备用天线，如实际不可能时，则应备有足够的天线导线及绝缘子，以使能架设备用天线。架设天线的必需工具亦应备全。

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* 为了确定由被要求具有六小时储备容量的电池组进行供电的负荷量，建议以下列公式作为参考：

1／2语言传送所耗电流＋收信机的耗电流＋在遇险或紧急时可由蓄电池组供电的一切附加负荷的耗电流。

第十七条 甚高频无线电话台

一、按照第五章第十八条的规定设有甚高频无线电话台时，该电话台应位于船内上部并应包括一套符合本条规定的甚高频无线电话设备。此设备由发信机和收信机、能供其在额定功率上工作的电源以及适于在工作频率上有效地发射和接收信号的天线所组成。

二、此甚高频设备应符合无线电规则为国际水上行动甚高频无线电话业务所用设备所规定的要求，并应在无线电规则所规定的各频道上和按第五章第十八条述及的缔约国政府可能要求的频道上都能工作。

三、缔约国政府不应要求发信机射频载波的输出功率大于10瓦特。天线应尽可能在所有方向不受遮挡。*

四、为航行安全所需的甚高频频道的控制装置，应在驾驶室内便于指挥的地点即刻可用；必要时，在驾驶室两翼亦应有能进行无线电通信的设备。

第十八条 无线电话自动报警器

一、无线电话自动报警器应符合下列最低要求：

㈠调谐电路的最大响应的频率以及其他音调选择设备，在每种情况下的容限应为±1.5%；该响应在最大响应的频率3%内的所有频率上不应降低至最大响应的50%以下；

* 为供参考起见，假设每船将装有高出水面9.15米（30呎）公称高度的垂直极化单位增益天线，射频输出功率为10瓦特的发信机，以及通过输入端的信噪比为20分贝，灵敏度为2微伏的收信机。

(二)在无噪音和干扰的情况下，自动接收设备应能于收到报警信号后在不少于四秒和不超过六秒的期间内进行动作；

(三)在无电和报警信号以外的强信号造成断续干扰的情况下，自动接收设备应能响应报警信号，并且在该设备保持值班的任何期间最好不需要作任何人工调整；

(四)自动接收设备不应被为无电或报警信号以外的强信号所开动；

(五)自动接收设备在能满意传送语言的范围以外应是有效的；

(六)自动接收设备应能承受相当于船舶在海上所经历的恶劣情况下的振动、湿度、温度变化和供电电压变化，并应能在这些情况下继续工作；

(七)自动接收设备在值班时间内，当发生各种会妨碍其正常功能的故障时，应尽可能发出警报。

二、在认可某种新型无线电话自动报警器之前，有关主管机关应通过相当于实际操作情况下的实效试验，以证实该设备符合本条一款的规定。

第十九条 无线电日志

一、按本章第三条或第四条设有无线电报台的船舶，根据无线电规则所要求的无线电日志（无线电业务日记），在航行期间应存放于无线电报工作室内。每一名无线电报务员，应在日志内记载其姓名、上下班时刻及其值班时间内所发生的可能对海上人命安全具有重要性的有关无线电业务的一切事件。此外，在日志内尚须记入：

(一)无线电规则所要求的记载事项；

(二)维护细节，包括电池充电记录在内，其格式可按主管机关的规定；

(三)业已执行本章第十条十六款所要求的日报；

(四)按本章第十条十九款的规定对备用发信机和备用电源所作试验的细节；

(五)在装有无线电报自动报警器的船上按本章第十一条三款所作试验的细节；

(六)电池组维护细节，包括按本章第十三条十款（如适用时）所要求的充电记录在内，以及对按该款所要求的关于装在机动救生艇上的发信机所作试验的细节；

(七)电池组维护细节，包括按本章第十四条九款（如适用时）所要求的充电记录在内，以及对按该款所要求的关于救生艇筏的手提无线电设备所作试验的细节；

(八)按本章第六条四款的规定中断守听值班的时间和原因，以及恢复守听值班的时间。

二、按本章第四条设有无线电话台的船舶，根据无线电规则所要求的无线电日志（无线电业务日记），应存放于守听值班之处。每一名合格话务员及按本章第七条执行守听值班的每一名船长、驾驶员或其他船员，应将其姓名及其值班时所发生的可能对海上人命安全具有重要性的有关无线电业务的一切事件，记入日志。此外，在日志内尚须记入：

(一)无线电规则所要求的细节；

(二)船舶离港时守听值班的开始时间，及船舶到港时守听值班的结束时间；

(三)因任何原因而中断守听值班的时间和理由，以及恢复守听值班的时间；

(四)电池组（如备有时）的维护细节，包括本章第十六条十二款所要求的充电记录；

(五)电池组维护细节，包括按本章第十四条九款（如适用时）所要求的充电记录在内，以及对按该款所要求的关于救生艇筏的手提无线电设备所作试验的细节。

三、无线电日志，应备供主管机关授权的检验人员检查。

第五章 航 行 安 全

第一条 适用范围

除本章另有明文规定外，本章适用于一切航线上的所有船舶，但军用舰艇和专门航行于北美洲五大湖以及与其连接的，东至加拿大魁北克省蒙特利尔的圣拉姆伯特船闸下游出口处为止的水域及支流的船舶，不在此限。

第二条 危险通报

一、每艘船舶的船长如遇到危险的冰、危险的漂浮物，或其他任何对航行的直接危险，或热带风暴，或遇到伴随强风的低于冰点的气温致使上层建筑严重积聚冰块，或者未曾收到暴风警报而遇到蒲福风级10级或10级以上的风力时，均有责任自行采取一切措施将此情报通知附近各船及能与之通信的最近岸上主管当局。发送这种情报，形式不受限制，可以用明语（最好用英文）或用国际信号码发送。这种情报应广播给邻近的一切船舶，还应发送到能与之通信的最近岸上地点，并要求其转达给适当的主管当局。

二、各缔约国政府采取一切必要步骤，保证在收到本条一款所述的任何危险情报时，迅速通知有关方面并传达给其他有关政府。

三、向有关船舶传达上述危险通报时，不收费用。

四、根据本条一款所发的一切无线电报应冠以安全信号，并按第四章第二条所指无线电规则所规定的程序办理。

第三条 危险通报内所需的情报

在危险通报内要包括下列情报：

一、冰、漂浮物及其他对航行的直接危险。

㈠所观测到的冰、漂浮物或航行危险的种类；

㈡最后所观测到的冰、漂浮物或航行危险的位置；

㈢最后所观测到的航行危险的时刻和日期（格林威治平时）。

二、热带风暴（西印度群岛的飓风、中国海的台风、印度海面的旋风以及其他地区类似的风暴）•

㈠遇到热带风暴的报告书•这项义务应从广义来理解，每当船长有充分理由认为在他附近正在发展或存在有热带风暴时，即须发送情报。

㈡观测时的时刻、日期（格林威治平时）和船舶的位置•

㈢在通报内必须尽可能包括下列情报：

气压，最好是修正过的气压（注明其为毫巴、毫米或吋，以及是否已经修正）；

气压趋势（过去三小时内气压的变化）；

真风向；

风力（蒲福风级）；

浪级（小浪，轻浪，中浪，巨浪）；

涌级（小，中，巨）及其传来的真方向•涌的周期和长度（短，中，长）亦将是有价值的；

船的真航向及速度•

三、继续观测•船长报告热带或其他危险的风暴后，在该船仍受风暴影响的时间内，虽无义务约束，如属可能仍希每小时作进一步的观测和通报，但无论如何每隔不超过三小时应进行一次•

四、虽未收到风暴警报而风力已达蒲福风级10级或10级以上时•

本款系指本条二款所述热带风暴以外的其他风暴；当遇到这种风暴时，通报中须包括该款所列的同样情报但不包括有关浪和涌的详情。

五、伴随强风的低于冰点的气温致使上层建筑严重积聚冰块：

㈠时刻和日期（格林威治平时）。

㈡气温•

㈢海水温度（如属可能）。

㈣风力和风向。

举　　例

冰

TTT冰。5月15日格林威治平时8点在北纬46°05′，西经44°10′发现大冰山。

漂浮物

TTT漂浮物。4月21日格林威治平时16点30分在北纬40°06′，西经12°43′见到几乎淹没的漂浮物。

航行危险

TTT航行。1月3日格林威治平时18点。甲号灯船不在原位。

热带风暴

TTT风暴。8月18日格林威治平时0点30分。北纬20°04′，东经113°54′。修正气压994毫巴，趋势下降6毫巴。西北风，风力9级，暴风雨。巨涌由东来。航向067°，航速5节。

TTT风暴。飓风接近的现象。9月14日格林威治平时13点。北纬22°，西经72°36′。修正气压2.64吋，趋势下降0.015吋。东北风，风力8级，阵风骤雨。航向035°，航速9节。

TTT风暴。情况表明已形成强旋风。5月4日格林威治平时2点。北纬16°20′，东经92°03′。未修正气压753毫米，趋势下降5毫米。风向南偏西，风力5级。航向300°，航速8节。

TTT风暴。6月12日格林威治平时3点。北纬18°12′，东经126°05′。台风在东南方。气压急速下降。北风在增强中。

TTT风暴。风力11级，未收到暴风警报。5月4日格林威治平时3点6北纬48°30′，西经30°。修正气压983毫巴，趋势下降4毫巴。西南风，风力11级，顺时针转向。航向260°，航速6节。

冰冻

TTT经受严重冰冻。3月2日格林威治平时14点。北纬69°，西经10°。气温18°，海水温度29°。东北风，风力8级。

第四条 气象服务

一、各缔约国政府承担义务，鼓励海上船舶收集气象资料，并保证用最适宜于助航目的的方式安排这些资料的审查、传播和交换。主管机关应鼓励使用高度精确的仪器，并应于请求校对此种仪器时给予便利。

二、各缔约国政府尤应承担义务，在执行下列气象安排方面尽可能进行合作：

㈠发送无线电通报同时在沿岸地点显示适当信号，警告船舶注意強风、风暴及热带风暴。

㈡每日以无线电发出适用于航运的气象公报，其中包括当时的天气、波浪和冰的资料以及天气预报，在可能时，还要发表充分的补充情报，以便能在海上编制简单的天气图，并鼓励传送适当的传真天气图。

㈢准备并发行供海上顺利开展气象工作所可能需要的刊物；如可能，并安排发布及提供每日天气图作为出航船舶的参考。

㈣安排选定的船舶配备经过校验的仪器（例如气压计、气压记录仪、湿度计及测量海水温度的适宜仪器），以供气象服务之用，并便其在主要标准时刻进行气象观测（当环境许可，每日至少4次），作为海面天气形势分析之用，并且鼓励其他船舶用变通方式进行观测，特别是在航船稀少的地区；安排这些船舶将他们的观测结果用无线电发送，以便各公立气象

服务机构得到便利，并由它们重复发送这种情报使附近船舶也得到便利。应鼓励在热带风暴或疑在热带风暴附近的船舶，当可能时增加它们的观测和发送次数，但要顾到驾驶人员在风暴情况下所需先行处理的航行任务。

(五)安排海岸电台与船舶间气象通报的收发事项。应鼓励不能直接与岸上通信的船舶将它们的气象通报经由海洋气象船或其他能与岸上联系的船舶转达。

(六)鼓励所有船长每当遇到时速50浬或50浬以上的风（蒲福风级10级风力）时，通知附近船舶及海岸电台。

(七)努力使上述国际气象服务获得统一程序，并尽可能地符合世界气象组织提出的技术规则和建议。各缔约国政府可以就执行本公约过程中所产生的任何气象问题提交该世界气象组织研究和征求意见。

三、本条所规定的情报，应按无线电规则规定的发送格式优先发送，在"向一切电台"发送气象情报、预报和警报时间内，所有船舶电台都必须遵守无线电规则的规定。

四、供船舶用的预报、警报、天气形势和其他气象报告，应按有关缔约国政府间的共同协定，由国家气象机构在为不同区域或地区服务的最佳地点，进行发布和传播。

第五条 冰区巡逻服务

一、各缔约国政府承担义务，继续担任北大西洋冰区巡逻和研究与观测冰情的服务。于整个冰季内，在纽芬兰大滩附近冰山区的东南、南及西南界限应予警戒，以便将该危险区的范围通知过往船舶，研究浮冰的一般情况以及对巡逻船活动区内的船舶和船员提供所需的援助。在一年中其余时间内也应适当保持对冰情的研究与观测。

二、用于供冰区巡逻服务及研究与观测冰情的船舶和飞机可担任管理国政府分配的其他任务，只要这些其他任务不妨碍本服务工作的原有目的或增加其费用。

第六条 冰区巡逻的管理与费用

一、美利坚合众国政府同意继续管理冰区巡逻服务及冰情的研究与观测，包括传播由此得到的情报。对这些服务工作有特殊利害关系的缔约国政府承担义务，分摊维持和提供这些服务的费用；每次分摊系根据每个分摊国政府经过冰区巡逻所警戒的冰山区的船舶合计总吨位计算；具体地说，每个有特殊利害关系的缔约国政府要承担义务，每年根据其在冰季内经过冰区巡逻所警戒的冰山区的船舶合计总吨位，与所有分摊国政府在冰季内经过冰区巡逻所警戒的冰山区内的船舶合计总吨位，按比例分摊维持和提供这些服务的费用。有特殊利害关系的非缔约国政府，可以在同样的基础上分摊维持和提供这些服务的费用。管理国政府将每年把维持和执行冰区巡逻的总费用及各分摊国政府的比例分摊额的表报供给各分摊国政府。

二、每个分摊国政府有权变更或中止其摊款，其他有关政府可承担义务来分摊服务费用。运用这项权利的分摊国政府，仍应继续负担其当时的分摊费用直至变更或中止其摊款的通知发出后的九月一日为止。在利用这项权利时，该分摊国必须在所述九月一日以前至少六个月通知管理国政府。

三、无论何时，美利坚合众国政府如欲中止担任这些服务工作，或有一个分摊国政府表示欲废弃它的摊款责任或变更它的摊款数，或另一缔约国政府愿意承担义务来分摊服务费用，则各分摊国政府对此项问题应根据它们的共同利益予以解决。

四、各分摊国政府经共同同意，有权随时对本条及本章第五条的规定作适当的变更。

五、凡本条规定经分摊国政府间同意后可以采取的某种措施，任何缔约国政府对实行这一措施的提案应送交管理国政府，由其同其他分摊国政府联系以确定它们是否接受此项提案，并将询问的结果通知其他分摊国政府和提出提案的缔约国政府。尤其是对有关这些服务费用分摊的安排，应由各分摊国政府在每隔不超过三年的时间内进行复查。为达到此目的，管理国政府应主动采取必要的行动。

第七条 接近浮冰的航速

每艘船舶的船长当据报有浮冰在该船航线上或在其航线附近时，在夜间必须以缓速前进或变更该船航向，以便远离危险区。

第八条 划定航路

一、为了分道航行包括避免通过指定对各船或某类船舶应避免航行的区域，或者为了避免不安全的情况，已采用的划定航路的作法，尤其是在航线密集区域，业已对航行安全作出了贡献，现建议所有有关船舶采用。

二、海协组织被认为是在国际水平上，在有关划定航路和规定各船或某类船舶应避免航行的水域方面进行建立和采取措施的唯一国际组织。它将把一切有关资料进行核对并散发给所有缔约国政府。

三、航路的选择及其付诸实施，以及怎样构成航线密集区的解释，主要由有关政府负责。在研制某些侵犯国际水域的划定航路的规划中，或在研制某些希望海协组织采用的此类其他规划中，有关政府要适当考虑海协组织已公布的有关资料。

四、缔约国政府要运用其影响保证适当使用所划定的航路，并尽一切力量保证遵循海协组织在有关船舶划定航路方面所采取的措施。

五、缔约国政府要促使航行于靠近纽芬兰大滩航线的所有船舶，尽其可能，避开北纬43°以北的纽芬兰渔场，并在已知或认为有冰险的区域外通过。

第九条 误用遇险信号

每艘船舶或每架飞机除表示遇险外，禁止使用国际遇险信号及任何与国际遇险信号可能相混的信号。

第十条 遇险通信——义务和程序

一、船长在海上当由任何方面接到遇险中的船舶或飞机或救生艇筏的信号时，应以全速前往援助遇险人员，如有可能并应通知他们正在前往援助中。如果该船长不能前往援助，或因情况特殊认为前往援助为不合理或不必要时，他必须将未能前往援助遇险人员的理由载入航海日志。

二、遇险船的船长在尽可能与应召援助的各船船长协商后，有权召请其中被认为最能给予援助的一船或数船；被召请的一船或数船的船长有义务履行应召，继续全速前进以援助遇险人员。

三、某船船长，当他知悉除他本船外其他一船或数船已被召请并正在履行应召时，得解除本条一款所责成的义务。

四、某船船长如经遇险人员的通知或经业已到达遇险人员处的另一船船长的通知，认为不再需要提供援助时，得解除本条一款所责成的义务；如果他的船为被召请者，得解除本条二款所责成的义务。

五、本条所有规定与一九一〇年九月二十三日在布鲁塞尔签订的为统一关于海上救助打捞若干规则的国际公约并无抵触，特别是该公约第十一条所责成的援助义务。

第十一条 通信信号灯

所有150总吨以上的船舶，当从事国际航行时，应在船上备有有效的白昼通信信号灯一盏，这种信号灯不应单纯依靠船舶的主用电源。

第十二条 船上航行设备

一、所有1600总吨和1600总吨以上的船舶，均应装设一台主管机关认可型式的雷达。这些船的驾驶室内应有便于标绘雷达读数的设备。

二、所有1600总吨和1600总吨以上的船舶，当从事国际航行时，应装设符合第四章第十二条规定的无线电测向设备，主管机关在适当考虑了无线电测向设备既可作为一种航行仪器又可作为一种帮助测定其他船舶、飞机或救生艇筏位置的重要工具的事实以后，若认为在某些航区装设此项设备为不合理或不必要时，可以对任何5000总吨以下的船舶免除这项要求。

三、所有1600总吨和1600总吨以上的船舶，当从事国际航行时，除磁罗经外，应增设一具电罗经。主管机关如果认为装设电罗经为不合理或不必要时，可以对5000总吨以下的任何船舶免除这项要求。

四、所有500总吨和500总吨以上的新船，当从事国际航行时，应装设一具回声测深仪。

五、虽应采取一切合理步骤以保持各种设备处于有效状态，但雷达设备、电罗经或回声测深仪的功能失常，不得认作船舶不适航，而在那些不能提供修理便利的港口亦不得作为拖延船舶在港的理由。

六、所有1600总吨和1600总吨以上的新船，当从事国际航行时，应装设符合第四章第十二条二款有关规定的在无线电话遇险频率上进行搜索的无线电设备。

第十三条 配员

从海上人命安全观点出发，各缔约国政府承担义务，对其本国的每艘船舶应经常保持，或在必要时采取措施来保证所有船舶配备足够数量和胜任的船员。

第十四条 助航设备

各缔约国政府承担义务，安排建立和维护它们认为从大量运输上证明以及从危险程度上考虑所需要的助航设备，包括无线电示位标及电子助航设备，并安排向一切有关方面提供关于这些助航设备的情报资料。

第十五条 搜寻与营救

一、每一缔约国政府承担义务，保证作一切必要的安排进行海岸守望及对沿其海岸的海上遇险者进行营救。这些安排，考虑到海上运输密度和航行障碍物的密度，必须包括被认为是实际可行和必要的海上安全设施的建立、运转和维护，并须尽可能提供足够的为寻找和营救遇险人员的设备。

二、每一缔约国政府承担义务，提供关于它现有营救设施的资料以及对其中内容所作的更改方案（如有时）。

第十六条 救生信号

救生站与海上救助单位同遇险船舶或遇险人员通信时，以及遇险船舶或遇险人员同救生站与海上救助单位通信时，应使用下列信号。飞机在进行搜寻与营救工作中，指引船舶所用的信号在下面四款中加以规定。凡适用本章的船舶应备有说明下列各种信号的图解说明表，以供该船值班驾驶员易于取用。

一、救生站与海上救助单位对船舶或个人所发遇险信号的答复：

信　　号	意　　义
昼间……橙色烟雾信号，或三个单发的声光混合信号（雷光）每隔约一分钟发射1次。	“已见到你，将尽速给予援助”
夜间……三个单发的白色星光火箭每隔约一分钟发射1次。	（重复此项信号，其意义相同）

必要时，昼间信号可用于夜间或者夜间信号用于昼间。

二、引导载有遇险船员或遇险人员小艇的登陆信号：

信　　号	意　　义
昼间……一面白旗或双臂上下挥动或发出一绿色星光信号或用灯光或音响信号工具发送电码字母“K”（—•—）。 夜间……一盏白灯或白色火焰上下挥动或发出一绿色星光信号或用灯光或音响信号工具发送电码字母“K”（—•—）。可以用一盏稳定的白灯或白色火焰置于与观测者成一直线的较低处以作示标（指示方向）。	“此处是最好的登陆地点”

昼间……一面白旗作横向运动或将双臂横伸，或发出一红色星光信号或用灯光或音响信号工具发送电码字母“S”（• • •）。 夜间……一盏白灯或白色火焰作水平运动，或发出一红色星光信号或用灯光或音响信号工具发送电码字母“S”（• • •）。	“在此处登陆极危险”
昼间……一面白旗作水平运动，随即将此白旗插于地上并持另一面白旗指示引导的方向，或者垂直地发出一红色星光信号并向较好的登陆地点的方向发一白色星光信号；若较好的登陆地点在遇险艇驶来方向的右边，也可发送电码字母“S”（• • •），接着发一电码字母“R”（• — •）；如较好的登陆地点在遇险艇驶来方向的左边，则在电码字母“S”（• • •）后接着发一电码	“在此处登陆极危险，在所指的方向有一较好的登陆处”

字母“L”(•—••)。

夜间……一盏白灯或白色火焰作水平运动，随即将这盏白灯或白色火焰置于地上并持另一盏白灯或白色火焰指于引导的方向，或者垂直地发出一红色星光信号并向较好的登陆地点的方向发一白色星光信号；若较好的登陆地点在遇险艇驶来方向的右边，也可发送电码字母“S”(…)。接着发一电码字母“R”(•—•)；如较好的登陆地点在遇险艇驶来方向的左边，则在电码字母“S”(•••)后，接着发一电码字母“L”(•—••)

三、关于使用岸上救生工具所用的信号：

信　　号	意　　义
昼间……一面白旗或双臂作上下挥动或发出一绿色星光信号。 夜间……一盏白灯或白色火焰作上下挥动或发出一绿色星光信号。	一般表示：“肯定”。 特别意义：“火箭绳已握住”。“带尾索滑车已系牢”。“绳缆已系牢”。“人在裤形救生圈中”。“拉”。

昼间……一面白旗作水平运动或将双臂横伸或发出一红色星光信号。

夜间……一盏白灯或白色火焰作水平运动或发出一红色星光信号。

一般表示："否定"。

特别意义："放松"。

"停拉"。

四、飞机在进行搜寻与营救工作中指引船舶驶向遇险的飞机、船舶或人员所用的信号（见以下附注）：

㈠飞机顺序执行下列程序，表示它正在指引一艘水面船艇驶向一遇险的飞机或遇险的水面船艇。

1.环绕水面船艇飞行至少一次；

2.紧贴水面船艇首前方低飞，并横越其航线的延伸方向，开闭节气阀（油门）或变更推进器螺距。

3.飞向指引水面船艇应前进的方向。

重复这些程序，其意义相同。

㈡飞机执行下列程序表示已不再需要信号所指引的水面船艇提供援助，

紧贴水面船艇尾后方低飞并横越该船艇的航迹，开闭节气阀（油门）或变更推进器螺距。

注：对这些信号的变更将由海协组织按需要预先发布通告。

第十七条 引水员软梯及引水员机械升降器

从事各航线的船舶在其航程中欲招请引水员者，应符合下列要求：

一、引水员软梯

㈠软梯应有效地供引水员能安全登船和离船，保持清洁和良好状态，并可于船舶到港或离港过程中供公务人员和其他人员使用。

㈡软梯的系固位置应避开船上任何可能的排水孔，每级踏板要稳固地紧靠于船旁，并应尽可能避开船型尖瘦的部位，同时使引水员在攀登不少于1.5米（5呎）而不多于9米（30呎）之后，即能安全和顺利地到达船上。使用单根软梯应能从登船口处直达水面；在备置此项软梯时，应考虑船舶的装载和纵倾以及15°不利横倾的所有情况。每当从海面到登船口处的距离超过9米（30呎）时，则用引水员软梯登船的方法应改用舷梯或其他同等安全和便利的设备。

㈢引水员软梯的踏板应为：

1.采用硬木或其他等效性质的材料整块制成而没有节疤，并具有有效的防滑表面；最低的四级踏板可采用足够强度和硬度的橡皮或用等效特性的其他适当材料制成。

2.踏板的长度不少于480毫米（19吋），宽度不少于115毫米（4½吋），不计防滑装置的厚度不少于25毫米（1吋）。

3.各级踏板之间应为等距，其间距不小于300毫米（12吋），也不超过380毫米（15吋），踏板的系固，要使其保持水平的状态。

㈣引水员软梯上不应有二块以上其系固方法不同于该梯原结构所用方法的换配踏板；这种换配踏板，应尽早用按该梯原结构所用系固方法的踏板来替换。当任何换配踏板以在边上开槽口的办法来系固于软梯的边绳时，则这种槽口应开在踏板的长边上。

㈤软梯每边的边绳应由两根裸露的白棕绳所组成，其周长不小于60毫米（2½吋）。在顶端踏板之下的每根边绳应为整根而无接头。应备有两根适当系牢于船上的扶手绳，其周长不小于65毫米（2½吋），此外还要有一根安全绳，置于手边，以备需要时使用。

(六)应备有由整根硬木或其他等效性质材料制成的几根板条，每根长度不少于1.8米（5呎10吋）。此项板条应安置在一定间隔的位置，以防止引水员软梯翻转。最低一根板条应装在从梯底倒数第五块踏板上，两根板条之间的间隔不得超过九块踏板。

(七)在引水员软梯或任何舷梯或其他装置的顶端，应有供登上或进入船舶，或者离开船舶的安全和便利的通道设施。如这种通道是利用栏杆上或舷墙上的门，则应装有适当的扶手；如这种通道是利用舷墙梯子，则这种梯子应牢固地连接在舷墙盖板上或平台上，并在进出船舶口处装两根扶手支柱，两支柱相距不少于0.7米（2呎3吋），也不大于0.8米（2呎7吋）。每根支柱在其根部或接近其根部以及另一较高之点应系固在船体结构上，支柱的直径应不小于40毫米（1½吋），并应伸出舷墙顶以上不少于1.2米（3呎11吋）。

(八)夜间应备有灯光，使舷外边的引水员软梯及引水员登船的地点，均能充分照亮。应有一个带有自亮浮灯的救生圈，置于手边，以备使用；还应有一根抛缆绳，置于手边，以备需要时使用。

(九)在船舶的两舷，均应设置能使用引水员软梯的设备。

(十)软梯的装设和引水员的登船和离船，均应由船上一位负责驾驶员进行管理。

(十一)根据船舶的构造特点，诸如装有防擦护舷材以致妨碍执行任何上述规定时，应备有使主管机关认为满意的特殊装置，以保证人员能安全地登船和离船。

二、引水员机械升降器

㈠如设有引水员机械升降器及其辅助设备，其型式须经主管机关认可。它的设计和构造应保证引水员能安全登船和离船，包括安全地从升降器到达甲板，或从甲板到达升降器。

㈡在甲板上邻近升降器之处，应备有一套符合本条一款规定的引水员软梯，以便立刻使用。

第十八条 甚高频无线电话台

某一缔约政府如要求在其主权管辖地区内航行的船舶设置甚高频无线电话台，用以与为促进航行安全而设立起来的系统相联系时，则此种无线电话台应符合第四章第十七条的规定，且应按照第四章第八条进行工作。

第十九条 自动操舵仪的使用

一、在运输稠密的地区、在能见度受限制的情况下以及在所有其他航行危险的处境中，使用自动操舵仪时，应能立即改为人工操舵。

二、在上述情况下，应能毫不迟延地为值班驾驶员提供一位合格的舵工，该舵工应随时准备接过操舵的工作。

三、从自动操舵转换为人工操舵，以及相反地从人工操舵转换为自动操舵，应由一位负责的驾驶员操作或在其监督下进行操作。

第二十条 航海资料

所有船舶应备有为其计划航程所必须的足够和最新的海图、航路指南、灯塔表、航行通告、潮汐表以及一切其他航海资料。

第二十一条 国际信号规则

按照本公约需要设有无线电报或无线电话装置的所有船舶，应备有国际信号规则。主管机关认为有必要使用该规则的任何其他船舶，亦应备有此规则。

第六章 谷物装运

第一节 通则

第一条 适用范围

除另有明文规定外，本章包括第一节、第二节和第三节，它适用于本公约所适用的一切船舶的谷物装运。

第二条 定义

一、“谷物”一词包括小麦、玉蜀黍（苞米）、燕麦、稞麦、大麦、大米、豆类、种子，以及由其加工的与谷物在自然状态下具有相同特点的制成品。

二、“满载舱”一词系指在任何舱内按第三条的要求经装载和平舱之后，散装谷物达到其可能的最高水平面。

三、“部分装载舱”一词系指在任何舱内，散装谷物未装载到本条二款所规定的状态。

四、“进水角”（θ_f）一词，系指船体、上层建筑或甲板室上不能关闭成风雨密的开口进水时的横倾角。在引用这个定义时，对不可能发生蔓延进水的小型开口，可不认为是开敞的。

第三条 谷物的平舱

应进行一切必要的和合理的平舱工作，以便把所有的谷物自由表面整成水平，并使谷物移动的影响减至最小。

一、在任何“满载舱”中，应对散装谷物加以平舱，使其尽最大可能填满甲板下方及舱口盖下方的一切空间。

二、在装载之后，“部分装载舱”内所有的谷物自由表面都应整成水平。

三、发给批准证的主管机关可按本章第一节第九条在下述情况下允许免予平舱：设置输送管道、甲板添注口或其他类似装置，使谷物自由流进舱内因而形成的甲板下方空档形状，在计算其高度时，经主管机关考虑认为满意。

第四条 完整稳性要求

一、本条要求的计算，应按本公约第二章甲第十九条的规定或按本章第一节第十条发给批准证的主管机关的要求所提供的稳性资料为基础。

二、任何装运散装谷物的船舶在整个航程中的完整稳性特征，当按照第二节所述方法考虑到由于谷物移动产生的倾侧力矩后，至少应表明能满足下列标准：

㈠由于谷物移动而产生的横倾角应不大于12度，但根据本章第一节第十条发给批准证的主管机关如经实践证明认为较小的横倾角是必要时，则可要求较小的横倾角*。

㈡在静稳性曲线图上，到达倾侧力臂曲线与复原力臂曲线的纵座标最大差值的横倾角或40度角或"进水角"（θ_f）时，取其小者，该两曲线之间的净面积或剩余面积，在一切装载情况下应不小于0.075米-弧度；

㈢经修正各舱内自由液面影响后的初稳性高度，应不小于0.3米。

三、在装载散装谷物之前，如经装货港所在缔约国政府要求，船长应利用按本章第一节第十和十一条认可和发给的资料，证明该船在任何航程的一切阶段，均能符合本条二款所要求的稳性标准。

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* 例如，允许的横倾角可以限制为当露天甲板的边缘在静水中被浸没时的横倾角。

四、在装载后，船长应确保船舶在出海之前为正浮状态。

第五条 纵向隔壁与托盘

一、在“满载舱”和“部分装载舱”内，均可设置纵向隔壁，作为减少谷物移动的有害横倾影响，或作为固定谷物表面而限制货物高度的一种装置，这种隔壁应设置成谷密，其构造应符合本章第三节第一条的规定。

二、在“满载舱”内，如设置隔壁用以减少谷物移动的有害影响，则该隔壁应：

㈠在甲板间舱内者，从甲板延伸到甲板；

㈡在货舱内者，从甲板或舱口盖的下边向下延伸，如本章第二节第二条所述。

除装运亚麻子和具有类似性质的其他种子的情况外，在舱口下方的纵向隔壁，可以用本章第三节第一条所述方法构成的托盘来代替。

三、在“部分装载舱”内，如设置隔壁时，则该隔壁应从所装谷物水平表面以上高度为该舱最大宽度1／8之处，向下延伸到谷物表面以下的同等距离。当用来限制面上堆装的高度时，中心线隔壁在谷物水平表面以上高度至少应为0．6米。

四、此外，可用充分限制移动的袋装谷物或其他适宜的货物紧密堆装于舱的两侧和两端，以减少谷物移动的有害横倾影响。

第六条 固定

一、如果不按照本规则考虑由于谷物移动所产生的有害横倾影响，则任何“部分装载舱”内的散装谷物表面应整成水平，并用袋装谷物紧密地在面上堆装，堆装高度不小于谷物自由表面最大宽度的1／16或1．2米，取其较大者。可用至少具有相等压力的其他适宜货物来代替袋装谷物。

二、面上堆装的袋装谷物或其他适宜货物应按本章第三节第二条所述方法加以支承；或选取另一方法，散装谷物表面可用该条所述捆扎或绑缚的方法来加以固定。

第七条 添注漏斗和围堚

如果设置添注漏斗或围堚，在按本章第二节第三条所述方法计算横倾力矩时，应适当考虑由此所产生的影响。构成这种添注漏斗边界的隔壁的强度应符合本章第三节第一条的规定。

第八条 连通装载布置

底层货舱及其上面的甲板间舱，如果在计算横向倾侧力矩时适当考虑了谷物流入底层舱空间的情况，则可作为一个舱进行装载。

第九条 第二和第三节的适用范围

如果满足本章第一节第四条二款的稳性标准，主管机关或代表某一主管机关的缔约国政府，经考虑了装载条件或结构布置后认为合理时，可以批准偏离第二及第三节的假定条件。根据本条所作的此种批准，其细节应记入批准证或谷物装载资料内。

第十条 批准

一、每艘按照本章规则装载的船舶，应由主管机关或其承认的机构，或由代表该主管机关的缔约国政府，发给一份批准证。这种批准证应被承认为该船能符合本章规则要求的证明。

二、该批准证应附于并提及为使船长能满足本章第一节第四条三款的要求而备置的谷物装载稳性簿。此稳性簿应满足本章第一节第十一条的要求。

三、这种批准证、谷物装载稳性资料及其附属图表可用发证国的一种官方文字或几种官方文字写成。如果使用的文字既不是英文，也不是法文，则该文本应包括有上述文字之一的译本。

四、船上应备有一份这种批准证和谷物装载稳性资料及其附属图表，以便在要求提交时由船长提交给装货港所在缔约国政府检查。

五、未持有这种批准证的船舶，在船长向主管机关或代表该主管机关的装货港所在缔约国政府证明该船的计划装载情况能够符合本章规则的要求并取得其同意之前，不得装载谷物。

第十一条 谷物装载资料

谷物装载资料，应足以使船长能在一切合理的装载情况下，确定按本章第二节计算的由于谷物移动所产生的横向倾侧力矩。此资料应包括下述内容：

一、应经主管机关或代表该主管机关的缔约国政府批准的资料：

㈠关于每个满载舱或部分装载舱，或连通装载舱的谷物倾侧力矩的曲线或图表，包括临时装置的效用；

㈡足以供船长证明符合本章第一节第四条三款要求的最大许可横向倾侧力矩表或其他资料；

㈢任何临时装置的详细尺寸，以及为满足本章第三节第一条五款要求的必要规定（如适用时）；

㈣出港和到港时典型的装载营运情况，以及必要时介于二者之间的最差装载营运情况；

㈤作为船长指南的装载实例；

㈥概括本章各项要求，以摘录形式编成的装载指示。

二、应送交主管机关或代表该主管机关的缔约国政府的资料：

㈠船舶特征；

㈡空船排水量及从船型基线与中剖面的交点至船舶重心的垂直距离（KG）；

㈢自由液面修正表；

㈣容量和重心。

第十二条 等效

如主管机关按照本公约第一章第五条准许采用等效措施，则其细节应载入批准证或谷物装载资料内。

第十三条 对某些航程的免除

主管机关或代表该主管机关的缔约国政府，如认为由于某一航程的遮蔽性和条件，使执行本章第一节第三条至第十二条的任何要求均为不合理或不必要时，则可对个别船舶或个别类型船舶免除这些特定的要求。

第二节 假定倾侧力矩的计算

第一条 假定空档的说明和完整稳性的计算方法

一、通则

㈠为了计算装运散装谷物的船舶由于货物表面移动产生的有害倾侧力矩，应假定：

1. 按照本章第一节第三条的规定经过平整的“满载舱”内，在所有对水平面的倾角小于30° 的限界面下存在一个空档，该空档与边界表面平行，其平均深度按下列公式计算：

$$V_d = V_{d_1} + 0.75\,(d - 600) \text{ 毫米}$$

式中：V_d——空档平均深度，毫米；

V_{d_1}——下面表1 所列的标准空档深度；

d——实际桁材深度，毫米；

在任何情况下，V_d 值概不得假定小于100毫米。

表 1

从舱口端或舱口边到货舱边界的距离，米	标准空档深度 V_{d_1}，毫米
0.5	570
1.0	530
1.5	500
2.0	480
2.5	450
3.0	440
3.5	430
4.0	430
4.5	430
5.0	430
5.5	450
6.0	470
6.5	490
7.0	520
7.5	550
8.0	590

表1注：

如距离大于8.0米，在距离每增加1.0米，深度增加80毫米时，标准空档深度V d_1 可按外插法计算，如果舱口边桁材或其延伸部分和舱口端横梁的深度不同时，则应采用较大的深度，但下列各项除外：

①当舱口边桁材或其延伸部分的深度较舱口端横梁的深度为小时，则与舱口并列的各空档可以采用较小的深度计算；

②当舱口端横梁的深度较舱口边桁材或其延伸部分的深度为小时，则在舱口前、后方位于舱口边桁材的延伸部分以内的各空档可以采用较小的深度计算；

③当在舱口之外有一升高甲板时，则量自升高甲板下边的空档平均深度，应以标准空档深度加上舱口端横梁的桁材深度，再加上升高甲板的高度来计算。

2.未按本章第一节第三条的规定加以平舱且限界面与水平面的倾角小于30°的"满载舱"内，装载后货物表面与水平线的倾角为30°。

3.在装满的舱口内，除在舱口盖内任何开敞的空档外，有一个自舱口盖最低部分或舱口边围板的顶端（取其较低者）量至谷物表面的平均深度为150毫米的空档。

㈡在"部分装载舱"内，假定谷物表面变动形状的说明见本节第四条。

㈢为了证明符合本章第一节第四条二款的稳性标准（见图1），通常应根据假定"满载舱"的货物重心就是整个货物处所的体积中心来进行船舶的稳性计算。在某些情况下，如主管机关批准在"满载舱"内应考虑甲板下方各假定空档对货物重心的垂向位置的影响时，则有必要按下式用增加由于谷物横向移动的假定倾侧力矩，以补偿谷物表面垂向移动的有害影响：

总倾侧力矩＝1.06×计算的横向倾侧力矩

在所有情况下，"满载舱"内货物的重量应为整个货物处所的容积除以积载因数。

㈣在“部分装载舱”内，应按下式计算谷物表面垂向移动的有害影响：

总倾侧力矩＝1.12×计算的横向倾侧力矩

㈤上述㈢和㈣项所要求的补偿可采用任何其他等效的方法。

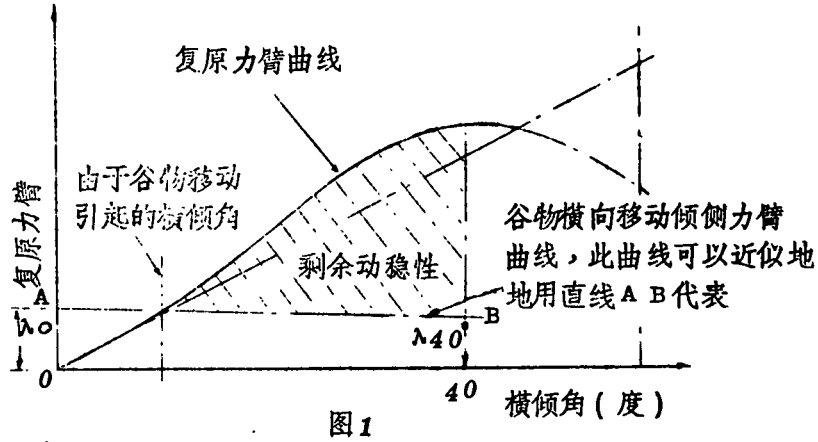

图1

图1注：

①图中：

$$\lambda_0 = \frac{\text{由于横向移动的假定体积倾侧力矩}}{\text{积载因数}\times\text{排水量}}$$

$$\lambda_{40} = 0.8 \times \lambda_0$$

积载因数——谷物单位重量的体积；

排水量——船舶、燃料、淡水、备品等和货物的重量。

②复原力臂曲线应由横交曲线导出，这些横交曲线的数目应足以准确地确定所要求的曲线，并应包括12°和40°处的横交曲线。

第二条 满载舱的假定体积倾侧力矩

一、通则

㈠谷物表面移动的形状与通过所考虑的该舱某一部份的横剖面有关，该部分的总力矩应以所得倾侧力矩乘以长度求得。

㈡由于谷物移动而假定的横向倾侧力矩，是谷物从高边向低边移动后，各空档形状和位置最终变更的结果。

㈢移动后所得到的谷物表面，应假定为与水平成 15° 角。

㈣计算相对于纵向构件所能形成的最大空档面积时，任何水平面的影响，例如折边或面材，应忽略不计。

㈤初始和最终的各空档的总面积应相等。

㈥一个不连续的纵向隔壁，应认为对其全长有效。

二、假定

在下述各项内，一个舱的假定总倾侧力矩是由分别考虑下列各部分的结果相加而得：

㈠各舱口以前和以后部分：

1.如果一个舱间有二个或二个以上的主舱口可进行装载，则这些舱口之间一部分（或几部分）的甲板下空档深度，应以舱口以前及以后至两舱口间中点的距离确定之。

2.假定谷物移动之后，最终的空档形状应如图 2 所示。

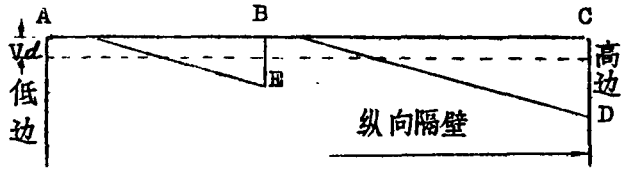

图 2

图 2 注：

①如靠着 B 处桁材所能形成的最大空档面积，小于在 A B 之下空档的初始面积，即 A B × V d，则多余的面积应假定转移到高边的最终空档。

②如果在C处的纵向隔壁系按本章第一节第五条二款㈡项的规定设置者，则该隔壁应向下延伸低于D或E点至少0.6米，取其较深者。

㈡各舱口内和两侧：

假定谷物移动之后，最终的空档形状应如图3及图4所示。

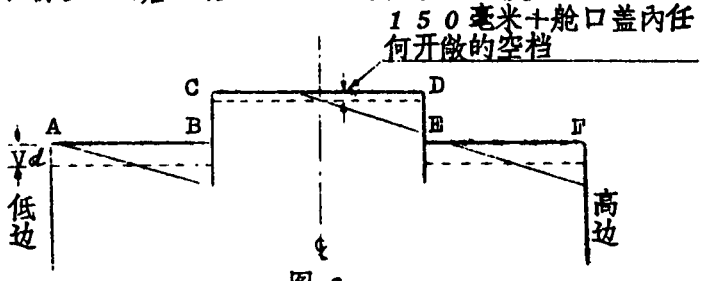

图3

图3注：

①A B处：任何对着B处桁材所能形成的多余面积，应转移到舱口内的最终空档面积。

②C D处：任何对着E处桁材所能形成的多余面积，应转移到高边的最终空档面积。

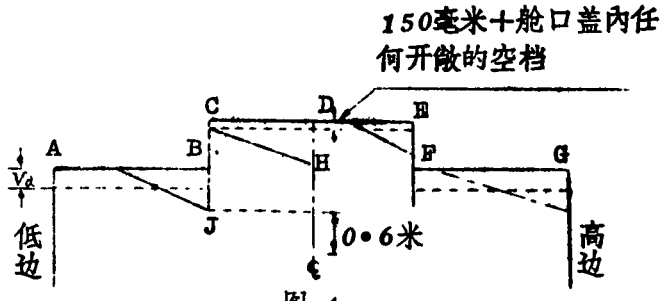

图4

图4注：

①如果中心线隔壁已按本章第一节第五条二款㈡项的规定设置，则该隔壁应向下延伸低于H或J点至少0.6米，取其较深者。

②A B处的多余空档面积应转移到舱口内低半边，在此舱口内将形成两个分开的最终空档面积，即一个靠着中心线隔壁，另一个靠着在高边的舱口边围板和桁材。

③如果舱口内构成一袋装托盘或散装谷物捆包，则为了计算横向倾侧力矩，应假定这种设施至少可与中心线隔壁等效。

三、连通装载舱

下列各项说明当各舱作连通装载时应假定空档变动的形状：

㈠未设置有效的中心线隔壁：

1.在上甲板下方——当作本节第二条二款所述的单层甲板布置。

2.在第二层甲板下方——供从低边转移的空档面积，即初始空档面积减去靠于舱口边桁材的空档面积，应假定转移如下：

一半转移到上甲板的舱口内，1／4转移到上甲板下方的高边，另1／4转移到第二层甲板下方的高边。

3.在第三层及更低的甲板下方——所有供从这些甲板每层低边转移的空档面积，应假定为按相等数量转移到各层甲板下方高边的空档以及上甲板舱口内的空档。

㈡设有延伸到上甲板舱口内的有效的中心线隔壁：

1.在所有甲板水平面内的隔壁两侧，供从低边转移的空档面积，应假定转移到上甲板舱口低半边下方的空档内。

2.在直接位于隔壁底端下面的一层甲板的水平面内，供从低边转移的空档面积，应假定转移如下：

一半转移到上甲板舱口低半边下方的空档，其余按相等数量转移到各层甲板下方高边的各空档内。

3.在低于本项1和2目所述的各甲板水平面内，所有供从这些甲板每层低边转移的空档面积，应假定按相等数量转移到上甲板舱口内在隔壁两边的每一空档内，以及各层甲板下方高边的各空档内。

㈢设有未延伸到上甲板舱口内的有效的中心线隔壁：

由于在与隔壁相同的甲板水平面内可假定不发生空档在水平方向的转移，所以在此水平面内供从低边转移的空档面积，应假定为按照上述㈠和㈡项的原则，转移到隔壁上方各高边的空档内。

第三条 添注漏斗和围井的假定体积倾侧力矩

一、适宜布置的两侧添注漏斗（见图 5）

可假定由于船舶运动的影响，甲板下方各空档将实际上被从一对纵向的两侧添注漏斗中流出的谷物所填满，其条件为：

㈠添注漏斗应延伸到甲板的全长，并且在甲板上开有适当间隔的添注孔。

㈡每一添注漏斗的容积等于舱口边桁材及其延伸部分外侧的甲板下方空档的体积。

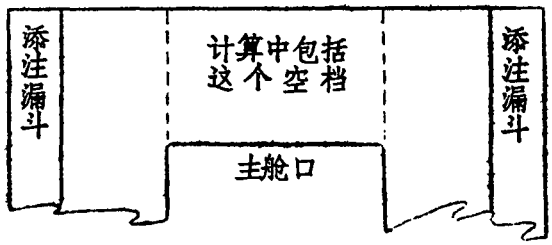

图 5

二、位于主舱口上的围弊

假定谷物移动之后，其最终的空档形状应如图 6 所示。

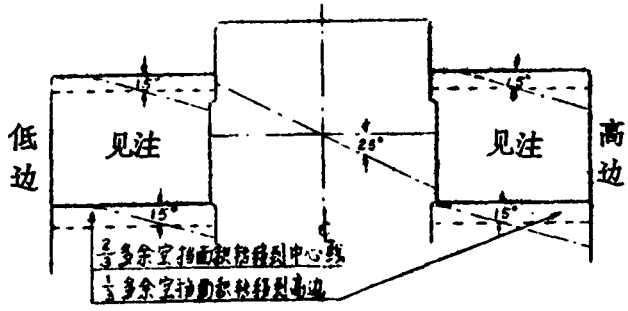

图 6

图 6 注：

位于围弊的两侧处所如不能按本章第一节第三条作适当的平舱，则应假定会发生 25° 的表面移动。

第四条 部分装载舱的假定体积倾侧力距

一、通则

当散装谷物的自由表面未经按照本章第一节第六条加以固定时，应假定谷物表面在移动之后与水平成 25° 角。

二、不连续的纵向隔壁

在某一舱内，如果纵向隔壁在该舱的横向边界之间不连续，则任何此种作为阻止谷物表面作全宽度移动的隔壁有效长度，应取该隔壁的实际长度减去该隔壁与相邻隔壁之间或该隔壁与船舷之间的较大横向距离的 2/7。

这个修正对上层舱间可以是“满载舱”或是“部分装载舱”的任何连通装载的底层舱不适应。

第五条 现有船舶可替代的装载布置

一、通则

按照下述二款或三款的规定装载的船舶，应认为至少与本章第一节第四条二款要求的完整稳性特征等效。允许这样装载的批准证，应根据本章第一节第十条一款予以承认。

在本节中，“现有船舶”一词，系指在本章生效之日以前安放龙骨的船舶。

二、特别适合装运谷物的船舶的装载

㈠不论本章第二节中有何规定，如船舶的结构具有两道或两道以上垂直或倾斜的谷密纵向隔壁，且作适当分布以限制谷物的任何横向移动的影响，则在下述条件下散装谷物可不按该节规定的要求进行装运：

1.应将尽可能多的货舱或舱间装满并平舱满实；

2.在任何指定的装载布置情况下，船舶在其航程的任何阶段不致倾斜到大于5°。这里假设：

(1)在经过平舱满实的货舱或舱间内，谷物表面从初始表面下沉了容积的2%，并且在这些货舱和舱间的所有对水平的倾角小于30°的限界面下，移动至与初始谷物表面成12°的倾角。

(2)在“部分装载的舱间或货舱”内，谷物自由表面下沉和移动如上面2目(1)所述，或移动到主管机关或代表该主管机关的缔约国政府认为必要的较大角度；如谷物表面按照本章第一节第五条加以面上堆装，则移动到与原来整成水平的表面成8°倾角。在本项2目的情况下，如设置止移板，可认为能限制谷物表面的横向移动。

3.船长持有表明作为本项2目进行计算所依据的各种稳性情况，包括所采用的各种装载布置的谷物配载图及稳性簿，二者均经主管机关或代表该主管机关的缔约国政府认可。

㈡主管机关或代表该主管机关的缔约国政府对按照本条二款㈠项的规定设计的并满足该项2及3目要求的船舶，应规定在所有其他装载情况下防止移动的措施。

三、未备有批准证的船舶

凡未备有按本章第一节第四条及第十条的规定发给批准证的船舶，可根据本条二款的要求或者下述条件，允许装载散装谷物：

㈠所有“满载舱”应设置延伸到该舱全长度的中心线隔壁，此隔壁从甲板或舱口盖的下边向下延伸到甲板线以下至少等于该舱最大宽度的1／8或2·4米的距离，取其较大者；但按照第三节第二条的要求制成托盘时，可同意用来代替在舱口内和舱口下的中心线隔壁。

㈡所有“满载舱”的舱口，都要关闭，并将舱口盖固定就位。

㈢在“部分装载舱”内的所有谷物自由表面，应平整成水平，并按照第三节第二条的规定加以固定。

㈣在整个航程中，经修正各舱内自由液面影响后的初稳性高度应为0·3米，或者按下列公式求得，取其较大者：

$$GM_R = \frac{L\,B\,Vd\left(0{\cdot}25B - 0{\cdot}645\sqrt{Vd\;B}\right)}{SF \times \triangle \times 0{\cdot}0875}$$

式中：L——所有满装舱间的合计总长度；

B——船舶的型宽；

SF——积载因数；

V d——按本节第一条一款㈠项/ 目的计算的空档平均深度；

△——排水量。

第三节 谷物装置及其固定

第一条 谷物装置的强度

一、通则（包括工作应力）

二、两侧受载的隔壁

三、仅单侧受载的隔壁

四、托盘

五、散装谷物捆包

六、满载舱舱口盖的固定

第二条 部分装载舱的固定

一、捆扎或绑缚

二、面上堆装布置

三、袋装谷物

第一条 谷物装置的强度

一、通则

㈠木材：用于谷物装置的木材应具有上等完好质量，其品种和等级经证明能满足于这一用途。木材成品的实际尺寸应按照本节下述规定的尺寸。外用型用防水胶粘合的胶合板并在设置时使面层板的纹理方向垂直于支撑立柱或束缚物，如其强度与适当尺寸的实体木材的强度等效，也可使用。

㈡工作应力：当使用本条三款㈠和㈡项的表列数值计算单侧受载的隔壁尺寸时，应采取下列工作应力：

对钢制隔壁……2000公斤/厘米²

对木质隔壁……160公斤/厘米²

㈢其他材料：除木材或钢材之外的其他材料，如对其机械性能已作适当考虑，可同意用来制造此种隔壁。

㈣立柱：

1.除设有能防止立柱端部从其插座中脱出的装置者外，每一立柱每端插入插座的深度应不小于75毫米。如某一立柱在其顶端未作固定，则最上面的撑柱或拉索应尽可能靠近其顶端设置。

2.如将立柱的剖面削除一部分用来插入止移板，则这种措施不应使局部应力过分增高。

3.作用在支持单侧受载隔壁的立柱上的最大弯曲力矩，通常应在计算时假定各立柱的两端为自由支持。但是，如主管机关同意所假定的某种程度的固定将能在实际中达到，则可考虑对由于立柱两端作某种程度的固定而产生的最大弯曲力矩作某种减少。

㈤组合剖面：如果立柱、束缚件或任何其他强力构件是由二个分开的剖面组成，在隔壁的两侧各设一个剖面，并按适当间距用贯穿螺栓使其互相连结，则其有效剖面模数应取二个分开的剖面模数之和。

㈥局部隔壁：如果隔壁没有延伸到货舱的全深度，这种隔壁及其立柱应加以支持或牵拉，以使其达到与延伸到全深度的隔壁同等有效。

二、两侧受载的隔壁

㈠止移板：

1.止移板的厚度应不小于50毫米，并应设置成谷密，且在其必要处用立柱支持。

2.各种厚度的止移板的最大自由跨距应如下：

厚　度	最大自由跨距
50毫米	2.5米
60毫米	3.0米
70毫米	3.5米
80毫米	4.0米

如果厚度超过上列数值，则最大自由跨距可直接按厚度的增大作比例增加。

3.所有止移板的端部应牢固地嵌入插槽，并具有75毫米的最小支承长度。

(二)其他材料：采用木材以外的其他材料构成的隔壁，应与本款(一)项对止移板所要求的强度等效。

(三)立柱：

1.用于支持两侧受载隔壁的钢质立柱，其剖面模数应按下式求得：

$$W = a \times W_1$$

式中：W——剖面模数，厘米^3；

a——立柱间水平跨距，米；

每米跨距的剖面模数W_1应不小于按下述公式求得之值：

$$W_1 = 14.8 (h_1 - 1.2) \text{厘米}^3/\text{米}$$

式中：h_1——垂向自由跨距，以米计，应取相邻两支索的固定点之间或支索固定点与立柱任一端部之间的最大距离。如这个距离小于2.4米，则应在计算各模数时，假定距离的实际值为2.4米。

2.木质立柱的模数应按钢质立柱的相应模数乘以12.5来确定。如采用其他材料，其模数至少应等于对钢的要求，并按钢与所采用材料的许

用应力的比例予以增加。在这些情况下，还应注意到每根立柱的相对刚性，以保证其不致发生过度的挠曲。

3.立柱间的水平距离，应使止移板的自由跨距不超过本款(一)项.2目规定的最大跨距。

(四)撑柱

1.当采用木质撑柱时，该撑柱应为整根的，其每一端均应牢固地加以固定，并应将撑柱的跟部撑牢在船舶的永久性结构上，但不应直接支撑在船旁板上面。

2.木质撑柱的最小尺寸应如下表所列，并应遵守下述3和4目的规定。

撑柱的长度	矩形剖面，毫米	圆形剖面直径，毫米
不超过3米	150×100	140
3米以上但不超过5米	150×150	165
5米以上但不超过6米	150×150	180
6米以上但不超过7米	200×150	190
7米以上但不超过8米	200×150	200
超过8米	200×150	215

撑柱的长度为7米及7米以上时，应在近长度中点处牢固地架撑。

3.当各立柱之间的水平距离与4米相差甚大时，撑柱的惯性矩可按比例予以变更。

4.当撑柱与水平线所成夹角超过10°时，应选用按本项2目所要求的较大一档的撑柱，但在任何情况下撑柱与水平线之间的夹角应不超过45°。

(五)拉索：如使用拉索来支持两侧受载的隔壁，则拉索应水平地或尽可能水平地设置。拉索应由钢丝绳制成，其两端应妥善固定。钢丝绳的尺寸，应按假定由拉索支持的隔壁和立柱所承受的均匀负荷为500公斤／米²来确定。由此假定的在拉索上的工作负荷，应不超过其破断负荷的1/3。

三、仅单侧受载的隔壁

(一)纵向隔壁，隔壁的每米长度所受负荷的公斤数，应取表I所列数值。

表1（注①）

h（米）	B（米）							
	2	3	4	5	6	7	8	10
1.5	850	900	1010	1225	1500	1770	2060	2645
2.0	1390	1505	1710	1985	2295	2605	2930	3590
2.5	1985	2160	2430	2740	3090	3435	3800	4535
3.0	2615	2845	3150	3500	3885	4270	4670	5480
3.5	3245	3525	3870	4255	4680	5100	5540	6425
4.0	3890	4210	4590	5015	5475	5935	6410	7370
4.5	4535	4890	5310	5770	6270	6765	7280	8315
5.0	5185	5570	6030	6530	7065	7600	8150	9260
6.0	6475	6935	7470	8045	8655	9265	9890	11150
7.0	7765	8300	8910	9560	10245	10930	11630	13040
8.0	9055	9665	10350	11075	11835	12595	13370	14930
9.0	10345	11030	11790	12590	13425	14260	15110	16820
10.0	11635	12395	13230	14105	15015	15925	16850	18710

h——从隔壁底部算起的谷物高度，米（注②）
B——散装谷物横向范围，米

h或B为其他数值时，负荷应按需要用内插法或外插法计算。

注：①上述负荷如需换算为英制单位（英吨／呎）时，1公斤／米应等于0.0003英吨／呎。

②如从隔壁到添注漏斗或舱口的距离为1米或1米以下时，高度h应取至该舱口内或漏斗内的谷物水平面。在所有其他情况下高度应取至隔壁所在处的顶甲板。

㈡横向隔壁，隔壁的每米长度所受负荷的公斤数，应取表2所列数值。

表 2 （ 注 ① ）

h（米）	L（米）										
	2	3	4	5	6	7	8	10	12	14	16
1.5	670	690	730	780	835	890	935	1000	1040	1050	1050
2.0	1040	1100	1170	1245	1325	1400	1470	1575	1640	1660	1660
2.5	1460	1565	1675	1780	1880	1980	2075	2210	2285	2305	2305
3.0	1925	2065	2205	2340	2470	2590	2695	2845	2925	2950	2950
3.5	2425	2605	2770	2930	3075	3205	3320	3480	3570	3595	3595
4.0	2950	3160	3355	3535	3690	3830	3950	4120	4210	4235	4240
4.5	3495	3725	3940	4130	4295	4440	4565	4750	4850	4880	4885
5.0	4050	4305	4535	4735	4910	5060	5190	5385	5490	5525	5530
6.0	5175	5465	5720	5945	6135	6300	6445	6655	6775	6815	6825
7.0	6300	6620	6905	7150	7365	7445	7700	7930	8055	8105	8115
8.0	7425	7780	8090	8360	8590	8685	8950	9200	9340	9395	9410
9.0	8550	8935	9275	9565	9820	9930	10205	10475	10620	10685	10705
10.0	9680	10095	10460	10770	11045	11270	11460	11745	11905	11975	11997

h——从隔壁底部算起的谷物高度，米（注②）

L——散装谷物纵向范围，米

h或L为其他数值时，负荷应按需要用内插法或外插法计算。

㈢负荷的垂向分布，以上表1及表2所列隔壁的每单位长度总负荷，如认为必要，可假定沿高度成梯形分布。在这种情况下，垂向构件或立柱的上端或下端的反作用负荷是不相等的。以垂向构件或立柱所承受的总负荷的百分数表示的上端反作用负荷，应取下面表3及表4所列数值。

注：①上述负荷如需换算为英制单位（英吨／呎）时，1公斤／米应等于0.0003英吨／呎。

②如从隔壁到添注漏斗或舱口的距离为1米或1米以下时，高度h应取至该舱口内或漏斗内的谷物水平面。在所有其他情况下高度应取至隔壁所在处的顶甲板。

表 3

仅单侧受载的纵向隔壁

立柱上端的支承反作用力，以负荷（表1）的百分数表示

h (米)	B (米)							
	2	3	4	5	6	7	8	10
1.5	43.3	45.1	45.9	46.2	46.2	46.2	46.2	46.2
2	44.5	46.7	47.6	47.8	47.8	47.8	47.8	47.8
2.5	45.4	47.6	48.6	48.8	48.8	48.8	48.8	48.8
3	46.0	48.3	49.2	49.4	49.4	49.4	49.4	49.4
3.5	46.5	48.8	49.7	49.8	49.8	49.8	49.8	49.8
4	47.0	49.1	49.9	50.1	50.1	50.1	50.1	50.1
4.5	47.4	49.4	50.1	50.2	50.2	50.2	50.2	50.2
5	47.7	49.4	50.1	50.2	50.2	50.2	50.2	50.2
6	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
7	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
8	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
9	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
10	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2

B——散装谷物横向范围，米

h或B为其他数值时，反作用负荷应按需要用内插法或外插法计算。

表 4

仅单侧受载的横向隔壁

支柱上端的支承反作用力以负荷（表2）的百分数表示

h (米)	L (米)										
	2	3	4	5	6	7	8	10	12	14	16
1.5	37.3	38.7	39.7	40.6	41.4	42.1	42.6	43.6	44.3	44.8	45.0
2	39.6	40.6	41.4	42.1	42.7	43.1	43.6	44.3	44.7	45.0	45.2
2.5	41.0	41.8	42.5	43.0	43.5	43.8	44.2	44.7	45.0	45.2	45.2
3	42.1	42.8	43.3	43.8	44.2	44.5	44.7	45.0	45.2	45.3	45.3
3.5	42.9	43.5	43.9	44.3	44.6	44.8	45.0	45.2	45.3	45.3	45.3
4	43.5	44.0	44.4	44.7	44.9	45.0	45.2	45.4	45.4	45.4	45.4
5	43.9	44.3	44.6	44.8	45 0	45.2	45.3	45.5	45.5	45.5	45.5
6	44.2	44.5	44.8	45.0	45.2	45.3	45.4	45.6	45.6	45.6	45.6
7	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
8	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
9	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
10	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6

L ——散装谷物纵向范围，米

h或L为其他数值时，反作用负荷应按需要用内插法或外插法计算。

这种垂向构件或立柱的端部连接的强度，可以每一端可能承受的最大负荷作为基础来计算。这些负荷如下：

纵向隔壁

顶端最大负荷……表1中相应的总负荷的50%。

底端最大负荷……表1中相应的总负荷的55%。

横向隔壁

顶端最大负荷……表2中相应的总负荷的45%。

底端最大负荷……表2中相应的总负荷的60%。

在考虑到上述表3及表4所表示的负荷的垂向分布的情况下，水平木板的厚度也可按下式确定：

$$t = 10\,a\sqrt{\frac{p \times k}{h \times 213.3}}$$

式中：t—木板厚度，毫米；

a—板的水平跨距，即立柱之间的距离，米；

h—从谷物顶部到隔壁的底部的高度，米；

P—从表1或表2求得的单位长度总负荷，公斤；

k—按负荷垂向分布情况而定的系数。

假定负荷的垂向分布是均匀的，即矩形分布，k应取为1。对于梯形分布，则

$$k = 1.0 + 0.06\,(50 - R)$$

式中：R为从表3或表4所查得的上端支承反作用负荷。

(四)拉索或撑柱：拉索和撑柱的尺寸应这样来确定，即从前述三款(一)及(二)项中表1及表2求得的负荷应不超过破断负荷的1/3。

四、托盘

当使用托盘来减小“满载舱”内的倾侧力矩时，量自托盘底部至甲板线的托盘深度应如下：

对于型宽为9·1米及9·1米以下的船舶，不小于1·2米。

对于型宽为18·3米及18·3米以上的船舶，不小于1·8米。

对于型宽在9·1米至18·3米之间的船舶，托盘的最小深度应用内插法计算。

托盘的顶部（盘口）应由舱口范围的甲板下结构，即舱口边桁材或围板及舱口端梁所构成。托盘和其上面的舱口都应全部以放置在垫隔布或其等效物上的袋装谷物或其他适宜货物所填充，并应与邻近的构件及如已安装就位的活动舱口梁紧靠堆装。

五、散装谷物捆包

作为另一方法，可用散装谷物捆包代替袋装谷物或其他适宜货物来填装托盘，但需：

㈠托盘顶上备有适当的固定装置，托盘内衬以经主管机关同意的材料，这种材料具有每5厘米宽的狭条不小于274公斤的抗拉强度。

㈡如果托盘具有下述结构，亦可使用经主管机关同意的具有每5厘米宽狭条不少于137公斤的抗拉强度的材料，作为变通方法，来代替上述㈠项的要求：

用几根经主管机关同意的横向绑绳放置在插入散装谷物内的托盘内面，其间距不大于2·4米。这些绑绳应有足够长度，使能拉紧并固定在托盘的顶上。

用厚度不小于25毫米和宽度为150至300毫米的木垫板或其他同等强度的适当材料，沿首尾方向放置在这些绑绳上，以防止应放在托盘内的衬里材料被割破或擦伤。

㈢托盘内应装满散装谷物，并在顶上加以固定。但当使用上述㈡项经认可的材料时，衬里材料在包裹起来之后，在用绑绳捆扎使托盘固定以前，还应将木垫板放在捆包的顶上。

㈣如用一张以上的衬里材料来垫托盘，则各张材料应在盘底缝合或加以钩边折迭。

㈤托盘的顶部应与安装就位的舱口活动梁的底部相凑合，并在托盘的顶上，用适宜的杂货或散装谷物放置于活动梁之间。

六、“满载舱”舱口盖的固定

如果在“满载舱”上面没有散装谷物或其他货物，则舱口盖应在考虑到供固定这些舱口盖的重量和固定装置的情况下以认可的方式加以固定。

按本章第一节第十条发给的批准证，应包括发证的主管机关认为必要的固定方式的说明。

第二条 部分装载舱的固定

一、捆扎或绑缚

㈠为了消除“部分装载舱”内的倾侧力矩，当利用捆扎或绑缚时，应按下列方式固定：

1.谷物应加以平舱和整平至使顶部略成拱形，并以垫隔用的粗帆布、舱盖布或等效物覆盖。

2.垫隔用的粗帆布和/或舱盖布应搭接至少1.8米。

3.应铺设二层满铺的木材地板，每块木板厚约25毫米，宽150至300毫米。上层地板纵向铺置，钉于底层横向铺置的地板上。亦可采用

另一种办法，即用一层满铺地板，厚５０毫米，纵向铺置，钉于厚５０毫米，宽度不少于１５０毫米的底垫木上；这些底垫木应延伸到舱的全宽，其间隔距离不超过２．４米。利用其他材料制成的装置，经主管机关认为与上述装置等效者，也可加以采用。

4.钢丝绳（直径１９毫米或等效者）、双层钢带（５０毫米×１．３毫米，破断拉力至少５０００公斤），或同等强度的链条，每一件皆用３２毫米的松紧旋扣旋紧者，均可作为绑缚的工具。当使用钢带时，采用与锁制杆连用的绞车拉紧器可以代替３２毫米的松紧旋扣，但应备有必要的供拉紧用的适当板手。使用钢带时，至少应有三个折卷封头用来系固端部。使用钢丝绳时，至少应有４个钢绳夹用来构成绑绳的眼环。

5.在完成装载之前，绑绳应用一种２５毫米的卸扣或同等强度的梁夹具牢固地连接于船体骨架上，连接点是在预计的谷物最终表面以下约450毫米之处。

6.各根绑绳的放置间距应不超过２．４米，每根要由钉在纵向地板上的垫木予以支持。这种垫木应由不小于２５毫米×１５０毫米的木材或其等效物所组成，并应延伸到该舱的全宽。

7.在航程中应对钢带经常进行检查，必要时应重新收紧。

二、面上堆装布置

如利用袋装谷物或其他适宜的货物来固定“部分装载舱”，则在谷物的自由表面上应盖上垫隔布或其等效物，或者盖以某种适宜的平台。这种平台应由在间距不大于１．２米的垫木上方放置间距不大于１００毫米、厚２５毫米的木板所组成。平台也可用经主管机关认为是等效的其他材料构成。

三、袋装谷物

袋装谷物应装在完好的袋内，妥为装满，并牢固地缝口。

第七章 危险货物装运

第一条 适用范围

一、除另有明文规定外，本章适用于本公约所适用的一切船舶的危险货物装运。

二、本章规定不适用于船用物料及设备或专为载运特种货物而特别建造或改建的船舶如油轮等所载的该种货物。

三、除符合本章规定外，船舶禁止装运危险货物。

四、为了补充本章的规定，各缔约国政府应颁布或促使颁布关于指定的某种危险货物或各类危险货物的安全包装及装载的细则，该细则应包括这些货物涉及到其他货物的必要的任何预防措施。

第二条 分类

危险货物应分为如下的类别：

1 类——爆炸品。

2 类——压缩、液化或加压溶解的气体。

3 类——易燃液体。

4 类(1)——易燃固体。

4 类(2)——易于自燃的易燃固体或物质。

4 类(3)——遇水发生易燃气体的易燃固体或物质。

5 类(1)——氧化剂。

5 类(2)——有机过氧化物。

6类(1)——有毒的（毒性的）物质。

6类(2)——感染性的物质。

7类——放射性物质。

8类——腐蚀性物质。

9类——杂类危险物质，即经验已经证明或可以证明按其危险性质必须应用本章规定的任何其他物质。

第三条 包装

一、危险货物的包装应是：

㈠坚固而完好；

㈡包装的内表面可能与货物相接触者，应不致受所装货物的严重影响；

㈢能经受得住装卸及海运的一般危险。

二、如包装液体容器按常例采用具有吸收性或减震性的材料时，此种材料应为：

㈠能减少此液体所引起的危险；

㈡其布置应能防止移动，并确保该容器保持围衬状态；

㈢如为合理与可能，应具有足够的数量，以便在容器万一破裂时能吸收液体。

三、装盛危险液体的容器，应在灌注温度下留有在正常装运过程中最高温度所需的足够膨胀空隙。

四、压缩气体的盛瓶或容器，应为构造合适，经过检验，保持良好以及正确充灌者。

五、曾用于装运危险货物的空容器，其本身应作为危险货物处理，但经清洗和干燥，或认为其前装货物的性质具有安全性并经严密封闭的容器除外。

第四条 标志与标签

每个装盛危险货物的容器，应以正确的学名（不应使用商品名称）加以标志，并用显著的标签或签条板加以识别，以表明其危险的性质。每个容器均应按前述加上标签，但装盛少量包装化学品的容器以及大宗货物能成票堆装、搬运及识别者例外。

第五条 单据

一、在有关海运危险货物的所有单据中，货物的名称应使用正确学名（不应使用商品名称）并应按本章第二条所列类别加以正确说明。

二、由托运人预备的托运单据，应包括或附有证明书或声明书，注明所交运的货物业已正确地加以包装、标志及标签，并处于合适的装运状态。

三、每一艘装运危险货物的船舶，须具有按照本章第二条的规定载明船上所装危险货物及其位置的特殊清单或舱单。标明所有危险货物类别及注明其在船上位置的详细配载图，可以代替此特殊清单或舱单。

第六条 堆装要求

一、危险货物应按其性质安全地和适当地予以堆装。性质互不相容的货物，应彼此分开。

二、具有严重危险性的爆炸品（弹药除外），应堆装于在航行中须保持严密封闭的火药库内。这类爆炸品应与雷管分开。装运爆炸品的任何舱室内的电气设备及电缆，其设计与使用应能使火灾或爆炸的危险减至最小程度。

三、会产生危险气体的货物，应堆装于通风良好的处所或甲板上。

四、装运易燃液体或易燃气体的船舶，在有必要防止火灾或爆炸的处所，应采取特殊的预防措施。

五、在未经采取足够防止火灾发生的预防措施以前，不得装运易于自热或自燃的物质。

第七条 客船上的爆炸品

一、在客船上仅可装运如下的爆炸品：

㈠安全弹药和安全导火线；

㈡总净重不超过9公斤（或20磅）的少量爆炸品；

㈢船舶或飞机使用的遇险信号，其总重量不超过1016公斤（2240磅）者；

㈣不致发生猛烈爆炸的花炮，但装运统舱旅客的船舶除外。

二、虽在本条一款有所规定，但在具有经主管机关认可的特殊安全措施的客船上，可载运额外数量或其他类型的爆炸品。

第八章 核能船舶

第一条 适用范围

本章适用于一切核能船舶，但军用船舶除外。

第二条 其他各章的适用

本公约其他各章的规定均适用于核能船舶，但本章有所变动者除外。

第三条 免除

在任何情况下，核能船舶均不应被免除执行本公约的任何规定。

第四条 核能反应堆装置的认可

核能反应堆装置的设计、构造以及检查和装配的标准，应经主管机关的同意和认可，并应考虑因辐射而使检验所受的限制。

第五条 船用核能反应堆装置的适应性

核能反应堆装置的设计，应兼顾船舶在航行中的正常和异常情况下的特殊使用条件。

第六条 辐射安全

主管机关应采取措施，确保在海上或港内，使船员、旅客或公众，或水道、食物和水源免受不当的辐射或其他核能的危害。

第七条 安全鉴定书

一、应编写安全鉴定书，以评定核动力装置的性能与船舶的安全，从而确保在海上或港内，对船员、旅客或公众，或水道、食物和水源免受不当的辐射或其他核能的危害。主管机关对鉴定书满意时应予认可，此项鉴定书应经常保持为最新编写的。

二、安全鉴定书应在充裕时间前送交核能船舶拟往访问的缔约国政府，以使其可以评定该核能船的安全性。

第八条 操作须知

关于核动力装置的一切操作事项，应制订充分详细的且重点放在安全上的操作须知，以供工作人员工作时的参考与指导。主管机关对操作须知满意时，应予认可。该操作须知应保存于船上，并应经常保持为最新编写的。

第九条 检验

核能船舶的检验，应包括第一章第七条或第一章第八、第九及第十条的可适用的要求，但因辐射而受限制的检验除外。此外，检验尚应包括安全鉴定书的各种特殊要求。在所有情况下，虽于第一章第八及第十条有所规定，此项检验应不少于每年一次。

第十条 证书

一、第一章第十二条一款及第一章第十四条的规定，不适用于核能船舶。

二、对核能客船经检查与检验符合第二章甲、第二章乙、第三、第四及第八章的要求及本规则任何其他有关要求者，应发给证书，称为核能客船安全证书。

三、对核能货船经检查与检验满足第一章第十条所指出的货船检验要求并符合第二章甲、第二章乙、第三、第四及第八章的要求与本规则任何其他有关要求者，应发给证书，称为核能货船安全证书。

四、核能客船安全证书与核能货船安全证书应载明："此船为核能船，符合本公约第八章的一切要求，并与所认可的此船安全鉴定书相一致"。

五、核能客船安全证书与核能货船安全证书的有效期限，均不应超过12个月。

六、核能客船安全证书与核能货船安全证书，应由主管机关或由其正式授权的个人或社团发给之。在每一种情况下，主管机关均应对该证书负完全责任。

第十一条 特殊监督

除按第一章第十九条的规定执行监督外，核能船舶尚应于进入各缔约国港口之前以及在港时接受特殊监督，其目的为证实船上具备有效的核能船舶安全证书，并证实在海上或港内，对船员、旅客或公众，或对水道、食物和水源无不当的辐射及其他核能的危害。

第十二条 灾难

核能船舶，在发生任何能导致对于周围环境危害的事故时，该船船长应立即报告主管机关，也应立即报告该船在损伤情况下可能处于的水域或驶近的水域所属国家政府的主管当局。

附录 证书格式

客船安全证书格式

客船安全证书

（公章） （国名）

国际航行
供 ——————— 用
短程国际航行

根据一九七四年国际海上人命安全公约规定发给

船名	船舶编号或呼号	船籍港	总吨位	规则第三章第二十七条三款(七)项所特准航程的详细说明(如有时)	安放龙骨日期（见注）

（政府名） 政府

——————————— 证明：

签名人 （姓名）

1.此船业经依照上述公约的规定进行了相应的检验。

2.检验证明，此船符合上述公约所附规则关于下列各项的要求：

1）船舶结构、主辅锅炉及其他受压容器与机器；

2）水密分舱的布置与细节；

3）下列分舱载重线：

勘定并勘划于船中两舷的分舱载重线（第二章甲第十一条）	干　　舷	适用于载客处所包括下列 客货交替使用处所
C•1	...	...
C•2	...	...
C•3	...	...

3.救生设备仅供总人数_____人用，计有：

救生艇____艘（包括机动救生艇____艘），能载____人，及装有无线电报设备及探照灯的机动救生艇____艘（包括于上述救生艇总数内）以及仅装有探照灯的机动救生艇____艘（也包括于上述救生艇总数内），共需执证救生艇员____人；

需设认可降落装置的救生筏____只，能载____人；

不需设认可降落装置的救生筏____只，能载____人；

救生浮具____只，能浮起____人；

救生圈____只；

救生衣____件。

4.各救生艇与救生筏已按规则的规定配置属具。

5.此船按规则的规定备有抛绳设备和供救生艇筏用的手提式无线电设备。

6.此船符合规则关于无线电报设备的要求，计有：

	规则要求	实际情况
报务员守听小时数	…	…
报务员人数	…	…
是否装有自动报警器	…	…
是否装有主用设备	…	…
是否装有应急设备	…	…
主发信机与应急发信机在电路上为分开的或连通的	…	…
是否装有无线电测向仪	…	…
是否装有搜索无线电话遇险频率的无线电设备	…	…
是否装有雷达	…	…
核准搭载的旅客人数	…	…

7.机动救生艇的无线电报设备和／或供救生艇筏用的手提式无线电设备（如设有时）的效用符合规则的规定。

8.此船符合规则关于探火及灭火设备、雷达、回声测深仪及电罗经的要求，并按规则及现行国际海上避碰规则的规定备有航行灯及号型、引水员软梯、以及发出音响信号及遇险信号的设备。

9.此船其他方面符合规则对其适用的各项要求。

本证书由　　政府授权发给。本证书有效期限至　　止。

19　　年　　月　　日发于　　。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九五二年、一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即。

按公约规则第二章甲第一条二款㈠项或第二章乙第一条一款㈠项的规定进行改建的船舶，应填明改建开工日期。

货 船 构 造 安 全 证 书 格 式

货 船 构 造 安 全 证 书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船 名	船舶编号或呼号	船籍港	总吨位	安放龙骨日期（见注）

（政府名） 政府

证明：

签名人 （姓名）

此船业经依照上述公约所附规则第一章第十条的规定进行了相应的检验；检验证明此船上述规则所指的船体、机器及设备的情况，均属合格；且此船符合第二章甲及第二章乙（除有关灭火设备和防火控制图的要求外）对其适用的各项要求。

本证书由 政府授权发给。本证书有效期限至 止。

一九 年 月 日发于 。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九五二年、一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

货船设备安全证书格式

货船设备安全证书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船名	船舶编号或呼号	船籍港	总吨位	安放龙骨日期（见注）

（政府名） 政府

证明：

签名人 （姓名）

1.此船业经依照上述公约的规定进行了相应的检查。

2.检查证明，其救生设备仅供总人数___人用，计有：

左舷救生艇___艘，能载___人；

右舷救生艇___艘，能载___人；

机动救生艇____艘（包括于上述救生艇总数内），包括装有无线电报设备及探照灯的机动救生艇____艘，以及仅装有探照灯的机动救生艇____艘；

需设认可降落装置的救生筏____只，能载____人；

不需设认可降落装置的救生筏____只，能载____人；

救生圈____只；

救生衣____件。

3.各救生艇和救生筏已按公约所附规则的规定配置属具。

4.此船按规则的规定备有抛绳设备和供救生艇筏用的手提式无线电设备。

5.检查证明此船符合上述公约关于灭火设备及防火控制图、回声测深仪及电罗经的要求，并按规则及现行国际海上避碰规则的规定备有航行灯及号型、引水员软梯、以及发出音响信号及遇险信号的设备。

6.此船其他方面符合规则对其适用的各项要求。

本证书由 政府授权发给，本证书有效期限至 止。

一九 年 月 日发于 。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九五二年、一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

货 船 无 线 电 报 安 全 证 书 格 式

货 船 无 线 电 报 安 全 证 书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船　　名	船舶编号或呼号	船籍港	总吨位	安放龙骨日期（见注）

（政府名） 政府

证明：

签名人 （姓名）

1.此船符合上述公约所附规则关于无线电报及雷达的规定：

	规则要求	实际情况
报务员收听小时数	…	…
报务员人数	…	…
是否装有自动报警器	…	…
是否装有主用设备	…	…
是否装有应急设备	…	…
主发信机与应急发信机在电路上为分开的或连通的	…	…
是否装有无线电测向仪	…	…
是否装有搜索无线电话遇险频率的无线电设备	…	…
是否装有雷达	…	…

2.机动救生艇无线电报设备和／或供救生艇筏用的手提式无线电设备（如设有时）的效用符合上述规则的规定。

本证书由　　政府授权发给。本证书有效期限至　　止。

一九　　年　　月　　日发于　　。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九五二年、一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

货船无线电话安全证书格式

货船无线电话安全证书

（公章）　　（国名）

根据一九七四年国际海上人命安全公约规定发给

船　名	船舶编号或呼号	船籍港	总吨位	安放龙骨日期（见注）

（政府名）　　政府

证明：

签名人　　（姓名）

1.此船符合上述公约所附规则关于无线电话的规定：

	规则要求	实际情况
守听小时数	...	...
话务员人数	...	...

2.供救生艇筏用的手提式无线电设备（如设有时）的效用符合上述规则的规定。

本证书由 政府授权发给。本证书有效期限至 止。

一九 年 月 日发于 。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注以下字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九五二年、一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

免除证书格式

免除证书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船名	船舶编号或呼号	船籍港	总吨位

（政府名） 政府

签名人 （姓名） 证明：

此船根据上述公约所附规则第____章第____条的规定，准予在____至_____航线上免除公约*_____的要求。

此处填写许可免除的条件。

本证书由 政府授权发给。本证书有效期限至 止。

以下由核发证书的主管机关签名盖章。

（印）

若系签名应加注以下字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

* 此处填写引自规则何章何条何款。

核能客船安全证书格式

核能客船安全证书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船名	船舶编号或呼号	船籍港	总吨位	规则第三章第二十七条三款(七)项所特准航程的详细说明（如有时）	安放龙骨日期(见注)

（政府名） 政府

证明：

签名人 （姓名）

1. 此船业经依照上述公约的规定进行了相应的检验。

2. 此船为核能船，符合本公约第八章的一切要求，并与所认可的此船安全鉴定书相一致。

3. 检验证明，此船符合上述公约所附规则关于下列各项的要求：

1）船舶结构、主辅锅炉及其他受压容器与机器；

2）水密分舱的布置与细节；

3）下列分舱载重线：

勘定并勘划于船中两舷的分舱载重线（第二章甲第十一条）	干舷	适用于载客处所包括下列客货交替使用处所
C. 1	...	...
C. 2	...	...
C. 3	...	...

4.救生设备仅供总人数___人用，计有：

救生艇___艘（包括机动救生艇___艘）能载___人，及装有无线电报设备及探照灯的机动救生艇___艘（包括于上述救生艇总数内）以及仅装有探照灯的机动救生艇___艘（也包括于上述救生艇总数内），共需执证救生艇员___人，

需设认可降落装置的救生筏___只，能载___人；

不需设认可降落装置的救生筏___只，能载___人；

救生浮具___只，能浮起___人；

救生圈___只；

救生衣___件。

5.各救生艇与救生筏已按规则的规定配置属具。

6.此船按规则的规定备有抛绳设备和供救生艇筏用的手提式无线电设备。

7.此船符合规则关于无线电报设备的要求，计有：

	规则要求	实际情况
报务员守听小时数	...	...
报务员人数	...	...
是否装有自动报警器	...	...
是否装有主用设备	...	...
是否装有应急设备	...	...
主发信机与应急发信机在电路上为分开的或连通的	...	...
是否装有无线电测向仪	...	...

是否装有搜索无线电话遇险频率的无线电设备	…	…
是否装有雷达	…	…
核准搭载的旅客人数	…	…

8.机动救生艇的无线电报设备和／或供救生艇筏用的手提式无线电设备（如设有时）的效用符合规则的规定。

9.此船符合规则关于探火及灭火设备、雷达、回声测深仪及电罗经的要求，并按规则及现行国际海上避碰规则的规定备有航行灯及号型、引水员软梯、以及发出音响信号及遇险信号的设备。

10.此船其他方面符合规则对其适用的各项要求。

本证书由 政府授权发给。本证书有效期限至 止。

一九 年 月 日发于 。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。 （签名）

注：除一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

按公约规则第二章甲第一条二款㈠项或第二章乙第一条一款㈠项的规定进行改建的船舶，应填明改建开工日期。

核能货船安全证书格式

核能货船安全证书

（公章） （国名）

根据一九七四年国际海上人命安全公约规定发给

船名	船舶编号及呼号	船籍港	总吨位	安放龙骨日期（见注）

（政府名） 政府

签名人 （姓名） 证明：

1.此船业经依照上述公约的规定进行了相应的检验。

2.此船为核能船，符合本公约第八章的一切要求，并与所认可的此船安全鉴定书相一致。

3.检验证明此船满足公约第一章第十条关于船体、机器和设备的各项要求并符合第二章甲及第二章乙的有关要求。

4.救生设备仅供总人数___人用，计有：

左舷救生艇___艘，能载___人；

右舷救生艇___艘，能载___人；

机动救生艇___艘（包括于上述救生艇总数内），包括设有无线电设备及探照灯的机动救生艇___艘，以及仅设有探照灯的机动救生艇___艘；

需设认可降落装置的救生筏___只，能载___人；

不需设认可降落装置的救生筏___只，能载___人；

救生圈___只；

救生衣___件。

5.各救生艇和救生筏已按公约所附规则的规定配置属具。

6.此船按规则的规定备有抛绳设备和供救生艇筏用的手提式无线电设备。

7.此船符合规则关于无线电报设备的要求，计有：

	规则要求	实际情况
报务员守听小时数	…	…
报务员人数	…	…
是否装有自动报警器	…	…
是否装有主用设备	…	…
是否装有应急设备	…	…
主发信机与应急发信机在电路上为分开的或连通的	…	…
是否装有无线电测向仪	…	…
是否装有搜索无线电话遇险频率的无线电设备	…	…
是否装有雷达	…	…

8.机动救生艇的无线电报设备和／或供救生艇筏用的手提式无线电设备（如设有时）的效用符合规则的规定。

9.检查证明此船符合上述公约关于灭火设备、雷达、回声测深仪及电罗经的要求，并按规则及现行国际海上避碰规则的规定备有航行灯及号型、引水员软梯、以及发出音响信号及遇险信号的设备。

10.此船其他方面符合规则对其适用的各项要求。

本证书由 政府授权发给，本证书有效期限至 止。

19 年 月 日发于 。

以下由核发证书的主管机关签名或盖章。

（印）

若系签名应加注下列字句：

签名人声明，本人系由所述政府正式授权发给本证书。

（签名）

注：除一九六五年和一九七四年国际海上人命安全公约生效的年份安放龙骨或处于相应建造阶段的船舶，应填明实际日期外，其余只填年份即可。

INTERNATIONAL CONVENTION[1] FOR THE SAFETY OF LIFE AT SEA, 1974

The Contracting Governments,

Being desirous of promoting safety of life at sea by establishing in common agreement uniform principles and rules directed thereto,

Considering that this end may best be achieved by the conclusion of a Convention to replace the International Convention for the Safety of Life at Sea, 1960,[2] taking account of developments since that Convention was concluded,

Have agreed as follows:

Article I. GENERAL OBLIGATIONS UNDER THE CONVENTION

(*a*) The Contracting Governments undertake to give effect to the provisions of the present Convention and the Annex thereto, which shall constitute an integral part of the present Convention. Every reference to the present Convention constitutes at the same time a reference to the Annex.

(*b*) The Contracting Governments undertake to promulgate all laws, decrees, orders and regulations and to take all other steps which may be necessary to give the

[1] Came into force on 25 May 1980, i.e., 12 months after the date on which not less than 25 States, the combined merchant fleets of which constitute not less than 50 per cent of the gross tonnage of the world's merchant shipping, had become Parties to the Convention by definitive signature, or by deposit with the Secretary-General of the Inter-Governmental Maritime Consultative Organization of an instrument of ratification, acceptance, approval or accession, in accordance with article I (*a*).

State	Date of deposit of the instrument of ratification, acceptance (A), approval (AA) accession (a) or of definitive signature (s)	
Argentina	5 December	1979
Bahamas	16 February	1979 *a*
Belgium	24 September	1979
Brazil	22 May	1980 *a*
Canada	8 May	1978 *a*
Cape Verde	28 April	1977 *a*
Chile	28 March	1980
China	7 January	1980
Denmark	8 March	1978
Dominican Republic	10 April	1980 *a*
France*	25 May	1977 *AA*
German Democratic Republic	15 March	1979 *a*
Germany, Federal Republic of (With a declaration of application to Berlin (West).)	26 March	1979
Greece	12 May	1980 *A*
Hungary	9 January	1980 *AA*
India	16 June	1976 *a*
Israel	15 May	1979
Japan	15 May	1980 *a*
Kuwait*	29 June	1979 *a*
Liberia	14 November	1977
Mexico	28 March	1977 *A*
Monaco	1 November	1974 *s*
Netherlands (With a declaration of application to the Netherlands Antilles.)	10 July	1978 *a*
Norway	15 February	1977
Panama	9 March	1978 *a*
Peru	4 December	1979 *a*
Romania	24 May	1979 *a*
South Africa	23 May	1980 *a*
Spain	5 September	1978
Sweden	7 July	1978 *A*
Tonga	12 April	1977 *a*
Trinidad and Tobago	15 February	1979 *a*
Ukrainian Soviet Socialist Republic	1 November	1974 *s*
Union of Soviet Socialist Republics	9 January	1980 *A*
United Kingdom of Great Britain and Northern Ireland (With a declaration of application to Hong Kong.)	7 October	1977
United States of America	7 September	1978
Uruguay	30 April	1979 *a*
Yemen	6 March	1979 *a*
Yugoslavia	11 June	1979 *AA*

*See p. 619 of volume 1185 for the texts of declarations and reservations made upon accession or approval.

[2] United Nations, *Treaty Series*, vol. 536, p. 27.

present Convention full and complete effect, so as to ensure that, from the point of view of safety of life, a ship is fit for the service for which it is intended.

Article II. APPLICATION

The present Convention shall apply to ships entitled to fly the flag of States the Governments of which are Contracting Governments.

Article III. LAWS, REGULATIONS

The Contracting Governments undertake to communicate to and deposit with the Secretary-General of the Inter-Governmental Maritime Consultative Organization (hereinafter referred to as "the Organization"):

(*a*) A list of non-governmental agencies which are authorized to act in their behalf in the administration of measures for safety of life at sea for circulation to the Contracting Governments for the information of their officers;

(*b*) The text of laws, decrees, orders and regulations which shall have been promulgated on the various matters within the scope of the present Convention;

(*c*) A sufficient number of specimens of their Certificates issued under the provisions of the present Convention for circulation to the Contracting Governments for the information of their officers.

Article IV. CASES OF "FORCE MAJEURE"

(*a*) A ship, which is not subject to the provisions of the present Convention at the time of its departure on any voyage, shall not become subject to the provisions of the present Convention on account of any deviation from its intended voyage due to stress of weather or any other cause of *force majeure*.

(*b*) Persons who are on board a ship by reason of *force majeure* or in consequence of the obligation laid upon the master to carry shipwrecked or other persons shall not be taken into account for the purpose of ascertaining the application to a ship of any provisions of the present Convention.

Article V. CARRIAGE OF PERSONS IN EMERGENCY

(*a*) For the purpose of evacuating persons in order to avoid a threat to the security of their lives a Contracting Government may permit the carriage of a larger number of persons in its ships than is otherwise permissible under the present Convention.

(*b*) Such permission shall not deprive other Contracting Governments of any right of control under the present Convention over such ships which come within their ports.

(*c*) Notice of any such permission, together with a statement of the circumstances, shall be sent to the Secretary-General of the Organization by the Contracting Government granting such permission.

Article VI. PRIOR TREATIES AND CONVENTIONS

(*a*) As between the Contracting Governments, the present Convention replaces and abrogates the International Convention for the Safety of Life at Sea which was signed in London on 17 June 1960.

(*b*) All other treaties, conventions and arrangements relating to safety of life at sea, or matters appertaining thereto, at present in force between Governments par-

ties to the present Convention shall continue to have full and complete effect during the terms thereof as regards:

(i) Ships to which the present Convention does not apply;

(ii) Ships to which the present Convention applies, in respect of matters for which it has not expressly provided.

(*c*) To the extent, however, that such treaties, conventions or arrangements conflict with the provisions of the present Convention, the provisions of the present Convention shall prevail.

(*d*) All matters which are not expressly provided for in the present Convention remain subject to the legislation of the Contracting Governments.

Article VII. SPECIAL RULES DRAWN UP BY AGREEMENT

When in accordance with the present Convention special rules are drawn up by agreement between all or some of the Contracting Governments, such rules shall be communicated to the Secretary-General of the Organization for circulation to all Contracting Governments.

Article VIII. AMENDMENTS

(*a*) The present Convention may be amended by either of the procedures specified in the following paragraphs.

(*b*) Amendments after consideration within the Organization:

(i) Any amendment proposed by a Contracting Government 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 at least six months prior to its consideration.

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

(iii) Contracting Governments of States, 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.

(iv) Amendments shall be adopted by a two-thirds majority of the Contracting Governments present and voting in the Maritime Safety Committee expanded as provided for in sub-paragraph (iii) of this paragraph (hereinafter referred to as "the expanded Maritime Safety Committee") on condition that at least one-third of the Contracting Governments shall be present at the time of voting.

(v) Amendments adopted in accordance with sub-paragraph (iv) of this paragraph shall be communicated by the Secretary-General of the Organization to all Contracting Governments for acceptance.

(vi) (1) An amendment to an Article of the Convention or to Chapter I of the Annex shall be deemed to have been accepted on the date on which it is accepted by two-thirds of the Contracting Governments.

(2) An amendment to the Annex other than Chapter I shall be deemed to have been accepted:

(*aa*) At the end of two years from the date on which it is communicated to Contracting Governments 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 Contract-

ing Governments present and voting in the expanded Maritime Safety Committee.

However, if within the specified period either more than one-third of Contracting Governments, or Contracting Governments the combined merchant fleets of which constitute not less than fifty per cent of the gross tonn)ge of the world's merchant fleet, notify the Secretary-General of the Organization that they object to the amendment, it shall be deemed not to have been accepted.

(vii) (1) An amendment to an Article of the Convention or to Chapter 1 of the Annex shall enter into force with respect to those Contracting Governments which have accepted it, six months after the date on which it is deemed to have been accepted, and with respect to each Contracting Government which accepts it after that date, six months after the date of that Contracting Government's acceptance.

(2) An amendment to the Annex other than Chapter 1 shall enter into force with respect to all Contracting Governments, except those which have objected to the amendment under sub-paragraph (vi)(2) of this paragraph 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 Contracting Government 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 Contracting Governments present and voting in the expanded Maritime Safety Committee at the time of the adoption of the amendment.

(*c*) Amendment by a Conference:

(i) Upon the request of a Contracting Government concurred in by at least one-third of the Contracting Governments, the Organization shall convene a Conference of Contracting Governments to consider amendments to the present Convention.

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

(iii) 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 sub-paragraphs (*b*)(vi) and (*b*)(vii) respectively of this Article, provided that references in these paragraphs to the expanded Maritime Safety Committee shall be taken to mean references to the Conference.

(*d*) (i) A Contracting Government which has accepted an amendment to the Annex which has entered into force shall not be obliged to extend benefit of the present Convention in respect of the certificates issued to a ship entitled to fly the flag of a State the Government of which, pursuant to the provisions of sub-paragraph (*b*)(vi)(2) of this Article, has objected to the amendment and has not withdrawn such an objection, but only to the extent that such certificates relate to matters covered by the amendment in question.

(ii) A Contracting Government which has accepted an amendment to the Annex which has entered into force shall extend the benefit of the present Convention in respect of the certificates issued to a ship entitled to fly the flag of a State the Government of which, pursuant to the provisions of sub-paragraph (*b*)(vii)(2) of this Article, has notified the Secretary-General of the Organization that it exempts itself from giving effect to the amendment.

(*e*) Unless expressly provided otherwise, any amendment to the present Convention 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.

(*f*) Any declaration of acceptance of, or objection to, an amendment or any notice given under sub-paragraph (*b*)(vii)(2) of this Article shall be submitted in writing to the Secretary-General of the Organization, who shall inform all Contracting Governments of any such submission and the date of its receipt.

(*g*) The Secretary-General of the Organization shall inform all Contracting Governments of any amendments which enter into force under this Article, together with the date on which each such amendment enters into force.

Article IX. SIGNATURE, RATIFICATION, ACCEPTANCE, APPROVAL AND ACCESSION

(*a*) The present Convention shall remain open for signature at the Headquarters of the Organization from 1 November 1974 until 1 July 1975 and shall thereafter remain open for accession. States may become parties to the present Convention by:

(i) Signature without reservation as to ratification, acceptance or approval; or

(ii) Signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or

(iii) Accession.

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

(*c*) The Secretary-General of the Organization shall inform the Governments of all States which have signed the present Convention or acceded to it of any signature or of the deposit of any instrument of ratification, acceptance, approval or accession and the date of its deposit.

Article X. ENTRY INTO FORCE

(*a*) The present Convention shall enter into force twelve months after the date on which not less than twenty-five 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 become parties to it in accordance with Article IX.

(*b*) Any instrument of ratification, acceptance, approval or accession deposited after the date on which the present Convention enters into force shall take effect three months after the date of deposit.

(*c*) After the date on which an amendment to the present Convention is deemed to have been accepted under Article VIII, any instrument of ratification, acceptance, approval or accession deposited shall apply to the Convention as amended.

Article XI. DENUNCIATION

(*a*) The present Convention may be denounced by any Contracting Government at any time after the expiry of five years from the date on which the Convention enters into force for that Government.

(*b*) Denunciation shall be effected by the deposit of an instrument of denunciation with the Secretary-General of the Organization who shall notify all the other Contracting Governments of any instrument of denunciation received and of the date of its receipt as well as the date on which such denunciation takes effect.

(*c*) 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.

Article XII. DEPOSIT AND REGISTRATION

(*a*) The present Convention shall be deposited with the Secretary-General of the Organization who shall transmit certified true copies thereof to the Governments of all States which have signed the present Convention to it.

(*b*) As soon as the present Convention enters into force, the text shall be transmitted by the Secretary-General of the Organization to the Secretary-General of the United Nations for registration and publication, in accordance with Article 102 of the Charter of the United Nations.

Article XIII. LANGUAGES

The present Convention is established in a single copy in the Chinese, English, French, Russian and Spanish languages, each text being equally autbentic. Official translations in the Arabic, German and Italian languages shall be prepared and deposited with the signed original.

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

DONE at London this first day of November one thousand nine hundred and seventy-four.

ANNEX

CHAPTER 1. GENERAL PROVISIONS

PART A. APPLICATION, DEFINITIONS, ETC.

Regulation 1. APPLICATION

(*a*) Unless expressly provided otherwise, the present Regulations apply only to ships engaged on international voyages.

(*b*) The classes of ships to which each Chapter applies are more precisely defined, and the extent of the application is shown, in each Chapter.

Regulation 2. DEFINITIONS

For the purpose of the present Regulations, unless expressly provided otherwise:

(*a*) "Regulations" means the Regulations contained in the Annex to the present Convention.

(*b*) "Administration" means the Government of the State whose flag the ship is entitled to fly.

(*c*) "Approved" means approved by the Administration.

(*d*) "International voyage" means a voyage from a country to which the present Convention applies to a port outside such country, or conversely.

(*e*) A passenger is every person other than:

(i) The master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of that ship; and

(ii) A child under one year of age.

(*f*) A passenger ship is a ship which carries more than twelve passengers.

(*g*) A cargo ship is any ship which is not a passenger ship.

(*h*) A tanker is a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of an inflammable* nature.

(*i*) A fishing vessel used for catching fish, whales, seals, walrus or other living resources of the sea.

(*j*) A nuclear ship is a ship provided with a nuclear power plant.

(*k*) "New ship" means a ship the keel of which is laid or which is at a similar stage of construction on or after the date of coming into force of the present Convention.

(*l*) "Existing ship" means a ship which is not a new ship.

(*m*) A mile is 1,852 metres or 6,080 feet.

Regulation 3. EXCEPTIONS

(*a*) The present Regulations, unless expressly provided otherwise, do not apply to:

(i) Ships of war and troopships;

(ii) Cargo ships of less than 500 tons gross tonnage;

(iii) Ships not propelled by mechanical means;

(iv) Wooden ships of primitive build;

(v) Pleasure yachts not engaged in trade;

(vi) Fishing vessels.

(*b*) Except as expressly provided in Chapter V, nothing herein shall apply to ships solely navigating the Great Lakes of North America and the River St. Lawrence as far east as a straight line drawn from Cap des Rosiers to West Point, Anticosti Island and, on the north side of Anticosti Island, the 63rd Meridian.

Regulation 4. EXEMPTIONS

(*a*) A ship which is not normally engaged on international voyages but which, in exceptional circumstances, is required to undertake a single international voyage may be exempted by the Administration from any of the requirements of the present Regulations provided that it complies with safety requirements which are adequate in the opinion of the Administration for the voyage which is to be undertaken by the ship.

(*b*) The Administration may exempt any ship which embodies features of a novel kind from any of the provisions of Chapters II-1, II-2, III and IV of these Regulations the application of which might seriously impede research into the development of such features and their incorporation in ships engaged on international voyages. Any such ship shall, however, comply with safety requirements which, in the opinion of that Administration, are adequate for the service for which it is intended and are such as to ensure the overall safety of the ship and which are acceptable to the Governments of the States to be visited by the ship. The Administration which allows any such exemption shall communicate to the Organization particulars of same and the reasons therefor which the Organization shall circulate to the Contracting Governments for their information.

Regulation 5. EQUIVALENTS

(*a*) Where the present Regulations require that a particular fitting, material, appliance or apparatus, or type thereof, shall be fitted or carried in a ship, or that any particular provision shall be made, the Administration may allow any other fitting, material, appliance or apparatus, or type thereof, to be fitted or carried, or any other provision to be made in that ship,

*"Inflammable" has the same meaning as "flammable".

if it is satisfied by trial thereof or otherwise that such fitting, material, appliance or apparatus, or type thereof, or provision, is at least as effective as that required by the present Regulations.

(*b*) Any Administration which so allows, in substitution, a fitting, material, appliance or apparatus, or type thereof, or provision, shall communicate to the Organization particulars thereof together with a report on any trials made and the Organization shall circulate such particulars to other Contracting Governments for the information of their officers.

PART B. SURVEYS AND CERTIFICATES

Regulation 6. INSPECTION AND SURVEY

The inspection and survey of ships, so far as regards the enforcement of the provisions of the present Regulations and the granting of exemptions therefrom, shall be carried out by officers of the country in which the ship is registered, provided that the Government of each country may entrust the inspection and survey either to surveyors nominated for the purpose or to organizations recognized by it. In every case the Government concerned fully guarantees the completeness and efficiency of the inspection and survey.

Regulation 7. SURVEYS OF PASSENGER SHIPS

(*a*) A passenger ship shall be subjected to the surveys specified below:

(i) A survey before the ship is put in service;

(ii) A periodical survey once every twelve months;

(iii) Additional surveys, as occasion arises.

(*b*) The surveys referred to above shall be carried out as follows:

(i) The survey before the ship is put in service shall include a complete inspection of its structure, machinery and equipment, including the outside of the ship's bottom and the inside and outside of the boilers. This survey shall be such as to ensure that the arrangements, material, and scantlings of the structure, boilers and other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installation, radio installation, radiotelegraph installations in motor lifeboats, portable radio apparatus for survival craft, life-saving appliances, fire protection, fire detecting and extinguishing appliances, radar, echo-sounding device, gyro-compass, pilot ladders, mechanical pilot hoists and other equipment, fully comply with the requirements of the present Convention, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration for ships of the service for which it is intended. The survey shall also be such as to ensure that the workmanship of all parts of the ship and its equipment is in all respects satisfactory, and that the ship is provided with the lights, shapes, means of making sound signals and distress signals as required by the provisions of the present Convention and the International Regulations for Preventing Collisions at Sea[1] in force.

(ii) The periodical survey shall include an inspection of the structure, boilers and other pressure vessels, machinery and equipment, including the outside of the ship's bottom. The survey shall be such as to ensure that the ship, as regards the structure, boilers and other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installation, radio installation, radiotelegraph installations in motor lifeboats, portable radio apparatus for survival craft, life-saving appliances, fire protection, fire detecting and extinguishing appliances, radar, echo-sounding device, gyro-compass, pilot ladders, mechanical pilot hoists and other equipment, is in satisfactory condition and fit for the service for which it is intended, and that it complies with the requirements of the present Convention, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration. The lights, shapes and means of making sound signals and the distress signals carried by the ship shall also be subject to the above-mentioned survey for the purpose of ensuring that they comply with the

[1] *United States Treaties and Other International Agreements*, vol. 16, part I (1965), p. 794.

requirements of the present Convention and of the International Regulations for Preventing Collisions at Sea in force.

(iii) A survey either general or partial, according to the circumstances, shall be made every time an accident occurs or a defect is discovered which affects the safety of the ship or the efficiency or completeness of its life-saving appliances or other equipment, or whenever any important repairs or renewals are made. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs are in all respects satisfactory, and that the ship complies in all respects with the provisions of the present Convention and of the International Regulations for Preventing Collisions at Sea in force, and of the laws, decrees, orders and regulations promulgated as a result thereof by the Administration.

(*c*) (i) The laws, decrees, orders and regulations referred to in paragraph (*b*) of this Regulation shall be in all respects such as to ensure that, from the point of view of safety of life, the ship is fit for the service for which it is intended.

(ii) They shall among other things prescribe the requirements to be observed as to the initial and subsequent hydraulic or other acceptable alternative tests to which the main and auxiliary boilers, connexions, steam pipes, high pressure receivers, and fuel tanks for internal combustion engines are to be submitted including the test procedures to be followed and the intervals between two consecutive tests.

Regulation 8. SURVEYS OF LIFE-SAVING APPLIANCES AND OTHER EQUIPMENT OF CARGO SHIPS

The life-saving appliances, except a radiotelegraph installation in a motor lifeboat or a portable radio apparatus for survival craft, the echo-sounding device, the gyro-compass, and the fire-extinguishing appliances of cargo ships to which Chapters II-1, II-2, III and V apply shall be subject to initial and subsequent surveys as provided for passenger ships in Regulation 7 of this Chapter with the substitution of 24 months for 12 months in sub-paragraph (*a*)(ii) of that Regulation. The fire control plans in new ships and the pilot ladders, mechanical pilot hoists, lights, shapes and means of making sound signals carried by new and existing ships shall be included in the surveys for the purpose of ensuring that they comply fully with the requirements of the present Convention and, where applicable, the International Regulations for Preventing Collisions at Sea in force.

Regulation 9. SURVEYS OF RADIO AND RADAR INSTALLATIONS OF CARGO SHIPS

The radio and radar installations of cargo ships to which Chapters IV and V apply and any radiotelegraph installation in a motor lifeboat or portable radio apparatus for survival craft which is carried in compliance with the requirements of Chapter III shall be subject to initial and subsequent surveys as provided for passenger ships in Regulation 7 of this Chapter.

Regulation 10. SURVEYS OF HULL, MACHINERY AND EQUIPMENT OF CARGO SHIPS

The hull, machinery and equipment (other than items in respect of which Cargo Ship Safety Equipment Certificates, Cargo Ship Safety Radiotelegraphy Certificates or Cargo Ship Safety Radiotelephony Certificates are issued) of a cargo ship shall be surveyed on completion and thereafter in such manner and at such intervals as the Administration may consider necessary in order to ensure that their condition is in all respects satisfactory. The survey shall be such as to ensure that the arrangements, material, and scantlings of the structure, boilers and other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installations and other equipment are in all respects satisfactory for the service for which the ship is intended.

Regulation 11. MAINTENANCE OF CONDITIONS AFTER SURVEY

After any survey of the ship under Regulations 7, 8, 9 or 10 of this Chapter has been completed, no change shall be made in the structural arrangements, machinery, equipment, etc., covered by the survey, without the sanction of the Administration.

Regulation 12. ISSUE OF CERTIFICATES

(*a*) (i) A certificate called a Passenger Ship Safety Certificate shall be issued after inspection and survey to a passenger ship which complies with the requirements of Chapters II-1, II-2, III and IV and any other relevant requirements of the present Regulations.

(ii) A certificate called a Cargo Ship Safety Construction Certificate shall be issued after survey to a cargo ship which satisfies the requirements for cargo ships on survey set out in Regulation 10 of this Chapter and complies with the applicable requirements of Chapters II-1 and II-2 other than those relating to fire-extinguishing appliances and fire control plans.

(iii) A certificate called a Cargo Ship Safety Equipment Certificate shall be issued after inspection to a cargo ship which complies with the relevant requirements of Chapters II-1, II-2 and III and any other relevant requirements of the present Regulations.

(iv) A certificate called a Cargo Ship Safety Radiotelegraphy Certificate shall be issued after inspection to a cargo ship, fitted with a radiotelegraph installation, which complies with the requirements of Chapter IV and any other relevant requirements of the present Regulations.

(v) A certificate called a Cargo Ship Safety Radiotelephony Certificate shall be issued after inspection to a cargo ship, fitted with a radiotelephone installation, which complies with the requirements of Chapter IV and any other relevant requirements of the present Regulations.

(vi) When an exemption is granted to a ship under and in accordance with the provisions of the present Regulations, a certificate called an Exemption Certificate shall be issued in addition to the certificates prescribed in this paragraph.

(vii) Passenger Ship Safety Certificates, Cargo Ship Safety Construction Certificates, Cargo Ship Safety Equipment Certificates, Cargo Ship Safety Radiotelegraphy Certificates, Cargo Ship Safety Radiotelephony Certificates and Exemption Certificates shall be issued either by the Administration or by any person or organization duly authorized by it. In every case, that Administration assumes full responsibility for the Certificate.

(*b*) Notwithstanding any other provision of the present Convention any certificate issued under, and in accordance with, the provisions of the International Convention for the Safety of Life at Sea, 1960, which is current when the present Convention comes into force in respect of the Administration by which the certificate is issued, shall remain valid until it expires under the terms of Regulation 14 of Chapter I of that Convention.

(*c*) A Contracting Government shall not issue certificates under, and in accordance with, the provisions of the International Convention for the Safety of Life at Sea, 1960, 1948[1] or 1929[2], after the date on which acceptance of the present Convention by the Government takes effect.

Regulation 13. ISSUE OF CERTIFICATE BY ANOTHER GOVERNMENT

A Contracting Government may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the requirements of the present Regulations are complied with, shall issue certificates to the ship in accordance with the present Regulations. Any certificate so issued must contain a statement to the effect that it has been issued at the request of the Government of the country in which the ship is or will be registered, and it shall have the same force and receive the same recognition as a certificate issued under Regulation 12 of this Chapter.

Regulation 14. DURATION OF CERTIFICATES

(*a*) Certificates other than Cargo Ship Safety Construction Certificates, Cargo Ship Safety Equipment Certificates and Exemption Certificates shall be issued for a period of not

[1] United Nations, *Treaty Series*, vol. 164, p. 113.
[2] League of Nations, *Treaty Series*, vol. CXXXVI, p. 81.

more than 12 months. Cargo Ship Safety Equipment Certificates shall be issued for a period of not more than 24 months. Exemption Certificates shall not be valid for longer than the period of the certificates to which they refer.

(*b*) If a survey takes place within two months before the end of the period for which a Cargo Ship Safety Radiotelegraphy Certificate or a Cargo Ship Safety Radiotelephony Certificate issued in respect of cargo ships of 300 tons gross tonnage and upwards, but less than 500 tons gross tonnage, was originally issued, that certificate may be withdrawn, and a new certificate may be issued which shall expire 12 months after the end of the said period.

(*c*) If a ship at the time when its certificate expires is not in a port of the country in which it is registered, the certificate may be extended by the Administration, but such extension shall be granted only for the purpose of allowing the ship to complete its voyagc to the country in which it is registered or is to be surveyed, and then only in cases where it appears proper and reasonable so to do.

(*d*) No certificate shall be thus extended for a longer period than five months, and a ship to which such extension is granted shall not, on its arrival in the country in which it is registered or the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port or country without having obtained a new certificate.

(*e*) A certificate which has not been extended under the foregoing provisions of this Regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it.

Regulation 15. FORM OF CERTIFICATES

(*a*) All certificates shall be drawn up in the official language or languages of the country by which they are issued.

(*b*) The form of the certificates shall be that of the models given in the Appendix to the present Regulations. The arrangement of the printed part of of the model certificates shall be exactly reproduced in the certificates issued, or in certified copies thereof, and the particulars inserted in the certificate or in certified copies thereof, shall be in Roman characters and Arabic figures.

Regulation 16. POSTING UP OF CERTIFICATES

All certificates or certificd copies thereof issued under the present Regulations shall be posted up in a prominent and accessible place in the ship.

Regulation 17. ACCEPTANCE OF CERTIFICATES

Certificates issued under the authority of a Contracting Government shall be accepted by the other Contracting Governments for all purposes covered by the present Convention. They shall be regarded by the other Contracting Governments as having the same force as certificates issued by them.

Regulation 18. QUALIFICATION OF CERTIFICATES

(*a*) If in the course of a particular voyage a ship has on board a number of persons less than the total number stated in the Passenger Ship Safety Certificate and is in consequence, in accordance with the provisions of the present Regulations, free to carry a smaller number of lifeboats and other life-saving appliances than that stated in the Certificate, an annex may be issued by thc Government, person or organization referred to in Regulation 12 or 13 of this Chapter.

(*b*) This annex shall state that in the circumstances there is no infringement of the provisions of the present Regulations. It shall be annexed to the Certificate and shall be substituted for it in so far as the life-saving appliances are concerned. It shall be valid only for the particular voyagc for which it is issued.

Regulation 19. CONTROL

Every ship holding a certificate issued under Regulation 12 or Regulation 13 of this Chapter is subject in the ports of the other Contracting Governments to control by officers duly authorized by such Governments in so far as this control is directed towards verifying that there is on board a valid certificate. Such certificate shall be accepted unless there are clear grounds for believing that the condition of the ship or of its equipment does not correspond substantially with the particulars of that certificate. In that case, the officer carrying out the control shall take such steps as will ensure that the ship shall not sail until it can proceed to sea without danger to the passengers or the crew. In the event of this control giving rise to intervention of any kind, the officer carrying out the control shall inform the Consul of the country in which the ship is registered in writing forthwith of all the circumstances in which intervention was deemed to be necessary, and the facts shall be reported to the Organization.

Regulation 20. PRIVILEGES

The privileges of the present Convention may not be claimed in favour of any ship unless it holds appropriate valid certificates.

PART C. CASUALTIES

Regulation 21. CASUALTIES

(*a*) Each Administration undertakes to conduct an investigation of any casualty occurring to any of its ships subject to the provisions of the present Convention when it judges that such an investigation may assist in determining what changes in the present Regulations might be desirable.

(*b*) Each Contracting Government undertakes to supply the Organization with pertinent information concerning the findings of such investigations. No reports or recommendations of the Organization based upon such information shall disclose the identity or nationality of the ships concerned or in any manner fix or imply responsibility upon any ship or person.

CHAPTER II-1. CONSTRUCTION – SUBDIVISION AND STABILITY, MACHINERY AND ELECTRICAL INSTALLATIONS

PART A. GENERAL

Regulation 1. APPLICATION

(*a*) (i) Unless expressly provided otherwise, this Chapter applies to new ships.

(ii) Existing passenger ships and cargo ships shall comply with the following:

(1) For ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to new ships as defined in that Chapter are complied with;

(2) For ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, but before the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of the 1948 Convention to new ships as defined in that Chapter are complied with;

(3) For ships the keels of which were laid or which were at a similar stage of construction before the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to existing ships as defined in that Chapter are complied with;

(4) As regards the requirements of Chapter II-1 of the present Convention which are not contained in Chapter II of the 1960 and 1948 Conventions, the Administration shall decide which of these requirements shall be applied to existing ships as defined in the present Convention.

(iii) A ship which undergoes repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to the ship. An existing ship in such a case shall not, as a rule, comply to a lesser extent with the requirements for a new ship than it did before. Repairs, alterations and modifications of a major character and outfitting related thereto should meet the requirements for a new ship in so far as the Administration deems reasonable and practicable.

(*b*) For the purpose of this Chapter:

(i) A new passenger ship is a passenger ship the keel of which is laid or which is at a similar stage of construction on or after the date of coming into force of the present Convention, or a cargo ship which is converted to a passenger ship on or after that date, all other passenger ships being described as existing passenger ships;

(ii) A new cargo ship is a cargo ship the keel of which is laid or which is at a similar stage of construction after the date of coming into force of the present Convention.

(*c*) The Administration may, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of any specific requirements of this Chapter unreasonable or unnecessary, exempt from those requirements individual ships or classes of ships belonging to its country which, in the course of their voyage, do not proceed more than 20 miles from the nearest land.

(*d*) In the case of a passenger ship which is permitted under paragraph (*c*) of Regulation 27 of Chapter III to carry a number of persons on board in excess of the lifeboat capacity provided, it shall comply with the special standards subdivision set out in paragraph (*e*) of Regulation 5 of this Chapter, and the associated special provisions regarding permeability in paragraph (*d*) of Regulation 4 of this Chapter, unless the Administration is satisfied that, having regard to the nature and conditions of the voyage, compliance with the other provisions of the Regulations of this Chapter and Chapter II-2 of the present Convention is sufficient.

(*e*) In the case of passenger ships which are employed in special trades for the carriage of large numbers of special trade passengers, such as the pilgrim trade, the Administration, if satisfied that it is impracticable to enforce compliance with the requirements of this Chapter, may exempt such ships, when they belong to its country, from those requirements, provided that they comply fully with the provisions of:

(i) The Rules annexed to the Special Trade Passenger Ships Agreement, 1971;[1] and

(ii) The Rules annexed to the Protocol on Space Requirements for Special Trade Passenger Ships, 1973,[2] when it enters into force.

Regulation 2. DEFINITIONS

For the purpose of this Chapter, unless expressly provided otherwise:

(*a*) (i) A subdivision load line is a water-line used in determining the subdivision of the ship.

[1] United Nations, *Treaty Series*, vol. 910, p. 61.
[2] *Ibid.*, vol. 1046, p. 317.

(ii) The deepest subdivision load line is the water-line which corresponds to the greatest draught permitted by the subdivision requirements which are applicable.

(*b*) The length of the ship is the length measured between perpendiculars taken at the extremities of the deepest subdivision load line.

(*c*) The breadth of the ship is the extreme width from outside of frame to outside of frame at or below the deepest subdivision load line.

(*d*) The draught is the vertical distance from the moulded base line amidships to the subdivision load line in question.

(*e*) The bulkhead deck is the uppermost deck up to which the transverse watertight bulkheads are carried.

(*f*) The margin line is a line drawn at least 76 millimetres (3 inches) below the upper surface of the bulkhead deck at side.

(*g*) The permeability of a space is the percentage of that space which can be occupied by water.

The volume of a space which extends above the margin line shall be measured only to the height of that line.

(*h*) The machinery space is to be taken as extending from the moulded base line to the margin line and between the extreme main transverse watertight bulkheads bounding the spaces containing the main and auxiliary propelling machinery, boilers serving the needs of propulsion, and all permanent coal bunkers.

In the case of unusual arrangements, the Administration may define the limits of the machinery spaces.

(i) Passenger spaces are those which are provided for the accommodation and use of passengers, excluding baggage, store, provision and mail rooms.

For the purposes of Regulations 4 and 5 of this Chapter, spaces provided below the margin line for the accommodation and use of the crew shall be regarded as passenger spaces.

(*j*) In all cases volumes and areas shall be calculated to moulded lines.

PART B. SUBDIVISION AND STABILITY*

(Part B applies to passenger ships only, except that Regulation 19 also applies to cargo ships)

Regulation 3. FLOODABLE LENGTH

(*a*) The floodable length at any point of the length of a ship shall be determined by a method of calculation which takes into consideration the form, draught and other characteristics of the ship in question.

(*b*) In a ship with a continuous bulkhead deck, the floodable length at a given point is the maximum portion of the length of the ship, having its centre at the point in question, which can be flooded under the definite assumptions set forth in Regulation 4 of this Chapter without the ship being submerged beyond the margin line.

(*c*) (i) In the case of a ship not having a continuous bulkhead deck, the floodable length at any point may be determined to an assumed continuous margin line which at no point is less than 76 millimetres (3 inches) below the top of the deck (at side) to which the bulkheads concerned and the shell are carried watertight.

(ii) Where a portion of an assumed margin line is appreciably below the deck to which bulkheads are carried, the Administration may permit a limited relaxation in the watertightness of those portions of the bulkheads which are above the margin line and immediately under the higher deck.

* Instead of the requirements in this Part, the Regulations on Subdivision and Stability of Passenger Ships as an Equivalent to Part B of Chapter II of the International Convention for the Safety of Life at Sea, 1960, adopted by the Organization by Resolution A.265(VIII), may be used, if applied, in their entirety.

Regulation 4. PERMEABILITY

(*a*) The definite assumptions referred to in Regulation 3 of this Chapter relate to the permeabilities of the spaces below the margin line.

In determining the floodable length, a uniform average permeability shall be used throughout the whole length of each of the following portions of the ship below the margin line:

(i) The machinery space as defined in Regulation 2 of this Chapter;

(ii) The portion forward of the machinery space; and

(iii) The portion abaft the machinery space.

(*b*) (i) The uniform average permeability throughout the machinery space shall be determined from the formula:

$$85 + 10 \left(\frac{a - c}{v}\right)$$

where:

a = volume of the passenger spaces, as defined in Regulation 2 of this Chapter, which are situated below the margin line within the limits of the machinery space;

c = volume of between deck spaces below the margin line within the limits of the machinery space which are appropriated to cargo, coal or stores;

v = whole volume of the machinery space below the margin line.

(ii) Where it is shown to the satisfaction of the Administration that the average permeability as determined by detailed calculation is less than that given by the formula, the detailed calculated value may be used. For the purpose of such calculation, the permeabilities of passenger spaces, as defined in Regulation 2 of this Chapter, shall be taken as 95, that of all cargo, coal and store spaces as 60, and that of double bottom, oil fuel and other tanks at such values as may be approved in each case.

(*c*) Except as provided in paragraph (*d*) of this Regulation, the uniform average permeability throughout the portion of the ship before (or abaft) the machinery space shall be determined from the formula:

$$63 + 35 \frac{a}{v}$$

where:

a = volume of the passenger spaces, as defined in Regulation 2 of this Chapter, which are situated below the margin line, before (or abaft) the machinery space; and

v = whole volume of the portion of the ship below the margin line before (or abaft) the machinery space.

(*d*) In the case of a ship which is permitted under paragraph (*c*) of Regulation 27 of Chapter III to carry a number of persons on board in excess of the lifeboat capacity provided, and is required under paragraph (*d*) of Regulation 1 of this Chapter to comply with special provisions, the uniform average permeability throughout the portion of the ship before (or abaft) the machinery space shall be determined from the formula:

$$95 - 35 \frac{b}{v}$$

where:

b = the volume of the spaces below the margin line and above the tops of floors, inner bottom, or peak tanks, as the case may be, which are appropriated to and used as cargo spaces, coal or oil fuel bunkers, store-rooms, baggage and mail rooms, chain lockers and fresh water tanks, before (or abaft) the machinery space; and

v = whole volume of the portion of the ship below the margin line before (or abaft) the machinery space.

In the case of ships engaged on services where the cargo holds are not generally occupied by any substantial quantities of cargo, no part of the cargo spaces is to be included in calculating "b".

(*e*) In the case of unusual arrangements the Administration may allow, or require, a detailed calculation of average permeability for the portions before or abaft the machinery space. For the purpose of such calculation, the permeability of passenger spaces as defined in Regulation 2 of this Chapter shall be taken as 95, that of spaces containing machinery as 85, that of all cargo, coal and store spaces as 60, and that of double bottom, oil fuel and other tanks at such value as may be approved in each case.

(*f*) Where a between deck compartment between two watertight transverse bulkheads contains any passenger or crew space, the whole of that compartment, less any space completely enclosed within permanent steel bulkheads and appropriated to other purposes, shall be regarded as passenger space. Where, however, the passenger or crew space in question is completely enclosed within permanent steel bulkheads, only the space so enclosed need be considered as passenger space.

Regulation 5. PERMISSIBLE LENGTH OF COMPARTMENTS

(*a*) Ships shall be as efficiently subdivided as is possible having regard to the nature of the service for which they are intended. The degree of subdivision shall vary with the length of the ship and with the service, in such manner that the highest degree of subdivision corresponds with the ships of greatest length, primarily engaged in the carriage of passengers.

(*b*) *Factor of subdivision.* The maximum permissible length of a compartment having its centre at any point in the ship's length is obtained from the floodable length by multiplying the latter by an appropriate factor called the factor of subdivision.

The factor of subdivision shall depend on the length of the ship, and for a given length shall vary according to the nature of the service for which the ship is intended. It shall decrease in a regular and continuous manner:

(i) As the length of the ship increases; and

(ii) From a factor A, applicable to ships primarily engaged in the carriage of cargo, to a factor B, applicable to ships primarily engaged in the carriage of passengers.

The variations of the factors A and B shall be expressed by the following formulae (I) and (II) where L is the length of the ship as defined in Regulation 2 of this Chapter:

L in metres:

$$A = \frac{58.2}{L - 60} + .18 \text{ (L = 131 and upwards)} \quad \text{(I)};$$

L in feet:

$$A = \frac{190}{L - 198} + .18 \text{ (L = 430 and upwards)};$$

L in metres:

$$B = \frac{30.3}{L - 42} + .18 \text{ (L = 79 and upwards)} \quad \text{(II)};$$

L in feet:

$$B = \frac{100}{L - 138} + .18 \text{ (L = 260 and upwards)}.$$

(*c*) *Criterion of service.* For a ship of given length the appropriate factor of subdivision shall be determined by the Criterion of Service Numeral (hereinafter called the Criterion Numeral) as given by the following formulae (III) and (IV) where:

C_s = the Criterion Numeral;

L = length of the ship, as defined in Regulation 2 of this Chapter;

M = the volume of the machinery space, as defined in Regulation 2 of this Chapter; with the addition thereto of the volume of any permanent oil fuel bunkers which may be situated above the inner bottom and before or abaft the machinery space;

P = the whole volume of the passenger spaces below the margin line, as defined in Regulation 2 of this Chapter;

V = the whole volume of the ship below the margin line;

P_1 = KN where:

N = number of passengers for which the ship is to be certified, and

K has the following values:

	Value of K
Length in metres and volumes in cubic feet	.056L
Length in feet and volumes in cubic feet	.6L

Where the value of KN is greater than the sum of P and the whole volume of the actual passenger spaces above the margin line, the figure to be taken as P_1 is that sum or two-thirds KN, whichever is the greater.

When P_1 is greater than P:

$$C_s = 72 \frac{M + 2P_1}{V + P_1 - P} \quad \text{(III)}$$

and in other cases:

$$C_s = 72 \frac{M + 2P}{V} \quad \text{(IV).}$$

For ships not having a continuous bulkhead deck the volumes are to be taken up to the actual margin lines used in determining the floodable lengths.

(*d*) *Rules for subdivision of ships other than those covered by paragraph (e) of this Regulation.* (i) The subdivision abaft the forepeak of ships 131 metres (430 feet) in length and upwards having a criterion numeral of 23 or less shall be governed by the factor A given by formula (I); of those having a criterion numeral of 123 or more by the factor B given by formula (II); and of those having a criterion numeral between 23 and 123 by the factor F obtained by linear interpolation between the factors A and B, using the formula:

$$F = A - \frac{(A - B)(C_s - 23)}{100} \quad \text{(V).}$$

Nevertheless, where the criterion numeral is equal to 45 or more and simultaneously the computed factor of subdivision as given by formula (V) is .65 or less, but more than .50, the subdivision abaft the forepeak shall be governed by the factor .50.

Where the factor F is less than .40 and it is shown to the satisfaction of the Administration to be impracticable to comply with the factor F in a machinery compartment of the ship, the subdivision of such compartment may be governed by an increased factor, which, however, shall not exceed .40.

(ii) The subdivision abaft the forepeak of ships less than 131 metres (430 feet) but not less than 79 metres (260 feet) in length having a criterion numeral equal to S, where:

$$S = \frac{3{,}574 - 25L}{13} \text{ (L in metres)} = \frac{9{,}382 - 20L}{34} \text{ (L in feet)}$$

shall be governed by the factor unity; of those having a criterion numeral of 123 or more by the factor B given by the formula (II); of those having a criterion numeral between S and 123 by the factor F obtained by linear interpolation between unity and the factor B using the formula:

$$F = 1 - \frac{(1 - B)(C_s - S)}{123 - S} \quad \text{(VI).}$$

(iii) The subdivision abaft the forepeak of ships less than 131 metres (430 feet) but not less than 79 metres (260 feet) in length and having a criterion numeral less than S, and of all ships less than 79 metres (260 feet) in length shall be governed by the factor unity, unless, in either case, it is shown to the satisfaction of the Administration to be impracticable to comply with this factor in any part of the ship, in which case the Administration may allow such relaxation as may appear to be justified, having regard to all the circumstances.

(iv) The provisions of sub-paragraph (iii) of this paragraph shall apply also to ships of whatever length, which are to be certified to carry a number of passengers exceeding 12 but not exceeding:

$$\frac{L^2}{650} \text{ (in metres)} = \frac{L^2}{7{,}000} \text{ (in feet), or 50, whichever is the less.}$$

(*e*) *Special standards of subdivision for ships which are permitted under paragraph (c) of Regulation 27 of Chapter III to carry a number of persons on board in excess of the lifeboat capacity provided and are required under paragraph (d) of Regulation I of this Chapter to comply with special provisions.* (i) (1) In the case of ships primarily engaged in the carriage of passengers, the subdivision abaft the forepeak shall be governed by a factor of .50 or by the factor determined according to paragraphs (*c*) and (*d*) of this Regulation, if less than .50.

(2) In the case of such ships less than 91.5 metres (300 feet) in length, if the Administration is satisfied that compliance with such factor would be impracticable in a compartment, it may allow the length of that compartment to be governed by a higher factor provided the factor used is the lowest that is practicable and reasonable in the circumstances.

(ii) Where, in the case of any ship whether less than 91.5 metres (300 feet) or not, the necessity of carrying apprcciable quantities of cargo makes it impracticable to require the subdivision abaft the forepeak to be governed by a factor not exceeding .50, the standard of subdivision to be applied shall be determined in accordance with the following sub-paragraphs (1) to (5), subject to the condition that where the Administration is satisfied that insistence on strict compliance in any respect would be unreasonable, it may allow such alternative arrangement of the watertight bulkheads as appears to be justified on merits and will not diminish the general effectiveness of the subdivision.

(1) The provisions of paragraph (*c*) of this Regulation relating to the criterion numeral shall apply with the exception that in calculating the value of P_1 for berthed passengers K is to have the value defined in paragraph (*c*) of this Regulation, or 3.55 cubic metres (125 cubic feet), whichever is the greater, and for unberthed passengers K is to have the value 3.55 cubic metres (125 cubic feet).

(2) The factor B in paragraph (*b*) of this Regulation shall be replaced by the factor BB determined by the following formula:

L in metres:

$$BB = \frac{17.6}{L - 33} + .20 \text{ (L = 55 and upwards);}$$

L in feet:

$$BB = \frac{57.6}{L - 108} + .20 \text{ (L = 180 and upwards).}$$

(3) The subdivision abaft the forepeak of ships 131 metres (430 feet) in length and upwards having a criterion numeral of 23 or less shall be governed by the factor A given by formula (I) in paragraph (*b*) of this Regulation; of those having a criterion numeral of 123 or more by the factor BB given by the formula in sub-paragraph (ii)(2) of this paragraph; and of those having a criterion numeral between 23 and 123 by the faetor F obtained by linear interpolation between the factors A and BB, using the formula:

$$F = A - \frac{(A - BB)(C_s - 23)}{100}$$

except that if the factor F so obtained is less than .50 the factor to be used shall be either .50 or the factor calculated according to the provisions of sub-paragraph (*d*)(i) of this Regulation, whichever is the smaller.

(4) The subdivision abaft the forepeak of ships less than 131 metres (430 feet) but not less than 55 metres (180 feet) in length having a criterion numeral equal to S_1 where:

$$S_1 = \frac{3{,}712 - 25L}{19} \text{ (L in metres)}$$

$$S_1 = \frac{1{,}950 - 4L}{10} \text{ (L in feet)}$$

shall be governed by the factor unity; of those having a criterion numeral of 123 or more by the factor BB given by the formula in sub-paragraph (ii)(2) of this paragraph; of those having a criterion numeral between S_1 and 123 by the factor F obtained by linear interpolation between unity and the factor BB using the formula:

$$F = 1 - \frac{(1 - BB)(C_s - S_1)}{123 - S_1}$$

except that in either of the two latter cases if the factor so obtained is less than .50 the subdivision may be governed by a factor not exceeding .50.

(5) The subdivision abaft the forepeak of ships less than 131 metres (430 feet) but not less than 55 metres (180 feet) in length and having a criterion numeral less than S_1 and of all ships less than 55 metres (180 feet) in length shall be governed by the factor unity, unless it is shown to the satisfaction of the Administration to be impracticable to comply with this factor in particular compartments, in which event the Administration may allow such relaxations in respect of those compartments as appear to be justified, having regard to all the circumstances, provided that the aftermost compartment and as many as possible of the forward compartments (between the forepeak and the after end of the machinery space) shall be kept within the floodable length.

Regulation 6. SPECIAL RULES CONCERNING SUBDIVISION

(*a*) Where in a portion or portions of a ship the watertight bulkheads are carried to a higher deck than in the remainder of the ship and it is desired to take advantage of this higher extension of the bulkheads in calculating the floodable length, separate margin lines may be used for each such portion of the ship provided that:

(i) The sides of the ship are extended throughout the ship's length to the deck corresponding to the upper margin line and all openings in the shell plating below this deck throughout the length of the ship are treated as being below a margin line, for the purposes of Regulation 14 of this Chapter; and

(ii) The two compartments adjacent to the "step" in the bulkhead deck are each within the permissible length corresponding to their respective margin lines, and, in addition, their combined length does not exceed twice the permissible length based on the lower margin line.

(*b*) (i) A compartment may exceed the permissible length determined by the rules of Regulation 5 of this Chapter provided the combined length of each pair of adjacent compartments to which the compartment in question is common does not exceed either the floodable length or twice the permissible length, whichever is the less.

(ii) If one of the two adjacent compartments is situated inside the machinery space, and the second is situated outside the machinery space, and the average permeability of the portion of the ship in which the second is situated differs from that of the machinery space, the combined length of the two compartments shall be adjusted to the mean average permeability of the two portions of the ship in which the compartments are situated.

(iii) Where the two adjacent compartments have different factors of subdivision, the combined length of the two compartments shall be determined proportionately.

(*c*) In ships 100 metres (330 feet) in length and upwards, one of the main transverse bulkheads abaft the forepeak shall be fitted at a distance from forward perpendicular which is not greater than the permissible length.

(*d*) A main transverse bulkhead may be recessed provided that all parts of the recess lie inboard of vertical surfaces on both sides of the ship, situated at a distance from the shell plating equal to one-fifth the breadth of the ship, as defined in Regulation 2 of this Chapter, and measured at right angles to the centre line at the level of the deepest subdivision load line.

Any part of a recess which lies outside these limits shall be dealt with as a step in accordance with paragraph (*e*) of this Regulation.

(*e*) A main transverse bulkhead may be stepped provided that it meets one of the following conditions:

(i) The combined length of the two compartments, separated by the bulkhead in question, does not exceed either 90 per cent of the floodable length or twice the permissible length, except that in ships having a factor of subdivision greater than .9, the combined length of the two compartments in question shall not exceed the permissible length;

(ii) Additional subdivision is provided in way of the step to maintain the same measure of safety as that secured by a plane bulkhead;

(iii) The compartment over which the step extends does not exceed the permissible length corresponding to a margin line taken 76 millimetres (3 inches) below the step.

(*f*) Where a main transverse bulkhead is recessed or stepped, an equivalent plane bulkhead shall be used in determining the subdivision.

(*g*) If the distance between two adjacent main transverse bulkheads, or their equivalent plane bulkheads, or the distance between the transverse planes passing through the nearest stepped portions of the bulkheads, is less than 3.05 metres (10 feet) plus 3 per cent of the length of the ship, or 10.67 metres (35 feet) whichever is the less, only one of these bulkheads shall be regarded as forming part of the subdivision of the ship in accordance with the provisions of Regulation 5 of this Chapter.

(*h*) Where a main transverse watertight compartment contains local subdivision and it can be shown to the satisfaction of the Administration that, after any assumed side damage extending over a length of 3.05 metres (10 feet) plus 3 per cent of the length of the ship, or 10.67 metres (35 feet) whichever is the less, the whole volume of the main compartment will not be flooded, a proportionate allowance may be made in the permissible length otherwise required for such compartment. In such a case the volume of effective buoyancy assumed on the undamaged side shall not be greater than that assumed on the damaged side.

(*i*) Where the required factor of subdivision is .50 or less, the combined length of any two adjacent compartments shall not exceed the floodable length.

Regulation 7. STABILITY OF SHIPS IN DAMAGED CONDITION

(*a*) Sufficient intact stability shall be provided in all service conditions so as to enable the ship to withstand the final stage of flooding of any one main compartment which is required to be within the floodable length.

Where two adjacent main compartments are separated by a bulkhead which is stepped under the conditions of sub-paragraph (*e*)(i) of Regulation 6 of this Chapter the intact stability shall be adequate to withstand the flooding of those two adjacent main compartments.

Where the required factor of subdivision is .50 or less but more than .33 intact stability shall be adequate to withstand the flooding of any two adjacent main compartments.

Where the required factor of subdivision is .33 or less the intact stability shall be adequate to withstand the flooding of any three adjacent main compartments.

(*b*) (i) The requirements of paragraph (*a*) of this Regulation shall be determined by calculations which are in accordance with paragaphs (*c*), (*d*) and (*f*) of this Regulation and which take into consideration the proportions and design characteristics of the ship and the arrangement and configuration of the damaged compartments. In making these calculations the ship is to be assumed in the worst anticipated service condition as regards stability.

(ii) Where it is proposed to fit decks, inner skins or longitudinal bulkheads of sufficient tightness to seriously restrict the flow of water, the Administration shall be satisfied that proper consideration is given to such restrictions in the calculations.

(iii) In cases where the Administration considers the range of stability in the damaged condition to be doubtful, it may require investigation thereof.

(*c*) For the purpose of making damage stability calculations the volume and surface permeabilities shall be in general as follows:

Spaces	*Permeability*
Appropriated to cargo, coal or stores	60
Occupied by accommodation	95
Occupied by machinery	85
Intended for liquids	0 or 95*

Higher surface permeabilities are to be assumed in respect of spaces which, in the vicinity of the damage waterplane, contain no substantial quantity of accommodation or machinery and spaces which are not generally occupied by any substantial quantity of cargo or stores.

(*d*) Assumed extent of damage shall be as follows:

(i) Longitudinal extent: 3.05 metres (10 feet) plus 3 per cent of the length of the ship, or 10.67 metres (35 feet) whichever is the less; where the required factor of subdivision is .33 or less the assumed longitudinal extent of damage shall be increased as necessary so as to include any two consecutive main transverse watertight bulkheads;

(ii) Transverse extent (measured inboard from the ship's side, at right angles to the centre line at the level of the deepest subdivision load line): a distance of one-fifth of the breadth of the ship, as defined in Regulation 2 of this Chapter; and

(iii) Vertical extent: from the base line upwards without limit;

(iv) If any damage of lesser extent than that indicated in sub-paragraphs (i), (ii) and (iii) of this paragraph would result in a more severe condition regarding heel or loss of metacentric height, such damage shall be assumed in the calculations.

(*e*) Unsymmetrical flooding is to be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting, but in any case where controls to cross-flooding fittings are provided they shall be operable from above the bulkhead deck. These fittings together with their controls as well as the maximum heel before equalization shall be acceptable to the Administration. Where cross-flooding fittings are required the time for equalization shall not exceed 15 minutes. Suitable information concerning the use of cross-flooding fittings shall be supplied to the master of the ship.**

(*f*) The final conditions of the ship after damage and, in the case of unsymmetrical flooding, after equalization measures have been taken shall be as follows:

(i) In the case of symmetrical flooding there shall be a positive residual metacentric height of at least 50 millimetres (2 inches) as calculated by the constant displacement method;

(ii) In the case of unsymmetrical flooding the total heel shall not exceed seven degrees, except that, in special cases, the Administration may allow additional heel due to the unsymmetrical moment, but in no case shall the final heel exceed fifteen degrees;

* Whichever results in the more severe requirements.

** Reference is made to the Recommendation on a Standard Method for Establishing Compliance with the Requirements for Cross-Flooding Arrangements in Passenger Ships, adopted by the Organization by Resolution A.266(VII).

(iii) In no case shall the margin line be submerged in the final stage of flooding; if it is considered that the margin line may become submerged during an intermediate stage of flooding, the Administration may require such investigations and arrangements as it considers necessary for the safety of the ship.

(*g*) The master of the ship shall be supplied with the data necessary to maintain sufficient intact stability under service conditions to enable the ship to withstand the critical damage. In the case of ships requiring cross-flooding the master of the ship shall be informed of the conditions of stability on which the calculations of heel are based and be warned that excessive heeling might result should the ship sustain damage when in a less favourable condition.

(*h*) (i) No relaxation from the requirements for damage stability may be considered by the Administration unless it is shown that the intact metacentric height in any service condition necessary to meet these requirements is excessive for the service intended.

(ii) Relaxations from the requirements for damage stability shall be permitted only in exceptional cases and subject to the condition that the Administration is to be satisfied that the proportions, arrangements and other characteristics of the ship are the most favourable to stability after damage which can practically and reasonably be adopted in the particular circumstances.

Regulation 8. BALLASTING

When ballasting with water is necessary, the water ballast should not in general be carried in tanks intended for oil fuel. In ships in which it is not practicable to avoid putting water in oil fuel tanks, oily-water separator equipment to the satisfaction of the Administration shall be fitted, or other alternative means acceptable to the Administration shall be provided for disposing of the oily-water ballast.

Regulation 9. PEAK AND MACHINERY SPACE BULKHEADS, SHAFT TUNNELS, ETC.

(*a*) (i) A ship shall have a forepeak or collision bulkhead, which shall be watertight up to the bulkhead deck. This bulkhead shall be fitted not less than 5 per cent of the length of the ship, and not more than 3.05 metres (10 feet) plus 5 per cent of the length of the ship from the forward perpendicular.

(ii) If the ship has a long forward superstructure, the forepeak bulkhead shall be extended weathertight to the deck next above the bulkhead deck. The extension need not be fitted directly over the bulkhead below, provided it is at least 5 per cent of the length of the ship from the forward perpendicular, and the part of the bulkhead deck which forms the step is made effectively weathertight.

(*b*) An afterpeak bulkhead, and bulkheads dividing the machinery space, as defined in Regulation 2 of this Chapter, from the cargo and passenger spaces forward and aft, shall also be fitted and made watertight up to the bulkhead deck. The afterpeak bulkhead may, however, be stepped below the bulkhead deck, provided the degree of safety of the ship as regards subdivision is not thereby diminished.

(*c*) In all cases stern tubes shall be enclosed in watertight spaces of moderate volume. The stern gland shall be situated in a watertight shaft tunnel or other watertight space separate from the stern tube compartment and of such volume that, if flooded by leakage through the stern gland, the margin line will not be submerged.

Regulation 10. DOUBLE BOTTOMS

(*a*) A double bottom shall be fitted extending from the forepeak bulkhead to the afterpeak bulkhead as far as this is practicable and compatible with the design and proper working of the ship.

(i) In ships 50 metres (165 feet) and under 61 metres (200 feet) in length a double bottom shall be fitted at least from the machinery space to the forepeak bulkhead, or as near thereto as practicable;

(ii) In ships 61 metres (200 feet) and under 76 metres (249 feet) in length a double bottom shall be fitted at least outside the machinery space, and shall extend to the fore and after peak bulkheads, or as near thereto as practicable;

(iii) In ships 76 metres (249 feet) in length and upwards, a double bottom shall be fitted amidships, and shall extend to the fore and after peak bulkheads, or as near thereto as practicable.

(*b*) Where a double bottom is required to be fitted its depth shall be to the satisfaction of the Administration and the inner bottom shall be continued out to the ship's sides in such a manner as to protect the bottom to the turn of the bilge. Such protection will be deemed satisfactory if the line of intersection of the outer edge of the margin plate with the bilge plating is not lower at any part than a horizontal plane passing through the point of intersection with the frame line amidships of a transverse diagonal line inclined at 25 degrees to the base line and cutting it at a point one-half the ship's moulded breadth from the middle line.

(*c*) Small wells constructed in the double bottom in connexion with drainage arrangements of holds, etc., shall not extend downwards more than necessary. The depth of the well shall in no case be more than the depth less 457 millimetres (18 inches) of the double bottom at the centreline, nor shall the well extend below the horizontal plane referred to in paragraph (*b*) of this Regulation. A well extending to the outer bottom is, however, permitted at the after end of the shaft tunnel of screw-ships. Other wells (e.g., for lubricating oil under main engines) may be permitted by the Administration if satisfied that the arrangements give protection equivalent to that afforded by a double bottom complying with this Regulation.

(*d*) A double bottom need not be fitted in way of watertight compartments of moderate size used exclusively for the carriage of liquids, provided the safety of the ship, in the event of bottom or side damage, is not, in the opinion of the Administration, thereby impaired.

(*e*) In the case of ships to which the provisions of paragraph (*d*) of Regulation 1 of this Chapter apply and which are engaged on regular service within the limits of a short international voyage as defined in Regulation 2 of Chapter III, the Administration may permit a double bottom to be dispensed with in any part of the ship which is subdivided by a factor not exceeding .50, if satisfied that the fitting of a double bottom in that part would not be compatible with the design and proper working of the ship.

Regulation 11. ASSIGNING, MARKING AND RECORDING OF SUBDIVISION LOAD LINES

(*a*) In order that the required degree of subdivision shall be maintained a load line corresponding to the approved subdivision draught shall be assigned and marked on the ship's sides. A ship having spaces which are specially adapted for the accommodation of passengers and the carriage of cargo alternatively may, if the owners desire, have one or more additional load lines assigned and marked to correspond with the subdivision draughts which the Administration may approve for the alternative service conditions.

(*b*) The subdivision load lines assigned and marked shall be recorded in the Passenger Ship Safety Certificate, and shall be distinguished by the notation C.1 for the principal passenger condition, and C.2, C.3, etc., for the alternative conditions.

(*c*) The freeboard corresponding to each of these load lines shall be measured at the same position and from the same deck line as the freeboards determined in accordance with the International Convention respecting Load Lines in force.

(*d*) The freeboard corresponding to each approved subdivision load line and the conditions of service for which it is approved, shall be clearly indicated on the Passenger Ship Safety Certificate.

(*e*) In no case shall any subdivision load line mark be placed above the deepest load line in salt water as determined by the strength of the ship and/or the International Convention respecting Load Lines in force.

(*f*) Whatever may be the position of the subdivision load line marks, a ship shall in no case be loaded so as to submerge the load line mark appropriate to the season and locality as determined in accordance with the International Convention respecting Load Lines in force.

(*g*) A ship shall in no case be so loaded that when she is in salt water the subdivision load line mark appropriate to the particular voyage and condition of service is submerged.

Regulation 12. CONSTRUCTION AND INITIAL TESTING OF WATERTIGHT BULKHEADS, ETC.

(*a*) Each watertight subdivision bulkhead, whether transverse or longitudinal, shall be constructed in such a manner that it shall be capable of supporting, with a proper margin of resistance, the pressure due to the maximum head of water which it might have to sustain in the event of damage to the ship but at least the pressure due to a head of water up to the margin line. The construction of these bulkheads shall be to the satisfaction of the Administration.

(*b*) (i) Steps and recesses in bulkheads shall be watertight and as strong as the bulkhead at the place where each occurs.

(ii) Where frames or beams pass through a watertight deck or bulkhead, such deck or bulkhead shall be made structurally watertight without the use of wood or cement.

(*c*) Testing main compartments by filling them with water is not compulsory. When testing by filling with water is not carried out, a hose test is compulsory; this test shall be carried out in the most advanced stage of the fitting out of the ship. In any case, a thorough inspection of the watertight bulkheads shall be carried out.

(*d*) The forepeak, double bottoms (including duct keels) and inner skins shall be tested with water to a head corresponding to the requirements of paragraph (*a*) of this Regulation.

(*e*) Tanks which are intended to hold liquids, and which form part of the subdivision of the ship, shall be tested for tightness with water to a head up to the deepest subdivision load line or to a head corresponding to two-thirds of the depth from the top of keel to the margin line in way of the tanks, whichever is the greater; provided that in no case shall the test head be less than 0.92 metres (3 feet) above the top of the tank.

(*f*) The tests referred to in paragraphs (*d*) and (*e*) of this Regulation are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required depending on the height to which the liquid has access in the tank or its connexions.

Regulation 13. OPENINGS IN WATERTIGHT BULKHEADS

(*a*) The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the design and proper working of the ship; satisfactory means shall be provided for closing these openings.

(*b*) (i) Where pipes, scuppers, electric cables, etc., are carried through watertight subdivision bulkheads, arrangements shall be made to ensure the integrity of the watertightness of the bulkheads.

(ii) Valves and cocks not forming part of a piping system shall not be permitted in watertight subdivision bulkheads.

(iii) Lead or other heat sensitive materials shall not be used in systems which penetrate watertight subdivision bulkheads, where deterioration of such systems in the event of fire would impair the watertight integrity of the bulkheads.

(*c*) (i) No doors, manholes, or access openings are permitted:

(1) In the collision bulkhead below the margin line;

(2) In watertight transverse bulkheads dividing a cargo space from an adjoining cargo space or from a permanent or reserve bunker, except as provided in paragraph (1) of this Regulation.

(ii) Except as provided in sub-paragraph (iii) of this paragraph, the collision bulkhead may be pierced below the margin line by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screwdown valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead.

(iii) If the forepeak is divided to hold two different kinds of liquids the Administration may allow the collision bulkhead to be pierced below the margin line by two pipes, each of which is fitted as required by sub-paragraph (ii) of this paragraph, provided the Administration is satisfied that there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the ship is maintained.

(d) (i) Watertight doors fitted in bulkheads between permanent and reserve bunkers shall be always accessible, except as provided in sub-paragraph (ii) of paragraph *(k)* of this Regulation for between deck bunker doors.

(ii) Satisfactory arrangements shall be made by means of screens or otherwise to prevent the coal from interfering with the closing of watertight bunker doors.

(e) Within spaces containing the main and auxiliary propelling machinery including boilers serving the needs of propulsion and all permanent bunkers, not more than one door apart from the doors to bunkers and shaft tunnels may be fitted in each main transverse bulkhead. Where two or more shafts are fitted the tunnels shall be connected by an intercommunicating passage. There shall be only one door between the machinery space and the tunnel spaces where two shafts are fitted and only two doors where there are more than two shafts. All these doors shall be of the sliding type and shall be located so as to have their sills as high as practicable. The hand gear for operating these doors from above the bulkhead deck shall be situated outside the spaces containing the machinery if this is consistent with a satisfactory arrangement of the necessary gearing.

(f) (i) Watertight doors shall be sliding doors or hinged doors or doors of an equivalent type. Plate doors secured only by bolts and doors required to be closed by dropping or by the action of a dropping weight are not permitted.

(ii) Sliding doors may be either hand-operated only or power-operated as well as hand-operated.

(iii) Authorized watertight doors may therefore be divided into three Classes:

— Class 1, hinged doors;

— Class 2, hand-operated sliding doors;

— Class 3, sliding doors which are power-operated as well as hand-operated.

(iv) The means of operation of any watertight door whether power-operated or not shall be capable of closing the door with the ship listed to 15 degrees either way.

(v) In all classes of watertight doors indicators shall be fitted which show, at all operating stations from which the doors are not visible, whether the doors are open or closed. If any of the watertight doors, of whatever Class, is not fitted so as to enable it to be closed from a central control station, it shall be provided with a mechanical, electrical, telephonic, or any other suitable direct means of communication, enabling the officer of the watch promptly to contact the person who is responsible for closing the door in question, under previous orders.

(g) Hinged doors (Class 1) shall be fitted with quick action closing devices, such as catches, workable from each side of the bulkhead.

(h) Hand-operated sliding doors (Class 2) may have a horizontal or vertical motion. It shall be possible to operate the mechanism at the door itself from either side, and in addition, from an accessible position above the bulkhead deck, with an all round crank motion, or some other movement providing the same guarantee of safety and of an approved type. Departures from the requirement of operation on both sides may be allowed, if this requirement is impossi-

ble owing to the layout of the spaces. When operating a hand gear the time necessary for the complete closure of the door with the vessel upright, shall not exceed 90 seconds.

(*i*) (i) Power-operated sliding doors (Class 3) may have a vertical or horizontal motion. If a door is required to be power-operated from a central control, the gearing shall be so arranged that the door can be operated by power also at the door itself from both sides. The arrangement shall be such that the door will close automatically if opened by local control after being closed from the central control, and also such that any door can be kept closed by local systems which will prevent the door from being opened from the upper control. Local control handles in connexion with the power gear shall be provided each side of the bulkhead and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the closing mechanism in operation accidentally. Power-operated sliding doors shall be provided with hand gear workable at the door itself on either side and from an accessible position above the bulkhead deck, with an all round crank motion or some other movement providing the same guarantee of safety and of an approved type. Provision shall be made to give warnings by sound signal that the door has begun to close and will continue to move until it is completely closed. The door shall take a sufficient time to close to ensure safety.

(ii) There shall be at least two independent power sources capable of opening and closing all the doors under control, each of them capable of operating all the doors simultaneously. The two power sources shall be controlled from the central station on the bridge provided with all the necessary indicators for checking that each of the two power sources is capable of giving the required service satisfactorily.

(iii) In the case of hydraulic operation, each power source shall consist of a pump capable of closing all doors in not more than 60 seconds. In addition, there shall be for the whole installation hydraulic accumulators of sufficient capacity to operate all the doors at least three times, i.e., closed-open-closed. The fluid used shall be one which does not freeze at any of the temperatures liable to be encountered by the ship during its service.

(*j*) (i) Hinged watertight doors (Class I) in passenger, crew and working spaces are only permitted above a deck the underside of which, at its lowest point at side, is at least 2.13 metres (7 feet) above the deepest subdivision load line.

(ii) Watertight doors, the sills of which are above the deepest load line and below the line specified in the preceding sub-paragraph shall be sliding doors and may be hand-operated (Class 2), except in vessels engaged on short international voyages and required to have a factor of subdivision of .50 or less in which all such doors shall be power-operated. When trunkways in connexion with refrigerated cargo and ventilation or forced draught ducts are carried through more than one main watertight subdivision bulkhead, the doors at such openings shall be operated by power.

(*k*) (i) Watertight doors which may sometimes be opened at sea, and the sills of which are below the deepest subdivision load line shall be sliding doors. The following rules shall apply:

(1) When the number of such doors (excluding doors at entrances to shaft tunnels) exceeds five, all of these doors and those at the entrance to shaft tunnels or ventilation or forced draught ducts, shall be power-operated (Class 3) and shall be capable of being simultaneously closed from a central station situated on the bridge;

(2) When the number of such doors (excluding doors at entrances to shaft tunnels) is greater than one, but does not exceed five;

(*a*) Where the ship has no passenger spaces below the bulkhead deck, all the above-mentioned doors may be hand-operated (Class 2);

(*b*) Where the ship has passenger spaces below the bulkhead deck all the above-mentioned doors shall be power-operated (Class 3) and shall be capable of being simultaneously closed from a central station situated on the bridge;

(3) In any ship where there are only two such watertight doors and they are into or within the space containing machinery, the Administration may allow these two doors to be hand-operated only (Class 2).

(ii) If sliding watertight doors which have sometimes to be open at sea for the purpose of trimming coal are fitted between bunkers in the between decks below the bulkhead deck, these doors shall be operated by power. The opening and closing of these doors shall be recorded in such log book as may be prescribed by the Administration.

(1) (i) If the Administration is satisfied that such doors are essential, watertight doors of satisfactory construction may be fitted in watertight bulkheads dividing cargo between deck spaces. Such doors may be hinged, rolling or sliding doors but shall not be remotely controlled. They shall be fitted at the highest level and as far from the shell plating as practicable, but in no case shall the outboard vertical edges be situated at a distance from the shell plating which is less than one-fifth of the breadth of the ship, as defined in Regulation 2 of this Chapter, such distance being measured at right angles to the centre line of the ship at the level of the deepest subdivision load line.

(ii) Such doors shall be closed before the voyage commences and shall be kept closed during navigation; and the time of opening such doors in port and of closing them before the ship leaves port shall be entered in the log book. Should any of the doors be accessible during the voyage, they shall be fitted with a device which prevents unauthorized opening. When it is proposed to fit such doors, the number and arrangements shall receive the special consideration of the Administration.

(*m*) Portable plates on bulkheads shall not be permitted except in machinery spaces. Such plates shall always be in place before the ship leaves port, and shall not be removed during navigation except in case of urgent necessity. The necessary precautions shall be taken in replacing them to ensure that the joints shall be watertight.

(*n*) All watertight doors shall be kept closed during navigation except when necessarily opened for the working of the ship, and shall always be ready to be immediately closed.

(*o*) (i) Where trunkways or tunnels for access from crew accommodation to the stokehold, for piping, or for any other purpose are carried through main transverse watertight bulkheads, they shall be watertight and in accordance with the requirements of Regulation 16 of this Chapter. The access to at least one end of each such tunnel or trunkway, if used as a passage at sea, shall be through a trunk extending watertight to a height sufficient to permit access above the margin line. The access to the other end of the trunkway or tunnel may be through a watertight door of the type required by its location in the ship. Such trunkways or tunnels shall not extend through the first subdivision bulkhead abaft the collision bulkhead.

(ii) Where it is proposed to fit tunnels or trunkways for forced draught, piercing main transverse watertight bulkheads, these shall receive the special consideration of the Administration.

Regulation 14. OPENINGS IN THE SHELL PLATING BELOW THE MARGIN LINE

(*a*) The number of openings in the shell plating shall be reduced to the minimum compatible with the design and proper working of the ship.

(*b*) The arrangement and efficiency of the means for closing any opening in the shell plating shall be consistent with its intended purpose and the position in which it is fitted and generally to the satisfaction of the Administration.

(*c*) (i) If in a between decks, the sills of any sidescuttles are below a line drawn parallel to the bulkhead deck at side and having its lowest point 2½ per cent of the breadth of the ship above the deepest subdivision load line, all sidescuttles in that between deck shall be of the non-opening type.

(ii) All sidescuttles the sills of which are below the margin line, other than those required to be of a non-opening type by sub-paragraph (i) of this paragraph, shall be of such construc-

tion as will effectively prevent any person opening them without the consent of the master of the ship.

(iii) (1) Where in a between decks, the sills of any of the sidescuttles referred to in sub-paragraph (ii) of this paragraph are below a line drawn parallel to the bulkhead deck at side and having its lowest point 1.37 metres (4½ feet) plus 2½ per cent of the breadth of the ship above the water when the ship departs from any port, all the sidescuttles in that between decks shall be closed watertight and locked before the ship leaves port, and they shall not be opened before the ship arrives at the next port. In the application of this sub-paragraph the appropriate allowance for fresh water may be made when applicable.

(2) The time of opening such sidescuttles in port and of closing and locking them before the ship leaves port shall be entered in such log book as may be prescribed by the Administration.

(3) For any ship that has one or more sidescuttles so placed that the requirements of clause (1) of this sub-paragraph would apply when she was floating at her deepest subdivision load line, the Administration may indicate the limiting mean draught at which these sidescuttles will have their sills above the line drawn parallel to the bulkhead deck at side, and having its lowest point 1.37 metres (4½ feet) plus 2½ per cent of the breadth of the ship above the waterline corresponding to the limiting mean draught, and at which it will therefore be permissible to depart from port without previously closing and locking them and to open them at sea on the responsibility of the master during the voyage to the next port. In tropical zones as defined in the International Convention respecting Load Lines in force, this limiting draught may be increased by 0.305 metres (1 foot).

(d) Efficient hinged inside deadlights arranged so that they can be easily and effectively closed and secured watertight shall be fitted to all sidescuttles except that abaft one-eighth of the ship's length from the forward perpendicular and above a line drawn parallel to the bulkhead deck at side and having its lowest point at a height of 3.66 metres (12 feet) plus 2½ per cent of the breadth of the ship above the deepest subdivision load line, the deadlights may be portable in passenger accommodation other than that for steerage passengers, unless the deadlights are required by the International Convention respecting Load Lines[*] in force to be permanently attached in their proper positions. Such portable deadlights shall be stowed adjacent to the sidescuttles they serve.

(e) Sidescuttles and their deadlights, which will not be accessible during navigation, shall be closed and secured before the ship leaves port.

(f) (i) No sidescuttles shall be fitted in any spaces which are appropriated exclusively to the carriage of cargo or coal.

(ii) Sidescuttles may, however, be fitted in spaces appropriated alternatively to the carriage of cargo or passengers, but they shall be of such construction as will effectively prevent any person opening them or their deadlights without the consent of the master of the ship.

(iii) If cargo is carried in such spaces, the sidescuttles and their deadlights shall be closed watertight and locked before the cargo is shipped and such closing and locking shall be recorded in such log book as may be prescribed by the Administration.

(g) Automatic ventilating sidescuttles shall not be fitted in the shell plating below the margin line without the special sanction of the Administration.

(h) The number of scuppers, sanitary discharges and other similar openings in the shell plating shall be reduced to the minimum either by making each discharge serve for as many as possible of the sanitary and other pipes, or in any other satisfactory manner.

(i) (i) All inlets and discharges in the shell plating shall be fitted with efficient and accessible arrangements for preventing the accidental admission of water into the ship. Lead or

[*] See "International Convention on Load Lines, 1966, done at London on 5 April 1966" in United Nations, *Treaty Series*, vol. 640, p. 133.

other heat sensitive materials shall not be used for pipes fitted outboard of shell valves in inlets or discharges, or any other application where the deterioration of such pipes in the event of fire would give rise to danger of flooding.

(ii) (1) Except as provided in sub-paragraph (iii) of this paragraph, each separate discharge led through the shell plating from spaces below the margin line shall be provided either with one automatic non-return valve fitted with a positive means of closing it from above the bulkhead deck, or, alternatively, with two automatic non-return valves without such means, the upper of which is so situated above the deepest subdivision load line as to be always accessible for examination under service conditions, and is of a type which is normally closed.

(2) Where a valve with positive means of closing is fitted, the operating position above the bulkhead deck shall always be readily accessible, and means shall be provided for indicating whether the valve is open or closed.

(iii) Main and auxiliary sea inlets and discharges in connexion with machinery shall be fitted with readily accessible cocks or valves between the pipes and shell plating or between the pipes and fabricated boxes attached to the shell plating.

(*j*) (i) Gangway, cargo and coaling ports fitted below the margin line shall be of sufficient strength. They shall be effectively closed and secured watertight before the ship leaves port, and shall be kept closed during navigation.

(ii) Such ports shall be in no case fitted so as to have their lowest point below the deepest subdivision load line.

(*k*) (i) The inboard opening of each ash-shoot, rubbish-shoot, etc., shall be fitted with an efficient cover.

(ii) If the inboard opening is situated below the margin line, the cover shall be watertight, and in addition an automatic non-return valve shall be fitted in the shoot in an easily accessible position above the deepest subdivision load line. When the shoot is not in use both the cover and the valve shall be kept closed and secured.

Regulation 15. CONSTRUCTION AND INITIAL TESTS OF WATERTIGHT DOORS, SIDESCUTTLES, ETC.

(*a*) (i) The design, materials and construetion of all watertight doors, sidescuttles, gangway, cargo and coaling ports, valves, pipes, ash-shoots and rubbish-shoots referred to in these Regulations shall be to the satisfaction of the Administration.

(ii) The frames of vertical watertight doors shall have no groove at the bottom in which dirt might lodge and prevent the door closing properly.

(iii) All cocks and valves for sea inlets and discharges below the bulkhead deck and all fittings outboard of such cocks and valves shall be made of steel, bronze or other approved ductile material. Ordinary cast iron or similar materials shall not be used.

(*b*) Each watertight door shall be tested by water pressure to a head up to the bulkhead deck. The test shall be made before the ship is put in service, either before or after the door is fitted.

Regulation 16. CONSTRUCTION AND INITIAL TESTS OF WATERTIGHT DECKS, TRUNKS, ETC.

(*a*) Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels. The means used for making them watertight, and the arrangements adopted for closing openings in them, shall be to the satisfaction of the Administration. Watertight ventilators and trunks shall be carried at least up to the bulkhead deck.

(*b*) After completion, a hose or flooding test shall be applied to watertight decks and a hose test to watertight trunks, tunnels and ventilators.

Regulation 17. WATERTIGHT INTEGRITY ABOVE THE MARGIN LINE

(*a*) The Administration may require that all reasonable and practicable measures shall be taken to limit the entry and spread of water above the bulkhead deck. Such measures may include partial bulkheads or webs. When partial watertight bulkheads and webs are fitted on the bulkhead deck, above or in the immediate vicinity of main subdivision bulkheads, they shall have watertight shell and bulkhead deck connexions so as to restrict the flow of water along the deck when the ship is in a heeled damaged condition. Where the partial watertight bulkhead does not line up with the bulkhead below, the bulkhead deck between shall be made effectively watertight.

(*b*) The bulkhead deck or a deck above it shall be weathertight in the sense that in ordinary sea conditions water will not penetrate in a downward direction. All openings in the exposed weather deck shall have coamings of ample height and strength and shall be provided with efficient means for expeditiously closing them weathertight. Freeing ports, open rails and/or scuppers shall be fitted as necessary for rapidly clearing the weather deck of water under all weather conditions.

(*c*) Sidescuttles, gangway, cargo and coaling ports and other means for closing openings in the shell plating above the margin line shall be of efficient design and construction and of sufficient strength having regard to the spaces in which they are fitted and their positions relative to the deepest subdivision load line.

(*d*) Efficient inside deadlights, arranged so that they can be easily and effectively closed and secured watertight, shall be provided for all sidescuttles to spaces below the first deck above the bulkhead deck.

Regulation 18. BILGE PUMPING ARRANGEMENTS IN PASSENGER SHIPS

(*a*) Ships shall be provided with an efficient bilge pumping plant capable of pumping from and draining any watertight compartment which is neither a permanent oil compartment nor a permanent water compartment under all practicable conditions after a casualty whether the ship is upright or listed. For this purpose wing suctions will generally be necessary except in narrow compartments at the ends of the ship, where one suction may be sufficient. In compartments of unusual form, additional suctions may be required. Arrangements shall be made whereby water in the compartment may find its way to the suction pipes. Where in relation to particular compartments the Administration is satisfied that the provision of drainage may be undesirable, it may allow such provision to be dispensed with if calculations made in accordance with the conditions laid down in paragraph (*b*) of Regulation 7 of this Chapter show that the safety of the ship will not be impaired. Efficient means shall be provided for draining water from insulated holds.

(*b*) (i) Ships shall have at least three power pumps connected to the bilge main, one of which may be attached to the propelling unit. Where the criterion numeral is 30 or more, one additional independent power pump shall be provided.

(ii) The requirements are summarized in the following table:

Criterion numeral	*Less than 30*	*30 and over*
Main engine pump (may be replaced by one independent pump)	1	1
Independent pumps	2	3

(iii) Sanitary, ballast and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connexions to the bilge pumping system.

(*c*) Where practicable, the power bilge pumps shall be placed in separate watertight compartments so arranged or situated that these compartments will not readily be flooded by the same damage. If the engines and boilers are in two or more watertight compartments, the

pumps available for bilge service shall be distributed throughout these compartments as far as is possible.

(*d*) On ships 91.5 metres (300 feet) or more in length or having a criterion numeral of 30 or more, the arrangements shall be such that at least one power pump shall be available for use in all ordinary circumstances in which a ship may be flooded at sea. This requirement will be satisfied if:

(i) One of the required pumps is an emergency pump of a reliable submersible type having a source of power situated above the bulkhead deck; or

(ii) The pumps and their sources of power are so disposed throughout the length of the ship that under any condition of flooding which the ship is required to withstand, at least one pump in an undamaged compartment will be available.

(*e*) With the exception of additional pumps which may be provided for peak compartments only, each required bilge pump shall be arranged to draw water from any space required to be drained by paragraph (*a*) of this Regulation.

(*f*) (i) Each power bilge pump shall be capable of giving a speed of water through the required main bilge pipe of not less than 122 metres (400 feet) per minute. Independent power bilge pumps situated in machinery spaces shall have direct suctions from these spaces, except that not more than two such suctions shall be required in any one space. Where two or more such suctions are provided there shall be at least one on the port side and one on the starboard side. The Administration may require independent power bilge pumps situated in other spaces to have separate direct suctions. Direct suctions shall be suitably arranged and those in a machinery space shall be of a diameter not less than that required for the bilge main.

(ii) In coal-burning ships there shall be provided in the stokehold, in addition to the other suctions required by this Regulation, a flexible suction hose of suitable diameter and sufficient length, capable of being connected to the suction side of an independent power pump.

(*g*) (i) In addition to the direct bilge suction or suctions required by paragraph (*f*) of this Regulation there shall be in the machinery space a direct suction from the main circulating pump leading to the drainage level of the machinery space and fitted with a non-return valve. The diameter of this direct suction pipe shall be at least two-thirds of the diameter of the pump inlet in the case of steamships, and of the same diameter as the pump inlet in the case of motorships.

(ii) Where in the opinion of the Administration the main circulating pump is not suitable for this purpose, a direct emergency bilge suction shall be led from the largest available independent power driven pump to the drainage level of the machinery space; the suction shall be of the same diameter as the main inlet of the pump used. The capacity of the pump so connected shall exceed that of a required bilge pump by an amount satisfactory to the Administration.

(iii) The spindles of the sea inlet and direct suction valves shall extend well above the engine room platform.

(iv) Where the fuel is, or may be, coal and there is no watertight bulkhead between the engines and the boilers, a direct discharge overboard or alternatively a by-pass to the circulating pump discharge, shall be fitted from any circulating pump used in compliance with sub-paragraph (i) of this paragraph.

(*h*) (i) All pipes from the pumps which are required for draining cargo or machinery spaces shall be entirely distinct from pipes which may be used for filling or emptying spaces where water or oil is carried.

(ii) All bilge pipes used in or under coal bunkers or fuel storage tanks or in boiler or machinery spaces, including spaces in which oil-settling tanks or oil fuel pumping units are situated, shall be of steel or other approved material.

(*i*) The diameter of the bilge main shall be calculated according to the following formulae provided that the actual internal diameter of the bilge main may be of the nearest standard size acceptable to the Administration:

$$d = 1.68\sqrt{L(B + D)} + 25$$

where: d = internal diameter of the bilge main in millimetres,

L and B are the length and the breadth of the ship in metres, as defined in Regulation 2 of this Chapter; and

D = moulded depth of the ship to bulkhead deck in metres;

or

$$d = \sqrt{\frac{L(B + D)}{2,500}} + 1$$

where: d = internal diameter of the bilge main in inches;

L and B are the length and the breadth of the ship in feet, as defined in Regulation 2 of this Chapter; and

D = moulded depth of the ship to bulkhead deck in feet.

The diameter of the bilge branch pipes shall be determined by rules to be made by the Administration.

(*j*) The arrangement of the bilge and ballast pumping system shall be such as to prevent the possibility of water passing from the sea and from water ballast spaces into the cargo and machinery spaces, or from one compartment to another. Special provision shall be made to prevent any deep tank having bilge and ballast connexions being inadvertently run up from the sea when containing cargo, or pumped out through a bilge pipe when contaning water ballast.

(*k*) Provision shall be made to prevent the compartment served by any bilge suction pipe being flooded in the event of the pipe being severed, or otherwise damaged by collision or grounding in any other compartment. For this purpose, where the pipe is at any part situated nearer the side of the ship than one-fifth the breadth of the ship (measured at right angles to the centre line at the level of the deepest subdivision load line), or in a duct keel, a non-return valve shall be fitted to the pipe in the compartment containing the opcn end.

(*l*) All the distribution boxes, cocks and valves in connexion with the bilge pumping arrangements shall be in positions which are accessible at all times under ordinary circumstances. They shall be so arranged that, in the event of flooding, one of the bilge pumps may be operative on any compartment; in addition, damage to a pump or its pipe connecting to the bilge main outboard of a line drawn at one-fifth of the breadth of the ship shall not put the bilge system out of action. If there is only one system of pipes common to all the pumps, the necessary cocks or valves for controlling the bilge suctions must be capable of being operated from above the bulkhead deck. Where in addition to the main bilge pumping system an emergency bilge pumping system is provided, it shall be independent of the main system and so arranged that a pump is capable of operating on any compartment under flooding conditions; in that case only the cocks and valves necessary for the operation of the emergency system need be capable of being operated from above the bulkhead deck.

(*m*) All cocks and valves mentioned in paragraph (*l*) of this Regulation which can be operated from above the bulkhead deck shall have their controls at their place of operation clearly marked and provided with means to indicate whether they are open or closed.

Regulation 19. STABILITY INFORMATION FOR PASSENGER SHIPS AND CARGO SHIPS*

(*a*) Every passenger ship and cargo ship shall be inclined upon its completion and the elements of its stability determined. The master shall be supplied with such reliable information as is necessary to enable him by rapid and simple processes to obtain accurate guidance as to the stability of the ship under varying conditions of service, and a copy shall be furnished to the Administration.

(*b*) Where any alterations are made to a ship so as to materially affect the stability information supplied to the master, amended stability information shall be provided. If necessary the ship shall be re-inclined.

(*c*) The Administration may allow the inclining test of an individual ship to be 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 exempted ship can be obtained from such basic data.

(*d*) The Administration may also allow the inclining test of an individual ship or class of ships, especially designed for the carriage of liquids or ore in bulk, to be dispensed with when reference to existing data for similar ships clearly indicates that due to the ship's proportions and arrangements more than sufficient metacentric height will be available in all probable loading conditions.

Regulation 20. DAMAGE CONTROL PLANS

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

Regulation 21. MARKING, PERIODICAL OPERATION AND INSPECTION OF WATERTIGHT DOORS, ETC.

(*a*) This Regulation applies to new and existing ships.

(*b*) Drills for the operating of watertight doors, sidescuttles, valves and closing mechanisms of scuppers, ash-shoots and rubbish-shoots shall take place weekly. In ships in which the voyage exceeds one week in duration a complete drill shall be held before leaving port, and others thereafter at least once a week during the voyage. In all ships all watertight power doors and hinged doors, in main transverse bulkheads, in use at sea, shall be operated daily.

(*c*) (i) The watertight doors and all mechanisms and indicators connected therewith, all valves the closing of which is necessary to make a compartment watertight, and all valves the operation of which is necessary for damage control cross connexions shall be periodically inspected at sea at least once a week.

(ii) Such valves, doors and mechanisms shall be suitably marked to ensure that they may be properly used to provide maximum safety.

Regulation 22. ENTRIES IN LOG

(*a*) This Regulation applies to new and existing ships.

(*b*) Hinged doors, portable plates, sidescuttles, gangway, cargo and coaling ports and other openings, which are required by these Regulations to be kept closed during navigation, shall be closed before the ship leaves port. The time of closing and the time of opening (if per-

* Reference is made to the Recommendation on Intact Stability for Passenger and Cargo Ships under 100 metres in length, adopted by the Organization by Resolution A.167(ES.IV) and Amendments to this Recommendation, adopted by the Organization by Resolution A.206(VII).

missible under these Regulations) shall be recorded in such log book as may be prescribed by the Administration.

(*c*) A record of all drills and inspections required by Regulation 21 of this Chapter shall be entered in the log book with an explicit record of any defects which may be disclosed.

PART C. MACHINERY AND ELECTRICAL INSTALLATIONS*

Regulation 23. GENERAL

(*a*) Electrical installations in passenger ships shall be such that:

(i) Services essential for safety will be maintained under various emergency conditions; and

(ii) The safcty of passengers, crew and ship from electrical hazards will be assured.

(*b*) Cargo ships shall comply with Regulations 26, 27, 28, 29, 30 and 32 of this Chapter.

Regulation 24. MAIN SOURCE OF ELECTRICAL POWER IN PASSENGER SHIPS

(*a*) Every passenger ship, the electrical power of which constitutes the only means of maintaining the auxiliary services indispensable for the propulsion and the safety of the ship, shall be provided with at least two main generating sets. The power of these sets shall be such that it shall still be possible to ensure the functioning of the services referred to in sub-paragraph (*a*)(i) of Regulation 23 of this Chapter in the event of any one of these generating sets being stopped.

(*b*) In a passenger ship where there is only one main generating station, the main switch-board shall be located in the same main fire zone. Where there is more than one main generating station, it is permissible to have only one main switchboard.

Regulation 25. EMERGENCY SOURCE OF ELECTRICAL POWER IN PASSENGER SHIPS

(*a*) There shall be above the bulkhead deck and outside the machinery casings a self-contained emergency source of electrical power. Its location in relation to the main source or sources of electrical power shall be such as to ensure to the satisfaction of the Administration that a fire or other casualty to the machinery space as defined in paragraph (*h*) of Regulation 2 of this Chapter will not interfere with the supply or distribution of emergency power. It shall not be forward of the collision bulkhead.

(*b*) The power available shall be sufficient to supply all those services that are, in the opinion of the Administration, necessary for the safety of the passengers and the crew in an emergency, due regard being paid to such services as may have to be operated simultaneously. Special consideration shall be given to emergency lighting at every boat station on deck and oversides, in all alleyways, stairways and exits, in the machinery spaces and in the control stations as defined in paragraph (*r*) of Regulation 3 of Chapter II-2, to the sprinkler pump, to navigation lights, and to the daylight signalling lamp if operated from the main source of power. The power shall be adequate for a period of 36 hours, except that in the case of ships engaged regularly on voyages of short duration, the Administration may accept a lesser supply if satisfied that the same standard of safety would be attained.

(*c*) The emergency source of power may be either:

(i) A generator driven by a suitable prime-mover with an independent fuel supply and with approved starting arrangements; the fuel used shall have a flashpoint of not less than 43°C (110°F); or

(ii) An accumulator (storage) battery capable of carrying the emergency load without recharging or excessive voltage drop.

* Reference is made to the Recommendation on Safety Measures for Periodically Unattended Machinery Spaces of Cargo Ships additional to those normally considered necessary for an Attended Machinery Space, adopted by the Organization by Resolution A.211(VII).

(*d*) (i) Where the emergency source of power is a generator there shall be provided a temporary source of emergency power consisting of an accumulator battery of sufficient capacity:

(1) To supply emergency lighting continuously for half an hour;

(2) To close the watertight doors (if electrically operated) but not necessarily to close them all simultaneously;

(3) To operate the indicators (if electrically operated) which show whether power-operated watertight doors are open or closed; and

(4) To operate the sound signals (if electrically operated) which give warning that power-operated watertight doors are about to close.

The arrangements shall be such that the temporary source of emergency power will come into operation automatically in the event of failure of the main electrical supply.

(ii) Where the emergency source of power is an accumulator battery, arrangements shall be made to ensure that emergency lighting will automatically come into operation in the event of failure of the main lighting supply.

(*e*) An indicator shall be mounted in the machinery space, preferably on the main switchboard, to indicate when any accumulator battery fitted in accordance with this Regulation is being discharged.

(*f*) (i) The emergency switchboard shall be installed as near as is practicable to the emergency source of power.

(ii) Where the emergency source of power is a generator, the emergency switchboard shall be located in the same space as the emergency source of power, unless the operation of the emergency switchboard would thereby be impaired.

(iii) No accumulator battery fitted in accordance with this Regulation shall be installed in the same space as the emergency switchboard.

(iv) The Administration may permit the emergency switchboard to be supplied from the main switchboard in normal operation.

(*g*) Arrangements shall be such that the complete emergency installation will function when the ship is inclined 22½ degrees and/or when the trim of the ship is 10 degrees.

(*h*) Provision shall be made for the periodic testing of the emergency source of power and the temporary source of power, if provided, which shall include the testing of automatic arrangements.

Regulation 26. EMERGENCY SOURCE OF ELECTRICAL POWER IN CARGO SHIPS

(*a*) *Cargo ships of 5,000 tons gross tonnage and upwards.* (i) In cargo ships of 5,000 tons gross tonnage and upwards there shall be a self-contained emergency source of power, located to the satisfaction of the Administration above the uppermost continuous deck and outside the machinery casings, to ensure its functioning in the event of fire or other casualty causing failure to the main electrical installation.

(ii) The power available shall be sufficient to supply all those services which are, in the opinion of the Administration, necessary for the safety of all on board in an emergency, due regard being paid to such services as may have to be operated simultaneously. Special consideration shall be given to:

(1) Emergency lighting at every boat station on deck and oversides, in all alleyways, stairways and exits, in the main machinery space and main generating set space, on the navigating bridge and in the chartroom;

(2) The general alarm; and

(3) Navigation lights if solely electric, and the daylight signalling lamp if operated by the main source of electrical power.

The power shall be adequate for a period of 6 hours.

(iii) The emergency source of power may be either:

(1) An accumulator (storage) battery capable of carrying the emergency load without recharging or excessive voltage drop; or

(2) A generator driven by a suitable prime-mover with an indepcndent fuel supply and with starting arrangements to the satisfaction of the Administration. The fuel used shall have a flashpoint of not less than 43°C (110°F).

(iv) Arrangements shall be such that the complete emergency installation will function when the ship is inclined 22½ degrees and/or when the trim of the ship is 10 degrees.

(v) Provision shall be made for the periodic testing of the complete emergency installation.

(*b*) *Cargo ships of less than 5,000 tons gross tonnage.* (i) In cargo ships of less than 5,000 tons gross tonnage there shall be a self-contained emergency source of power located to the satisfaction of the Administration, and capable of supplying the illumination at launching stations and stowage positions of survival craft prescribed in sub-paragraphs (*a*)(ii), (*b*)(ii) and (*b*)(iii) of Regulation 19 of Chapter III, and in addition such other services as the Administration may require, due regard being paid to Regulation 38 of Chapter III.

(ii) The power available shall be adequate for a period of at least 3 hours.

(iii) These ships shall also be subjcct to sub-paragraphs (iii), (iv), and (v) of paragraph (*a*) of this Regulation.

Regulation 27. PRECAUTIONS AGAINST SHOCK, FIRE AND OTHER HAZARDS OF ELECTRICAL ORIGIN

(*a*) *Passenger ships and cargo ships.* (i) (1) All exposed metal parts of electrical machines or equipment which are not intended to be "live" but are liable to become "live" under fault conditions, shall be earthed (grounded); and all electrical apparatus shall be so constructed and so installed that danger of injury in ordinary handling shall not exist.

(2) Metal frames of all portable electric lamps, tools and similar apparatus, supplied as ship's equipment and rated in excess of a safety voltage to be prescribed by the Administration shall be earthed (grounded) through a suitable conductor, unless equivalent provisions are made such as by double insulation or by an isolating transformer. The Administration may require additional special precautions for electric lamps, tools or similar apparatus for use in damp spaces.

(ii) Main and emergency switchboards shall be so arranged as to give easy access back and front, without danger to attendants. The sides and backs and, where necessary, the fronts of switchboards shall be suitably guarded. There shall be non-conducting mats or gratings front and rear where necessary. Exposed current-carrying parts at voltages to earth (ground) exceeding a voltage to be specified by the Administration shall not be installed on the face of any switchboard or control panel.

(iii) (1) Where the hull return system of distribution is used, special precautions shall be taken to the satisfaction of the Administration.

(2) Hull return shall not be used in tankers.

(iv) (1) All metal sheaths and armour of cables shall be electrically continuous and shall be earthed (grounded).

(2) Where the cables are neither sheathed nor armoured and there might be a risk of fire in the event of an electrical fault, precautions shall be required by the Administration.

(v) Lighting fittings shall be arranged to prevent temperature rises that would be injurious to the wiring, and to prevent surrounding material from becoming excessively hot.

(vi) Wiring shall bc supported in such a manner as to avoid chafing or other injury.

(vii) Each separate circuit shall be protected against short circuit. Each separate circuit shall also be protected against overload, except in accordance with Regulation 30 of this

Chapter or where the Administration grants an exemption. The current-carrying capacity of each circuit shall be permanently indicated, together with the rating or setting of the appropriate overload protective device.

(viii) Accumulator batteries shall be suitably housed, and compartments used primarily for their accommodation shall be properly constructed and efficiently ventilated.

(*b*) *Passenger ships only.* (i) Distribution systems shall be so arranged that fire in any main fire zone will not interfere with essential services in any other main fire zone. This requirement will be met if main and emergency feeders passing through any zone are separated both vertically and horizontally as widely as is practicable.

(ii) Electric cables shall be of a flame retarding type to the satisfaction of the Administration. The Administration may require additional safeguards for electric cables in particular spaces of the ship with a view to the prevention of fire or explosion.

(iii) In spaces where inflammable mixtures are liable to collect, no electrical equipment shall be installed unless it is of a type which will not ignite the mixture concerned, such as flameproof (explosion proof) equipment.

(iv) A lighting circuit in a bunker or hold shall be provided with an isolating switch outside the space.

(v) Joints in all conductors except for low voltage communication circuits shall be made only in junction or outlet boxes. All such boxes or wiring devices shall be so constructed as to prevent the spread of fire from the box or device. Where splicing is employed it shall only be by an approved method such that it retains the original mechanical and electrical properties of the cable.

(vi) Wiring systems for interior communications essential for safety and for emergency alarm systems shall be arranged to avoid galleys, machinery spaces and other enclosed spaces having a high risk of fire except in so far as it is necessary to provide communication or to give alarm within those spaces. In the case of ships the construction and small size of which do not permit of compliance with these requirements, measures satisfactory to the Administration shall be taken to ensure efficient protection for these wiring systems where they pass through galleys, machinery spaces and other enclosed spaces having a high risk of fire.

(*c*) *Cargo ships only.* Devices liable to arc shall not be installed in any compartment assigned principally to accumulator batteries unless the devices are flameproof (explosion proof).

Regulation 28. MEANS OF GOING ASTERN

(*a*) *Passenger ships and cargo ships.* Ships shall have sufficient power for going astern to secure proper control of the ship in all normal circumstances.

(*b*) *Passenger ships only.* The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time, under normal manœuvring conditions, and so to bring the ship to rest from maximum ahead service speed shall be demonstrated at the initial survey.

Regulation 29. STEERING GEAR*

(*a*) *Passenger ships and cargo ships.* (i) Ships shall be provided with a main steering gear and an auxiliary steering gear to the satisfaction of the Administration.

(ii) The main steering gear shall be of adequate strength and sufficient to steer the ship at maximum service speed. The main steering gear and rudder stock shall be so designed that they are not damaged at maximum astern speed.

(iii) The auxiliary steering gear shall be of adequate strength and sufficient to steer the ship at navigable speed and capable of being brought speedily into action in an emergency.

* Reference is made to the Recommendation on Steering Gear for Large Ships, adopted by the Organization by Resolution A.210(VII).

(iv) The exact position of the rudder, if power operated, shall be indicated at the principal steering station.

(*b*) *Passenger ships only.* (i) The main steering gear shall be capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the ship running ahead at maximum service speed. The rudder shall be capable of being put over from 35 degrees on either side to 30 degrees on the other side in 28 seconds at maximum service speed.

(ii) The auxiliary steering gear shall be operated by power in any case in which the Administration would require a rudder stock of over 228.6 millimetres (9 inches) diameter in way of the tiller.

(iii) Where main steering gear power units and their connexions are fitted in duplicate to the satisfaction of the Administration, and each power unit enables the steering gear to meet the requirements of sub-paragraph (i) of this paragraph, no auxiliary steering gear need be required.

(iv) Where the Administration would require a rudder stock with a diameter in way of the tiller exceeding 228.6 millimetres (9 inches) there shall be provided an alternative steering station located to the satisfaction of the Administration. The remote steering control systems from the principal and alternative steering stations shall be so arranged to the satisfaction of the Administration that failure of either system would not result in inability to steer the ship by means of the other system.

(v) Means satisfactory to the Administration shall be provided to enable orders to be transmitted from the bridge to the alternative steering station.

(*c*) *Cargo ships only.* (i) The auxiliary steering gear shall be operated by power in any case in which the Administration would require a rudder stock of over 355.6 millimetres (14 inches) diameter in way of the tiller.

(ii) Where power-operated steering gear units and connexions are fitted in duplicate to the satisfaction of the Administration, and each unit complies with sub-paragraph (iii) of paragraph (*a*) of this Regulation, no auxiliary steering gear need be required, provided that the duplicate units and connexions operating together comply with sub-paragraph (ii) of paragraph (*a*) of this Regulation.

Regulation 30. ELECTRIC AND ELECTROHYDRAULIC STEERING GEAR*

(*a*) *Passenger ships and cargo ships.* Indicators for running indication of the motors of electric and eleetrohydraulic steering gear shall be installed in a suitable location to the satisfaction of the Administration.

(*b*) *All passenger ships (irrespective of tonnage) and cargo ships of 5,000 tons gross tonnage and upwards.* (i) Electric and electrohydraulic steering gear shall be served by two circuits fed from the main switchboard. One of the circuits may pass through the emergency switchboard, if provided. Each circuit shall have adequate capacity for supplying all the motors which are normally conneeted to it and which operate simultaneously. If transfer arrangements are provided in tlie steering gear room to permit either circuit to supply any motor or combination of motors, the capacity of each circuit shall be adequate for the most severe load condition. Tlie circuits shall be separated throughout their length as widely as is practicable.

(ii) Short circuit protection only shall be provided for these circuits and motors.

(*c*) *Cargo ships of less than 5,000 tons gross tonnage.* (i) Cargo ships in which electrical power is the sole souree of power for both main and auxiliary steering gear shall comply with sub-paragraphs (i) and (ii) of paragraph (*b*) of this Regulation, except that if the auxiliary

* Reference is made to the Recommendation on Steering Gear for Large Ships, adopted by the Organization by Resolution A.210(VII).

steering gear is powered by a motor primarily intended for other services, paragraph (*b*)(ii) may be waived, provided that the Administration is satisfied with the protection arrangements.

(ii) Short circuit protection only shall be provided for motors and power circuits of electrically or electrohydraulically operated main steering gear.

Regulation 31. LOCATION OF EMERGENCY INSTALLATIONS IN PASSENGER SHIPS

The emergency source of electrical power, emergency fire pumps, emergency bilge pumps, batteries of carbon dioxide bottles for fire extinguishing purposes and other emergency installations which are essential for the safety of the ship shall not be installed in a passenger ship forward of the collision bulkhead.

Regulation 32. COMMUNICATION BETWEEN BRIDGE AND ENGINE ROOM

Ships shall be fitted with two means of communicating orders from the bridge to the engine room. One means shall be an engine room telegraph.

CHAPTER II-2. CONSTRUCTION — FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART A. GENERAL*

Regulation 1. APPLICATION

(*a*) For the purpose of this Chapter:

(i) A new passenger ship is a passenger ship the keel of which is laid or which is at a similar stage of construction on or after the date of coming into force of the present Convention, or a cargo ship which is converted to a passenger ship on or after that date, all other passenger ships being considered as existing ships.

(ii) A new cargo ship is a cargo ship the keel of which is laid or which is at a similar stage of construction on or after the date of coming into force of the present Convention.

(iii) A ship which undergoes repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to the ship. An existing ship in such a case shall not as a rule comply to a lesser extent with the requirements for a new ship than it did before. Repairs, alterations and modifications of a major character and outfitting related thereto should meet the requirements for a new ship in so far as the Administration deems reasonable and practicable.

(*b*) Unless expressly provided otherwise:

(i) Regulations 4 to 16 of Part A of this Chapter apply to new ships.

(ii) Part B of this Chapter applies to new passenger ships carrying more than 36 passengers.

(iii) Part C of this Chapter applies to new passenger ships carrying not more than 36 passengers.

(iv) Part D of this Chapter applies to new cargo ships.

(v) Part E of this Chapter applies to new tankers.

(*c*) (i) Part F of this Chapter applies to existing passenger ships carrying more than 36 passengers.

(ii) Existing passenger ships carrying not more than 36 passengers and existing cargo ships shall comply with the following:

* Reference is made to Recommendation on Safety Measures for Periodically Unattended Machinery Spaces of Cargo Ships additional to those normally considered necessary for an Attended Machinery Space, adopted by the Organization by Resolution A.211(VII).

(1) For ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to new ships as defined in that Chapter are complied with;

(2) For ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, but before the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of the 1948 Convention to new ships as defined in that Chapter are complied with;

(3) For ships the keels of which were laid or which were at a similar stage of construction before the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to existing ships as defined in that Chapter are complied with.

(*d*) For any existing ship as defined in the present Convention the Administration, in addition to applying the requirements of sub-paragraph (*c*)(i) of this Regulation, shall decide which of the requirements of this Chapter not contained in Chapter II of the 1948 and 1960 Conventions shall be applied.

(*e*) The Administration may, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of any specific requirements of this Chapter unreasonable or unnecessary, exempt from those requirements individual ships or classes of ships belonging to its country which, in the course of their voyage, do not proceed more than 20 miles from the nearest land.

(*f*) In the case of passenger ships which are employed in special trades for the carriage of large numbers of special trade passengers, such as the pilgrim trade, the Administration, if satisfied that it is impracticable to enforce compliance with the requirements of this Chapter, may exempt such ships, when they belong to its country, from those requirements, provided that they eomply fully with the provisions of:

(i) The Rules annexed to the Special Trade Passenger Ships Agreement, 1971; and

(ii) The Rules annexed to the Protocol on Space Requirements for Special Trade Passenger Ships, 1973, when it comes into force.

Regulation 2. BASIC PRINCIPLES

The purpose of this Chapter is to require the fullest practicable degree of fire protection, fire detection and fire extinction in ships. The following basic principles underlie the Regulations in this Chapter and are embodied in the Regulations as appropriate, having regard to the type of ships and the potential fire hazard involved:

(*a*) Division of ship into main vertical zones by thermal and structural boundaries;

(*b*) Separation of accommodation spaces from the remainder of the ship by thermal and structural boundaries;

(*c*) Restricted use of combustible materials;

(*d*) Detection of any fire in the zone of origin;

(*e*) Containment and extinction of any fire in the space of origin;

(*f*) Protection of means of escape or access for fire fighting;

(*g*) Ready availability of fire-extinguishing appliances;

(*h*) Minimization of possibility of ignition of inflammable* cargo vapour.

* "Inflammable" has the same meaning as "flammable".

Regulation 3. DEFINITIONS

For the purpose of this Chapter, unless expressly provided otherwise:

(*a*) "Non-combustible material" means a material which neither burns nor gives off inflammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C (1,382°F) this being determined to the satisfaction of the Administration by an established test procedure.* Any other material is a combustible material.

(*b*) "A Standard Fire Test" is one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4.65 square metres (50 square feet) and height (or length of deck) of 2.44 metres (8 feet) resembling as closely as possible the intended construction and including where appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following points:

— At the end of the first 5 minutes, 538°C (1,000°F);

— At the end of the first 10 minutes, 704°C (1,300°F);

— At the end of the first 30 minutes, 843°C (1,550°F);

— At the end of the first 50 minutes, 927°C (1,700°F);

(*c*) "'A' Class Divisions" are those divisions formed by bulkheads and decks which comply with the following:

(i) They shall be constructed of steel or other equivalent material;

(ii) They shall be suitably stiffened;

(iii) They shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test;

(iv) They shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 139°C (250°F) above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C (325°F) above the original temperature, within the time listed below:

— Class "A-60", 60 minutes;

— Class "A-30", 30 minutes;

— Class "A-15", 15 minutes;

— Class "A-0", 0 minutes;

(v) The Administration may require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise.**

(*d*) "'B' Class Divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

(i) They shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test;

(ii) They shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C (250°F) above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C (405°F) above the original temperature, within the time listed below:

— Class "B-15", 15 minutes;

— Class "B-0", 0 minutes;

(iii) They shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of "B" Class divisions shall be non-combustible, ex-

* Reference is made to Recommendation on Test Method for Qualifying Marine Construction Materials as Non-Combustible, adopted by the Organization by Resolution A.270(VIII).

** Reference is made to Recommendation for Fire Test Procedures for "A" and "B" Class Divisions, adopted by the Organization by Resolutions A.163(ES.IV) and A.215(VII).

cept where in accordance with Parts C and D of this Chapter the use of combustible material is not precluded, in which case it shall comply with the temperature rise limitation specified in sub-paragraph (ii) of this paragraph up to the end of the first one-half hour of the standard fire test;

(iv) The Administration may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.*

(*e*) "'C' Class Divisions" shall be constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame nor the limiting of temperature rise.

(*f*) "Continuous 'B' Class Ceilings or Linings" are those "B" Class ceilings or linings which terminate only at an "A" or "B" Class division.

(*g*) "*Steel or other equivalent material*". Where the words "steel or other equivalent material" occur, "equivalent material" means any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable fire exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation).

(*h*) "Low Flame Spread" means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Administration by an established test proeedure.

(*i*) "Main Vertical Zones" are those sections into which the hull, superstructure, and deckhouses are divided by "A" Class divisions, the mean length of which on any one deck does not in general exceed 40 metres (131 feet).

(*j*) "Accommodation Spaces" are those used for public spaces, corridors, lavatories, eabins, offices, crew quarters, barber shops, isolated pantries and lockers and similar spaces.

(*k*) "Public Spaces" are those portions of the accommodation which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

(*l*) "Service Spaces" are those used for galleys, main pantries, stores (except isolated pantries and lockers), mail and specie rooms, workshops other than those forming part of machinery spaces, and similar spaces and trunks to such spaces.

(*m*) "Cargo Spaces" are all spaces used for cargo (including cargo oil tanks) and trunks to such spaces.

(*n*) "Special Category Spaces" are those enclosed spaces above or below the bulkhead deck intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven and to which passengers have access.

(*o*) "Machinery Spaces of Category A" are all spaces which contain:

(i) Internal combustion type machinery used either for main propulsion purposes, or for other purposes where such machinery has in the aggregate a total power output of not less than 373 kW; or

(ii) Any oil-fired boiler or oil fuel unit; and trunks to such spaces.

(*p*) "Machinery Spaces" are all machinery spaces of Category A and all other spaces containing propelling machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air conditioning machinery, and similar spaces; and trunks to such spaces.

(*q*) "Oil Fuel Unit" means the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure more than 1.8 kilogrammes per square centimetre (25 pounds per square inch) gauge.

* Reference is made to Recommendation for Fire Test Procedures for "A" and "B" Class Divisions, adopted by the Organization by Resolutions A.163(ES.IV) and A.215(VII).

(*r*) "Control Stations" are those spaces in which the ship's radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment is centralized.

(*s*) "Rooms containing Furniture and Furnishings of Restricted Fire Risk" are, for the purpose of Regulation 20 of this Chapter, those rooms containing furniture and furnishings of restricted fire risk (whether cabins, public spaces, offices or other types of accommodation) in which:

(i) All case furniture such as desks, wardrobes, dressing tables, bureaux, is constructed entirely of approved non-combustible materials, except that a combustible veneer not exceeding 2 millimetres (1/12 inch) may be used on the working surface of such articles;

(ii) All free-standing furniture such as chairs, sofas, tables, is constructed with frames of non-combustible materials;

(iii) All draperies, curtains and other suspended textile materials have, to the satisfaction of the Administration, qualities of resistance to the propagation of flame not inferior to those of wool weighing 0.8 kilogrammes per square metre (24 ounces per square yard);

(iv) All floor coverings have, to the satisfaction of the Administration, qualities of resistance to the propagation of flame not inferior to those of an equivalent woollen material used for the same purpose; and

(v) All exposed surfaces of bulkheads, linings and ceilings have low flame-spread characteristics.

(*t*) "Bulkhead deck" is the uppermost deck up to which the transverse water-tight bulkheads are carried.

(*u*) "Deadweight" is the difference in metric tons between the displacement of a ship in water of a specific gravity of 1.025 at the load water line corresponding to the assigned summer freeboard and the lightweight of the ship.

(*v*) "Lightweight" is the displacement of a ship in metric tons without cargo, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, together with passengers, and crew and their effects.

(*w*) "Combination carrier" is a tanker designed to carry oil or alternatively solid cargoes in bulk.

Regulation 4. FIRE CONTROL PLANS

There shall be permanently exhibited in all new and existing ships for the guidance of the ship's officers general arrangement plans showing clearly for each deck the control stations, the various fire sections enclosed by "A" Class divisions, the sections enclosed by "B" Class divisions (if any), together with particulars of the fire alarms, detecting systems, the sprinkler installation (if any), the fire-extinguishing appliances, means of access to different compartments, decks, etc., and the ventilating system including particulars of the fan control positions, the position of dampers and identification numbers of the ventilating fans serving each section. Alternatively, at the discretion of the Administration, the aforementioned details may be set out in a booklet, a copy of which shall be supplied to each officer, and one copy at all times shall be available on board in an accessible position. Plans and booklets shall be kept up to date, any alterations being recorded thereon as soon as practicable. Description in such plans and booklets shall be in the national language. If the language is neither English nor French, a translation into one of those languages shall be included. In addition, instructions concerning the maintenance and operation of all the equipment and installations on board for the fighting and containment of fire shall be kept under one cover, readily available in an accessible position.

Regulation 5. FIRE PUMPS, FIRE MAINS, HYDRANTS AND HOSES

(*a*) *Total capacity of fire pumps.* (i) In a passenger ship, the required fire pumps shall be capable of delivering for fire-fighting purposes a quantity of water, at the appropriate pressure prescribed below, not less than two-thirds of the quantity required to be dealt with by the bilge pumps when employed for bilge pumping.

(ii) In a cargo ship, the required fire pumps, other than the emergency pump (if any), shall be capable of delivering for fire-fighting purposes a quantity of water, at the appropriate pressure prescribed, not less than four-thirds of the quantity required under Regulation 18 of Chapter II-1 to be dealt with by each of the independent bilge pumps in a passenger ship of the same dimensions when employed on bilge pumping, provided that in no cargo ship need the total required capacity of the fire pumps exceed 180 cubic metres per hour.

(*b*) *Fire Pumps.* (i) The fire pumps shall be independentiy driven. Sanitary, ballast, bilge or general service pumps may be accepted as fire pumps, provided that they are not normally used for pumping oil and that if they are subject to occasional duty for the transfer or pumping of fuel oil, suitable change-over arrangements are fitted.

(ii) (1) In passenger ships carrying more than 36 passengers, each of the required fire pumps shall have a capacity not less than 80 per cent of the total required capacity divided by the minimum number of required fire pumps and each such pump shall in any event be capable of delivering at least the two required jets of water. These fire pumps shall be capable of supplying the fire main system under the required conditions.

Where more pumps than the minimum of required pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Administration.

(2) In all other types of ships, each of the required fire pumps (other than any emergency pump required by Regulation 52 of this Chapter) shall have a capacity not less than 80 per cent of the total required capacity divided by the number of required fire pumps, and shall in any event be capable of supplying the fire main system under the required conditions.

Where more pumps than required are installed their capacity shall be to the satisfaction of the Administration.

(iii) Relief valves shall be provided in conjunction with all fire pumps if the pumps are capable of devcloping a pressure exceeding the design pressure of the water service pipes, hydrants and hoses. These valves shall be so placed and adjusted as to prevent excessive pressure in any part of the fire main system.

(*c*) *Pressure in the fire main.* (i) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously, except that in the case of cargo ships the diamcter need only be sufficient for the discharge of 140 cubic metres per hour.

(ii) With the two pumps simultaneously delivering through nozzles specified in paragraph (*g*) of this Regulation the quantity of water specified in sub-paragraph (i) of this paragraph, through any adjacent hydrants, the following mimimum pressures shall be maintained at all hydrants:

- Passenger ships:
  - 4,000 tons gross tonnage and upwards: 3.2 kilogrammes per square centimctre (45 pounds per square inch);
  - 1,000 tons gross tonnage and upwards but under 4,000 tons gross tonnage: 2.8 kilogrammes per square centimetre (40 pounds per square inch);
  - Under 1,000 tons gross tonnage: to the satisfaction of the Administration;
- Cargo ships:
  - 6,000 tons gross tonnage and upwards: 2.8 kilogrammes per square centimetre (40 pounds per square inch);

– 1,000 tons gross tonnage and upwards but under 6,000 tons gross tonnage: 2.6 kilogrammes per square centimetre (37 pounds per square inch);

– Under 1,000 tons gross tonnage: to the satisfaction of the Administration.

(*d*) *Number and position of hydrants.* The number and position of the hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated.

(*e*) *Pipes and hydrants.* (i) Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected. The pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them. In ships where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo. Unless there is provided one hose and nozzle for each hydrant in the ship, there shall be complete interchangeability of hose couplings and nozzles.

(ii) A cock or valve shali be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are at work.

(*f*) *Fire hoses.* Fire hoses shall be of material approved by the Administration and sufficient in length to project a jet of water to any of the spaces in which they may be required to be used. Their maximum length shall be to the satisfaction of the Administration. Each hose shall be provided with a nozzle and the necessary couplings. Hoses specified in this Chapter as "fire hoses" shall together with any necessary fittings and tools be kept ready for use in conspicuous positions near the water service hydrants or connexions. Additionally in interior locations in passenger ships carrying more than 36 passengers, fire hoses shall be connected to the hydrants at all times.

(*g*) *Nozzles.* (i) For the purposes of this Chapter, standard nozzle sizes shall be 12 millimetres (½ inch), 16 millimetres (⅝ inch) and 19 millimetres (¾ inch) or as near thereto as possible. Larger diameter nozzles may be permitted at the discretion of the Administration.

(ii) For accommodation and service spaces, a nozzle size greater than 12 millimetres (½ incb) nced not be used.

(iii) For machinery spaces and exterior locations, the nozzle size shall be such as to obtain the maximum discharge possible from two jets at the pressure mentioned in paragraph (*c*) of this Regulation from the smallest pump, provided that a nozzle size greater than 19 millimetres (¾ inch) nced not be used.

(iv) For machinery spaces or in similar spaces where the risk of spillage of oil exists, the nozzles shall be suitable for spraying water on oil or alternatively shall be of a dual purpose type.

(*h*) *International shore connexion.* Standard dimensions of flanges for the international shore connexion required in this Chapter to be installed in the ship shall be in accordance with the following table:

Description	*Dimension*
Outside diameter	178 millimetres (7 inches)
Iimer diameter	64 millimetres (2½ inches)
Bolt circle diameter	132 millimetres (5¼ inches)
Slots in flange	4 holes 19 millimetres (¾ inch) in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery
Flange thickness	14.5 millimetres (9/16 inch) minimum
Bolts and nuts	4, each of 16 millimetres (⅝ inch) diameter, 50 millimetres (2 inches) in length

The connexion shall be constructed of material suitable for 10.5 kilogrammes per square centimctre (150 pounds per square inch) service. The flange shall have a flat face on one side and the other shall have permanently attached thereto a coupling that will fit the ship's hydrant and hose. The connexion shall be kept aboard the ship together with a gasket of any material suitable for 10.5 kilogrammes per square centimetre (150 pounds per square inch) service, together with four 16 millimetre (5/8 inch) bolts, 50 millimetres (2 inches) in length and eight washers.

Regulation 6. MISCELLANEOUS ITEMS

(*a*) Electric radiators, if used, shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators shal be fitted with an element so exposed that clothing, curtains, or other similar materials can be scorched or set on fire by heat from the element.

(*b*) Cellulose-nitrate based films shall not be used for cinematograph installations.

Regulation 7. FIRE EXTINGUISHERS

(*a*) All fire extinguishers shall be of approved types and designs.

(i) The capacity of required portable fluid extinguishers shall be not more than 13.5 litres (3 gallons) and not less than 9 litres (2 gallons). Other extinguishers shall not be in excess of the equivalent portability of the 13.5 litre (3 gallons) fluid extinguisher and shall not be less than the fire-extinguishing equivalent of a 9 litre (2 gallons) fluid extinguisher.

(ii) The Administration shall determine the equivalents of fire extinguishers.

(*b*) Spare charges shall be provided in accordance with requirements to be specified by the Administration.

(*c*) Fire extinguishers containing an extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons shall not be permitted.

(*d*) A portable froth applicator unit shall consist of an induetor type of air-froth nozzle eapable of being connected to the fire main by a fire hose, together with a portable tank containing at least 20 litres (4½ gallons) of froth-making liquid and one spare tank. The nozzle shall be capable of producing effective froth suitable for extinguishing an oil fire, at the rate of at least 1.5 cubic metres (53 cubie feet) per minute.

(*e*) Fire extinguishers shall be periodically examined and subjected to such tests as the Administration may require.

(*f*) One of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

Regulation 8. FIXED GAS FIRE-EXTINGUISHING SYSTEMS

(*a*) The use of a fire-extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons shall not be permitted.

(*b*) Where provision is made for the injeetion of gas for fire-extinguishing purposes, the necessary pipes for conveying the gas shall be provided with control valves or cocks so marked as to mdieate clearly the compartments to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the gas to any compartment. Where cargo spaces fitted with such a system for fire protection are used as passenger spaces the gas connexion shall be blanked during such use.

(*c*) The piping shall be arranged so as to provide effective distribution of fire-extinguishing gas.

(*d*) (i) When carbon dioxide is used as the extinguishing medium in cargo spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30 per cent of the gross volume of the largest cargo compartment in the ship which is capable of being sealed.

(ii) When carbon dioxide is used as an extinguishing medium for machinery spaces of Category A the quantity of gas carried shall be sufficient to give a minimum quantity of free gas equal to the larger of the following quantities, either:

(1) 40 per cent of the gross volume of the largest space, the volume to include the casing up to the level at which the horizontal area of the casing is 40 per cent or less of the horizontal area of the space concerned taken midway between the tank top and the lowest part of the casing, or

(2) 35 per cent of the entire volume of the largest space including the casing,

provided that the above-mentioned percentages may be reduced to 35 per cent and 30 per cent respectively for cargo ships of less than 2,000 tons gross tonnage; provided also that if two or more machinery spaces of Category A are not entirely separate they shall be considered as forming one compartment.

(iii) Where the volume of free air contained in air receivers in any machinery space of Category A is such that, if released in such space in the event of fire, such release of air within that space would seriously affect the efficiency of the fixed fire-extinguishing installation, the Administration shall require the provision of an additional quantity of carbon dioxide.

(iv) When carbon dioxide is used as an extinguishing medium both for cargo spaces and for machinery spaces of Category A the quantity of gas necd not be more than the maximum required either for the largest cargo compartment or machinery space.

(v) For the purpose of this paragraph the volume of carbon dioxide shall be calculated at 0.56 cubic metres to the kilogramme (9 cubic feet to the pound).

(vi) When carbon dioxide is uscd as the extinguishing medium for machinery spaces of Category A the fixed piping system shall be such that 85 per cent of the gas can be discharged into the space within 2 minutes.

(vii) Carbon dioxide bottle storage rooms shall be situated at a safe readily accessible position and shall be effectively ventilated to the satisfaction of the Administration. Any entrance to such storage rooms shall preferably be from the open deck, and in any case shall be indcpendent of the protectcd space. Access doors shall be gastight and bulkhcads and decks which form the boundaries of such rooms shall be gastight and adequately insulated.

(*e*) (i) Where gas other than carbon dioxide or steam as permitted by paragraph (*f*) of this Regulation is produced on the ship and is used as an extinguishing medium, it shall be a gaseous product of fuel combustion in which the oxygen content, the carbon monoxide content, the corrosive elements and any solid combustible elements have been reduced to a permissible minimum.

(ii) Where such gas is uscd as the extinguishing medium in a fixed fire-extinguishing system for tlie protection of machinery spaces of Category A it shall afford protection equivalent to that provided by a fixed carbon dioxide system.

(iii) Where such gas is used as the extinguishing medium in a fixed fire-extinguishing system for tlie protection of cargo spaces a sufficient quantity of such gas shall be available to supply hourly a volume of free gas at least equal to 25 per cent of the gross volume of the largest compartment protected in this way for a period of 72 hours.

(*f*) In general, the Administration shall not permit the use of steam as a fire-extinguishing medium in fire-extinguishing systems of new ships. Where the use of steam is permitted by the Administration it shall be used only in restricted areas as an addition to the required fire-extinguishing medium and with the proviso that the boiler or boilers available for supplying steam shall have an evaporation of at least 1 kilogramme of steam per hour for each

0.75 cubic metre (1 pound of steam per hour per 12 cubic feet) of the gross volume of the largest space so protected. In addition to complying with the foregoing requirements the systems in all respects shall be as determined by, and to the satisfaction of the Administration.

(*g*) Means shall be provided for automatically giving audible warning of the release of fire-extinguishing gas into any space to which personnel normally have access. The alarm shall operate for a suitable period before the gas is released.

(*h*) The means of control of any such fixed gas fire-extinguishing system shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

Regulation 9. FIXED FROTH FIRE-EXTINGUISHING SYSTEMS IN MACHINERY SPACES

(*a*) Any required fixed froth fire-extinguishing system in machinery spaces shall be capable of discharging through fixed discharge outlets in not more than five minutes, a quantity of froth sufficient to cover to a depth of 150 millimetres (6 inches) the largest single area over which oil fuel is liable to spread. The system shall be capable of generating froth suitable for extinguishing oil fires. Means shall be provided for effective distribution of the froth through a permanent system of piping and control valves or cocks to suitable discharge outlets, and for the froth to be effectively directed by fixed sprayers on other main fire hazards in the protected space. The expansion ratio of the froth shall not exceed 12 to 1.

(*b*) The means of control of any such systems shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

Regulation 10. FIXED HIGH EXPANSION FROTH FIRE-EXTINGUISHING SYSTEMS IN MACHINERY SPACES

(*a*) (i) Any required fixed high expansion froth system in machinery shall be capable of rapidly discharging through fixed discharge outlets a quantity of froth sufficient to fill the greatest space to be protected at a rate of at least 1 metre (3.3 feet) in depth per minute. The quantity of froth-forming liquid available shall be sufficient to produce a volume of froth equal to five times the volume of the largest space to be protected. The expansion ratio of the froth shall not exceed 1,000 to 1.

(ii) The Administration may permit alternative arrangements and discharge rates provided that it is satisfied that equivalent protection is achieved.

(*b*) Supply ducts for delivering froth, air intakes to the froth generator and the number of froth-producing units shall in the opinion of the Administration be such as will provide effective froth production and distribution.

(*c*) The arrangement of the froth generator delivery ducting shall be such that a fire in the protected space will not affect the froth-generating equipment.

(*d*) The froth generator, its sources of power supply, froth-forming liquid and means of controlling the system shall be readily accessible and simple to operate and shall be grouped in as few locations as possible at positions not likely to be cut off by fire in the protected space.

Regulation 11. FIXED PRESSURE WATER-SPRAYING FIRE-EXTINGUISHING SYSTEMS IN MACHINERY SPACES

(*a*) Any required fixed pressure water-spraying fire-extinguishing system in machinery spaces shall be provided with spraying nozzles of an approved type.

(*b*) The number and arrangement of the nozzles shall be to the satisfaction of the Administration and be such as to ensure an effective average distribution of water of at least 5 litres per square metre (0.1 gallon per square foot) per minute in the spaces to be protected. Where increased application rates are considered necessary, these shall be to the satisfaction of

the Administration. Nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and also above other specific fire hazards in the machinery spaces.

(*c*) The system may be divided into sections, the distribution valves of which shall be operated from easily accessible positions outside the spaces to be protected and which will not be readily cut off by an outbreak of fire.

(*d*) The system shall be kept charged at the necessary pressure and the pump supplying the water for the system shall be put automatically into action by a pressure drop in the system.

(*e*) The pump shall be capable of simultaneously supplying at the necessary pressure all sections of the system in any one compartment to be protected. The pump and its controls shall be installed outside the space or spaces to be protected. It shall not be possible for a fire in the space or spaces protected by the water-spraying system to put the system out of action.

(*f*) The pump may be driven by independent internal combustion type machinery but if it is dependent upon power being supplied from the emergency generator fitted in compliance with the provisions of Regulation 25 or Regulation 26 as appropriate of Chapter II-1 of the present Convention that generator shall be arranged to start automatically in case of main power failure so that power for the pump required by paragraph (*e*) of this Regulation is immediately available. When the pump is driven by independent internal combustion type machinery it shall be so situated that a fire in the protected space will not affect the air supply to the machinery.

(*g*) Precautions shall be taken to prevent the nozzles from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.

Regulation 12. AUTOMATIC SPRINKLER AND FIRE ALARM AND FIRE DETECTION SYSTEMS

(*a*) (i) Any required automatic sprinkler and fire alarm and fire detection system shall be capable of immediate operation at all times and no action by the crew shall be necessary to set it in operation. It shall be of the wet pipe type but small exposed sections may be of the dry pipe type where in the opinion of the Administration this is a necessary precaution. Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing. It shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water as required in this Regulation.

(ii) Each section of sprinklers shall include means for giving a visual and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation. Such units shall give an indication of any fire and its location in any space served by the system and shall be centralized on the navigating bridge or in the main fire control station, which shall be so manned or equipped as to ensure that any alarm from the system is immediately received by a responsible member of the crew. Such alarm systems shall be constructed so as to indicate if any fault occurs in the system.

(*b*) (i) Sprinklers shall be grouped into separate sections, each of which shall contain not more than 200 sprinklers. Any section of sprinklers shall not serve more than two decks and shall not be situated in more than one main vertical zone, except that an Administration, if it is satisfied that the protection of the ship against fire will not thereby be reduced, may permit such a section of sprinklers to serve more than two decks or to be situated in more than one main vertical zone.

(ii) Each section of sprinklers shall be capable of being isolated by one stop valve only. The stop valve in each section shall be readily accessible and its location shall be clearly and permanently indicated. Means shall be provided to prevent the operation of the stop valves by any unauthorized person.

(iii) A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central station.

(iv) The sprinklers shall be resistant to corrosion by marine atmospheres. In accommodation and service spaces the sprinklers shall come into operation within the temperature range of 68°C (155°F) and 79°C (175°F), except that in locations such as drying rooms, where high ambient temperatures might be expected, the operating temperature may be increased by not more than 30°C (54°F) above the maximum deck head temperature.

(v) A list or plan shall be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.

(*c*) Sprinklers shall be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 litres per square metre (0.1 gallon per square foot) per minute over the nominal area covered by the sprinklers. Alternatively, the Administration may permit the use of sprinklers providing such other amount of water suitably distributed as has been shown to the satisfaction of the Administration to be not less effective.

(*d*) (i) A pressure tank having a volume equal to at least twice that of the charge of water specified in this sub-paragraph shall be provided. The tank shall contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by the pump referred to in sub-paragraph (*e*)(ii) of this Regulation, and the arrangements shall provide for maintaining such air pressure in the tank to ensure that where the standing charge of fresh water in the tank has been used the pressure will be not less than the working pressure of the sprinkler, plus the pressure due to a head of water measured from the bottom of the tank to the highest sprinkler in the system. Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank shall be provided. A glass gauge shall be provided to indicate the correct level of the water in the tank.

(ii) Means shall be provided to prevent the passage of sea water into the tank.

(*e*) (i) An independent power pump shall be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump shall be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.

(ii) The pump and the piping system shall be capable of maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of a minimum area of 280 square metres (3,000 square feet) at the application rate specified in paragraph (*c*) of this Regulation.

(iii) The pump shall have fitted on the delivery side a test valve with a short open-ended discharge pipe. The effective area through the valve and pipe shall be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in sub-paragraph (*d*)(i) of this Regulation.

(iv) The sea inlet to the pump shall wherever possible be in the space containing the pump and shall be so arranged that when the ship is afloat it will not be necessary to shut off the supply of sea water to the pump for any purpose other than the inspection or repair of the pump.

(*f*) The sprinkler pump and tank shall be situated in a position reasonably remote from any machinery space of Category A and shall not be situated in any space required to be protected by the sprinkler system.

(*g*) There shall be not less than two sources of power supply for the sea water pump and automatic alarm and detection system. Where the sources of power for the pump are electrical, these shall be a main generator and an emergency source of power. One supply for the pump shall be taken from the main switchboard, and one from the emergency switchboard by separate feeders reserved solely for that purpose.

The feeders shall be arranged so as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except in so far as it is necessary to reach the appropriate switchboards,

and shall be run to an automatic change-over switch situated near the sprinkler pump. This switch shall permit the supply of power from the main switchboard so long as a supply is available therefrom, and be so designed that upon failure of that supply it will automatically change over to the supply from the emergency switchboard. The switches on the main switchboard and the emergency switchboard shall be clearly labelled and normally kept closed. No other switch shall be permitted in the feeders concerned. One of the sources of power supply for the alarm and detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion-type engine it shall, in addition to complying with the provisions of paragraph (*f*) of this Regulation, be so situated that a fire in any protected space will not affect the air supply to the machinery.

(*h*) The sprinkler system shall have a connexion from the ship's fire main by way of a lockable screw-down non-return valve at the connexion which will prevent a backflow from the sprinkler system to the fire main.

(*i*) (i) A test valve shall be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section shall be situated near the stop valve for that section.

(ii) Means shall be provided for testing the automatic operation of the pump, on reduction of pressure in the system.

(iii) Switches shall be provided at one of the indicating positions referred to in subparagraph (*a*)(ii) of this Regulation which will enable the alarm and the indicators for each section of sprinklers to be tested.

(*j*) Spare sprinkler heads shall be provided for each section of sprinklers to the satisfaction of the Administration.

Regulation 13. AUTOMATIC FIRE ALARM AND FIRE DETECTION SYSTEMS

Requirements for passenger ships carrying more than 36 passengers

(*a*) (i) Any required automatic fire alarm and fire detection system shall be capable of immediate operation at all times and no action of the crew shall be necessary to set it in operation.

(ii) Each section of detectors shall include means for giving a visual and audible alarm signal automatically at one or more indicating units whenever any detector comes into operation. Such units shall give an indication of any fire and its location in any space served by the system and shall be centralized on the navigating bridge or in the main fire control station which shall be so manned or equipped as to ensure that any alarm from the system is immediately received by a responsible member of the crew. Such alarm system shall be constructed so as to indicate if any fault occurs in the system.

(*b*) Detectors shall be grouped into separate sections each covering not more than 50 rooms served by such a system and containing not more than 100 detectors. A section of detectors shall not serve spaces on both the port and starboard sides of the ship nor on more than one deck and neither shall it be situated in more than one main vertical zone except that the Administration, if it is satisfied that the protection of the ship against fire will not thereby be reduced, may permit such a section of detectors to serve both the port and starboard sides of the ship and more than one deck.

(*c*) The system shall be operated by an abnormal air temperature, by an abnormal concentration of smoke or by other factors indicative of incipient fire in any one of the spaces to be protected. Systems which are sensitive to air temperature shall not operate at less than 57°C (135°F) and shall operate at a temperature not greater than 74°C (165°F) when the temperature increase to those levels is not more than 1°C (1.8°F) per minute. At the discretion of the Administration the permissible temperature of operation may be increased to 30°C (54°F) above the maximum deckhead temperature in drying rooms and similar places of a normally high am-

bient temperature. Systems which are sensitive to smoke concentration shall operate on the reduction of the intensity of a transmitted light beam by an amount to be determined by the Administration. Other equally effective methods of operation may be accepted at the discretion of the Administration. The detection system shall not be used for any purpose other than fire detection.

(*d*) The detectors may be arranged to operate the alarm by the opening or closing of contacts or by other appropriate methods. They shall be fitted in an overhead position and shall be suitably protected against impact and physical damage. They shall be suitable for use in a marine atmosphere. They shall be placed in an open position clear of beams and other objects likely to obstruct the flow of hot gases or smoke to the sensitive element. Detectors operated by the closing of contacts shall be of the sealed contact type and the circuit shall be continuously monitored to indicate fault conditions.

(*e*) At least one detector shall be installed in each space where detection facilities are required and there shall be not less than one detector for each 37 square metres (400 square feet) of deck area. In large spaces the detectors shall be arranged in a regular pattern so that no detector is more than 9 metres (30 feet) from another detector or more than 4.5 metres (15 feet) from a bulkhead.

(*f*) There shall be not less than two sources of power supply for the electrical equipment used in the operation of the fire alarm and fire detection system, one of which shall be an emergency source. The supply shall be provided by separate feeders reserved solely for that purpose. Such feeders shall run to a change-over switch situated in the control station for the fire detection system. The wiring system shall be so arranged to avoid galleys, machinery spaces and other enclosed spaces having a high fire risk except in so far as it is necessary to provide for fire detection in such spaces or to reach the appropriate switchboard.

(*g*) (i) A list or plan shall be displayed adjacent to each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.

(ii) Provision shall be made for testing the correct operation of the detectors and the indicating units by supplying means for applying hot air or smoke at detector positions.

(*h*) Spare detector heads shall be provided for each section of detectors to the satisfaction of the Administration.

Requirements for all other types of ships

(i) All required fire detection systems shall be capable of automatically indicating the presence or indication of fire and also its location. Indicators shall be centralized either on the navigating bridge or in other control stations which are provided with a direct communication with the bridge. The Administration may permit the indicators to be distributed among several stations.

(*j*) In passenger ships electrical equipment used in the operation of required fire detection systems shall have two separate sources of power, one of which shall be an emergency source.

(*k*) The alarm system shall operate both audible and visible signals at the main stations referred to in paragraph (*i*) of this Regulation. Detection systems for cargo spaces need not have audible alarms.

Regulation 14. FIREMAN'S OUTFIT

A fireman's outfit shall consist of:

(*a*) Personal equipment comprising:

(i) Protective clothing of material to protect the skin from the heat radiating from the fire and from burns and scalding by steam; the outer surface shall be water-resistant;

(ii) Boots and gloves of rubber or other electrically non-conducting material;

(iii) A rigid helmet providing effective protection against impact;

(iv) An electric safety lamp (hand lantern) of an approved type with a minimum burning period of three hours;

(v) An axe to the satisfaction of the Administration;

(*b*) A breathing apparatus of an approved type which may be either:

(i) A smoke helmet or smoke mask which shall be provided with a suitable air pump and a length of air hose sufficient to reach from the open deck, well clear of hatch or doorway, to any part of the holds or machinery spaces; if, in order to comply with this subparagraph, an air hose exceeding 36 metres (120 feet) in length would be necessary, a self-contained breathing apparatus shall be substituted or provided in addition as determined by the Administration; or

(ii) A self-contained breathing apparatus which shall be capable of functioning for a period of time to be determined by the Administration.

For each breathing apparatus a fireproof lifeline of sufficient length and strength shall be provided capable of being attached by means of a snaphook to the harness of the apparatus or to a separate belt in order to prevent the breathing apparatus becoming detached when the lifeline is operated.

Regulation 15. READY AVAILABILITY OF FIRE-EXTINGUISHING APPLIANCES

In all new and existing ships, fire-extinguishing appliances shall be kept in good order and available for immediate use at all times during the voyage.

Regulation 16. ACCEPTANCE OF SUBSTITUTES

Where in this Chapter any special type of appliance, apparatus, extinguishing medium or arrangement is specified in any new and existing ships, any other type of appliance, etc., may be allowed, provided the Administration is satisfied that it is not less effective.

PART B. FIRE SAFETY MEASURES FOR PASSENGER SHIPS CARRYING MORE THAN 36 PASSENGERS

Regulation 17. STRUCTURE

The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material. For the purpose of applying the definition of steel or other equivalent material as given in Regulation 3(*g*) of this Chapter the "applicable fire exposure" shall be according to the integrity and insulation standards given in the tables of Regulation 20 of this Chapter. An example where divisions such as decks or sides and ends of deckhouses are permitted to have "B-0" fire integrity, the "applicable fire exposure" shall be one half-hour.

Provided that in cases where any part of the structure is of aluminium alloy, the following requirements shall apply:

(*a*) The insulation of aluminium alloy components of "A" or "B" Class divisions, except structure which in the opinion of the Administration is non-load-bearing, shall be such that the temperature of the structural core does not rise more than 200°C (360°F) above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

(*b*) Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and liferaft stowage, launching and embarkation areas, and "A" and "B" Class divisions to ensure:

(i) That for such members supporting lifeboat and liferaft areas and "A" Class divisions the temperature rise limitation specified in paragraph (*a*) of this Regulation shall apply at the end of one hour; and

(ii) That for such members required to support "B" Class divisions, the temperature rise limitation specified in paragraph (*a*) of this Regulation shall apply at the end of one half-hour.

(*c*) Crowns and casings of machinery spaces of Category A shall be of steel construction adequately insulated and openings therein, if any, shall be suitably arranged and protected to prevent the spread of fire.

Regulation 18. MAIN VERTICAL ZONES AND HORIZONTAL ZONES

(*a*) The hull, superstructure and deckhouses shall be subdivided into main vertical zones by "A" Class divisions. Steps and recesses shall be kept to a minimum, but where they are necessary, they shall also be "A" Class divisions. These divisions shall have insulation values in accordance with the applicable tables in Regulation 20 of this Chapter.

(*b*) As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight sub-division bulkheads situated immediately below the bulkhead deck.

(*c*) Such bulkheads shall extend from deck to deck and to the shell or other boundaries.

(*d*) Where a main vertical zone is subdivided by horizontal "A" Class divisions into horizontal zones for the purpose of providing an appropriate barrier between sprinklered and non-sprinklered zones of the ship the divisions shall extend between adjacent main vertical zone bulkheads and to the shell or exterior boundaries of the ship and shall be insulated in accordance with the fire insulation and integrity values given in Table 3 of Regulation 20 of this Chapter.

(*e*) On ships designed for special purposes, such as automobile or railroad car ferries, where the provision of main vertical zone bulkheads would defeat the purpose for which the ship is intended, equivalent means for controlling and limiting a fire shall be substituted and specifically approved by the Administration.

Provided that in a ship with special category spaces, any such space shall comply with the applicable provisions of Regulation 30 of this Chapter, and in so far as such compliance would be inconsistent with compliance with other requirements of this Part of this Chapter, the requirements of Regulation 30 shall prevail.

Regulation 19. BULKHEADS WITHIN A MAIN VERTICAL ZONE

(*a*) All bulkheads which are not required to be "A" Class divisions shall be at least "B" Class or "C" Class divisions as prescribed in the tables in Regulation 20 of this Chapter. All such divisions may be faced with combustible materials in accordance with the provisions of Regulation 27 of this Chapter.

(*b*) All corridor bulkheads where not required to be "A" Class shall be "B" Class divisions which shall extend from deck to deck except:

(i) When continuous "B" Class ceilings and/or linings are fitted on both sides of the bulkhead, the portion of the bulkhead behind the continuous ceiling or lining shall be of material which in thickness and composition is acceptable in the construction of "B" Class divisions but which shall be required to meet "B" Class integrity standards only in so far as is reasonable and practicable in the opinion of the Administration;

(ii) In the case of a ship protected by an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter, the corridor bulkheads of "B" Class materials may terminate at a ceiling in the corridor provided such a ceiling is of material which in thickness and composition is acceptable in the construction of "B" Class divisions; notwithstanding the requirements of Regulation 20 of this Chapter, such bulkheads and ceilings shall be required to meet "B" Class integrity standards only in so far as is reasonable and practicable in the opinion of the Administration; all doors and frames in such

bulkheads shall be of incombustible materials and shall be constructed so as to provide substantial fire resistance to the satisfaction of the Administration.

(*c*) All bulkheads required to be "B" Class divisions, except corridor bulkheads, shall extend from deck to deck and to the shell or other boundaries unless continuous "B" Class ceilings and/or linings are fitted on both sides of the bulkhead in which case the bulkhead may terminate at the continuous ceiling or lining.

Regulation 20. FIRE INTEGRITY OF BULKHEADS AND DECKS

(*a*) In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in the Regulations of this Part, the minimum fire integrity of all bulkheads and decks shall be as prescribed in Tables 1 to 4 in this Regulation. Where, due to any particular structural arrangements in the ship, difficulty is experienced in determining from the tables the minimum fire integrity value of any divisions, such values shall be determined to the satisfaction of the Administration.

(*b*) The following requirements shall govern application of the tables:

(i) Table 1 shall apply to bulkheads bounding main vertical zones or horizontal zones.

Table 2 shall apply to bulkheads not bounding either main vertical zones or horizontal zones.

Table 3 shall apply to decks forming steps in main vertical zones or bounding horizontal zones.

Table 4 shall apply to decks not forming steps in main vertical zones nor bounding horizontal zones.

(ii) For the purpose of determining the appropriate fire integrity standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in Categories (1) to (14) below. Where the contents and use of a space are such that there is a doubt as to its classification for the purpose of this Regulation, it shall be treated as a space within the relevant category having the most stringent boundary requirements. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row number in the tables.

(1) Control stations:
- Spaces containing emergency sources of power and lighting;
- Wheelhouse and chartroom;
- Spaces containing the ship's radio equipment;
- Fire control and recording stations;
- Control room for propelling machinery when located outside the propelling machinery space;
- Spaces containing centralized fire alarm equipment;
- Spaces containing centralized emergency public address system stations and equipment;

(2) Stairways:
- Interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) for passengers and crew and enclosures thereto; in this connexion, a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door;

(3) Corridors:
- Passsenger and crew corridors;

(4) Lifeboat and liferaft handling and embarkation stations:
- Open deck spaces and enclosed promenades forming lifeboat and liferaft embarkation and lowering stations;

(5) Open deck spaces:
- Open deck spaces and enclosed promenades clear of lifeboat and liferaft embarkation and lowering stations;
- Air space (the space outside superstructures and deckhouses);

(6) Accommodation spaces of minor fire risk:
- Cabins containing furniture and furnishings of restricted fire risk;
- Public spaces containing furniture and furnishings of restricted fire risk;
- Public spaces containing furniture and furnishings of restricted fire risk and having a deck area of less than 50 square metres (540 square feet);
- Offices and dispensaries containing furniture and furnishings of restricted fire risk;

(7) Accommodation spaces of moderate fire risk:
- Same as (6) above but containing furniture and furnishings of other than restricted firc risk;
- Public spaces containing furniture and furnishings of restricted fire risk and having a deck area of 50 square metres (540 square feet) and greater;
- Isolated lockers and small store-rooms in accommodation spaces;
- Sales shops;
- Motion picture projection and film stowage rooms;
- Diet kitchens (containing no open flame);
- Cleaning gear lockers (in which inflammable liquids are not stowed);
- Laboratories (in which inflainmable liquids are not stowed);
- Pharmacies;
- Small drying rooms (having a deck area of 4 square metres (43 square feet) or less);
- Specie rooms;

(8) Accommodation spaces of greater fire risk:
- Public spaces containing furniture and furnishings of other than restricted fire risk and having a deck area of 50 square metres (540 square feet) and greater;
- Barber shops and beauty parlours;

(9) Sanitary and simiiar spaces:
- Communal sanitary facilities, showers, baths, water closets, etc.;
- Small laundry rooms;
- Indoor swimming pool area;
- Operating rooms;
- Isolated serving pantries in accommodation spaces;
- Private sanitary facilities shall be considered a portion of the space in which they are located;

(10) Tanks, voids and auxiliary machinery spaces having little or no fire risk:
- Water tanks forming part of the ship's structure;
- Voids and cofferdams;
- Auxiliary machinery spaccs which do not contain machinery having a pressure lubrication system and where storage of combustibles is prohibited, such as ventilation and air-conditioning rooms; windlass room; steering gear room; stabilizer equipment room; electrical propulsion motor room; rooms containing section switchboards and purely electrical equipment other than oil-filled eleetrical transformers (above 10 kVA); shaft alleys and pipe tunnels; spaces for pumps and refrigeration machinery (not handling or using inflammable liquids);

- Closed trunks serving the spaces listed above;
- Other closed trunks such as pipe and cable trunks;

(11) Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk:

- Cargo oil tanks;
- Cargo holds, trunkways and hatchways;
- Refrigerated chambers;
- Oil fuel tanks (where installed in a separate space with no machinery);
- Shaft alleys and pipe tunnels allowing storage of combustibles;
- Auxiliary machinery spaces as in Category (10) which contain machinery having a pressure lubrication system or where storage of combustibles is permitted;
- Oil fuel filling stations;
- Spaces containing oil-filled electrical transformers (above 10 kVA);
- Spaces containing turbine and reciprocating steam engine driven auxiliary generators and small internal combustion engines of power output up to 112 kW driving emergency generators, sprinkler, drencher or fire pumps, bilge pumps, etc.;
- Special category spaces (Tables 1 and 3 only apply);
- Closed trunks serving the spaces listed above;

(12) Machinery spaces and main galleys:

- Main propelling machinery rooms (other than electric propulsion motor rooms) and boiler rooms;
- Auxiliary machinery spaces other than those in Categories (10) and (11) which contain internal combustion machinery or other oil-burning, heating or pumping units;
- Main galleys and annexes;
- Trunks and casings to the spaces listed above;

(13) Store-rooms, workshops, pantries, etc.:

- Main pantries not annexed to galleys;
- Main laundry;
- Large drying rooms (having a deck area of more than 4 square metres (43 square feet));
- Miscellaneous stores;
- Mail and baggage rooms;
- Garbage rooms;
- Workshops (not part of machinery spaces, galleys, etc.);

(14) Other spaces in which inflammable liquids are stowed:

- Lamp rooms;
- Paint rooms;
- Store-rooms containing inflammable liquids (including dyes, medicines, etc.);
- Laboratories (in which inflammable liquids are stowed).

(iii) Where a single value is shown for the fire integrity of a boundary between two spaces, that value shall apply in all cases.

(iv) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter or between such zones neither of which is so protected, the higher of the two values given in the tables shall apply.

(v) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter or between such zones both of which are so protected, the lesser of the two values given in the tables shall apply. In instances where a sprinklered zone and a non-sprinklered zone meet within accommodation and service spaces, the higher of the two values given in the tables shall apply to the division between the zones.

(vi) Where adjacent spaces are in the same numerical category and the superscript "1" appears in the tables, a bulkhead or deck between such spaces need not be fitted if deemed unnecessary by the Administration. For example, in Category (12) a bulkhead need not be required between a galley and its annexed pantries provided the pantry bulkheads and decks maintain the integrity of the galley boundaries. A bulkhead is, however, required between a galley and a machinery space even though both spaces are in Category (12).

(vii) Where the superscript "2" appears in the tables, the lesser insulation value may be permitted only if at least one of the adjoining spaces is protected by an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter.

(viii) Notwithstanding the provisions of Regulation 19 of this Chapter, there are no special requirements for material or integrity of boundaries where only a dash appears in the tables.

(ix) The Administration shall determine in respect of Category (5) spaces whether the insulation values in Table 1 or 2 shall apply to ends of deckhouses and superstructures, and whether the insulation values in Table 3 or 4 shall apply to weather decks. In no case shall the requirements of Category (5) of Tables 1 to 4 necessitate enclosure of spaces which in the opinion of the Administration need not be enclosed.

(*c*) Continuous "B" Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing wholly or in part, to the required insulation and integrity of a division.

(*d*) In approving structural fire protection details, the Administration shall have regard to the risk of heat transmission at intersections and terminal points of required thermal barriers.

Regulation 21. MEANS OF ESCAPE

(*a*) In and from all passenger and crew spaces and in spaces in which the crew is normally employed, other than machinery spaces, stairways and ladders shall be arranged to provide ready means of escape to the lifeboat and liferaft embarkation deck. In particular, the following provisions shall be complied with:

(i) Below the bulkhead deck, two means of escape, at least one of which shall be independent of watertight doors, shall be provided from each watertight compartment or similarly restricted space or group of spaces. Exceptionally, the Administration may dispense with one of the means of escape, due regard being paid to the nature and location of spaces and to the number of persons who normally might be quartered or employed there.

(ii) Above the bulkhead deck, there shall be at least two means of escape from each main vertical zone or similarly restricted space or group of spaces at least one of which shall give access to a stairway forming a vertical escape.

(iii) At least one of the means of escape required by sub-paragraphs (*a*)(i) and (ii) of this Regulation shall be by means of a readily accessible enclosed stairway, which shall provide continuous fire shelter from the level of its origin to the appropriate lifeboat and liferaft embarkation decks or the highest level served by the stairway, whichever level is the highest. However, where an Administration has granted dispensation under the provisions of sub-paragraph (*a*)(i) of this Regulation the sole means of escape shall provide safe escape to the satisfaction of the

TABLE 1. BULKHEADS BOUNDING MAIN VERTICAL ZONES OR HORIZONTAL ZONES

Spaces		*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*
Control stations	(1)	A-60	A-30	A-30	A-0	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways	(2)		A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Corridors	(3)			A-0	A-0	A-0	A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Lifeboat and liferaft handling and embarkation stations	(4)				—	—	A-0	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-60
Open deck spaces	(5)					—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk	(6)						A-15 A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-30	A-15 A-0	A-30
Accommodation spaces of moderate fire risk	(7)							A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-30 A-0	A-60
Accommodation spaces of greater fire risk	(8)								A-60 A-15	A-0	A-0	A-60 A-15	A-60	A-30 A-0	A-60
Sanitary and similar spaces	(9)									A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)										A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)											A-0	A-60	A-0	A-60
Machinery spaces and main galleys	(12)												A-60	A-30[2] A-15	A-60
Store-rooms, workshops, pantries, etc.	(13)													A-0	A-30
Other spaces in which inflammable liquids are stowed	(14)														A-60

TABLE 2. BULKHEADS NOT BOUNDING EITHER MAIN VERTICAL ZONES OR HORIZONTAL ZONES

Spaces		*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*
Control stations	(1)	B-0[1]	A-0	A-0	A-0	A-0 B-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways	(2)		A-0[1]	A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15	A-30	A-15 A-0	A-30
Corridors	(3)			C	A-0	A-0 B-0	B-0	B-15 B-0	B-15 B-0	B-0	A-0	A-15	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations	(4)				–	–	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-15 A-0
Open deck spaces	(5)					–	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0 B-0
Accommodation spaces of minor fire risk	(6)						B-0 C	B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-30	A-0	A-30 A-0
Accommodation spaces of moderate fire risk	(7)							B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-60	A-15 A-0	A-60 A-15
Accommodation spaces of greater fire risk	(8)								B-15 C	B-0 C	A-0	A-30 A-0	A-60	A-15 A-0	A-60 A-15
Sanitary and similar spaces	(9)									C	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)										A-0[1]	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)											A-0[1]	A-0	A-0	A-30[2] A-15
Machinery spaces and main galleys	(12)												A-0	A-0	A-60
Store-rooms, workshops, pantries, etc.	(13)													A-0[1]	A-0
Other spaces in which inflammable liquids are stowed	(14)														A-30[2] A-15

TABLE 3. DECKS FORMING STEPS IN MAIN VERTICAL ZONES OR BOUNDING HORIZONTAL ZONES

Space below ↓ *Space above* →		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-60	A-60	A-30	A-0	A-0	A-15	A-30	A-60	A-0	A-0	A-30	A-60	A-15	A-60
Stairways	(2)	A-15	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Corridors	(3)	A-30	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-30 A-0	A-15 A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-15	A-0	A-15
Accommodation spaces of moderate fire risk	(7)	A-60	A-60 A-15	A-30 A-0	A-15 A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-30	A-0	A-30
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-15	A-60 A-15	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-15 A-0	A-60
Sanitary and similar spaces	(9)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60	A-60	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-0	A-30	A-30[2] A-0	A-30
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Store-rooms, workshops, pantries, etc.	(13)	A-60	A-60 A-15	A-30 A-0	A-15	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-0	A-30	A-0	A-30
Other spaces in which inflammable liquids are stowed	(14)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60

TABLE 4. DECKS NOT FORMING STEPS IN MAIN VERTICAL ZONES NOR BOUNDING HORIZONTAL ZONES

Space below ↓ / Space above →		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-30 A-0	A-30 A-0	A-15 A-0	A-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0	A-60	A-0	A-60 A-15
Stairways	(2)	A-0	A-0	A-0	A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-30 A-0
Corridors	(3)	A-15 A-0	A-0	A-0[1] B-0[1]	A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-15 B-0	A-0 B-0	A-0	A-0	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	–	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0 B-0	A-0	–	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-15 A-0	A-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-15 A-0	A-0	A-15 A-0
Accommodation spaces of moderate fire risk	(7)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-30 B-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-30 A-0
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-0	A-30 A-0	A-0 B-0	A-15 B-0	A-30 B-0	A-60 B-0	A-0 B-0	A-0	A-30 A-0	A-30 A-0	A-0	A-30 A-0
Sanitary spaces and similar spaces	(9)	A-0	A-0	A-0 B-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0[1]	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60 A-15	A-60 A-15	A-30 A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0[1]	A-0	A-0	A-30[2] A-15
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-30	A-30[1]	A-0	A-60
Store-rooms, workshops, pantries, etc.	(13)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-15 A-0	A-30 A-0	A-30 A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-15[2] A-0
Other spaces in which inflammable liquids are stowed	(14)	A-60	A-60 A-30	A-60 A-30	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30[2] A-0	A-30[2] A-0	A-0	A-30[2] A-0

Administration. The width, number and continuity of the stairways shall be to the satisfaction of the Administration.

(iv) Protection of access from the stairway enclosures to the lifeboat and liferaft embarkation areas shall be to the satisfaction of the Administration.

(v) Lifts shall not be considered as forming one of the required means of escape.

(vi) Stairways serving only a space and a balcony in that space shall not be considered as forming one of the required means of escape.

(vii) If a radiotelegraph station has no direct access to the weather deck, two means of escape shall be provided from such station.

(viii) Dead-end corridors exceeding 13 metres (43 feet) shall not be permitted.

(*b*) (i) In special category spaces the number and disposition of the means of escape both below and above the bulkhead deck shall be to the satisfaction of the Administration, and in general the safety of access to the embarkation deck shall be at least equivalent to that provided for under sub-paragraphs (*a*)(i), (ii), (iii), (iv) and (v) of this Regulation.

(ii) One of the escape routes from the machinery spaces where the crew is normally employed shall avoid direct access to any special category space.

(*c*) Two means of escape shall be provided from each machinery space. In particular, the following provisions shall be complied with:

(i) Where the space is below the bulkhead deck the two means of escape shall consist of either:

(1) Two sets of steel ladders as widely separated as possible, leading to doors in the upper part of the space similarly separated and from which access is provided to the appropriate lifeboat and liferaft embarkation decks; one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space; or

(2) One steel ladder leading to a door in the upper part of the space from which access is provided to the embarkation deck and a steel door capable of being operated from each side and which provides a safe escape route to the embarkation deck.

(ii) Where the space is above the bulkhead deck, two means of escape shall be as widely separated as possible and the doors leading from such means of escape shall be in a position from which access is provided to the appropriate lifeboat and liferaft embarkation decks. Where such escapes require the use of ladders these shall be of steel.

Provided that in a ship of less than 1,000 tons gross tonnage, the Administration may dispense with one of the means of escape due regard being paid to the width and disposition of the upper part of the space; and in a ship of 1,000 tons gross tonnage and above, the Administration may dispense with one means of escape from any such space so long as either a door or a steel ladder provides a safe escape route to the embarkation deck due regard being paid to the nature and location of the space and whether persons are normally employed in that space.

Regulation 22. PROTECTION OF STAIRWAYS AND LIFTS IN ACCOMMODATION AND SERVICE SPACES

(*a*) All stairways shall be of steel frame construction except where the Administration sanctions the use of other equivalent material, and shall be within enclosures formed of "A" Class divisions, with positive means of closure at all openings, except that:

(i) A stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads or doors at one between deck space; when a stairway is closed at one between deck space, the stairway enclosure shall be protected in accordance with the tables for decks in Regulation 20 of this Chapter;

(ii) Stairways may be fitted in the open in a public space, provided they lie wholly within such public space.

(*b*) Stairway enclosures shall have direct communication with the corridors and be of sufficient area to prevent congestion, having in view the number of persons likely to use them in an emergency. In so far as practicable, stairway enclosures shall not give direct access to cabins, service lockers, or other enclosed spaces containing combustibles in which a fire is likely to originate.

(*c*) Lift trunks shall be so fitted as to prevent the passage of smoke and flame from one between deck to another and shall be provided with means of closing so as to permit the control of draught and smoke.

Regulation 23. OPENINGS IN "A" CLASS DIVISIONS

(*a*) Where "A" Class divisions are pierced for the passage of electric cables, pipes, trunks, ducts, etc., for girders, beams or other structures, arrangements shall be made to ensure that the fire resistance is not impaired, subject to the provisions of paragraph (*g*) of this Regulation.

(*b*) Where of necessity, a ventilation duct passes through a main vertical zone bulkhead, a fail-safe automatic closing fire damper shall be fitted adjacent to the bulkhead. The damper shall also be capable of being manually closed from each side of the bulkhead. The operating position shall be readily accessible and be marked in red light-reflecting colour. The duct between the bulkhead and the damper shall be of steel or other equivalent material and, if neeessary, to an insulating standard such as to comply with paragraph (*a*) of this Regulation. The damper shall be fitted on at least one side of the bulkhead with a visible indicator showing if the damper is in the open position.

(*c*) Except for hatches between cargo, special category, store, and baggage spaces, and between such spaces and the weather decks, all openings shall be provided with permanently attached means of closing which shall be at least as effective for resisting fires as the divisions in which they are fitted.

(*d*) The construction of all doors and door frames in "A" Class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame, as far as practicable, equiv)lent to that of the bulkheads in which the doors are situated. Such doors and door frames shall be constructed of stecl or other equivalent material. Watertight doors need not be insulated.

(*e*) It shall be possible for each door to be opened and closed from each side of the bulkhead by one person only.

(*f*) Fire doors in main vertical zone bulkheads and stairway enclosures, other than power-operated watertight doors and those which are normally locked, shall be of the self-closing type capable of closing against an inclination of 3½ degrees opposing closure. The speed of door closure shall, if necessary, be controlled so as to prevent undue danger to personnel. All such doors, except those that are normally closed, shall be capable of release from a control station, either simultaneously or in groups, and also individually from a position at the door. The release mechanism shall be so designed that the door will automatically close in the event of disruption of the control system; however, approved power-operated watertight doors will be considered acceptable for this purpose. Hold-back hooks, not subject to control station releasc, will not be permitted. When double swing doors are permitted, they shall have a latch arrangement which is automatically engaged by the operation of tlie door release system.

(*g*) Wliere a space is protected by an automatic sprinkler system complying with the provisions of Regulation I2 of this Chapter or fitted with a continuous "B" Class ceiling, openings in decks not forming steps in main vertical zones nor bounding horizontal zones shall be closed reasonably tight and such decks shall meet the "A" Class integrity requirements in so far as is reasonable and practicable in the opinion of the Administration.

(*h*) The requirements for "A" Class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles. Similarly, the rcquirements for'"A" Class integrity shall not apply to cxterior doors in superstructures and deckhouses.

Regulation 24. OPENINGS IN "B" CLASS DIVISIONS

(*a*) Where "B" Class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements shall be made to ensure that the fire resistance is not impaired.

(*b*) Doors and door frames in "B" Class divisions and means of securing them shall provide a method of closure which shall have resistance to fire as far as practicable equivalent to the divisions except that ventilation openings may be permitted in the lower portion of such doors. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 square metres (78 square inches). When such opening is cut in a door it shall be fitted with a grill made of non-combustible material. Doors shall be non-combustible.

(*c*) The requirements for "B" Class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles. Similarly, the requirements for "B" Class integrity shall not apply to exterior doors in superstructures and deckhouses.

(*d*) Where an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter is fitted:

(i) Openings in decks not forming steps in main vertical zones nor bounding horizontal zones shall be closed reasonably tight and such decks shall meet the "B" Class integrity requirements in so far as is reasonable and practicable in the opinion of the Administration; and

(ii) Openings in corridor bulkheads of "B" Class materials shall be protected in accordance with the provisions of Regulation 19 of this Chapter.

Regulation 25. VENTILATION SYSTEMS

(*a*) In general, the ventilation fans shall be so disposed that the ducts reaching the various spaces remain within the main vertical zone.

(*b*) Where ventilation systems penetrate decks, precautions shall be taken, in addition to those relating to the fire integrity of the deck required by Regulation 23 of this Chapter, to reduce the likelihood of smoke and hot gases passing from one between deck space to another through the system. In addition to insulation requirements contained in this Regulation, vertical ducts shall, if necessary, be insulated as required by the appropriate tables in Regulation 20 of this Chapter.

(*c*) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the space being ventilated.

(*d*) Except in cargo spaces, ventilation ducts shall be constructed of the following materials:

(i) Ducts not less than 0.075 square metres (116 square inches) in sectional area and all vertical ducts serving more than a single between deck space shall be constructed of steel or other equivalent material.

(ii) Ducts less than 0.075 square metres (116 square inches) in sectional area shall be constructed of non-combustible materials. Where such ducts penetrate "A" or "B" Class divisions due regard shall be given to ensuring the fire integrity of the division.

(iii) Short lengths of duct, not in general exceeding 0.02 square metres (31 square inches) in sectional area nor 2 metres (79 inches) in length, need not be incombustible provided that all of the following conditions are met:

(1) The duct is constructed of a material of restricted fire risk to the satisfaction of the Administration;

(2) The duct is used only at the terminal end of the ventilation system; and

(3) The duct is not located closer than 0.6 metres (24 inches) measured along its length to a penetration of an "A" or "B" Class division, including continuous "B" Class ceilings.

(*e*) Where a stairway enclosure is ventilated, the duct or ducts (if any) shall be taken from the fan room independently of other ducts in the ventilation system and shall not serve any other space.

(*f*) All power ventilation, except machinery and cargo spaces ventilation and any alternative system which may be required under paragraph (*h*) of this Regulation, shall be fitted with controls so grouped that all fans may be stopped from either of two separate positions which shall be situated as far apart as practicable. Controls provided for the power ventilation serving machinery spaces shall also be grouped so as to be operable from two positions, one of which shall be outside such spaces. Fans serving power ventilation systems to cargo spaces shall be capable of being stopped from a safe position outside such spaces

(*g*) Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of "A" Class divisions. Each exhaust duct shall be fitted with:

(i) A grease trap readily removable for cleaning;

(ii) A fire damper located in the lower end of the duct;

(iii) Arrangements, operable from within the galley, for shutting off the exhaust fan; and

(iv) Fixed means for extinguishing a fire within the duct.

(*h*) Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively. Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimized. At the discretion of the Administration, such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements would be equally effective.

(*i*) Ducts provided for ventilation of machinery spaces of Category A shall not in general pass through accommodation, service spaces or control stations, except that the Administration may permit relaxation from this requirement, provided that:

(i) The ducts are constructed of steel, and are insulated to "A-60" standard; or

(ii) The ducts are constructed of steel and are fitted with an automatic fire damper close to the boundary penetrated and are insulated to "A-60" standard from the machinery space to a poiut at least 5 metres (16 feet) beyond the fire damper.

(*j*) Ducts provided for ventilation of accommodation, service spaces, or control stations shall not in general pass through machinery spaces of Category A, except that the Administration may permit relaxation from this requirement provided that the ducts are constructed of steel and automatic fire dampers are fitted close to the boundaries penetrated.

Regulation 26. WINDOWS AND SIDESCUTTLES

(*a*) All windows and sidescuttles in bulkheads within accommodation and service spaces and control stations other than those to which the provisions of paragraph (*h*) of Regulation 23 and paragraph (*c*) of Regulation 24 of this Chapter apply, shall be constructed so as to preserve the integrity requirements of the type of bulkheads in which they are fitted.

(*b*) Notwithstanding the requirements of the tables in Regulation 20 of this Chapter:

(i) All windows and sidescuttles in bulkheads separating accommodation and service spaces and control stations from weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bead or angle.

(ii) Special attention shall be given to the fire integrity of windows facing open or enclosed lifeboat and liferaft embarkation areas and to windows situated below such areas in such a position that their failure during a fire would impede the launching of, or embarkation into, lifeboats or liferafts.

Regulation 27. RESTRICTION OF COMBUSTIBLE MATERIALS

(*a*) Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, ceilings and insulations shall be of non-combustible materials. Partial bulkheads or decks used to subdivide a space for utility or artistic treatment shall also be of non-combustible material.

(*b*) Vapour barriers and adhesives used in conjunction with insulation, as well as insulation of pipe fittings, for cold service systems need not be non-combustible, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have qualities of resistance to the propagation of flame to the satisfaction of the Administration.

(*c*) Bulkheads, linings and ceilings in all accommodation and service spaces may have combustible veneer, provided that such veneer shall not exceed 2 millimetres (½ inch) within any such spaces except corridors, stairway enclosures and control stations where it shall not exceed 1.5 millimetres ($^1/_{17}$ inch).

(*d*) The total volume of combustible facings, mouldings, decorations and veneers in any accommodation and service space shall not exceed a volume equivalent to 2.5 millimetres ($^1/_{10}$ inch) veneer on the combined area of the walls and ceilings. In the case of ships fitted with an automatic sprinkler system complying with the provisions of Regulation 12 of this Chapter, the above volume may include some combustible material used for erection of "C" Class divisions.

(*e*) All exposed surfaces in corridors or stairway enclosures and surfaces in concealed or inaccessible spaces in accommodation and service spaces and control stations shall have low flame-spread characteristics.*

(*f*) Furniture in the passages and stairway enclosures shall be kept to a minimum.

(*g*) Paints, varnishes and other finishes used on exposed interior surfaces shall not be of a nature to offer an undue fire hazard in the judgment of the Administration and shall not be capable of producing excessive quantities of smoke or other toxic properties.

(*h*) Primary deck coverings, if applied, within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite, or give rise to toxic or explosive hazards at elevated temperatures.**

(*i*) Waste-paper receptacles shall be constructed of non-combustible materials and with solid sides and bottoms.

Regulation 28. MISCELLANEOUS ITEMS

Requirements applicable to all portions of the ship

(*a*) Pipes penetrating "A" or "B" Class divisions shall be of a material approved by the Administration having regard to the temperature such divisions are required to withstand. Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the water-line and where the failure of the material in the event of fire would give rise to danger of flooding.

Requirements applicable to accommodation and service spaces, control stations, corridors and stairways

(*b*) (i) Air spaces enclosed behind ceilings, panelling or linings shall be suitably divided by close-fitting draught stops not more than 14 metres (46 feet) apart.

* Reference is made to Guidelines on the Evaluation of Fire Hazard Properties of Materials, adopted by the Organization by Resolution A.166(ES.IV).

** Reference is made to Improved Provisional Guidelines on Test Procedures for Primary Deck Coverings, adopted by the Organization by Resolution A.214(VII).

(ii) In the vertical direction, such spaces, including those behind linings of stairways, trunks, etc., shall be elosed at each deck.

(*c*) The construction of ceiling and bulkheading shall be such that it will be possible, without impairing the efficiency of the fire protection, for the fire patrols to detect any smoke originating in concealed and inaccessible places, except where in the opinion of the Administration there is no risk of fire originating in such places

Regulation 29. AUTOMATIC SPRINKLER AND FIRE ALARM AND FIRE DETECTION SYSTEMS OR AUTOMATIC FIRE ALARM AND FIRE DETECTION SYSTEMS

In any ship to which this Part applies there shall be installed throughout each separate zone, whether vertical or horizontal, in all accommodation and service spaces and, where it is considered necessary by the Administration, in control stations, except spaces which afford no substantial fire risk (such as void spaces, sanitary spaces, etc.) either:

(i) An automatic sprinkler and fire alarm and fire detection system of an approved type, complying with the provisions of Regulation 12 of this Chapter and installed and so arranged as to protect such spaces; or

(ii) An automatic fire alarm and fire detection system of an approved type, complying with the provisions of Regulation 13 of this Chapter, and installed and so arranged as to detect the presence of fire in such spaces.

Regulation 30. PROTECTION OF SPECIAL CATEGORY SPACES

Provisions applicable to special category spaces whether above or below the bulkhead deck

(*a*) *General.* (i) The basic principle underlying the provisions in this Regulation is that as normal main vertical zoning may not be practicable in special category spaces, equivalent protection must be obtained in such spaces on the basis of a horizontal zone concept and the provision of an efficient fixed fire-extinguishing system. Under this concept a horizontal zone for the purpose of this Regulation may include special category spaces on more than one deck provided that the overall height of the zone does not exceed 10 metres (33 feet).

(ii) All requirements laid down in Regulations 23 and 25 of this Chapter for maintaining the integrity of vertical zones shall be applied equally to decks and bulkheads forming the boundaries separating horizontal zones from each other and from the remainder of the ship.

(*b*) *Structural protection.* (i) Boundary bulkheads of special category spaces shall be insulated as required for Category (11) spaces in Table 1 of Regulation 20 of this Chapter and the horizontal boundaries as required for Category (11) spaces in Table 3 of that Regulation.

(ii) Indicators shall be provided on the navigating bridge which shall indicate when any fire door leading to or from the special category spaces is closed.

(*c*) *Fixed fire-extinguishing system**. Each special category space shall be fitted with an approved fixed pressure water-spraying system for manual operation which shall protect all parts of any deck and vehicle platform, if any, in such space, provided that the Administration may permit the use of any other fixed fire-extinguishing system that has been shown by full-scale test in conditions simulating a flowing petrol fire in a special category space to be not less effective in controlling fires likely to occur in such a space.

(*d*) *Patrols and detection.* (i) An efficient patrol system shall be maintained in special category spaces. In any such space in which the patrol is not maintained by a continuous fire watch at all times during the voyage there shall be provided in that space an automatic fire detection system of an approved type.

(ii) Manual fire alarms shall be provided as necessary throughout the special category spaces and one shall be placed close to each exit from such spaces.

* Reference is made to Recommendation on Fixed Fire Extinguishing Systems for Special Category Spaces, adopted by the Organization by Resolution A.123(V).

(*e*) *Fire-extinguishing equipment.* There shall be provided in each special category space:

(i) A number of hydrants with hoses and dual-purpose nozzles of an approved type so arranged that at least two jets of water each from a single length of hose not emanating from the same hydrant may reach any part of such space;

(ii) At least three water fog applicators;

(iii) One portable applicator unit complying with the provisions of Regulation 7(*d*) of this Chapter, provided that at least two such units are available in the ship for use in such spaces; and

(iv) Such number of portable fire extinguishers of an approved type as the Administration may deem sufficient.

(*f*) *Ventilation system.* (i) There shall be provided an effective power ventilation system for the special category spaces sufficient to give at least 10 air changes per hour. The system for such spaces shall be entirely separated from other ventilation systems and shall be operating at all times when vehicles are in such spaces. The Administration may require an increased number of air changes when vehicles are being loaded and unloaded.

(ii) The ventilation shall be such as to prevent air stratification and the formation of air pockets.

(iii) Means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.

Additional provisions applicable only to special category spaces above the bulkhead deck

(*g*) *Scuppers.* In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks consequent on the operation of the fixed pressure water-spraying system, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard.

(*h*) *Precautions against ignition of inflammable vapours.* (i) Equipment which may constitute a source of ignition of inflammable vapours and in particular electrical equipment and wiring, shall be installed at least 450 millimetres (18 inches) above the deck, provided that if the Administration is satisfied that the installation of such electrical equipment and wiring below this level is necessary for the safe operation of the ship, such electrical equipment and wiring shall be of a type approved for use in an explosive petrol and air mixture. Electrical equipment installed at more than 450 millimetres (18 inches) above the deck shall be of a type so enclosed and protected as to prevent the escape of sparks. The reference to a level of 450 millimetres (18 inches) above the deck shall be construed to mean each deck on which vehicles are carried and on which explosive vapours might be expected to accumulate.

(ii) Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

Additional provisions applicable only to special category spaces below the bulkhead deck

(i) *Bilge pumping and drainage.* In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or tank top consequent on the operation of the fixed pressure water-spraying system, the Administration may require pumping and drainage facilities to be provided additional to the requirements of Regulation 18 of Chapter II-1 of the present Convention.

(*j*) *Precautions against ignition of inflammable vapours.* (i) Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures. Other equipment which may constitute a source of ignition of inflammable vapours shall not be permitted.

(ii) Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

Regulation 31. PROTECTION OF CARGO SPACES OTHER THAN SPECIAL CATEGORY SPACES INTENDED FOR THE CARRIAGE OF MOTOR VEHICLES WITH FUEL IN THEIR TANKS FOR THEIR OWN PROPULSION

In any cargo space (other than special category spaces) containing motor vehicles with fuel in their tanks for their own propulsion, the following provisions shall be complied with:

(*a*) *Fire detection.* There shall be provided an approved fire detection and fire alarm system.

(*b*) *Fire-extinguishing arrangements.* (i) There shall be fitted a fixed gas fire-extinguishing system which shall comply with the provisions of Regulation 8 of this Chapter, except that if a carbon dioxide system is fitted, the quantity of gas available shall be at least sufficient to give a minimum volume of free gas equal to 45 per cent of the gross volume of the largest of such cargo spaces which is capable of being sealed, and the arrangements shall be such as to ensure that the gas is introduced rapidly and effeetively into the space. Any other fixed gas fire-extiuguishing system or fixed high expansion froth fire-extinguishing system may be fitted provided it gives equivalent protection.

(ii) There shall be provided for use in any such space such number of portable fire extinguishers of an approved type as the Administration may deem sufficient.

(*c*) *Ventilation system.* (i) In any such cargo space there shall be provided an effective power ventilation system sufficient to give at least 10 air changes per hour. The system for such cargo spaces shall be entirely separated from other ventilation systems and shall be operating at all times when vehicles are in such spaces.

(ii) The ventilation shall be such as to prevent air stratification and the formation of air pockets.

(iii) Means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.

(*d*) *Precautions against ignition of inflammable vapours.* (i) Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures. Other equipment which may constitute a source of ignition of inflammable vapours shall not be permitted.

(ii) Eleetrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sourees of ignition.

Regulation 32. MAINTENANCE OF FIRE PATROLS, ETC., AND PROVISION FOR FIRE-EXTINGUISHING EQUIPMENT

(*a*) *Fire patrols and detection, alarms and public address systems.* (i) An efficient patrol system shall be maintained so that an outbreak of fire may be promptly detected. Each member of the fire patrol shall be trained to be familiar with the arrangements of the ship as well as the location and operation of any equipment he may be called upon to use.

(ii) Manual alarms shall be fitted throughout the accommodation and service spaces to enable the fire patrol to give an alarm immediately to the navigating bridge or main fire control station.

(iii) An approved fire alarm or fire detecting system shall bc provided which will automatically indicate at one or more suitable points or stations the presence or indication of fire and its location in any cargo space which, in the opinion of the Administration, is not accessible to the patrol system, except where it is shown to the satisfaction of the Administration

that the ship is engaged on voyages of such short duration that it would be unreasonable to apply this requirement.

(iv) The ship shall at all times when at sea, or in port (except when out of service), be so manned or equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

(v) A special alarm, operated from the navigating bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the ship's general alarm system but it shall be capable of being sounded independently of the alarm to the passenger spaces.

(vi) A public address system or other effective means of communication shall be available throughout the accommodation and service spaces and control stations.

(*b*) *Fire pumps and fire main system.* The ship shall be provided with fire pumps, fire main system, hydrants and hoses complying with the provisions of Regulation 5 of this Chapter and shall comply with the following requirements:

(i) In a ship of 4,000 tons gross tonnage and upwards, there shall be provided at least three independently-driven fire pumps and, in a ship of less than 4,000 tons gross tonnage, at least two such fire pumps.

(ii) In a ship of 1,000 tons gross tonnage and upwards, the arrangement of sea connexions, fire pumps and sources of power for operating them shall be such as to ensure that a fire in any one compartment will not put all the fire pumps out of action.

(iii) In a ship of 1,000 tons gross tonnage and upwards, the arrangement of fire pumps, fire mains and hydrants shall be such that at least one effective jet of water as stipulated in paragraph (*c*) of Regulation 5 of this Chapter is immediately available from any one hydrant in an interior location. Arrangements shall also be made to ensure the continuation of the output of water by the automatic starting of a required fire pump.

(iv) In a ship of less than 1,000 tons gross tonnage the arrangements shall be to the satisfaction of the Administration.

(*c*) *Fire hydrants, hoses and nozzles.* (i) The ship shall be provided with fire hoses the number and diameter of which shall be to the satisfaction of the Administration. There shall be at least one fire hose for each of the hydrants required by paragraph (*d*) of Regulation 5 of this Chapter and these hoses shall be used only for the purposes of extinguishing fires or testing the fire-extinguishing apparatus at fire drills and surveys.

(ii) In accommodation and service spaces and in machinery spaces, the number and position of hydrants shall be such that the requirements of paragraph (*d*) of Regulation 5 of this Chapter may be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed.

(iii) The arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All required hydrants in machinery spaces shall be fitted with hoses having in addition to the nozzles required in paragraph (*g*) of Regulation 5 of this Chapter nozzles suitable for spraying water on oil, or alternatively dual-purpose nozzles. Additionally, each machinery space of Category A shall be provided with at least two suitable water fog applicators.*

(v) Water spray nozzles or dual-purpose nozzles shall be provided for at least one quarter of the number of hoses required in parts of the ship other than machinery spaces.

(vi) For each pair of breathing apparatus there shall be provided one water fog applicator which shall be stored adjacent to such apparatus.

(vii) Where, in any machinery space of Category A, access is provided at a low level from an adjacent shaft tunnel, two hydrants fitted with hoses with dual-purpose nozzles shall be pro-

* A water fog applicator might consist of a metal "L"-shaped pipe, the long limb being about 2 metres (6 feet) in length capable of being fitted to a fire hose and the short limb being about 250 millimetres (10 inches) in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle.

vided external to, but near the entrance to that machinery space. Where such access is not provided from a tunnel but is provided from other space or spaces there shall be provided in one of those spaces two hydrants fitted with hoses with dual-purpose nozzles near the entrance to the machinery space of Category A. Such provision need not be made when the tunnel or adjacent spaces are not part of an escape route.

(*d*) *International shore connexion.* (i) A ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connexion, complying with the provisions of paragraph (*h*) of Regulation 5 of this Chapter.

(ii) Facilities shall be available enabling such a connexion to be used on either side of the ship.

(*e*) *Portable fire extinguishers in accommodation and service spaces and control stations.* The ship shall be provided in accommodation and service spaces and control stations with such approved portable fire extinguishers as the Administration may deem to be appropriate and sufficient.

(*f*) *Fixed fire-extinguishing arrangements in cargo spaces.* (i) The cargo spaces of ships of 1,000 tons gross tonnage and upwards shall be protected by a fixed gas fire-extinguishing system complying with the provisions of Regulation 8 of this Chapter, or by a fixed high expansion froth fire-extinguishing system which gives equivalent protection.

(ii) Where it is shown to the satisfaction of the Administration that a ship is engaged on voyages of such short duration that it would be unreasonable to apply the requiremcnts of subparagraph (i) of this paragraph and also in ships of less than 1,000 tons gross tonnage, the arrangements in cargo spaces shall be to the satisfaction of the Administration.

(*g*) *Fire-extinguishing appliances in boiler rooms, etc.* Spaces containing oil-fired boilers or oil fuel units shall be provided with the following arrangements:

(i) There shall be any one of the following fixed fire-extinguishing systems:

(1) A pressure water-spraying system complying with the provisions of Regulation 11 of this Chapter;

(2) A gas system complying with the provisions of Regulation 8 of this Chapter;

(3) A froth system complying with the provisions of Regulation 9 of this Chapter;

(4) A high expansion froth system complying with the provisions of Regulation 10 of this Chapter.

In each case if the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms shall be considered as one compartment.

(ii) There shall be in each boiler room at least one set of portable air-froth equipment complying with the provisions of paragraph (*d*) of Regulation 7 of this Chapter.

(iii) There shall be at least two approved portable extinguishers discharging froth or equivalent in each firing space in each boiler room and each space in which a part of the oil fuel installation is situated. There shall be not less than one approved froth-type extinguisher of at least 136 litres (30 gallons) capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room.

(iv) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda or other approved dry material, in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be substituted therefor.

(*h*) *Fire-extinguishing appliances in spaces containing internal combustion type machinery.* Spaces containing internal combustion machinery used either for main propulsion, or for other purposes when such machinery has in the aggregate a total power output of not less than 373 kW, shall be provided with the following arrangements:

(i) There shall be one of the fire-extinguishing systems required by subparagraph (*g*)(i) of this Regulation.

(ii) There shall be at least one set of portable air-froth equipment complying with the provisions of paragraph (*d*) of Regulation 7 of this Chapter.

(iii) There shall be in each such space approved froth-type fire extinguishers each of at least 45 litres (10 gallons) capacity or equivalent sufficient in number to enable froth or its equivalent to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there shall be provided a sufficient number of portable froth extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres (33 feet) walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space.

(*i*) *Fire-extinguishing arrangements in spaces containing steam turbines or enclosed steam engines.* In spaces containing steam turbines or enclosed steam engines used either for main propulsion or for other purposes when such machinery has in the aggregate a total power output of not less than 373 kW:

(i) There shall be provided froth fire extinguishers each of at least 45 litres (10 gallons) capacity or equivalent sufficient in number to enable froth or its equivalent to be directed on to any part of the pressure lubrication system, on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing, and any other fire hazards. Provided that such extinguishers shall not be required if protection at least equivalent to this sub-paragraph is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with sub-paragraph (*g*)(i) of this Regulation.

(ii) There shall be provided a sufficient number of portable froth extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres (33 feet) walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space, and such extinguishers shall not be required in addition to any provided in compliance with sub-paragraph (*h*)(ii) of this Regulation.

(*j*) *Fire-extinguishing appliances in other machinery spaces.* Where, in the opinion of the Administration, a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing appliances are prescribed in paragraphs (*g*), (*h*) and (*i*) of this Regulation there shall be provided in, or adjacent to, that space such number of approved portable fire extinguishers or other means of fire extinction as the Administration may deem sufficient.

(*k*) *Fixed fire-extinguishing appliances not required by this part.* Where a fixed fire-extinguishing system not required by this Part of this Chapter is installed, such a system shall be to the satisfaction of the Administration.

(*l*) *Special requirements for machinery spaces.* (i) For any machinery space of Category A to which access is provided at a low level from an adjacent shaft tunnel there shall be provided in addition to any watertight door and on the side remote from that machinery space a light steel fire-screen door which shall be operable from each side.

(ii) An automatic fire detection and alarm system shall be fitted when the Administration considers such special precautions warranted in any machinery space in which the installation of automatic and remote control systems and equipment have been approved in lieu of continuous manning of the space.

(*m*) *Fireman's outfits and personal equipment.* (i) The minimum number of fireman's outfits complying with the requirements of Regulation 14 of this Chapter, and of additional sets of personal equipment, each such set comprising the items stipulated in sub-paragraphs (*a*)(i), (ii) and (iii) of that Regulation, to be carried shall be as follows:

(1) Two fireman's outfits; and, in addition,

(2) For every 80 metres (262 feet) or part thereof, of the aggregate of the lengths of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate of such lengths, two fireman's outfits and two sets of personal equipment, each such set comprising the items stipulated in Regulation 14(*a*)(i), (ii) and (iii) of this Chapter.

(ii) For each fireman's outfit which includes a self-contained breathing apparatus as provided in paragraph (*b*) of Regulation 14 of this Chapter, spare charges shall be carried on a scale approved by the Administration.

(iii) Fireman's outfits and sets of personal equipment shall be stored in widely separated positions ready for use. At least two fireman's outfits and one set of personal equipment shall be available at any one position.

Regulation 33. ARRANGEMENTS FOR OIL FUEL, LUBRICATING OIL AND OTHER INFLAMMABLE OILS

(*a*) *Oil fuel arrangements.* In a ship in which oil fuel is used, the arrangements for the storage, distribution and utilization of the oil fuel shall be such as to ensure the safety of the ship and persons on board and shall at least comply with the provisions:

(i) No oil fuel which has a flashpoint of less than 60°C (140°F) (closed cup test) as determined by an approved flashpoint apparatus shall be used as fuel, except in emergency generators, in which case the flashpoint shall be not less than 43°C (110°F).

Provided that the Administration may permit the general use of fuel oil having a flashpoint of not less than 43°C (110°F) subject to such additional precautions as it may consider necessary and on condition that the temperature of the space in which such fuel is stored or used shall not be allowed to rise within 10°C (18°F) below the flashpoint of the fuel.

(ii) As far as practicable, no part of the oil fuel system containing heated oil under pressure exceeding 1.8 kilogrammes per square centimetre (25 pounds per square inch) gauge shall be so concealed that defects and leakage cannot readily be observed. In way of such parts of the oil fuel system the machinery space shall be adequately illuminated.

(iii) The ventilation of machinery spaces shall be sufficient under all normal conditions to prevent accumulation of oil vapour.

(iv) (1) As far as practicable, oil fuel tanks shall be part of the ship's structure and shall be located outside machinery spaces of Category A. When oil fuel tanks, except double bottom tanks, are necessarily located adjacent to machinery spaces of Category A, they shall preferably have a common boundary with the double bottom tanks, and the area of the tank boundary common with the machinery space shall be kept to a minimum. In general, the use of free-standing oil fuel tanks shall be avoided but when such tanks are employed they shall not be situated in machinery spaces of Category A.

(2) No oil tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

(v) Every oil fuel pipe which if damaged would allow oil to escape from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve on the tank capable of being closed from a safe position outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tanks shall be fitted but control in event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space.

(vi) Safe and efficient means of ascertaining the amount of oil fuel contained in any oil tank shall be provided. Sounding pipes with suitable means of closure may be permitted if their upper ends terminate in safe positions. Other means of ascertaining the amount of oil fuel contained in any oil fuel tank may be permitted if they do not require penetration below the top of the tank, and providing their failure or overfilling of the tanks will not permit release of fuel thereby.

(vii) Provision shall be made to prevent over-pressure in any oil tank or in any part of the oil fuel system, including the filling pipes. Any relief valves and air or overflow pipes shall discharge to a position which, in the opinion of the Administration, is safe.

(viii) Oil fuel pipes shall be of steel or other approved material, provided that restricted use of flexible pipes shall be permissible in positions where the Administration is satisfied that they are necessary. Such flexible pipes and end attachments shall be of approved fire-resisting materials of adequate strength and shall be constructed to the satisfaction of the Administration.

(*b*) *Lubricating oil arrangements.* The arrangements for the storage, distribution and utilization of oil used in pressure lubrication systems shall be such as to ensure the safety of the ships and persons on board, and such arrangements in machinery spaces of Category A and, whenever practicable, in other machinery spaces shall at least comply with the provisions of sub-paragraphs (ii), (iv)(2), (v), (vi) and (vii) of paragraph (*a*) of this Regulation.

(*c*) *Arrangements for other inflammable oils.* The arrangements for the storage, distribution and utilization of other inflammable oils employed under pressure in power transmission systems, control and activating systems and heating systems shall be such as to ensure the safety of the ship and persons on board. In locations where means of ignition are present such arrangements shall at least comply with the provisions of sub-paragraphs (*a*)(iv)(2) and (*a*)(vi), and with the provisions of sub-paragraph (*a*)(viii) in respect of strength and construction, of this Regulation.

Regulation 34. SPECIAL ARRANGEMENTS IN MACHINERY SPACES

(*a*) The provisions of this Regulation shall apply to machinery spaces of Category A and, where the Administration considers it desirable, to other machinery spaces.

(*b*) (i) The number of skylights, doors, ventilators, openings in funnels to permit exhaust ventilation and other openings to machinery spaces shall be reduced to a minimum consistent with the needs of ventilation and the proper and safe working of the ship.

(ii) The flaps of such skylights where fitted shall be of steel. Suitable arrangements shall be made to permit the release of smoke in the event of fire, from the space to be protected.

(iii) Such doors other than power-operated watertight doors shall be arranged so that positive closure is assured in case of fire in the space, by power-operated closing arrangements or by the provision of self-closing doors capable of closing against an inclination of 3½ degrees opposing closure and having a fail-safe hook-back facility, provided with a remotely operated release device.

(*c*) Windows shall not be fitted in machinery space casings.

(*d*) Means of control shall be provided for:

(i) Opening and closure of skylights, closure of openings in funnels which normally allow exhaust ventilation, and closure of ventilator dampers;

(ii) Permitting the release of smoke;

(iii) Closure of power-operated doors or release mechanism on doors other than power-operated watertight doors;

(iv) Stopping ventilating fans; and

(v) Stopping forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps.

(*e*) The controls required for ventilating fans shall comply with the provisions of paragraph (*f*) of Regulation 25 of this Chapter. The controls for any required fixed fire-extinguishing system and those required by sub-paragraphs (*d*)(i), (ii), (iii) and (v) of this Regulation and of sub-paragraph (*a*)(v) of Regulation 33 of this Chapter shall be situated at one control position, or grouped in as few positions as possible to the satisfaction of the Administration. Such position or positions shall be located where they will not be cut off in the event of fire in the space they serve, and shall have a safe access from the open deck.

PART C. FIRE SAFETY MEASURES FOR PASSENGER SHIPS CARRYING NOT MORE THAN 36 PASSENGERS

Regulation 35. STRUCTURE

(*a*) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

(*b*) Where fire protection in accordance with paragraph (*b*) of Regulation 40 of this Chapter is employed, the superstructure may be constructed of, for example, aluminium alloy, provided that:

(i) For the temperature rise of the metallic cores of "A" Class divisions when exposed to the standard fire test, due regard is given to the mechanical properties of the material;

(ii) The Administration is satisfied that the amount of combustible materials used in the relevant part of the ship is suitably reduced; the ceilings (i.e. linings of deck heads) are non-combustible;

(iii) Adequate provision is made to ensure that in the event of fire, arrangements for stowage, launching and embarkation into survival craft remain as effective as if the superstructure were constructed of steel;

(iv) Crowns and casings of boiler and machinery spaces are of steel construction adequately insulated, and the openings therein, if any, are suitably arranged and protected to prevent spread of fire.

Regulation 36. MAIN VERTICAL ZONES

(*a*) The hull, superstructure and deckhouses shall be subdivided into main vertical zones. Steps and recesses shall be kept to a minimum, but where they are necessary, they shall be of "A" Class divisions.

(*b*) As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight sub-division bulkheads situated immediately below the bulkhead deck.

(*c*) Such bulkheads shall extend from deck to deck and to the shell or other boundaries.

(*d*) On ships designed for special purposes, such as automobile or railroad car ferries, where installation of such bulkheads would defeat the purpose for which the ship is intended, equivalent means for controlling and limiting a fire shall be substituted and specifically approved by the Administration.

Regulation 37. OPENINGS IN "A" CLASS DIVISIONS

(*a*) Where "A" Class divisions are pierced for the passage of electric cables, pipes, trunks, ducts, etc., for girders, beams or other structures, arrangements shall be made to ensure that the fire resistance is not impaired.

(*b*) Where of necessity, a duct passes through a main vertical zone bulkhead, a fail-safe automatic closing fire damper shall be fitted adjacent to the bulkhead. The damper shall also be capable of being manually closed from both sides of the bulkhead. The operating position shall be readily accessible and be inarked in red light-reflecting colour. The duct between the bulkhead and the damper shall be of steel or other equivalent material and, if necessary, to an insulating standard such as to comply with paragraph (*a*) of this Regulation. The damper shall be fitted on at least one side of the bulkhead with a visible indicator showing if the damper is in the open position.

(*c*) Except for hatches between cargo, store, and baggage spaces, and between such spaces and the weather decks, all openings shall be provided with permanently attached means of closing which shall be at least as effective for resisting fires as the divisions in which they are fitted.

(*d*) The construction of all doors and door frames in "A" Class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame as far as practicable equivalent to that of the bulkheads in which the doors are situated. Watertight doors need not be insulated.

(*e*) It shall be possible for each door to be opened from either side of the bulkhead by one person only.

(*f*) Fire doors in main vertical zone bulkheads and stairway enclosures, other than power-operated watertight doors and those which are normally locked, shall be of the self-closing type capable of closing against an inclination of 3½ degrees opposing closure. All such doors, except those that are normally closed, shall be capable of release from a control station, either simultaneously or in groups, and also individually from a position at the door. The release mechanism shall be so designed that the door will automatically close in the event of disruption of the control system; however, approved power-operated watertight doors will be considered acceptable for this purpose. Hold-back hooks, not subject to control station release, will not be permitted. When double swing doors are permitted, they shall have a latch arrangement which is automatically engaged by the operation of the door release system.

Regulation 38. FIRE INTEGRITY OF "A" CLASS DIVISIONS

Where "A" Class divisions are required under this Part, the Administration, in deciding the amount of insulation to be provided, shall be guided by the provisions of Part B of this Chapter, but may accept a reduction of the amount of insulation below that stipulated by that Part.

Regulation 39. SEPARATION OF ACCOMMODATION SPACES FROM MACHINERY, CARGO AND SERVICE SPACES

The boundary bulkheads and decks separating accommodation spaces from machinery, cargo and service spaces shall be constructed of "A" Class divisions, and these bulkheads and decks shall have an insulation value to the satisfaction of the Administration having regard to the nature of the adjacent spaces.

Regulation 40. PROTECTION OF ACCOMMODATION AND SERVICE SPACES

The accommodation and service spaces shall be protected in accordance with the provisions of either paragraph (*a*) or (*b*) of this Regulation.

(*a*) (i) Within the accommodation spaces, all enclosure bulkheads other than those required to be of "A" Class divisions, shall be constructed of "B" Class divisions of non-combustible materials, which may, however, be faced with combustible materials in accordance with subparagraph (iii) of this paragraph.

(ii) All corridor bulkheads shall extend from deck to deck. Ventilation openings may be permitted in the doors in "B" Class bulkheads, preferably in the lower portion. All other enclosure bulkheads shall extend from deck to deck vertically, and to the shell or other boundaries transversely, unless non-combustible ceilings or linings such as will ensure fire integrity are fitted, in which case the bulkheads may terminate at the ceilings or linings.

(iii) Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, ceilings and insulations shall be of non-combustible materials. The total volume of combustible facings, mouldings, decorations and veneers in any accommodation or public space shall not exceed a volume equivalent to 2.54 millimetres (1/10 inch) veneer on the combined area of the walls and ceilings. All exposed surfaces in corridors or stairway enclosures and in concealed or inaccessible spaces shall have low flame-spread characteristics.*

* Reference is made to Guidelines on the Evaluation of Fire Hazard Properties of Materials, adopted by the Organization by Resolution A.166(ES.IV).

(*b*) (i) All corridor bulkheads in accommodation spaces shall be of steel or be constructed of "B" Class panels.

(ii) A fire detecting system of an approved type shall be installed and so arranged as to detect the presence of fire in all enclosed spaces appropriated to the use or service of passengers or crew (except spaces which afford no substantial fire hazard) and automatically to indicate at one or more points or stations where it can be most quickly observed by officers and crew, the presence or indication of fire and also its location.

Regulation 41. DECK COVERINGS*

Primary deck coverings within accommodation spaces, control stations, stairways and corridors shall be of approved material which will not readily ignite.

Regulation 42. PROTECTION OF STAIRWAYS AND LIFTS IN ACCOMMODATION AND SERVICE SPACES

(*a*) All stairways and means of escape in accommodation and service spaces shall be of steel or other suitable materials.

(*b*) Passenger and service lift trunks, vertical trunks for light and air to passenger spaces, etc., shall be of "A" Class divisions. Doors shall be of steel or other equivalent material and when closed shall provide fire resistance at least as effective as the trunks in which they are fitted.

Regulation 43. PROTECTION OF CONTROL STATIONS AND STORE-ROOMS

(*a*) Control stations shall be separated from the remainder of the ship by "A" Class bulkheads and decks.

(*b*) The boundary bulkheads of baggage rooms, mail rooms, store-rooms, paint and lamp lockers, galleys and similar spaces shall be of "A" Class divisions. Spaces containing highly inflammable stores shall be so situated as to minimize the danger to passengers or crew in the event of fire.

Regulation 44. WINDOWS AND SIDESCUTTLES

(*a*) All windows and sidescuttles in bulkheads separating accommodation spaces from weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bead.

(*b*) All windows and sidcscuttles in bulkheads within accommodation spaces shall be constructed so as to preserve the integrity requirements of the type of bulkhead in which they are fitted.

Regulation 45. VENTILATION SYSTEMS

Power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

Regulation 46. DETAILS OF CONSTRUCTION

(*a*) Paints, varnishes and similar preparations having a nitro-cellulose or other highly inflammable base shall not be used in any part of the ship.

(*b*) Pipes penetrating "A" or "B" Class divisions shall be of a material approved by the Administration having regard to the temperature such divisions are required to withstand. Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the water-line and where the failure of the material in the event of fire would give rise to danger of flooding.

* Reference is made to Improved Provisional Guidelines on Test Procedures for Primary Deck Coverings, adopted by the Organization by Resolution A.214(VII).

(*c*) In spaces containing main propulsion machinery, or oil-fired boilers, or auxiliary internal combustion type machinery of total power output of 746 kW or over, the following measures shall be taken:

(i) Skylights shall be capable of being closed from outside the space;

(ii) Skylights containing glass panels shall be fitted with external shutters of steel or other equivalent material permanently attached;

(iii) Any window permitted by the Administration in casings of such spaces shall be of the non-opening type, and shall be fitted with an external shutter of steel or other equivalent material permanently attached; and

(iv) In the windows and skylights referred to in sub-paragraphs (i), (ii) and (iii) of this paragraph, wire reinforced glass shall be used.

Regulation 47. FIRE DETECTION SYSTEMS AND FIRE-EXTINGUISHING EQUIPMENT

(*a*) *Patrols and detection.* (i) An efficient patrol system shall be maintained in all ships so that any outbreak of fire may be promptly detected. Manual fire alarms shall be fitted throughout the passenger and crew accommodation to enable the fire patrol to give an alarm immediately to the navigating bridge or fire control station.

(ii) An approved fire alarm or fire detecting system shall be provided which will automatically indicate at one or more suitable points or stations the presence or indication of fire and its location in any part of the ship which, in the opinion of the Administration, is not accessible to the patrol system, except where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply this requirement.

(iii) The ship, whether new or existing, shall at all times when at sea, or in port (except when out of service), be so manned or equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

(*b*) *Fire pumps and fire main system.* The ship shall be provided with fire pumps, fire main system, hydrants and hoses complying with Regulation 5 of this Chapter and with the following requirements:

(i) A ship of 4,000 tons gross tonnage and upwards shall be provided with at least three independently driven fire pumps and every ship of less than 4,000 tons gross tonnage with at least two such fire pumps.

(ii) In a ship of 1,000 tons gross tonnage and upwards, the arrangement of sea connexions, pumps and sources of power for operating them shall be such as to ensure that a fire in any one compartment will not put all the fire pumps out of action.

(iii) In a ship of less than 1,000 tons gross tonnage the arrangements shall be to the satisfaction of the Administration.

(*c*) *Fire hydrants, hoses and nozzles.* (i) The ship shall be provided with such number of fire hoses as the Administration may deem sufficient. There shall be at least one fire hose for each of the hydrants required by paragraph (*d*) of Regulation 5 of this Chapter and these hoses shall be used only for the purposes of extinguishing fires or testing the fire-extinguishing apparatus at fire drills and surveys.

(ii) In accommodation, service and machinery spaces, the number and position of hydrants shall be such that the requirements of paragraph (*d*) of Regulation 5 of this Chapter may be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed.

(iii) The arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All required hydrants in the machinery spaces of ships with oil-fired boilers or internal combustion type propelling machinery shall be fitted with hoses having nozzles as required in paragraph (*g*) of Regulation 5 of this Chapter.

(*d*) *International shore connexion.* (i) A ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connexion, complying with paragraph (*h*) of Regulation 5 of this Chapter.

(ii) Facilities shall be available enabling such a connexion to be used on either side of the ship.

(*e*) *Portable fire extinguishers in accommodation and service spaces.* The ship shall be provided in accommodation and service spaces with such approved portable fire extinguishers as the Administration may deem to be appropriate and sufficient.

(*f*) *Fixed fire-extinguishing arrangements in cargo spaces.* (i) The cargo spaces of ships of 1,000 tons gross tonnage and upwards shall be protected by a fixed gas fire-extinguishing system complying with Regulation 8 of this Chapter.

(ii) Where it is shown to the satisfaction of the Administration that a ship is engaged on voyages of such short duration that it would be unreasonable to apply the requirements of sub-paragraph (i) of this paragraph and also in ships of less than 1,000 tons gross tonnage, the arrangements in cargo spaces shall be to the satisfaction of the Administration.

(*g*) *Fire-extinguishing appliances in boiler rooms, etc.* Where main or auxiliary oil-fired boilers are situated, or in spaces containing oil fuel units or settling tanks, a ship shall be provided with the following arrangements:

(i) There shall be any one of the following fixed fire-extinguishing installations:

(1) A pressure water-spraying system complying with Regulation 11 of this Chapter;

(2) A gas fire-extinguishing installation complying with Regulation 8 of this Chapter;

(3) A fixed froth installation complying with Regulation 9 of this Chapter (the Administration may require fixed or mobile arrangements by pressure water or froth spraying to fight fire above the floor plates).

In each case if the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room bilges, the combined engine and boiler rooms shall be considered as one compartment.

(ii) There shall be at least two approved portable extinguishers discharging froth or other approved medium suitable for extinguishing oil fires, in each firing space in each boiler room and each space in which a part of the oil fuel installation is situated. There shall be not less than one approved froth type extinguisher of at least 136 litres (30 gallons) capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room and spaces containing any part of the oil fuel installations.

(iii) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda or other approved dry material, in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be substituted therefor.

(*h*) *Fire-fighting appliances in spaces containing internal combustion type machinery.* Where internal combustion type engines are used, either for main propulsion or for auxiliary purposes associated with a total power output of not less than 746 kW, a ship shall be provided with the following arrangements:

(i) There shall be one of the fixed arrangements required by sub-paragraph (*g*)(i) of this Regulation;

(ii) There shall be in each engine space one approved froth-type extinguisher of not less than 45 litres (10 gallons) capacity or equivalent and also one approved portable froth-type extinguisher for each 746 kW of engine power output or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

(*i*) *Fire-fighting arrangements in spaces containing steam turbines and not requiring any fixed installation.* The Administration shall give special consideration to the fire-extinguishing arrangements to be provided in spaces containing steam turbines which are separated from boiler rooms by watertight bulkheads.

(*j*) *Fireman's outfits and personal equipment.* (i) The minimum number of fireman's outfits complying with the requirements of Regulation 14 of this Chapter, and of additional sets of personal equipment, each such set comprising the items stipulated in sub-paragraphs (*a*)(i), (ii) and (iii) of that Regulation, to be carried, shall be as follows:

(1) Two fireman's outfits; and in addition

(2) For every 80 metres (262 feet) or part thereof, of the aggregate of the lengths of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate of such lengths, two fireman's outfits and two sets of personal equipment, each such set comprising the items stipulated in Regulation 14(*a*)(i), (ii) and (iii) of this Chapter.

(ii) For each fireman's outfit which includes a self-contained breathing apparatus as provided in paragraph (*b*) of Regulation 14 of this Chapter, spare charges shall be carried on a scale approved by the Administration.

(iii) Fireman's outfits and sets of personal equipment shall be stored in widely separated positions ready for use. At least two fireman's outfits and one set of personal equipment shall be available at any one position.

Regulation 48. MEANS OF ESCAPE

(*a*) In and from all passenger and crew spaces and spaces in which crew are normally employed, other than machinery spaces, stairways and ladderways shall be arranged so as to provide ready means of escape to the lifeboat embarkation deck. In particular the following precautions shall be complied with:

(i) Below the bulkhead deck, two means of escape, at least one of which shall be independent of watertight doors, shall be provided for each watertight compartment or similarly restricted space or group of spaces; one of these means of escape may be dispensed with by the Administration, due regard being paid to the nature and the location of spaces concerned, and to the number of persons who normally might be quartered or employed there;

(ii) Above the bulkhead deck, there shall be at least two practical means of escape from each main vertical zone or similarly restricted space or group of spaces at least one of which shall give access to a stairway forming a vertical escape; and

(iii) At least one of the means of escape shall be by means of a readily accessible enclosed stairway, which shall provide as far as practicable continuous fire shelter from the level of its origin to the lifeboat embarkation deck; the width, number and continuity of the stairways shall be to the satisfaction of the Administration.

(*b*) In machinery spaces, two means of escape, one of which may be a watertight door, shall be provided from each engine room, shaft tunnel and boiler room. In machinery spaces, where no watertight door is available, the two means of escape shall be formed by two sets of steel ladders as widely separated as possible leading to doors in the casing similarly separated and from which access is provided to the embarkation deck. In the case of ships of less than 2,000 tons gross tonnage, the Administration may dispense with this requirement, due regard being paid to the width and the disposition of the casing.

Regulation 49. OIL FUEL USED FOR INTERNAL COMBUSTION ENGINES

No internal combustion engine shall be used for any fixed installation in a ship if its fuel has a flashpoint of 43°C (110°F) or less (closed cup test) as determined by an approved flash-point apparatus.

Regulation 50. SPECIAL ARRANGEMENTS IN MACHINERY SPACES

(*a*) Means shall be provided for stopping ventilating fans serving machinery and cargo spaces and for closing all doorways, ventilators, annular spaces around funnels and other openings to such spaces. These means shall be capable of being operated from outside such spaces in case of fire.

(*b*) Machinery driving forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they may be stopped in the event of a fire arising in the space in which they are located.

(*c*) Every oil fuel suction pipe from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve capable of being closed from outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel, valves on the tanks shall be fitted but control in event of fire may be effected by means of an additional valve on the pipeline or lines outside the tunnel or tunnels.

PART D. FIRE SAFETY MEASURES FOR CARGO SHIPS*

Regulation 51. GENERAL REQUIREMENTS FOR CARGO SHIPS OF 4,000 TONS GROSS TONNAGE AND UPWARDS OTHER THAN TANKERS COVERED BY PART E OF THIS CHAPTER

(*a*) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel, except where the Administration may sanction the use of other suitable material in special cases, having in mind the risk of fire.

(*b*) In accommodation spaees, the corridor bulkheads shall be of steel or be constructed of "B" Class panels.

(*c*) Deck coverings within accommodation spaces on the dccks forming the crown of machinery and cargo spaces shall be of a type which will not readily ignite.**

(*d*) Interior stairways below the weather deck shall be of steel or other suitable material. Crew lift trunks within accommodation shall be of steel or equivalent material.

(*e*) Bulkheads of galleys, paint stores, lamp rooms, boatswain's stores when adjacent to accommodation spaces and emergency generator rooms if any, shall be of steel or equivalent material.

(*f*) In accommodation and machinery spaces, paints, varnishes and similar preparations having a nitro-cellulose or other highly inflammable base shall not be used.

(*g*) Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the water-line and where the failure of the material in the event of fire would give rise to danger of flooding.

(*h*) Power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

Regulation 52. FIRE-EXTINGUISHING SYSTEMS AND EQUIPMENT

(*a*) *Application.* Where ships have a lower gross tonnage than those quoted in this Regulation, the arrangements for the items covered in this Regulation shall be to the satisfaction of the Administration.

* Reference is made to Recommendation on Safety Measures for Periodically Unattended Machinery Spaces of Cargo Ships additional to those normally considered necessary for an Attended Machinery Space, adopted by the Organization by Resolution A.211(VII).

** Reference is made to Improved Provisional Guidelines on Test Procedures for Primary Deck Coverings, adopted by the Organization by Resolution A.214(VII).

(*b*) *Fire pumps and fire main system.* The ship shall be provided with fire pumps, fire main system, hydrants and hoses complying with Regulation 5 of this Chapter and with the following requirements:

(i) A ship of 1,000 tons gross tonnage and upwards shall be provided with two independently driven power pumps.

(ii) In a ship of 1,000 tons gross tonnage and upwards if a fire in any one compartment could put all the pumps out of action, there must be an alternative means of providing water for fire fighting. In a ship of 2,000 tons gross tonnage and upwards this alternative means shall be a fixed emergency pump independently driven. This emergency pump shall be capable of supplying two jets of water to the satisfaction of the Administration.

(*c*) *Fire hydrants, hoses and nozzles.* (i) In a ship of 1,000 tons gross tonnage and upwards the number of fire hoses to be provided, each complete with couplings and nozzles, shall be one for each 30 metres (100 feet) length of the ship and one spare but in no case less than five in all. This number does ot include any hoses required in any engine or boiler room. The Administration may increase the number of the hoses required so as to ensure that hoses i$ sufficient number are available and accessible at all times, having regard to the type of the ship and the nature of the trade on which the ship is employed.

(ii) In accommodation, service and machinery spaces, the number and position of hydrants shall be such as to comply with the requirements of paragraph (*d*) of Regulation 5 of this Chapter.

(iii) In a ship the arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All required hydrants in the machinery spaces of ships with oil-fired boilers or internal combustion type propelling machinery shall be fitted with hoses having nozzles as required in paragraph (*g*) of Regulation 5 of this Chapter.

(*d*) *International shore connexion.* (i) A ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connexion, complying with paragraph (*h*) of Regulation 5 of this Chapter.

(ii) Facilities shall be available enabling such a connexion to be used on either side of the ship.

(*e*) *Portable fire extinguishers in accommodation and service spaces.* The ship shall be provided in accommodation and service spaces with such approved portable fire extinguishers as the Administration may deem to be appropriate and sufficient; in any case, their number shall not be less than five for ships of 1,000 tons gross tonnage and upwards.

(*f*) *Fixed fire-extinguishing arrangements in cargo spaces.* (i) Cargo spaces of ships of 2,000 tons gross tonnage and upwards shall be protected by a fixed fire-extinguishing system complying with Regulation 8 of this Chapter.

(ii) The Administration may exempt from the requirements of sub-paragraph (i) of this paragraph the cargo holds of any ship (other than the tanks of a tanker):

(1) If they are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the holds;

(2) If the ship is constructed and intended solely for carrying such cargoes as ore, coal or grain; or

(3) Where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply the requirement.

(iii) Every ship in addition to complying with the requirements of this Regulation shall, while carrying explosives of such nature or in such quantity as are not permitted to be carried in passenger ships under Regulation 7 of Chapter VII of this Convention comply with the following requirements:

(1) Steam shall not be used in any compartment containing explosives; for the purpose of this sub-paragraph, "compartment" means all spaces containing between two adjacent permanent bulkheads and includes the lower hold and all cargo spaces above it;

(2) In addition, in each compartment containing explosives and in adjacent cargo compartments, there shall be provided a smoke- or fire-detection system in each cargo space.

(*g*) *Fire-extinguishing appliances in boiler rooms, etc.* Where main or auxiliary oil-fired boilers are situated, or in spaces containing oil fuel units or settling tanks, a ship of 1,000 tons gross tonnage and upwards shall be provided with the following arrangements:

(i) There shall be any one of the following fixed fire-extinguishing installations:

(1) A pressure water-spraying system complying with Regulation 11 of this Chapter.

(2) A fire-extinguishing installation complying with Regulation 8 of this Chapter;

(3) A fixed froth installation complying with Regulation 9 of this Chapter (the Administration may require fixed or mobile arrangements by pressure water or froth spraying to fight fire above the fioor plates.)

In each case if the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room bilges, the combined engine and boiler rooms shall be considered as one eompartment.

(ii) There shall be at least two approved portable extinguishers discharging froth or other approved medium suitable for extinguishing oil fires in each firing space in each boiler room and each space in which a part of the oil fuel installation is situated. In addition, there shall be at least one extinguisher of the same description with a capacity of 9 litres (2 gallons) for each burner, provided that the total capacity of the additional extinguisher or extinguishers need not exceed 45 litres (10 gallons) for any one boiler room.

(iii) In each firing space there shall be a receptacle containing sand, sawdust impregnated with soda, or other approved dry material in such quantity as may be required by the Administration. Alternatively an approved portable extinguisher may be substituted therefor.

(*h*) *Fire-fighting appliances in spaces containing internal combustion type machinery.* Where internal combustion type engines are used, either for main propulsion machinery, or for auxiliary purposes associated with a total power output of not less than 746 kW, a ship of 1,000 tons gross tonnage and upwards shall be provided with the following arrangements:

(i) There shall be one of the fixed arrangements required by sub-paragraph (*g*)(i) of this Regulation;

(ii) There shall be in each engine space one approved froth-type extinguisher of not less than 45 litres (10 gallons) capacity or equivalent and also one approved portable froth extinguisher for each 746 kW of engine power output or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

(*i*) *Fire-fighting arrangements in spaces containing steam turbines and not requiring any fixed installation.* The Administration shall give special consideration to the fire-extinguishing arrangements to be provided in spaces containing steam turbines which are separated from boiler rooms by watertight bulkheads.

(*j*) *Fireman's outfits and personal equipment.* (i) The ship, whether new or existing, shall carry at least two fireman's outfits complying with the requirements of Regulation 14 of this Chapter. Furthermore, Administrations may require in large ships additional sets of personal equipment and in tankers and special ships such as factory ships additional fireman's outfits.

(ii) For each fireman's outfit which includes a self-contained breathing apparatus as provided in paragrpah (*b*) of Regulation 14 of this Chapter, spare charges shall be carried on a scale approved by the Administration.

(iii) The fireman's outfits and personal equipment shall be stored so as to be easily accessible and ready for use and, where more than one fireman's outfit and set of personal equipment are carried, they shall be stored in widely separated positions.

Regulation 53. MEANS OF ESCAPE

(*a*) In and from all crew and passenger spaces and spaces in which crew are normally employed, other than machincry spaces, stairways and ladders shall be arranged so as to provide ready means of escape to the lifeboat embarkation deck.

(*b*) In machinery spaces, two means of escape, one of which may be a watertight door, shall be provided from each engine room, shaft tunnel and boiler room. In machinery spaces, where no watertight door is available, the two means of escape shal be formed by two sets of steel ladders as widely separated as possible leading to doors in the casing similarly separated and from which access is provided to the embarkation deck. In the case of ships of less than 2,000 tons gross tonnage, the Administration may dispense with this requirement, due regard being paid to the width and the disposition of the casing.

Regulation 54. SPECIAL ARRANGEMENTS IN MACHINERY SPACES

(*a*) Means shall be provided for stopping ventilating fans serving machinery and cargo spaces and for closing all doorways, ventilators, annular spaces around funnels and other openings to such spaces. These means shall be capable of being operated from outside such spaces in case of fire.

(*b*) Machinery driving forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they may be stopped in the event of a fire arising in the space in which they are located.

(*c*) Every oil fuel suction pipe from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve capable of being closed from outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel, valves on the tanks shall be fitted but control in event of fire may be effected by means of an additional valve on the pipeline or lines outside the tunnel or tunnels.

PART E. FIRE SAFETY MEASURES FOR TANKERS

Regulation 55. APPLICATION

(*a*) This Part shall apply to all new tankers carrying crude oil and petroleum products having a flashpoint not exceeding 60°C (140°F) (closed cup test) as determined by an approved flashpoint apparatus and whose Reid vapour pressure is below that of atmospheric pressure, and other liquid products having a similar fire hazard.

(*b*) In addition, all ships covered by this Part shall comply with the requirements of Regulations 52, 53 and 54 of this Chapter, except that paragraph (*f*) of Regulation 52 need not apply to tankers complying with Regulation 60 of this Chapter.

(*c*) Where cargoes other than those referred to in paragraph (*a*) of this Regulation which introduce additional fire hazards are intended to be carried, additional safety measures shall be required to the satisfaction of the Administration.

(*d*) Combination carriers shall not carry solid cargoes unless all cargo tanks are empty of oil and gas freed or unless, in each case, the Administration is satisfied with the arrangements provided.

Regulation 56. LOCATION AND SEPARATION OF SPACES

(*a*) Machinery spaces of Category A shall be positioned aft of cargo tanks and slop tanks and shall be isolated from them by a cofferdam, cargo pump room or oil fuel bunker tank; they shall also be situated aft of such cargo pump rooms and cofferdams, but not necessarily aft of the oil fuel bunker tanks. However, the lower portion of the pump room may be recessed into such spaces to accommodate pumps provided the deck head of the recess is in general not more than one-third of the moulded depth above the keel except that in the case of ships of not more than 25,000 metric tons deadweight, where it can be demonstrated that for reasons of access and satisfactory piping arrangements this is impracticable, the Administration may permit a recess in excess of such height, but not excceding one half of the moulded depth above the keel.

(*b*) Accommodation spaces, main cargo control stations, control stations and service spaces shall be positioned aft of all cargo tanks, slop tanks, cargo pump rooms and cofferdams which isolate cargo or slop tanks from machinery spaces of Category A. Any common bulkhead separating a cargo pump room, including the pump room entrance, from accommodation and service spaces and control stations shall be constructed to "A-60" Class. Where deemed necessary, accommodation spaces, control stations, machinery spaces other than those of Category A and service spaces may be permitted forward of all cargo tanks, slop tanks, cargo pump rooms and cofferdams subject to an equivalent standard of safety and appropriate availability of fire-extinguishing arrangements being provided to the satisfaction of the Administration.

(*c*) Where the fitting of a navigation position above the cargo tank area is shown to be necessary it shall be for navigation purposes only and it shall be separated from the cargo tank deck by means of an open space with a height of at least 2 metres. The fire protection of such navigation position shall in addition be as required for control spaces as set forth in paragraphs (*a*) and (*b*) of Regulation 57 and other provisions as applicable of this Part.

(*d*) Means shall be provided to keep deck spills away from the accommodation and service areas. This may be accomplished by provision of a permanent continuous coaming of a suitable height extending from side to side. Special consideration shall be given to the arrangements associated with stern loading.

(*e*) Exterior boundaries of superstructures and deckhouses enclosing accommodation and service spaces and including any overhanging decks which support such accommodation, shall be insulated to "A-60" Class for the whole of the portions which face cargo oil tanks and for 3 metres aft of the front boundary. In the case of the sides of these superstructures and deckhouses, such insulation shall be carried as high as is deemed necessary by the Administration.

(*f*) In boundaries, facing cargo tanks, of superstructures and deckhouses containing accommodation and service spaces the following provisions shall apply:

(i) No doors shall be permitted in such boundaries, except that doors to those spaces not having access to accommodation and service spaces, such as cargo control stations, provision rooms, and storerooms may be permitted by the Administration; where such doors are fitted, the boundaries of the space shall be insulated to "A-60" Class; bolted plates for removal of machinery may be fitted in such boundaries;

(ii) Portlights in such boundaries shall be of a fixed (non-opening) type; pilot house windows may be non-fixed (opening);

(iii) Portlights in the first tier on the main deck shall be fitted with inside covers of steel or equivalent material.

The requirements of this paragraph, where applicable, except in the case of access to the navigating bridge spaces, shall also be applied to the boundaries of the superstructures and deckhouses for a distance of 5 metres measured longitudinally from the forward end of such structures.

Regulation 57. CONSTRUCTION

(*a*) (i) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

(ii) Bulkheads between cargo pump rooms, including their trunks and machinery spaces of Category A shall be "A" Class and shall have no penetrations which are less than "A-0" Class or equivalent in all respects, other than the cargo pump shaft glands and similar glanded penetrations.

(iii) Bulkheads and decks forming divisions separating machinery spaces of Category A and cargo pump rooms, including their trunks, respectively, from the accommodation and service spaces shall be of "A-60" Class. Such bulkheads and decks and any boundaries of machinery spaces of Category A and cargo pump rooms shall not be pierced for windows or portlights.

(iv) The requirements of sub-paragraphs (ii) and (iii) of this paragraph, however, do not preclude the installation of permanent approved gas-tight lighting enclosures for illuminating the pump rooms provided that they are of adequate strength and maintain the integrity and gas-tightness of the bulkhead as "A" Class. Further, it does not preclude the use of windows in a control room located entirely within a machinery space.

(v) Control stations shall be separated from adjacent enclosed spaces by means of "A" Class bulkheads and decks. The insulation of these control station boundaries shall be to the satisfaction of the Administration having in mind the risk of fire in adjacent spaces.

(vi) Casing doors in machinery spaces of Category A shall be self-closing and comply with the related provisions of sub-paragraph (*b*)(vii) of this Regulation.

(vii) The surface of the insulation on interior boundaries of machinery spaces of Category A shall be impervious to oil and oil vapours.

(viii) Primary deck coverings, if applied, shall be of approved materials which will not readily ignite.*

(ix) Interior stairways shall be of steel or other suitable material.

(x) When adjacent to accommodation spaces, bulkheads of galleys, paint stores, lamp rooms and boatswain's stores shall be of steel or equivalent material.

(xi) Paints, varnishes and other finishes used on exposed interior surfaces shall not be of a nature to offer an undue fire hazard in the judgement of the Administration and shall not be capable of producing excessive quantities of smoke or other toxic properties.

(xii) Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the water-line and where the failure of the material in the event of fire would give rise to danger of flooding.

(xiii) Power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

(xiv) Skylights to machinery spaces of Category A and cargo pump rooms shall comply with the provisions of sub-paragraph (*a*)(iii) of this Regulation in respect of windows and portlights and in addition shall be so arranged as to be capable of being readily closed from outside the spaces which they serve.

(*b*) Within the accommodation and service spaces and control stations the following conditions shall apply:

(i) Corridor bulkheads including doors shall be of "A" or "B" Class divisions extending from deck to deck. Where continuous "B" Class ceilings and/or linings are fitted on both sides

* Reference is made to Improved Provisional Guidelines on Test Procedures for Primary Deck Coverings, adopted by the Organization by Resolution A.214(VII).

of the bulkhead, the bulkhead may terminate at the continuous ceiling or lining. Doors of cabins and public spaces in such bulkheads may have a louvre in the lower half.

(ii) Air spaces enclosed behind ceilings, panellings, or linings shall be divided by close fitting draught stops spaced not more than 14 metres apart.

(iii) Ceilings, linings, bulkheads and insulation except for insulation in refrigerated compartments shall be of non-combustible material. Vapour barriers and adhesives used in conjunction with insulation, as well as insulation of pipe fittings for cold service systems need not be non-combustible, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have resistance to propagation of flame to the satisfaction of the Administration.

(iv) The framing, including grounds and the joint pieces of bulkheads, linings, ceilings and draught stops, if fitted, shall be of non-combustible material.

(v) All exposed surfaces in corridors and stairway enclosures and surfaces in concealed or inaccessible spaces shall have low flame-spread characteristics.*

(vi) Bulkheads, linings and ceilings may have combustible veneer, provided that such veneer shall not exceed 2 millimetres within any such space except corridors, stairway enclosures and control stations where it shall not exceed 1.5 millimetres.

(vii) Stairways which penetrate only a single deck shall be protected at least at one level by "A" or "B" Class divisions and self-closing doors so as to limit the rapid spread of fire from one deck to another. Crew lift trunks shall be of "A" Class divisions. Stairways and lift trunks which penetrate more than a single deck shall be surrounded by "A" Class divisions and protected by self-closing steel doors at all levels. Self-closing doors shall not be fitted with hold-back hooks. However, hold-back arrangements fitted with remote release fittings of the fail-safe type may be utilized.

(*c*) Ducts provided for ventilation of machinery spaces of Category "A" shall not in general pass through accommodation and service spaces or control stations, except that the Administration may permit relaxation from this requirement provided that:

(i) The ducts are constructed of steel and each is insulated to "A-60" Class; or

(ii) The ducts are constructed of steel and are fitted with an automatic fire damper close to the boundary penetrated and are insulated to "A-60" Class from the machinery space of Category A to a point at least 5 metres beyond the fire damper.

(*d*) Ducts provided for ventilation of accommodation and service spaces or control stations shall not in general pass through machinery spaces of Category A except that the Administration may permit relaxation from this requirement provided that ducts are constructed of steel and an automatic fire damper is fitted close to the boundaries penetrated.

Regulation 58. VENTILATION

(*a*) The arrangement and positioning of openings in the cargo tank deck from which gas emission can occur shall be such as to minimize the possibility of gas being admitted to enclosed spaces containing a source of ignition, or collecting in the vicinity of deck machinery and equipment which may constitute an ignition hazard. In every case the height of the outlet above the deck and the discharge velocity of the gas shall be considered in conjunction with the distance of any outlet from any deckhouse opening or source of ignition.

(*b*) The arrangement of ventilation inlets and outlets and other deckhouse and superstructure boundary space openings shall be such as to complement the provisions of paragraph (*a*) of this Regulation. Such vents especially for machinery spaces shall be situated as far aft as practicable. Due consideration in this regard should be given when the ship is equipped to

* Reference is made to Guidelines on Evaluation of Fire Hazard Properties of Materials, adopted by the Organization by Resolution A.166(ES.IV).

load or discharge at the stern. Sources of ignition such as electrical equipment shall be so arranged as to avoid an explosion hazard.

(*c*) Cargo pump rooms shall be mechanically ventilated and discharges from the exhaust fans shall be led to a safc place on the open deck. The ventilation of these rooms shall have sufficient capacity to minimize the possibility of accumulation of inflammable vapours. The number of changes of air shall be at least 20 times per hour, based upon the gross volume of the space. The air ducts shall be arranged so that all of the space is effectively ventilated. The ventilation shall be of the suction type.

Regulation 59. MEANS OF ESCAPE

In addition to the requirements of paragraph (*a*) of Regulation 53 of this Chapter, consideration shall be given by the Administration to the availability of emergency means of escape for personnel from each cabin.

Regulation 60. CARGO TANK PROTECTION

(*a*) For tankers of 100,000 metric tons deadweight and upwards and combination carriers of 50,000 metric tons deadweight and upwards, the protection of the cargo tanks deck area and cargo tanks shall be achieved by a fixed deck froth system and a fixed inert gas system in accordance with the requirements of Regulations 61 and 62 of this Part except that in lieu of the above installations the Administration, after having given consideration to the ship arrangement and equipment, may accept other combinations of fixed installations if they afford protection equivalent to thc above, in accordance with Regulation 5 of Chapter I of this Convention.

(*b*) To be considered equivalent, the system proposed in lieu of the deck froth system shall:

(i) Be capable of extinguishing spill fires and also preclude ignition of spilled oil not yet ignited; and

(ii) Be capable of combating fires in ruptured tanks.

(*c*) To be considered equivalent, the system proposed in lieu of the fixed inert gas system shall:

(i) Be capable of preventing dangerous accumulations of explosive mixtures in intact cargo tanks during normal service throughout the ballast voyage and necessary in-tank operations; and

(ii) Be so designed as to minimize the risk of ignition from the generation of static electricity by the system itself.

(*d*) In tankers of less than 100,000 metric tons deadweight and combination carriers of less than 50,000 metric tons deadweight the Administration, in applying the requirements of paragraph (*f*) of Regulation 52 of this Chapter, may accept a froth system, capable of discharging froth internally or externally, to the tanks. The details of such installation shall be to the satisfaction of the Administration.

Regulation 61. FIXED DECK FROTH SYSTEM

The fixed deck froth system referred to in paragraph (*a*) of Regulation 60 of this Chapter shall be designed as follows:

(*a*) The arrangements for providing froth shall be capable of delivering froth to the entire cargo tank area as well as into any cargo tank, the deck of which has been ruptured.

(*b*) The system shall be capable of simple and rapid operation. The main control station for the system shall be suitably located outside of the cargo tank area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.

(*c*) The rate of supply of froth solution shall be not less than the greater of the following:

(i) 0.6 litres per minute per square metre of the cargo deck area, where cargo deck area means the maximum breadth of the ship times the total longitudinal extent of the cargo tank spaces; or

(ii) 6 litres per minute per square metre of the horizontal sectional area of the single tank having the largest such area.

Sufficient froth concentrate shall be supplied to ensure at least 20 minutes of froth generation when using solution rates stipulated in sub-paragraph (i) or (ii) of this paragraph, whichever is the greater. The froth expansion ratio (i.e. the ratio of the volume of froth produced to the volume of the mixture of water and froth-making concentrate supplied) shall not generally exceed 12 to 1. Where systems essentially produce low expansion froth but at an expansion ratio slightly in excess of 12 to 1, the quantity of froth solution available shall be calculated as for 12 to 1 expansion ratio systems. When medium expansion ratio froth (between 50 to 1 and 150 to 1 expansion ratio) is employed the application rate of the froth and the capacity of a monitor installation shall be to the satisfaction of the Administration.

(*d*) Froth from the fixed froth system shall be supplied by means of monitors and froth applicators. At least 50 per cent of the required froth rate shall be delivered from each monitor.

(*e*) (i) The number and position of monitors shall be such as to comply with paragraph (*a*) of this Regulation. The capacity of any monitor in litres per minute of froth solution shall be at least three times the deck area in square metres protected by that monitor, such area being entirely forward of the monitor.

(ii) The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall not be more than 75 per cent of the monitor throw in still air conditions.

(*f*) A monitor and hose connexion for a froth applicator shall be situated both port and starboard at the poop front or accommodation spaces facing the cargo deck. Applicators shall be provided for flexibility of action during fire-fighting operations and to cover areas screened from the monitors.

(*g*) Valves shall be provided in both the froth main and the fire main immediately forward of every monitor position to isolate damaged sections of these mains.

(*h*) Operation of a deck froth system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.

Regulation 62. INERT GAS SYSTEM

The inert gas system referred to in paragraph (*a*) of Regulation 60 of this Chapter shall be capable of providing on demand a gas or mixture of gases to the cargo tanks so deficient in oxygen that the atmosphere within a tank may be rendered inert, i.e. incapable of propagating flame. Such a system shall satisfy the following conditions:

(*a*) The need for fresh air to enter a tank during normal operations shall be eliminated, except when preparing a tank for entry by personnel.

(*b*) Empty tanks shall be capable of being purged with inert gas to reduce the hydrocarbon content of a tank after discharge of cargo.

(*c*) The washing of tanks shall be capable of being carried out in an inert atmosphere.

(*d*) During cargo discharge, the system shall be such as to ensure that the volume of gas referred to in paragraph (*f*) of this Regulation is available. At other times sufficient gas to ensure compliance with paragraph (*g*) of this Regulation shall be continuously available.

(*e*) Suitable means for purging the tanks with fresh air as well as with inert gas shall be provided.

(*f*) The system shall be capable of supplying inert gas at a rate of at least 125 per cent of the maximum rated capacity of the cargo pumps.

(*g*) Under normal running conditions, when tanks are being filled or have been filled with inert gas, a positive pressure shall be capable of being maintained at the tank.

(*h*) Exhaust gas outlets for purging shall be suitably located in the open air and shall be to the same general requirements as prescribed for ventilating outlets of tanks, referred to in paragraph (*a*) of Regulation 58 of this Chapter.

(*i*) A scrubber shall be provided which will effectively cool the gas and remove solids and sulphur combustion products.

(*j*) At least two fans (blowers) shall be provided which together shall be capable of delivering at least the amount of gas stipulated in paragraph (*f*) of this Regulation.

(*k*) The oxygen content in the inert gas supply shall not normally exceed 5 per cent by volume.

(*l*) Means shall be provided to prevent the return of hydrocarbon gases or vapours from the tanks to the machinery spaces and uptakes and prevent the development of excessive pressure or vacuum. In addition, an effective water lock shall be installed at the scrubber or on deck. Branch piping for inert gas shall be fitted with stop valves or equivalent means of control at every tank. The system shall be so designed as to minimize the risk of ignition from the generation of static electricity.

(*m*) Instrumentation shall be fitted for continuously indicating and permanently recording at all times when inert gas is being supplied the pressure and oxygen content of the gas in the inert gas supply main on the discharge side of the fan. Such instrumentation should preferably be placed in the cargo control room if fitted but in any case shall be easily accessible to the officer in charge of cargo operations. Portable instruments suitable for measuring oxygen and hydrocarbon gases or vapour and the necessary tank fittings shall be provided for monitoring the tank contents.

(*n*) Means for indicating the temperature and pressure of the inert gas main shall be provided.

(*o*) Alarms shall be provided to indicate:

(i) High oxygen content of gas in the inert gas main,

(ii) Low gas pressure in the inert gas main,

(iii) Low pressure in the supply to the deck water seal, if such equipment is installed,

(iv) High temperature of gas in the inert gas main, and

(v) Low water pressure to the scrubber

and automatic shut-downs of the system shall be arranged on predetermined limits being reached in respect of sub-paragraphs (iii), (iv) and (v) of this paragraph.

(*p*) The master of any ship equipped with an inert gas system shall be provided with an instruction manual covering operational, safety and occupational health requirements relevant to the system.

Regulation 63. CARGO PUMP ROOM

Each cargo pump room shall be provided with a fixed fire-fighting system operated from a readily accessible position outside the pump room. The system shall use water-spray or another suitable medium satisfactory to the Administration.

Regulation 64. HOZE NOZZLES

All hose water nozzles provided shall be of an approved dual purpose type (i.e. spray/jet type) incorporating a shut-off.

PART F. SPECIAL FIRE SAFETY MEASURES FOR EXISTING PASSENGER SHIPS

(For the purposes of this Part of this Chapter, all references to Regulation . . . (1948) mean references to Regulations of Chapter II of the International Convention for the Safety of Life at Sea, 1948, and all references to Regulation . . . (1960) mean, unless otherwise stated, references to Regulations of Chapter II of the International Convention for the Safety of Life at Sea, 1960)

Regulation 65. APPLICATION

Any passenger ship carrying more than 36 passengers shall at least comply as follows:

(*a*) A ship, the keel of which was laid before 19 November 1952, shall comply with the provisions of Regulations 66 to 85 inclusive of this Part.

(*b*) A ship, the keel of which was laid on or after 19 November 1952 but before 26 May 1965, shall comply with the provisions of the International Convention for the Safety of Life at Sea, 1948, relating to the fire safety measures applicable in that Convention to new ships and shall also comply with the provisions of Regulations 68(*b*) and (*c*), 75, 77(*b*), 78, 80(*b*), 81(*b*) to (*g*), 84 and 85 of this Part.

(*c*) A ship, the keel of which was laid on or after 26 May 1965, but before the present Convention comes into force, shall, unless it complies with Parts A and B of this Chapter, comply with the provisions of the International Convention for the Safety of Life at Sea, 1960, relating to the fire safety measures applicable in that Convention to new ships and shall also comply with Regulations 68(*b*) and (*c*), 80(*b*), 81(*b*), (*c*) and (*d*) and 85 of this Part.

Regulation 66. STRUCTURE

The structural components shall be of steel or other suitable material in compliance with Regulation 27 (1948), except that isolated deckhouses containing no accommodation and decks exposed to the weather may be of wood if structural fire protection measures are taken to the satisfaction of the Administration.

Regulation 67. MAIN VERTICAL ZONES

The ship shall be subdivided by "A" Class divisions into main vertical zones in compliance with Regulation 28 (1948). Such divisions shall have as far as practicable adequate insulating value, taking into account the nature of the adjacent spaces as provided for in Regulation 26(*c*)(iv) (1948).

Regulation 68. OPENINGS IN MAIN VERTICAL ZONE BULKHEADS

(*a*) The ship shall comply substantially with Regulation 29 (1948).

(*b*) Fire doors shall be of steel or equivalent material with or without noncombustible insulation.

(*c*) In the case of ventilation trunks and ducts having a cross-sectional area of 0.02 square metres (31 square inches) or more which pass through main zone divisions, the following additional provisions shall apply:

(i) For trunks and ducts having cross-sectional areas between 0.02 square metres (31 square inches) and 0.075 square metres (116 square inches) inclusive, fire dampers shall be of a fail-safe automatic closing type, or such trunks and ducts shall be insulated for at least 457 millimetres (18 inches) on each side of the division to meet the applicable bulkhead requirements;

(ii) For trunks and ducts having a cross-sectional area cxceeding 0.075 square metres (116 square inches), fire dampers shall be of a fail-safe automatic closing type.

Regulation 69. SEPARATION OF ACCOMMODATION SPACES FROM MACHINERY, CARGO AND SERVICE SPACES

The ship shall comply with Regulation 31 (1948).

Regulation 70. APPLICATION RELATIVE TO METHODS I, II AND III

Each accommodation space and service space in a ship shall comply with all the provisions stipulated in one of the paragraphs (*a*), (*b*), (*c*) or (*d*) of this Regulation:

(*a*) When a ship is being considered for acceptance in the context of Method I, a network of non-combustible "B" Class bulkheads shall be provided in substantial compliance with Regulation 30(*a*) (1948) together with maximum use of non-combustible materials in compliance with Regulation 39(*a*) (1948).

(*b*) When a ship is being considered for acceptance in the context of Method II:

(i) An automatic sprinkler and fire alarm system shall be provided which shall be in substantial compliance with Regulations 42 and 48 (1948); and

(ii) The use of combustible materials of all kinds shall be reduced as far as is reasonable and practicable.

(*c*) When a ship is being considered for acceptance in the context of Method III, a network of fire-retarding bulkheads shall be fitted from deck to deck in substantial compliance with Regulation 30(*b*) (1948), together with an automatic fire detection system in substantial compliance with Regulation 43 (1948). The use of combustible and highly inflammable materials shall be restricted as prescribed in Regulations 39(*b*) and 40(*g*) (1948). Departure from the requirements of Regulations 39(*b*) and 40(*g*) (1948) may be permitted if a fire patrol is provided at intervals not exceeding 20 minutes.

(*d*) When a ship is being considered for acceptance in the context of Method III:

(i) Additional "A" Class divisions shall be provided within the accommodation spaces in order to reduce in these spaces the mean length of the main vertical zones to about 20 metres (65.5 feet); and

(ii) An automatic fire detection system shall be provided in substantial compliance with Regulation 43 (1948); and

(iii) All exposed surfaces, and their coatings, of corridor and cabin bulkheads in accommodation spaces shall be of limited flame-spreading power; and

(iv) The use of combustible materials shall be restricted as prescribed in Regulation 39(*b*) (1948); departure from the requirements of Regulation 39(*b*) (1948) may be permitted if a fire patrol is provided at intervals not exceeding 20 minutes; and

(v) Additional non-combustible "B" Class divisions shall be fitted from deck to deck forming a network of fire-retarding bulkheads within which the area of any compartment, except public spaces, will in general not exceed 300 square metres (3,200 square feet).

Regulation 71. PROTECTION OF VERTICAL STAIRWAYS

The stairways shall comply with Regulation 33 (1948) except that, in cases of exceptional difficulty, the Administration may permit the use of non-combustible "B" Class divisions and doors instead of "A" Class divisions and doors for stairway enclosures. Moreover, the Administration may permit exceptionally the retention of a wooden stairway subject to its being sprinkler-proteeted and satisfactorily enclosed.

Regulation 72. PROTECTION OF LIFTS (PASSENGER AND SERVICE), VERTICAL TRUNKS FOR LIGHT AND AIR, ETC.

The ship shall comply with Regulation 34 (1948).

Regulation 73. PROTECTION OF CONTROL STATIONS

The ship shall comply with Regulation 35 (1948), except however that in cases where the disposition or construction of control stations is such as to preclude full compliance, e.g. timber construction of wheelhouse, the Administration may permit the use of free-standing non-combustible "B" Class divisions to protect the boundaries of such control stations. In such cases, where spaces immediately below such control stations constitute a significant fire hazard, the deck between shall be fully insulated as an "A" Class division.

Regulation 74. PROTECTION OF STORE-ROOMS, ETC.

The ship shall comply with Regulation 36 (1948).

Regulation 75. WINDOWS AND SIDESCUTTLES

Skylights of engine and boiler spaces shall be capable of being closed from outside such spaces.

Regulation 76. VENTILATION SYSTEMS

(*a*) All power ventilation, except cargo and machinery space ventilation, shall be fitted with master controls so located outside the machinery space and in readily accessible positions, that it shall not be necessary to go to more than three stations in order to stop all the ventilation fans to spaces other than machinery and cargo spaces. Machinery space ventilation shall be provided with a master control operable from a position outside the machinery space.

(*b*) Efficient insulation shall be provided for exhaust ducts from galley ranges where the ducts pass through accommodation spaces.

Regulation 77. MISCELLANEOUS ITEMS

(*a*) The ship shall comply with Regulation 40(*a*), (*b*) and (*f*) (1948), except that in Regulation 40(*a*)(i) (1948), 20 metres (65.5 feet) may be substituted for 13.73 metres (45 feet).

(*b*) Fuel pumps shall be fitted with remote controls situated outside the space concerned so that they may be stopped in the event of a fire arising in the space in which they are located.

Regulation 78. CINEMATOGRAPH FILM

Cellulose-nitrate-based film shall not be used in cinematograph installations on board ship.

Regulation 79. PLANS

Plans shall be provided in compliance with Regulation 44 (1948).

Regulation 80. PUMPS, FIRE MAIN SYSTEMS, HYDRANTS AND HOSES

(*a*) The provisions of Regulation 45 (1948) shall be complied with.

(*b*) Water from the fire main shall, as far as practicable, be immediately available, such as by maintenance of pressure or by remote control of fire pumps, which control shall be easily operable and readily accessible.

Regulation 81. FIRE DETECTION AND EXTINCTION REQUIREMENTS

General

(*a*) The requirements of Regulation 50(*a*) to (*o*) (1948) inclusive shall be complied with, subject to further provisions of this Regulation.

Patrols, detection and communication system

(*b*) Each member of any fire patrol required by this Part shall be trained to be familiar with the arrangements of the ship as well as the location and operation of any equipment he may be called upon to use.

(*c*) A special alarm to summon the crew shall be fitted which may be part of the ship's general alarm system.

(*d*) A public address system or other effective means of communication shall also be available throughout the accommodation, public and service spaces.

Machinery and boiler spaces

(*e*) The number, type and distribution of fire extinguishers shall comply with paragraphs (*g*)(ii), (*g*)(iii) and (*h*)(ii) of Regulation 64 (1960).

International shore connexion

(*f*) The provisions of Regulation 64(*d*) (1960) shall be complied with.

Fireman's outfits

(*g*) The provisions of Regulation 64(*j*) (1960) shall be complied with.

Regulation 82. READY AVAILABILITY OF FIRE-FIGHTING APPLIANCES

The provisions of Regulation 66 (1960) shall be eomplied with.

Regulation 83. MEANS OF ESCAPE

The provisions of Regulation 54 (1948) shall be complied with.

Regulation 84. EMERGENCY SOURCE OF ELECTRICAL POWER

Thc provisions of Regulation 22(*a*), (*b*) and (*c*) (1948) shall be complied witli except that the location of the emergency souree of electrical power shall be in aeeordance with the requirements of Regulation 25(*a*) (1960).

Regulation 85. PRACTICE MUSTERS AND DRILLS

At the fire drills mentioned in Regulation 26 of Chapter III of the International Convention for the Safety of Life at Sea, 1960, eaeh member of the crew shall be required to demonstrate his familiarity with the arrangements and facilities of the ship, his duties, and any equipment he may be called upon to use. Masters shall be required to familiarize and instruct the crews in this regard.

CHAPTER III. LIFE-SAVING APPLIANCES, ETC.

Regulation 1. APPLICATION

(*a*) This Chapter, except where it is otlierwise expressly provided, applies as follows to new ships engaged on international voyages:

— Part A, Passenger ships and cargo ships;

— Part B, Passenger ships;

— Part C, Cargo ships;

(*b*) In the case of existing ships engaged on international voyages, the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the requirements of Chapter III of that Convention applicable to new ships as defined in that Convention shall apply.

(*c*) In the case of existing ships engaged on international voyages, the keels of which were laid or which were at a similar stage of construction before the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, and which do not already comply with the provisions of Chapter III of that Convention relating to new ships, the arrangements in each ship shall be considered by the Administration with a view to securing, so far as this is practicable and reasonable, and as early as possible, substantial compliance with the re-

quirements of Chapter III of that Convention. The proviso to sub-paragraph (*b*)(i) of Regulation 27 of this Chapter may, however, be applied to existing ships referred to in this paragraph only if:

(i) The provisions of Regulations 4, 8, 14, 18 and 19 and paragraphs (*a*) and (*b*) of Regulation 27 of this Chapter are complied with;

(ii) The liferafts carried in accordance with the provisions of paragraph (*b*) of Regulation 27 comply with the requirements of either Regulation 15 or Regulation 16, and of Regulation 17 of this Chapter; and

(iii) The total number of persons on board shall not be increased as the result of the provision of liferafts unless the ship fully complies with the provisions of:

(1) Part B of Chapter II-1;

(2) Sub-paragraphs (*a*)(iii) and (iv) of Regulation 21 or sub-paragraph (*a*)(iii) of Regulation 48 of Chapter II-2, as applicable; and

(3) Paragraphs (*a*), (*b*), (*e*) and (*f*) of Regulation 29 of this Chapter.

PART A. GENERAL

(Part A applies to both passenger ships and cargo ships)

Regulation 2. DEFINITIONS

For the purpose of this Chapter:

(*a*) "Short international voyage" means an international voyage in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety, and which does not exceed 600 miles in length between the last port of call in the country in which the voyage begins and the final port of destination.

(*b*) "Liferaft" means a liferaft complying with either Regulation 15 or Regulation 16 of this Chapter.

(*c*) "Approved launching device" means a device approved by the Adminstration, capable of launching from the embarkation position a liferaft fully loaded with the number of persons it is permitted to carry and with its equipment.

(*d*) "Certificated lifeboatman" means any member of the crew who holds a certificate of efficiency issued under the provisions of Regulation 32 of this Chapter.

(*e*) "Buoyant apparatus" means flotation equipment (other than lifeboats, liferafts, lifebuoys and life-jackets) designed to support a specified number of persons who are in the water and of such construction that it retains its shape and properties.

Regulation 3. EXEMPTIONS

(*a*) The Administration, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of the full requirements of this Chapter unreasonable or unnecessary, may to that extent exempt from the requirements of this Chapter individual ships or classes of ships which, in the course of their voyage, do not go more than 20 miles from the nearest land.

(*b*) In the case of passenger ships which are employed in special trades for the carriage of large numbers of special trade passengers, such as the pilgrim trade, the Administration, if satisfied that it is impracticable to enforce compliance with the requirements of this Chapter, may exempt such ships, when they belong to its country, from those requirements, provided that they comply fully with the provisions of:

(i) The Rules annexed to the Special Trade Passenger Ships Agreement, 1971; and

(ii) The Rules annexed to the Protocol on Space Requirements for Special Trade Passenger Ships, 1973, when it enters into force.

Regulation 4. READY AVAILABILITY OF LIFEBOATS, LIFERAFTS AND BUOYANT APPARATUS

(*a*) The general principle governing the provision of lifeboats, liferafts and buoyant apparatus in a ship to which this Chapter applies is that they shall be readily available in case of emergency.

(*b*) To be readily available, the lifeboats, liferafts and buoyant apparatus shall comply with the following conditions:

(i) They shall be capable of being put into the water safely and rapidly even under unfavourable conditions of trim and of 15 degree of list;

(ii) It shall be possible to effect embarkation into the lifeboats and liferafts rapidly and in good order;

(iii) The arrangement of each lifeboat, liferaft and article of buoyant apparatus shall be such that it will not interfere with the operation of other boats, liferafts and buoyant apparatus.

(*c*) All the life-saving appliances shall be kept in working order and available for immediate use before the ship leaves port and at all times during the voyage.

Regulation 5. CONSTRUCTION OF LIFEBOATS

(*a*) All lifeboats shall be properly constructed and shall be of such form and proportions that they shall have ample stability in a seaway, and sufficient freeboard when loaded with their full complement of persons and equipment. All lifeboats shall be capable of maintaining positive stability when open to the sea and loaded with their full complement of persons and equipment.

(*b*) (i) All lifeboats shall have rigid sides and internal buoyancy only. The Administration may approve lifeboats with a rigid shelter, provided that it may be readily opened from both inside and outside, and does not impede rapid embarkation and disembarkation or the launching and handling of the lifeboat.

(ii) Motor lifeboats may be fitted to the satisfaction of the Administration with a means for preventing the entry of water at the fore end.

(iii) All lifeboats shall be not less than 7.3 metres (24 feet) in length except where owing to the size of the ship, or for other reasons, the Administration considers the carriage of such lifeboats unreasonable or impracticable. In no ship shall the lifeboats be less than 4.9 metres (16 feet) in length.

(*c*) No lifeboat may be approved the weight of which when fully laden with persons and equipment exceeds 20,300 kilogrammes (20 tons) or which has a carrying capacity calculated in accordance with Regulation 7 of this Chapter of more than 150 persons.

(*d*) All lifeboats permitted to carry more than 60 persons but not more than 100 persons shall be either motor lifeboats complying with the requirements of Regulation 9 of this Chapter or be lifeboats fitted with an approved means of mechanical propulsion complying with Regulation 10 of this Chapter. All lifeboats permitted to carry more than 100 persons shall be motor lifeboats complying with the requirements of Regulation 9 of this Chapter.

(*e*) All lifeboats shall be of sufficient strength to enable them to be safely lowered into the water when loaded with their full complement of persons and equipment. All lifeboats shall be of such strength that they will not suffer residual deflection if subjected to an overload of 25 per cent.

(*f*) All lifeboats shall have a mean sheer at least equal to 4 per cent of their length. The sheer shall be approximately parabolic in form.

(*g*) In lifeboats permitted to carry 100 or more persons the volume of the buoyancy shall be increased to the satisfaction of the Administration.

(*h*) All lifeboats shall have inherent buoyancy, or shall be fitted with watertight air cases or other equivalent non-corrodible buoyant material which shall not be adversely affected by

oil or oil products, sufficient to float the boat and its equipment when the boat is flooded and open to the sea. An additional volume of watertight air cases or other equivalent non-corrodible buoyant material, which shall not be adversely affected by oil or oil products, equal to at least one-tenth of the cubic capacity of the boat shall also be provided. The Administration may permit the watertight air cases to be filled with a non-corrodible buoyant material which shall not be adversely affected by oil or oil products.

(*i*) All thwarts and side-seats shall be fitted as low in the lifeboat as practicable.

(*j*) The block coefficient of the cubic capacity as determined in accordance with Regulation 6 of this Chapter of all lifeboats, except wooden lifeboats made of planks, shall be not less than 0.64 provided that any such lifeboat may have a block coefficient of less than 0.64 if the Administration is satisfied with the sufficiency of the metacentric height and freeboard when the lifeboat is loaded with its full complement of persons and equipment.

Regulation 6. CUBIC CAPACITY OF LIFEBOATS

(*a*) The cubic capacity of a lifeboat shall be determined by Simpson's (Stirling's) Rule or by any other method giving the same degree of accuracy. The capacity of a square-sterned lifeboat shall be calculated as if the lifeboat had a pointed stern.

(*b*) For example, the eapacity in cubic metres (or cubic feet) of a lifeboat, calculated by the aid of Simpson's Rule, may be considered as given by the following formula:

$$\text{Capacity} = \frac{L}{12}(4A + 2B + 4C),$$

L being the length of the lifeboat in metres (or feet) from the inside of the planking or plating at the stem to the corresponding point at the stern post: in the case of a lifeboat with a square stern, the length is measured to the inside of the transom.

A, B, C denote respectively the areas of the cross-sections at the quarter-length forward, amidships, and the quarter-length aft, which correspond to the three points obtained by dividing L into four equal parts. (The areas corresponding to the two ends of the lifeboat are considered negligible.)

The areas A, B, C shall be deemed to be given in square metres (or square feet) by the successive application of the following formula to each of the three cross-sections:

$$\text{Area} = \frac{h}{12}(a + 4b + 2c + 4d + e),$$

h being the depth measured in metres (or in feet) inside the planking from the keel to the level of the gunwale, or, in certain cases, to a lower level as determined hereafter.

[Letter symbols] a, b, c, d, e denote the horizontal breadths of the lifeboat measured in metres (or in feet) at the upper and lower points of the depth and at the three points obtained by dividing h into four equal parts (a and e being the breadths at the extreme point, and c at the middle point of h).

(*c*) If the sheer of the gunwale, measured at the two points situated at a quarter of the length of the lifeboat from the ends, exceeds 1 per cent of the length of the lifeboat the depth employed in calculating the area of the cross-sections A or C shall be deemed to be the depth amidships plus 1 per cent of the length of the lifeboat.

(*d*) If the depth of the lifeboat amidships exceeds 45 per eent of the breadth, the depth employed in calculating the area of the amidship cross-section B shall be deemed to be equal to 45 per cent of the breadth, and the depth employed in calculating the areas of the quarter-length sections A and C is obtained by increasing this last figure by an amount equal to 1 per cent of the length of the lifeboat, provided that in no case shall the depths employed in the calculation exceed the actual depths at these points.

(*e*) If the depth of the lifeboat is greater than 1.22 metres (4 feet) the number of persons given by the application of this Rule shall be reduced in proportion to the ratio of 1.22 metres (4 feet) to the actual depth, until the lifeboat has been satisfactorily tested afloat with that number of persons on board, all wearing life jackets.

(*f*) The Administration shall impose, by suitable formulae, a limit for the number of persons allowed in lifeboats with very fine ends and in lifeboats very full in form.

(*g*) The Administration may assign to a lifeboat constructed of wooden planks capacity equal to the product of the length, the breadth and the depth multiplied by 0.6 if it is evident that this formula does not give a greater capacity than that obtained by the above method. The dimensions shall then be measured in the following manner:

- Length: from the intersection of the outside of the planking with the stem to the corresponding point at the stern post or, in the case of a square-sterned boat, to the after side of the transom;
- Breadth: from the outside of the planking at the point where the breadth of the boat is greatest;
- Depth: amidships inside the planking from the keel to the level of the gunwale, but the depth used in calculating the cubic capacity may not in any case exceed 45 per cent of the breadth.

In all cases the shipowner has the right to require that the cubic capacity of the lifeboat shall be determined by exact measurement.

(*h*) The cubic capacity of a motor lifeboat or a lifeboat fitted with other propelling gear shall be obtained from the gross capacity by deducting a volume equal to that occupied by the motor and its accessories or the gearbox of the other propelling gear, and, when carried, the radiotelegraph instaflation and searchlight with their accessories.

Regulation 7. CARRYING CAPACITY OF LIFEBOATS

The number of persons which a lifeboat shall be permitted to accommodate shall be equal to the greatest whole number obtained by dividing the capacity in cubic metres by:

- In the case of a lifeboat of 7.3 metres (24 feet) in length or over, 0.283 (or where the capacity is measured in cubic feet 10),
- In the case of lifeboats of 4.9 metres (16 feet) in length, 0.396 (or where the capacity is measured in cubic feet 14), and
- In the case of lifeboats of 4.9 metres (16 feet) in length or over but under 7.3 metres (24 feet), a number between 0.396 and 0.283 (or where the capacity is measured in cubic feet between 14 and 10), to be obtained by interpolation,

provided that the number shall in no case exceed the number of adult persons wearing lifejackets which can be seated without in any way interfering with the use of oars or the operation of other propulsion equipment.

Regulation 8. NUMBER OF MOTOR LIFEBOATS TO BE CARRIED

(*a*) In every passenger ship there shall be carried on each side of the ship at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter. Provided that in passenger ships in whieh the total number of persons which the slip is certified to carry, together with the crew, does not exceed 30, only one such motor lifeboat shall be required.

(*b*) In every cargo ship of 1,600 tons gross tomiage and upwards, except tankers, ships employed as whale factory ships, ships employed as fish processing or canning factory ships, and ships engaged in the carriage of persons in the whaling, fish processing or canning industries, there shall be carried at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter.

(*c*) In every tanker of 1,600 tons gross tonnage and upwards, in every ship employed as a whale factory ship, in every ship employed as a fish processing or canning factory ship and in every ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries, there shall be carried on each side at least one motor lifeboat complying with the requirements of Regulation 9 of this Chapter.

Regulation 9. SPECIFICATION OF MOTOR LIFEBOATS

(*a*) A motor lifeboat shall comply with the following conditions:

(i) It shall be fitted with a compression ignition engine and kept so as to be at all times ready for use; it shall be capable of being readily started in all conditions; sufficient fuel for 24 hours continuous operation at the speed specified in sub-paragraph (iii) of this paragraph shall be provided.

(ii) The engine and its accessories shall be suitably enclosed to ensure operation under adverse weather conditions, and the engine casing shall be fire-resisting. Provision shall be made for going astern.

(iii) The speed ahead in smooth water when loaded with its full complement of persons and equipment shall be:

(1) In the case of motor lifeboats required by Regulation 8 of this Chapter to be carried in passenger ships, tankers, ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, at least six knots;

(2) In the case of any other motor lifeboat, at least four knots.

(*b*) The volume of the internal buoyancy appliances of a motor lifeboat shall be increased above that required by Regulation 5 of this Chapter by the amount, if any, by which the volume of the internal buoyancy appliances required to support the engine and its accessories, and, if fitted, the searchlight and radiotelegraph installation and their accessories, exceeds the volume of the internal buoyancy appliances required, at the rate of 0.0283 cubic metres (one cubic foot) per person, to support the additional persons which the lifeboat could accommodate if the motor and its accessories, and, if fitted, the searchlight and radiotelegraph installation and their accessories, were removed.

Regulation 10. SPECIFICATION OF MECHANICALLY PROPELLED LIFEBOATS OTHER THAN MOTOR LIFEBOATS

A mechanically propelled lifeboat, other than a motor lifeboat, shall comply with the following conditions:

(*a*) The propelling gear shall be of an approved type and shall have sufficient power to enable the lifeboat to be readily cleared from the ship's side when launched and to be able to hold course under adverse weather conditions. If the gear is manually operated it shall be capable of being worked by persons untrained in its use and shall be capable of being operated when the lifeboat is flooded.

(*b*) A device shall be fitted by means of which the helmsman can cause the lifeboat to go astern at any time when the propelling gear is in operation.

(*c*) The volume of the internal buoyancy of a mechanically propelled lifeboat, other than a motor lifeboat, shal be increased to compensate for the weight of the propelling gear.

Regulation 11. EQUIPMENT OF LIFEBOATS

(*a*) The normal equipment of every lifeboat shall consist of:

(i) A single banked complement of buoyant oars, two spare buoyant oars, and a buoyant steering oar; one set and a half of thole pins or crutches, attached to the lifeboat by lanyard or chain; a boat hook;

(ii) Two plugs for each plug hole (plugs are not required when proper automatic valves are fitted) attached to the lifeboat by lanyards or chains; a baler, and two buckets of approved material;

(iii) A rudder attached to the lifeboat and a tiller;

(iv) Two hatchets, one at each end of the lifeboat;

(v) A lamp, with oil sufficient for 12 hours; two boxes of suitable matches in a watertight container;

(vi) A mast or masts, with galvanized wire stays together with sails (coloured orange);

(vii) An efficient compass in binnacle, to be luminised or fitted with suitable means of illumination;

(viii) A lifeline becketed round the outside of the lifeboat;

(ix) A sea-anchor of approved size;

(x) Two painters of sufficient length; one shall be secured to the forward end of the lifeboat with strop and toggle so that it can be released, and the other shall be firmly secured to the stem of the lifeboat and be ready for use;

(xi) A vessel containing 4½ litres (1 gallon) of vegetable, fish or animal oil; the vessel shall be so constructed that the oil can be easily distributed on the water, and so arranged that it can be attached to the sea-anchor;

(xii) A food ration, determined by the Administration, for each person the lifeboat is certified to carry; these rations shall be kept in airtight receptacles which are to be stowed in a watertight container;

(xiii) Watertight receptacles containing 3 litres (6 pints) of fresh water or each person the lifeboat is certified to carry, or watertight receptacles containing 2 litres (4 pints) of fresh water for each person together with an approved de-salting apparatus capable of providing 1 litre (2 pints) of drinking water per person; a rustproof dipper with lanyard; a rustproof graduated drinking vessel;

(xiv) Four parachute signals of approved type capable of giving a bright red light at a high altitude; six hand flares of an approved type giving a bright red light;

(xv) Two buoyant smoke signals of an approved type (for day-time use) capable of giving off a volume of orange-coloured smoke;

(xvi) Approved means to enable persons to cling to the boat should it be upturned, in the form of bilge keels or keel rails, together with grab lines secured from gunwale to gunwale under the keel, or other approved arrangements;

(xvii) An approved first-aid outfit in a watertight case;

(xviii) A waterproof electric torch suitible for signalling in the Morse Code together with one spare set of batteries and one spare bulb in a waterproof container;

(xix) A daylight-signalling mirror of an approved type;

(xx) A jack-knife fitted with a tin-opener to be kept attached to the boat with a lanyard;

(xxi) Two light buoyant heaving lines;

(xxii) A manual pump of an approved type;

(xxiii) A suitable locker for stowage of small items of equipment;

(xxiv) One whistle or equivalent sound signal;

(xxv) One set of fishing tackle;

(xxvi) One approved cover of a highly visible colour capable of protecting the occupants against injury by exposure; and

(xxvii) One copy of the illustrated table of life-saving signals referred to in Regulation 16 of Chapter V.

(*b*) In the case of ships engaged on voyages of such duration that in the opinion of the Administration the items specified in sub-paragraphs (vi), (xii), (xix), (xx) and (xxv) of paragraph (*a*) of this Regulation are unnecessary, the Administration may allow them to be dispensed with.

(*c*) Notwithstanding the provisions of paragraph (*a*) of this Regulation, motor lifeboats or other approved mechanically propelled lifeboats need not carry a mast or sails or more than half the complement of oars, but they shall carry two boat hooks.

(*d*) All lifeboats shall be fitted with suitable means to enable persons in the water to climb into the lifeboat.

(*e*) Every motor lifeboat shall carry portable fire-extinguishing equipment of an approved type capable of discharging froth or other suitable substance for extinguishing oil fires.

Regulation 12. SECURITY OF LIFEBOAT EQUIPMENT

All items of lifeboat equipment, with the exception of the boat hook which shall be kept free for fending off purposes, shall be suitably secured within the lifeboat. The lashing shall be carried out in such a manner as to ensure the security of the equipment and so as not to interfere with the lifting hooks or to prevent ready embarkation. All items of lifeboat equipment shall be as small and light in weight as possible and shall be packed in suitable and compact form.

Regulation 13. PORTABLE RADIO APPARATUS FOR SURVIVAL CRAFT

(*a*) An approved portable radio apparatus for survival craft complying with the requirements set out in Regulation 14 of Chapter IV shall be carried in all ships except those on which there is carried on each side of the ship a motor lifeboat fitted with a radiotelegraph installation complying with the provisions of Regulation 14 of this Chapter and of Regulation 13 of Chapter IV. All this equipment shall be kept together in the chartroom or other suitable place ready to be moved to one or other of the lifeboats in the event of an emergency. However, in tankers of 3,000 tons gross tonnage and upwards in which lifeboats are fitted amidships and aft this equipment shall be kept in a suitable place in the vicinity of those lifeboats which are furthest away from the ship's main transmitter.

(*b*) In the case of ships engaged on voyages of such duration that in the opinion of the Administration portable radio apparatus for survival craft is unnecessary, the Administration may allow such equipment to be dispensed with.

Regulation 14. RADIO APPARATUS AND SEARCHLIGHTS IN MOTOR LIFEBOATS

(*a*) (i) Where the total number of persons on board a passenger ship engaged on international voyages which are not short international voyages, a ship employed as a whale factory ship, a ship employed as a fish processing or canning factory ship or a ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries, is more than 199 but less than 1,500, a radiotelegraph apparatus complying with the requirements set out in this Regulation and in Regulation 13 of Chapter IV shall be fitted in at least one of the motor lifeboats required under Regulation 8 of this Chapter to be carried in that ship.

(ii) Where the total number of persons on board such a ship is 1,500 or more, such a radiotelegraph apparatus shall be fitted in every motor lifeboat required under Regulation 8 of this Chapter to be carried in that ship.

(*b*) The radio apparatus shall be installed in a cabin large enough to accommodate both the equipment and the person using it.

(*c*) The arrangements shall be such that the efficient operation of the transmitter and receiver shall not be interfered with by the engine while it is running, whether a battery is on charge or not.

(*d*) The radio battery shall not be used to supply power to any engine starting motor or ignition system.

(*e*) The motor lifeboat engine shall be fitted with a dynamo for recharging the radio battery, and for other services.

(*f*) A searchlight shall be fitted in each motor lifeboat required to be carried under paragraph (*a*) of Regulation 8 of this Chapter in passenger ships and under paragraph (*c*) of that Regulation in ships employed as whale factory ships, fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries.

(*g*) The searchlight shall include a lamp of at least 80 watts, an efficient reflector and a source of power which will give effective illumination of a light-coloured object having a width of about 18 metres (60 feet) at a distance of 180 metres (200 yards) for a total period of six hours and shall be capable of working for at least three hours continuously.

Regulation 15. REQUIREMENTS FOR INFLATABLE LIFERAFTS

(*a*) Every inflatable liferaft shall be so constructed that, when fully inflated and floating with the cover uppermost, it shall be stable in a seaway.

(*b*) The liferaft shall be so constructed that if it is dropped into the water from a height of 18 metres (60 feet) neither the liferaft nor its equipment will be damaged. If the raft is to be stowed on the ship at a height above the water of more than 18 metres (60 feet), it shall be of a type which has been satisfactorily drop-tested from a height at least equal to the height at which it is to be stowed.

(*c*) The construction of the liferaft shall include a cover which shall automatically be set in place when the liferaft is inflated. This cover shall be capable of protecting the occupants against injury from exposure, and means shall be provided for collecting rain. The top of the cover shall be fitted with a lamp which derives its luminosity from a sea-activated cell and a similar lamp shall also be fitted inside the liferaft. The cover of the liferaft shall be of a highly visible colour.

(*d*) The liferaft shall be fitted with a painter and shall have a line securely becketed round the outside. A lifeline shall also be fitted around the inside of the liferaft.

(*e*) The liferaft shall be capable of being readily righted by one person if it inflates in an inverted position.

(*f*) Tbe liferaft shall be fitted at each opening with efficient means to enable persons in the water to climb on board.

(*g*) The liferaft shall be contained in a valise or other container so constructed as to be capable of withstanding hard wear under conditions met with at sea. The liferaft in its valise or other container shall be inherently buoyant.

(*h*) The buoyancy of the liferaft shall be so arranged as to ensure by a division into an even number of separate compartments, half of which shall be capable of supporting out of the water the number of persons which the liferaft is permitted to accommodate, or by some other equally efficient means, that there is a reasonable margin of buoyancy if the raft is damaged or partially fails to inflate.

(*i*) The total weight of the liferaft, its valise or other container and its equipment shall not exceed 180 kilogrammes (400 lbs.).

(*j*) The number of persons which an inflatable liferaft shall be permitted to accommodate shall be equal to:

(i) The greatest whole number obtained by dividing by 96 the volume, measured in cubic decimetres (or by 3.4 the volume, measured in cubic feet) of the main buoyancy tubes (which for this purpose shall include neither the arches nor the thwart or thwarts if fitted) when inflated; or

(ii) The greatest whole number obtained by dividing by 3,720 the area measured in square centimetres (or by 4 the area, measured in square feet) of the floor (which for this purpose

may include the thwart or thwarts if fitted) of the liferaft when inflated whichever number shall be the less.

(*k*) The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold.

(*l*) The liferaft shall be inflated by a gas which is not injurious to the occupants and the inflation shall take place automatically either on the pulling of a line or by some other equally simple and efficient method. Means shall be provided whereby the topping-up pump or bellows required by Regulation 17 of this Chapter may be used to maintain pressure.

(*m*) The liferaft shall be of approved material and construction, and shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions.

(*n*) No liferaft shall be approved which has a carrying capacity calculated in accordance with paragraph (*j*) of this Regulation of less than six persons. The maximum number of persons calculated in accordance with that paragraph for which an inflatable liferaft may be approved shall be at the discretion of the Administration, but shall in no case exceed 25.

(*o*) The liferaft shall be capable of operating throughout a temperature range of 66°C to minus 30°C (150°F to minus 22°F).

(*p*) (i) The liferaft shall be so stowed as to be readily available in case of emergency. It shall be stowed in such a manner as to permit it to float free from its stowage, inflate and break free from the vessel in the event of sinking.

(ii) If used, lashings shall be fitted with an automatic release system of a hydrostatic or equivalent nature approved by the Administration.

(iii) The liferaft required by paragraph (*c*) of Regulation 35 of this Chapter may be securely fastened.

(*q*) The liferaft shall be fitted with arrangements enabling it to be readily towed.

Regulation 16. REQUIREMENTS FOR RIGID LIFERAFTS

(*a*) Every rigid liferaft shall be so constructed that if it is dropped into the water from its stowed position neither the liferaft nor its equipment will be damaged.

(*b*) The deck area of the liferaft shall be situated within that part of the liferaft which affords protection to its occupants. The area of that deck shall be at least 0.3720 square metres (4 square feet) for every person the liferaft is permtted to carry. The nature of the deck shall be such as to prevent so far as practicable the ingress of water and it shall effectively support the occupants out of the water.

(*c*) The liferaft shall be fitted with a cover or equivalent arrangement of a highly visible colour, which shall be capable of protecting the occupants against injury from exposure whichever way up the liferaft is floating.

(*d*) The equipment of the liferaft shall be so stowed as to be readily available whichever way up the liferaft is floating.

(*e*) The total weight of a liferaft and its equipment carried in passenger ships shall not exceed 180 kilogrammes (400 lbs.). Liferafts carried in cargo ships may exceed 180 kilogrammes (400 lbs.) in weight if they are capable of being launched from both sides of the ship or if there are provided means for putting them into the water mechanically.

(*f*) The liferaft must at all times be effective and stable when floating either way up.

(*g*) The liferaft shall have at least 96 cubic decimetres (3.4 cubic feet) of air cases or equivalent buoyancy for each person it is permitted to carry which must be placed as near as possible to the sides of the raft.

(*h*) The liferaft shall have a painter attached and a lifeline securely becketed round the outside. A lifeline shall also be fitted around the inside of the raft.

(*i*) The liferaft shall be fitted at each opening with efficient means to enable persons in the water to climb on board.

(*j*) The liferaft shall be so constructed as not to be affected by oil or oil products.

(*k*) A buoyant light of the electric battery type shall be attached to the liferaft by a lanyard.

(*l*) The liferaft shall be fitted with arrangements enabling it to be readily towed.

(*m*) Liferafts shall be so stowed as to float free in the event of the ship sinking.

Regulation 17. EQUIPMENT OF INFLATABLE AND RIGID LIFERAFTS

(*a*) The normal equipment of every liferaft shall consist of:

(i) One buoyant rescue quoit, attached to at least 30 metres (100 feet) of buoyant line;

(ii) For liferafts which are permitted to accommodate not more than 12 persons: one knife and one baler; for liferafts which are permitted to accommodate 13 persons or more: two knives and two balers;

(iii) Two sponges;

(iv) Two sea-anchors, one permanently attached to the liferaft and one spare;

(v) Two paddles;

(vi) One repair outfit capable of repairing punctures in buoyancy compartments;

(vii) One topping-up pump or bellows, unless the liferaft complies with Regulation 16 of this Chapter;

(viii) Three tin-openers;

(ix) One approved first-aid outfit in a waterproof case;

(x) One rustproof graduated drinking vessel;

(xi) One waterproof electric torch suitable for signalling in the Morse Code, together with one spare set of batteries and one spare bulb in a waterproof container;

(xii) One daylight-signalling mirror and one signalling whistle;

(xiii) Two parachute distress signals of an approved type, capable of giving a bright red light at a high altitude;

(xiv) Six hand flares of an approved type, capable of giving a bright red light;

(xv) One set of fishing tackle;

(xvi) A food ration, determined by the Administration, for each person the liferaft is permitted to accommodate;

(xvii) Watertight receptacles containing 1½ litres (3 pints) of fresh water for each person the liferaft is permitted to accommodate, of which ½ litre (1 pint) per person may be replaced by a suitable de-salting apparatus capable of producing an equal amount of fresh water;

(xviii) Six anti-seasickness tablets for each person the liferaft is deemed fit to accommodate;

(xix) Instructions on how to survive in the liferaft; and

(xx) One copy of the illustrated table of life-saving signals referred to in Regulation 16 of Chapter V.

(*b*) In the case of passenger ships engaged on short international voyages of such duration that in the opinion of the Administration all the items specified in paragraph (*a*) of this Regulation are unnecessary, the Administration may allow one or more liferafts, not being less than one-sixth of the number of liferafts carried in any such ship, to be provided with the equipment specified in sub-paragraphs (i) to (vii) inclusive, (xi) and (xix) of paragraph (*a*) of this Regulation, and with one-half of the equipment specified in sub-paragraphs (xiii) and (xiv) of that paragraph and the remainder of the liferafts carried to be provided with the equipment specified in sub-paragraphs (i) to (vii) inclusive and (xix) of that paragraph.

Regulation 18. TRAINING IN THE USE OF LIFERAFTS

The Administration shall so far as is practicable and reasonable take steps with a view to ensuring that crews of ships in which liferafts are carried are trained in their launching and use.

Regulation 19. EMBARKATION INTO LIFEBOATS AND LIFERAFTS

(*a*) Suitable arrangements shall be made for embarkation into the lifeboats, which shall include:

(i) A ladder at each set of davits to afford access to the lifeboats when waterborne, except that in passenger ships, ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, the Administration may permit such ladders to be replaced by approved devices provided that there shall not be less than one ladder on each side of the ship;

(ii) Means for illuminating the lifeboats and their launching gear during preparation for and the process of launching, and also for illuminating the water into which the lifeboats are launched until the process of launching is completed;

(iii) Arrangements for warning the passengers and crew that the ship is about to be abandoned; and

(iv) Means for preventing any discharge of water into the lifeboats.

(*b*) Suitable arrangements shall also be made for embarkation into the liferafts, which shall include:

(i) Sufficient ladders to facilitate embarkation into the liferafts when waterborne except that in passenger ships, ships employed as whale factory ships, ships employed as fish processing or canning factory ships, and ships engaged in the carriage of persons employed in the whaling, fish processing or fish canning industries, the Administration may permit the replacement of some or all of such ladders by approved devices;

(ii) Where there are carried liferafts for which approved launching devices are provided, means for illuminating those liferafts and launching devices during the preparation for and the process of launching, and also for illuminating the water into which those liferafts are launched until the process of launching is completed;

(iii) Means for illuminating the stowage position of liferafts for which approved launching devices are not provided;

(iv) Arrangements for warning the passengers and crew that the ship is about to be abandoned; and

(v) Means for preventing any discharge of water into the liferafts at fixed launching positions, including those under approved launching devices.

Regulation 20. MARKING OF LIFEBOATS, LIFERAFTS AND BUOYANT APPARATUS

(*a*) The dimensions of a lifeboat and the number of persons which it is permitted to carry shall be marked on it in clear permanent characters. The name and port of registry of the ship to which the lifeboat belongs shall be painted on each side of the bow.

(*b*) Buoyant apparatus shall be marked with the number of persons in the same manner.

(*c*) The number of persons shall be marked in the same manner on inflatable liferafts and also on the valise or container in which the inflatable liferaft is contained. Every inflatable liferaft shall also bear a serial number and the manufacturer's name so that the owner of the liferaft can be ascertained.

(*d*) Every rigid liferaft shall be marked with the name and port of registry of the ship in which it is carried, and with the number of persons it is permitted to carry.

(*e*) No lifeboat, liferaft or buoyant apparatus shall be marked for a greater number of persons than that obtained in the manner specified in this Chapter.

Regulation 21. SPECIFICATION OF A LIFEBUOY

(*a*) A lifebuoy shall satisfy the following requirements:

(i) It shall be of solid cork or any other equivalent material;

(ii) It shall be capable of supporting in fresh water for 24 hours at least 14.5 kilogrammes (32 lbs.) of iron;

(iii) It shall not be adversely affected by oil or oil products;

(iv) It shall be of a highly visible colour;

(v) It shall be marked in block letters with the name and port of registry of the ship in which it is carried.

(*b*) Lifebuoys filled with rushes, cork shavings or granulated cork, or any other loose granulated material, or whose buoyancy depends upon air compartments which require to be inflated, are prohibited.

(*c*) Lifebuoys made of plastic or other synthetic compounds shall be capable of retaining their buoyant properties and durability in contact with sea water or oil products, or under variations of temperature or climatic changes prevailing in open sea voyages.

(*d*) Lifebuoys shall be fitted with beckets securely seized. At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline of at least 27.5 metres (15 fathoms) in length.

(*e*) In passenger ships not less than one-half of the total number of lifebuoys, and in no case less than six, and in cargo ships at least one-half of the total number of lifebuoys, shall be provided with efficient self-igniting lights.

(*f*) The self-igniting lights required by paragraph (*e*) of this Regulation shall be such that they cannot be extinguished by water. They shall be capable of burning for not less than 45 minutes and shall have a luminous intensity of not less than 2 candelas in all directions of the upper hemisphere. The lights shall be kept near the lifebuoys to which they belong, with the necessary means of attachment. Self-igniting lights used in tankers shall be of an approved electric battery type.*

(*g*) All lifebuoys shall be so placed as to be readily accessible to the persons on board, and at least two of the lifebuoys provided with self-igniting lights in accordance with paragraph (*e*) of this Regulation shall also be provided with an efficient self-activating smoke signal capable of producing smoke of a highly visible colour for at least 15 minutes, and shall be capable of quick release from the navigating bridge.

(*h*) Lifebuoys shall always be capable of being rapidly cast loose and shall not be permanently secured in any way.

Regulation 22. LIFE-JACKETS

(*a*) Ships shall carry for every person on board a life-jacket of an approved type and, in addition, unless these life-jackets can be adapted for use by children, a sufficient number of life-jackets suitable for children. Each life-jacket shall be suitably marked showing that it has been approved by the Administration.

* The following ranges of visibilities of the light might be expected in given atmospheric conditions.

Atmospheric transmissivity factor	*Meteorological range of visibility (miles)*	*Range of visibility of the light (miles)*
0.3	2.4	0.96
0.4	3.3	1.05
0.5	4.3	1.15
0.6	5.8	1.24
0.7	8.4	1.34
0.8	13.4	1.45
0.9	28.9	1.57

(*b*) In addition to the life-jackets required by paragraph (*a*) of this Regulation there shall be carried on passenger ships life-jackets for 5 per cent of the total number of persons on board. These life-jackets shall be stowed in a conspicuous place on deck.

(*c*) An approved life-jacket shall comply with the following requirements:

(i) It shall be constructed with proper workmanship and materials;

(ii) It shall be so constructed as to eliminate so far as possible all risk of its being put on incorrectly, except that it shall be capable of being worn inside out;

(iii) It shall be capable of lifting the face of an exhausted or unconscious person out of the water and holding it above the water with the body inclined backwards from its vertical position;

(iv) It shall be capable of turning the body in the water from any position to a safe floating position with the body inclined backwards from its vertical position;

(v) It shall not be adversely affected by oil or oil products;

(vi) It shall be of a highly visible colour;

(vii) It shall be fitted with an approved whistle, firmly secured by a cord;

(viii) The buoyancy of the life-jacket required to provide the foregoing performance shall not be reduced by more than 5 per cent after 24 hours' submergence in fresh water.

(*d*) A life-jacket, the buoyancy of which depends on inflation, may be permitted for use by the crews of all ships except passenger ships and tankers provided that:

(i) It has two separate inflatable compartments;

(ii) It is capable of being inflated both mechanically and by mouth; and

(iii) It complies with the requirements of paragraph (*c*) of this Regulation with either compartment inflated separately.

(*e*) Life-jackets shall be so placed as to be readily accessible and their position shall be plainly indicated.

Regulation 23. LINE-THROWING APPLIANCES

(*a*) Ships shall carry a line-throwing appliance of an approved type.

(*b*) The appliance shall be capable of carrying a line not less than 230 metres (250 yards) with reasonable accuracy, and shall include not less than four projectiles and four lines.

Regulation 24. SHIPS' DISTRESS SIGNALS

Ships shall be provided, to the satisfaction of the Administration, with means of making effective distress signals by day and by night, including at least twelve parachute signals capable of giving a bright red light at a high altitude.

Regulation 25. MUSTER LIST AND EMERGENCY PROCEDURE

(*a*) Special duties to be undertaken in the event of an emergency shall be allotted to each member of the crew.

(*b*) The muster list shall show all the special duties and shall indicate, in particular, the station to which each member must go, and the duties that he has to perform.

(*c*) The muster list for each passenger ship shall be in a form approved by the Administration.

(*d*) Before the vessel sails, the muster list shall be completed. Copies shall be posted in several parts of the ship, and in particular in the crew's quarters.

(*e*) The muster list shall show the duties assigned to the different members of the crew in connexion with:

(i) The closing of the watertight doors, valves and closing mechanisms of scuppers, ash-shoots and fire doors;

(ii) The equipping of the lifeboats (including the portable radio apparatus for survival craft) and the other life-saving appliances;

(iii) The launching of the lifeboat;

(iv) The general preparation of the other life-saving appliances;

(v) The muster of the passengers; and

(vi) The extinction of fire, having regard to the ship's fire control plans.

(*f*) The muster list shall show the several duties assigned to the members of the stewards' department in relation to the passengers in case of emergency. These duties shall include:

(i) Warning the passengers;

(ii) Seeing that they are suitably clad and have put on their life-jackets in a proper manner;

(iii) Assembling the passengers at muster stations;

(iv) Keeping order in the passages and on the stairways, and, generally, controlling the movements of the passengers; and

(v) Ensuring that a supply of blankets is taken to the lifeboats.

(*g*) The duties shown by the muster list in relation to the extinction of fire pursuant to sub-paragraph (*e*)(vi) of this Regulation shall include particulars of:

(i) The manning of the fire parties assigned to deal with fires;

(ii) The special duties assigned in respect of the operation of fire-fighting equipment and installations.

(*h*) The muster list shall specify definite signals for calling all the crew to their boat, liferaft and fire stations, and shall give full particulars of these signals. These signals shall be made on the whistle or siren and, except on passenger ships on short international voyages and on cargo ships of less than 45.7 metres (150 feet) in length, they shall be supplemented by other signals which shall be electrically operated. All these signals shall be operable from the bridge.

Regulation 26. PRACTICE MUSTERS AND DRILLS

(*a*) (i) In passenger ships, musters of the crew for boat drill and fire drill shall take place weekly when practicable and there shall be such a muster when a passenger ship leaves the final port of departure on an international voyage which is not a short international voyage.

(ii) In cargo ships, a muster of the crew for boat drill and fire drill shall take place at intervals of not more than one month, provided that a muster of the crew for boat drill and fire drill shall take place within 24 hours of leaving a port if more than 25 per cent of the crew have been replaced at that port.

(iii) On the occasion of the monthly muster in cargo ships the boat's equipment shall be examined to ensure that it is complete.

(iv) The date upon which musters are held, and details of any training and drills in fire fighting which are carried out on board shall be recorded in such log book as may be prescribed by the Administration. If in any week (for passenger ships) or month (for cargo ships) no muster or a part muster only is held, an entry shall be made stating the circumstances and extent of the muster held. A report of the examination of the boat's equipment on cargo ships shall be entered in the log book, which shall also record the occasions on which the lifeboats are swung out and lowered in compliance with paragraph (*c*) of this Regulation.

(*b*) In passenger ships, except those engaged on short international voyages, a muster of the passengers shall be held within 24 hours after leaving port.

(*c*) Different groups of lifeboats shall be used in turn at successive boat drills and every lifeboat shall be swung out and, if practicable and reasonable, lowered at least once every four months. The musters and inspections shall be so arranged that the crew thoroughly understand and are practised in the duties they have to perform, including instructions in the handling and operation of liferafts where these are carried.

(*d*) The emergency signal for summoning passengers to muster stations shall be a succession of seven or more short blasts followed by one long blast on the whistle or siren. This shall be supplemented in passenger ships, except those engaged on short international voyages, by other signals, which shall be electrically operated, throughout the ship operable from the bridge. The meaning of all signals affecting passengers, with precise instructions on what they are to do in an emergency, shall be clearly stated in appropriate languages on cards posted in their cabins and in conspicuous places in other passenger quarters.

PART B. PASSENGER SHIPS ONLY

Regulation 27. LIFEBOATS, LIFERAFTS AND BUOYANT APPARATUS

(*a*) Passenger ships shall carry two boats attached to davits—one on each side of the ship—for use in an emergency. These boats shall be of an approved type and shall be not more than 8.5 metres (28 feet) in length. They may be counted for the purposes of paragraphs (*b*) and (*c*) of this Regulation, provided that they comply fully with the requirements for lifeboats of this Chapter, and for the purposes of Regulation 8 provided that in addition they comply fully with the requirements of Regulation 9 and where appropriate Regulation 14 of this Chapter. They shall be kept ready for immediate use while the ship is at sea. In ships in which the requirements of paragraph (*h*) of Regulation 29 are met by means of appliances fitted to the sides of the lifeboats, such appliances shall not be required to be fitted to the two boats provided to meet the requirements of this Regulation.

(*b*) Passenger ships engaged on international voyages which are not short international voyages shall carry:

(i) Lifeboats on each side of such aggregate capacity as will accommodate half the total number of persons on board; provided that the Administration may permit the substitution of lifeboats by liferafts of the same total capacity so however that there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37½ per cent of all on board;

(ii) Liferafts of sufficient aggregate capacity to accommodate 25 per cent of the total number of persons on board, together with buoyant apparatus for 3 per cent of that number; provided that ships which have a factor of subdivision of 0.33 or less shall be permitted to carry, in lieu of liferafts for 25 per cent of all on board and buoyant apparatus for 3 per cent of all on board, buoyant apparatus for 25 per cent of that number.

(*c*) (i) A passenger ship engaged on short international voyages shall be provided with sets of davits in accordance with its length as specified in Column A of the Table in Regulation 28 of this Chapter. Each set of davits shall have a lifeboat attached to it and these lifeboats shall provide at least the minimum capacity required by Column C of the Table or the capacity required to provide accommodation for all on board if this is less.

Provided that when in the opinion of the Administration it is impracticable or unreasonable to place on a ship engaged on short international voyages the number of sets of davits required by Column A of the Table in Regulation 28, the Administration may authorize, under exceptional conditions, a smaller number of davits, except that this number shall never be less than the minimum number fixed by Column B of the Table, and that the total capacity of the lifeboats on the ship will be at least equal to the minimum capacity required by Column C or the capacity required provide for all persons on board if this is less.

(ii) If the lifeboats so provided are not sufficient to accommodate all on board, additional lifeboats under davits or liferafts shall be provided so that the accommodation provided in the lifeboats and the liferafts in the ship shall be sufficient for all on board.

(iii) Notwithstanding the provisions of sub-paragraph (ii) of this paragraph in any ship engaged on short international voyages the number of persons carried shall not exceed the total capacity of the lifeboats provided in accordance with sub-paragraphs (i) and (ii) of this

paragraph unless the Administration considers that this is necessitated by the volume of traffic and then only if the ship complies with the provisions of paragraph (*d*) of Regulation 1 of Chapter II-1.

(iv) Where under the provisions of sub-paragraph (iii) of this paragraph the Administration has permitted the carriage of persons in excess of the lifeboat capacity and is satisfied that it is impracticable in that ship to stow the liferafts carried in accordance with sub-paragraph (ii) of this paragraph it may permit a reduction in the number of lifeboats.

Provided that:

(I) The number of lifeboats shall, in the case of ships of 58 metres (190 feet) in length and over, never be less than four, two of which shall be carried on each side of the ship, and in the case of ships of less than 58 metres (190 feet) in length, shall never be less than two, one of which shall be carried on each side of the ship; and

(2) The number of lifeboats and liferafts shall always be sufficient to accommodate the total number of persons on board.

(v) Every passenger ship engaged on short international voyages shall carry in addition to the lifeboats and liferafts required by the provisions of this paragraph, liferafts sufficient to accommodate 10 per cent of the total number of persons for whom there is accommodation in the lifeboats carried in that ship.

(vi) Every passenger ship engaged on short international voyages shall also carry buoyant apparatus for at least 5 per cent of the total number of persons on board.

(vii) The Administration may permit individual ships or classes of ships with short international voyage certificates to proceed on voyages in excess of 600 miles but not exceeding 1,200 miles if such ships comply with the provisions of paragraph (*d*) of Regulation 1 of Chapter II-1, if they carry lifeboats which provide for 75 per cent of the persons on board and otherwise comply with the provisions of this paragraph.

Regulation 28. TABLE RELATING TO DAVITS AND LIFEBOAT CAPACITY FOR SHIPS ON SHORT INTERNATIONAL VOYAGES

The following table fixes according to the length of the ship:

(A) The minimum number of sets of davits to be provided on a ship engaged on short international voyages to each of which must be attached a lifeboat in accordance with Regulation 27 of this Chapter;

(B) The smaller number of sets of davits which may be authorized exceptionally on a ship engaged on short international voyages under Regulation 27 of this Chapter; and

(C) The minimum lifeboat capacity required for a ship engaged on short international voyages.

Registered length of ship		*(A) Minimum number of sets of davits*	*(B) Smaller number of sets of davits authorized exceptionally*	*(C) Minimum capacity of lifeboats*	
metres	*feet*			*Cubic metres*	*Cubic feet*
31 and under 37	100 and under 120	2	2	11	400
37 and under 43	120 and under 140	2	2	18	650
43 and under 49	140 and under 160	2	2	26	900
49 and under 53	160 and under 175	3	3	33	1,150
53 and under 58	175 and under 190	3	3	38	1,350
58 and under 63	190 and under 205	4	4	44	1,550
63 and under 67	205 and under 220	4	4	50	1,750
67 and under 70	220 and under 230	5	4	52	1,850
70 and under 75	230 and under 245	5	4	61	2,150
75 and under 78	245 and under 255	6	5	68	2,400
78 and under 82	255 and under 270	6	5	76	2,700

Registered length of ship		(A) Minimum number of sets of davits	(B) Smaller number of sets of davits authorized exceptionally	(C) Minimum capacity of lifeboats	
metres	feet			Cubic metres	Cubic feet
82 and under 87	270 and under 285	7	5	85	3,000
87 and under 91	285 and under 300	7	5	94	3,300
91 and under 96	300 and under 315	8	6	102	3,600
96 and under 101	315 and under 330	8	6	110	3,900
101 and under 107	330 and under 350	9	7	122	4,300
107 and under 113	350 and under 370	9	7	135	4,750
113 and under 119	370 and under 390	10	7	146	5,150
119 and under 125	390 and under 410	10	7	157	5,550
125 and under 133	410 and under 435	12	9	171	6,050
133 and under 140	435 and under 460	12	9	185	6,550
140 and under 149	460 and under 490	14	10	202	7,150
149 and under 159	490 and under 520	14	10	221	7,800
159 and under 168	520 and under 550	16	12	238	8,400

NOTE on (C). Where the length of the ship is under 31 metres (100 feet) or over 168 metres (550 feet) the minimum number of sets of davits and the cubic capacity of the lifeboats shall be prescribed by the Administration.

Regulation 29. STOWAGE AND HANDLING OF LIFEBOATS, LIFERAFTS AND BUOYANT APPARATUS

(*a*) Lifeboats and liferafts shall be stowed to the satisfaction of the Administration in such a way that:

(i) They can all be launched in the shortest possible time and in not more than 30 minutes;

(ii) They will not impede in any way the prompt handling of any of the other lifeboats, liferafts or buoyant apparatus or the marshalling of the persons on board at the launching stations, or their embarkation;

(iii) The lifeboats, and the liferafts for which approved launching devices are required to be carried, shall be capable of being put into the water loaded with their full complement of persons and equipment even in unfavourable conditions of trim and of 15 degrees of list either way; and

(iv) The liferafts for which approved launching devices are not required to be carried, and the buoyant apparatus, shall be capable of being put into the water even in unfavourable conditions of trim and of 15 degrees of list either way.

(*b*) Every lifeboat shall be attached to a separate set of davits.

(*c*) Lifeboats may only be stowed on more than one deck if proper measures are taken to prevent lifeboats on a lower deck being fouled by those stowed on a deck above.

(*d*) Lifeboats, and liferafts for which approved launching devices are required to be carried, shall not be placed in the bow of the ship. They shall be stowed in such positions as to ensure safe launching having particular regard to clearance from the propeller and steeply overhanging portions of the hull aft.

(*e*) Davits shall be of approved design and shall be suitably placed to the satisfaction of the Administration. They shall be so disposed on one or more decks that the lifeboats placed under them can be safely lowered without interference from the operation of any other davits.

(*f*) Davits shall be as follows:

(i) Luffing or gravity type for operating lifeboats weighing not more than 2,300 kilogrammes (2¼ tons) in their turning out condition;

(ii) Gravity type for operating lifeboats weighing more than 2,300 kilogrammes (2¼ tons) in their turning out condition.

(*g*) Davits, falls, blocks and all other gear shall be of such strength that the lifeboats can be turned out manned by a launching crew and then safely lowered with the full complement of persons and equipment, with the ship listed to 15 degrees either way and with a 10 degrees trim.

(*h*) Skates or other suitable means shall be provided to facilitate launching the lifeboats against a list of 15 degrees.

(*i*) Means shall be provided for bringing the lifeboats against the ship's side and there holding them so that persons may be safely embarked.

(*j*) Lifeboats, together with the emergency boats required by Regulation 27 of this Chapter, shall be served by wire rope falls, together with winches of an approved type which, in the case of the emergency boats, shall be capable of quick recovery of those boats. Exceptionally, the Administration may allow manila rope falls or falls of another approved material with or without winches (except that the emergency boats shall be required to be served by winches which are capable of quick recovery of those boats) where they are satisfied that manila rope falls or falls of another approved material are adequate.

(*k*) At least two lifelines shall be fitted to the davit span, and the falls and lifelines shall be long enough to reach the water with the ship at its lightest seagoing draught and listed to 15 degrees either way. Lower fall blocks shall be fitted with a suitable ring or long link for attaching to the sling hooks unless an approved type of disengaging gear is fitted.

(*l*) Where mechanically-powered appliances are fitted for the recovery of the lifeboats, efficient hand gear shall also be provided. Where davits are recovered by action of the falls by power, safety devices shall be fitted which will automatically cut off the power before the davits come against the stops in order to avoid overstressing the wire rope falls or davits.

(*m*) Lifeboats attached to davits shall have the falls ready for service and arrangements shall be made for speedily, but not necessarily simultaneously, detaching the lifeboats from the falls. The point of attachment of the lifeboats to the falls shall be at such height above the gunwale as to ensure stability when lowering the lifeboats.

(*n*) (i) In passenger ships engaged on international voyages which are not short international voyages in which there are carried lifeboats and liferafts in accordance with sub-paragraph (*b*)(i) of Regulation 27 of this Chapter, there shall be provided approved launching devices sufficient in number in the opinion of the Administration to enable that number of liferafts which, together with the lifeboats, is required in accordance with that sub-paragraph to provide accommodation for all on board, to be put into the water loaded with the number of persons they are permitted to accommodate, in not more than thirty minutes in calm conditions. Approved launching devices so provided shall, so far as practicable, be distributed equally on each side of the ship and there shall never be less than one such device on each side. No such devices need, however, be provided for the additional liferafts required to be carried by sub-paragraph (*b*)(ii) of Regulation 27 of this Chapter for 25 per cent of all on board, but every liferaft carried in accordance with that sub-paragraph shall, where an approved launching device is provided in the ship, be of a type which is capable of being launched from such a device.

(ii) In passenger ships engaged on short international voyages, the number of approved launching devices to be provided shall be at the discretion of the Administration. The number of liferafts allocated to each such device carried shall not be more than the number which, in the opinion of the Administration, can be put into the water fully loaded with the number of persons they are permitted to carry by that device in not more than 30 minutes in calm conditions.

Regulation 30. LIGHTING FOR DECKS, LIFEBOATS, LIFERAFTS, ETC.

(*a*) Provision shall be made for an electric or equivalent system of lighting sufficient for all the requirements of safety in the different parts of a passenger ship, and particularly for decks on which the lifeboats and liferafts are stowed. The self-contained emergency source of

electrical power required by Regulation 25 of Chapter II-1 shall be capable of supplying where necessary this lighting system and also the lighting required by sub-paragraphs (*a*)(ii), (*b*)(ii) and (*b*)(iii) of Regulation 19 of this Chapter.

(*b*) The exit from every main compartment occupied by passengers or crew shall be continuously lighted by an emergency lamp. The power for these emergency lamps shall be so arranged that they will be supplied from the emergency source of power referred to in paragraph (*a*) of this Regulation in the event of failure of the main generating plant.

Regulation 31. MANNING OF LIFEBOATS AND LIFERAFTS

(*a*) A deck officer or certified lifeboatman shall be placed in charge of each lifeboat and a second-in-command shall also be nominated. The person in charge shall have a list of the lifeboat's crew, and shall see that the men placed under his orders are acquainted with their several duties.

(*b*) A man capable of working the motor shall be assigned to each motor lifeboat.

(*c*) A man capable of working the radio and searchlight installations shall be assigned to each lifeboat carrying this equipment.

(*d*) A man practised in the handling and operation of liferafts shall be assigned to each liferaft carried, except where in ships engaged on short international voyages the Administration is satisfied that this is not practicable.

Regulation 32. CERTIFICATED LIFEBOATMEN

(*a*) In passenger ships there shall be, for every lifeboat carried in order to comply with this Chapter, a number of lifeboatmen at least equal to that specified in the following table:

Prescribed complement of lifeboat	*The minimum number of certificated lifeboatmen shall be*
Less than 41 persons	2
From 41 to 61 persons	3
From 62 to 85 persons	4
Above 85 persons	5

(*b*) The allocation of the certificated lifeboatmen to each lifeboat remains within the discretion of the master.

(*c*) Certificates of efficiency shall be issued under the authority of the Administration. In order to obtain such a certificate an applicant shall prove that he has been trained in all the operations connected with launching lifeboats and other life-saving appliances and in the use of oars and propelling gear; that he is acquainted with the practical handling of lifeboats and of other life-saving equipment, and further, that he is capable of understanding and answering the orders relative to all kinds of life-saving appliances.

Regulation 33. BUOYANT APPARATUS

(*a*) No type of buoyant apparatus shall be approved unless it satisfies the following conditions:

(i) It shall be of such size and strength that it can be thrown from the place where it is stowed into the water without being damaged;

(ii) It shall not exceed 180 kilogrammes (400 lbs.) in weight unless suitable means to the satisfaction of the Administration are provided to enable it to be launched without lifting by hand;

(iii) It shall be of approved material and construction;

(iv) It shall be effective and stable when floating either way up;

(v) The air cases or equivalent buoyancy shall be placed as near as possible to the sides of the apparatus, and such buoyancy shall not be dependent upon inflation;

(vi) It shall be fitted with a painter and have a line securely becketed round the outside.

(*b*) The number of persons for which buoyant apparatus is certified shall be the number:

(i) Ascertained by dividing the number of kilogrammes of iron which it is capable of supporting in fresh water by 14.5 (or the number of pounds divided by 32); or

(ii) Equal to the number of millimetres in the perimeter divided by 305 (or the number of feet in the perimeter), whichever is thc less.

Regulation 34. NUMBER OF LIFEBUOYS TO BE PROVIDED

The minimum number of lifebuoys with which passenger ships are provided shall be fixed by the following table:

Length of ship		*Minimum number of buoys*
In metres	*In feet*	
Under 61	Under 200	8
61 and under 122	200 and under 400	12
122 and under 183	400 and under 600	18
183 and under 244	600 and under 800	24
244 and over	800 and over	30

PART C. CARGO SHIPS ONLY

Regulation 35. NUMBER AND CAPACITY OF LIFEBOATS AND LIFERAFTS

(*a*) (i) Every cargo ship, except ships employed as whale factory ships, fish processing or canning factory ships, and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, shall carry lifeboats on each side of the ship of such aggregate capacity as will accommodate all persons on board, and in addition shall carry liferafts sufficient to accommodate half that number.

Provided that, in the case of such cargo ships engaged on international voyages between near neighbouring countries, the Administration, if it is satisfied that the conditions of tlie voyage are such as to render the compulsory carriage of liferafts unreasonable or unnecessary, may to that extent exempt individual ships or classes of ships from this requirement.

(ii) (1) Subject to the provisions of sub-paragraph (ii)(2) of this paragraph, every tanker of 3,000 tons gross tonnage and upwards shall carry not less than four lifeboats, two of whicli shall be carried aft and two amidships, except that in tankers wliich have no amidships superstructure all lifeboats shall be carried aft.

(2) A tanker of 3,000 tons gross tonnage and upwards whicli has no amidships superstructure may be permitted by the Administration to carry two lifeboats only, provided that:

(*aa*) One lifeboat is carried aft on each side of the ship;

(*bb*) Each such lifeboat shall not exceed 8.5 metres (28 feet) in lengrh;

(*cc*) Eacli such lifeboat shall be stowed as far forward as practicable, but at least so far forward that the after end of the lifeboat is one-and-a-half times the length of the lifeboat forward of the propeller; and

(*dd*) Each such lifeboat shall be stowed as near sea level as is safe and practicable.

(*b*) (i) Every ship employed as a whale factory ship, every ship employed as a fish processing or canning factory ship and every ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries shall carry:

(1) Lifeboats on each side of such aggregate capacity as will accommodate half the total number of persons on board; provided that the Administration may permit the substitution of lifeboats by liferafts of the same total capacity so however that there shall never be

less than sufficient lifeboats on each side of the ship to accommodate 37½ per cent of all on board;

(2) Liferafts of sufficient aggregate capacity to accommodate half the total number of persons on board; provided that, if in ships employed as fish processing or canning factory ships, it is impracticable to carry lifeboats which comply fully with the requirements of this Chapter, the Administration may permit instead the carriage of other boats, which shall however provide not less than the accommodation required by this Regulation and shall have at least the buoyancy and equipment required by this Chapter for lifeboats.

(ii) Every ship employed as a whale factory ship, every ship employed as a fish processing or canning factory ship and every ship engaged in the carriage of persons employed in the whaling, fish processing or canning industries shall carry two boats — one on each side — for use in an emergency. These boats shall be of an approved type and shall be not more than 8.5 metres (28 feet) in length. They may be counted for the purposes of this paragraph provided that they comply fully with the requirements for lifeboats of this Chapter and for the purposes of Regulation 8 provided that in addition they comply with the requirements of Regulation 9, and, where appropriate, Regulation 14 of this Chapter. They shall be kept ready for immediate use while the ship is at sea. In ships in which the requirements of paragraph (*g*) of Regulation 36 of this Chapter are met by means of appliances fitted to the sides of the lifeboats, such appliances shall not be required to be fitted to the two boats provided to meet the requirements of this Regulation.

(*c*) Every cargo ship with no amidships superstructure having a registered length of 150 metres (492 feet) and upwards shall carry, in addition to the liferafts required under subparagraph (*a*)(i) of this Regulation, a liferaft capable of accommodating at least six persons which shall be stowed as far forward as is reasonable and practicable.

Regulation 36. DAVITS AND LAUNCHING ARRANGEMENTS

(*a*) In cargo ships lifeboats and liferafts shall be stowed to the satisfaction of the Administration.

(*b*) Every lifeboat shall be attached to a separate set of davits.

(*c*) Lifeboats and liferafts for which approved launching devices are required to be carried shall preferably be positioned as close to accommodation and service spaces as possible. They shall be stowed in such positions as to ensure safe launching, having particular regard to clearance from the propeller and steeply overhanging portions of the hull, with the object of ensuring so far as practicable that they can be launched down the straight side of the ship. If positioned forward they shall be stowed abaft the collision bulkhead in a sheltered position and in this respect the Administration shall give special consideration to the strength of the davits.

(*d*) Davits shall be of approved design and shall be suitably placed to the satisfaction of the Administration.

(*e*) In tankers of 1,600 tons gross tonnage and upwards, ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, all davits shall be of the gravity type. In other ships, davits shall be as follows:

(i) Luffing or gravity type for operating lifeboats weighing not more than 2,300 kilogrammes (2¼ tons) in their turning out condition;

(ii) Gravity type for operating lifeboats weighing more than 2,300 kilogrammes (2¼ tons) in their turning out condition.

(*f*) Davits, falls, blocks and all other gear shall be of such strength that the lifeboats can be turned out manned by a launching crew and then safely lowered with the full complement of persons and equipment, with the ship listed to 15 degrees either way, and with a 10 degrees trim.

(*g*) Skates or other suitable means shall be provided to facilitate launching the lifeboats against a list of 15 degrees.

(*h*) Means shall be provided for bringing the lifeboats against the ship's side and there holding them so that persons may be safely embarked.

(*i*) Lifeboats, together with the emergency boats required by sub-paragraph (*b*)(ii) of Regulation 35 of this Chapter, shall be served by wire rope falls, together with winches of an approved type which, in the case of the emergency boats, shall be capable of quick recovery of those boats. Exceptionally, the Administration may allow manila rope falls or falls of another approved material with or without winches (except that the emergency boats shall be required to be served by winches which are capable of quick recovery of those boats) where they are satisfied that manila rope falls or falls of another approved material are adequate.

(*j*) At least two lifelines shall be fitted to the davit spans, and the falls and lifelines shall be long enough to reach the water with the ship at its lightest sea-going draught and listed to 15 degrees either way. Lower fall blocks shall be fitted with a suitable ring or long link for attaching to the sling hooks unless an approved type of disengaging gear is fitted.

(*k*) Where mechanically powered appliances are fitted for the recovery of the lifeboats, efficient hand gear shall also be provided. Where davits are recovered by action of the falls by power, safety devices shall be fitted which will automatically cut off the power before the davits come against the stops in order to avoid overstressing the wire rope falls or davits.

(*l*) Lifeboats shall have the falls ready for service, and arrangements shall be made for speedily, but not necessarily simultaneously, detaching the lifeboats from the falls. The point of attachment of the lifeboats to the falls shall be at such height above the gunwale as to ensure stability when lowering the lifeboats.

(*m*) In ships employed as whale factory ships, ships employed as fish processing or canning factory ships and ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries, in which there are carried lifeboats and liferafts in accordance with sub-paragraph (*b*)(i)(2) of Regulation 35 no approved launching devices need be provided for the liferafts, but there shall be provided such devices sufficient in number, in the opinion of the Administration, to enable the liferafts carried in accordance with sub-paragraph (*b*)(i)(1) of that Regulation to be put into the water loaded with the number of persons they are permitted to accommodate, in not more than 30 minutes in calm conditions. Approved launching devices so provided shall, so far as practicable, be distributed equally on each side of the ship. Every liferaft carried on ships in which an approved launching device is required to be provided shall be of a type which is capable of being launched by such a device.

Regulation 37. NUMBER OF LIFEBUOYS TO BE PROVIDED

At least eight lifebuoys of a type which satisfies the requirements of Regulation 21 of this Chapter shall be carried.

Regulation 38. EMERGENCY LIGHTING

The lighting required by sub-paragraphs (*a*)(ii), (*b*)(ii) and (*b*)(iii) of Regulation 19 of this Chapter shall be capable of being supplied for at least three hours by the emergency source of power required by Regulation 26 of Chapter II-1. In cargo ships of 1,600 tons gross tonnage and upwards the Administration shall ensure that the lighting of the alleyways, stairways and exits is such that the access of all persons on board to the launching stations and stowage positions of lifeboats and liferafts is not impeded.

CHAPTER IV. RADIOTELEGRAPHY AND RADIOTELEPHONY

PART A. APPLICATION AND DEFINITIONS

Regulation 1. APPLICATION

(*a*) Unless expressly provided otherwise, this Chapter applies to all ships to which the present Regulations apply.

(*b*) This Chapter does not apply to ships to which present Regulations would otherwise apply while such ships are being navigated within the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.*

(*c*) No provision in this Chapter shall prevent the use by a ship or survival craft in distress of any means at its disposal to attract attention, make known its position and obtain help.

Regulation 2. TERMS AND DEFINITIONS

For the purpose of this Chapter the following terms shall have the meanings defined below. All other terms which are used in this Chapter and which are also defined in the Radio Regulations shall have the same meanings as defined in those Regulations:

(*a*) "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention[1] which may be in force at any time.

(*b*) "Radiotelegraph auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelegraph alarm signal and has been approved.

(*c*) "Radiotelephone auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelephone alarm signal and has been approved.

(*d*) "Radiotelephone station", "Radiotelephone installation" and "Watches—radiotelephone" shall be considered as relating to the medium frequency band, unless expressly provided otherwise.

(*e*) "Radio Officer" means a person holding at least a first or second class radiotelegraph operator's certificate, or a radiocommunication operator's general certificate for the maritime mobile service, complying with the provisions of the Radio Regulations, who is employed in the radiotelegraph station of a ship which is provided with such a station in compliance with the provisions of Regulation 3 or Regulation 4 of this Chapter.

(*f*) "Radiotelephone operator" means a person holding an appropriate certificate complying with the provisions of the Radio Regulations.

(*g*) "Existing installation" means:

(i) An installation wholly installed on board a ship before the date on which the present Convention enters into force irrespective of the date on which acceptance by the respective Administration takes effect; and

(ii) An installation part of which was installed on board a ship before the date of entry into force of the present Convention and the rest of which consists either of parts installed in replacement of identical parts, or parts which comply with the requirements of this Chapter.

(*h*) "New installation" means any installation which is not an existing installation.

* Such ships are subject to special requirements relative to radio for safety purposes, as contained in the relevant agreement between Canada and the United States of America.

[1] Registered with the Secretariat of the United Nations on 2 January 1981 under No. I-19497.

Regulation 3. RADIOTELEGRAPH STATION

Passenger ships irrespective of size and cargo ships of 1,600 tons gross tonnage and upwards, unless exempted under Regulation 5 of this Chapter, shall be fitted with a radiotelegraph station complying with the provisions of Regulations 9 and 10 of this Chapter.

Regulation 4. RADIOTELEPHONE STATION

Cargo ships of 300 tons gross tonnage and upwards but less than 1,600 tons gross tonnage, unless fitted with a radiotelegraph station complying with the provisions of Regulations 9 and 10 of this Chapter shall, provided they are not exempted under Regulation 5 of this Chapter, be fitted with a radiotelephone station complying with the provisions of Regulations 15 and 16 of this Chapter.

Regulation 5. EXEMPTIONS FROM REGULATIONS 3 AND 4

(*a*) The Contracting Governments consider it highly desirable not to deviate from the application of Regulations 3 and 4 of this Chapter; nevertheless the Administration may grant to individual passenger or cargo ships exemptions of a partial and/or conditional nature, or complete exemption from the requirements of Regulation 3 or Regulation 4 of this Chapter.

(*b*) The exemptions permitted under paragraph (*a*) of this Regulation shall be granted only to a ship engaged on a voyage where the maximum distance of the ship from the shore, the length of the voyage, the absence of general navigational hazards, and other conditions affecting safety are such as to render the full application of Regulation 3 or Regulation 4 of this Chapter unreasonable or unnecessary. When deciding whether or not to grant exemptions to individual ships, Administrations shall have regard to the effect that exemptions may have upon the general efficiency of the distress service for the safety of all ships. Administrations should bear in mind the desirability of requiring ships which are exempted from the requirement of Regulation 3 of this Chapter to be fitted with a radiotelephone station which complies with the provisions of Regulations 15 and 16 of this Chapter as a condition of exemption.

(*c*) Each Administration shall submit to the Organization as soon as possible after the first of January in each year a report showing all exemptions granted under paragraphs (*a*) and (*b*) of this Regulation during the previous calendar year and giving the reasons for granting such exemptions.

PART B. WATCHES

Regulation 6. WATCHES; RADIOTELEGRAPH

(*a*) Each ship which in accordance with Regulation 3 or Regulation 4 of this Chapter is fitted with a radiotelegraph station shall, while at sea, carry at least one radio officer and, if not fitted with a radiotelegraph auto alarm shall, subject to the provisions of paragraph (*d*) of this Regulation, listen continuously on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker.

(*b*) Each passenger ship which in accordance with Regulation 3 of this Chapter is fitted with a radiotelegraph station, if fitted with a radiotelegraph auto alarm, shall, subject to the provisions of paragraph (*d*) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker, as follows:

(i) If carrying or certificated to carry 250 passengers or less, at least hours listening a day in the aggregate;

(ii) If carrying or certificated to carry more than 250 passengers and engaged on a voyage exceeding 16 hours' duration between two consecutive ports, at least 16 hours' listening a day in the aggregate; in this case the ship shall carry at least two radio officers;

(iii) If carrying or certificated to carry more than 250 passengers and engaged on a voyage of less than 16 hours' duration between two consecutive ports, at least 8 hours' listening a day in the aggregate.

(*c*) (i) Each cargo ship which in accordance with Regulation 3 of this Chapter is fitted with a radiotelegraph station, if fitted with a radiotelegraph auto alarm, shall, subject to the provisions of paragraph (*d*) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker, for at least 8 hours a day in the aggregate.

(ii) Each cargo ship of 300 tons gross tonnage and upwards but less than 1,600 tons gross tonnage which is fitted with a radiotelegraph station as a consequence of Regulation 4 of this Chapter, if fitted with a radiotelegraph auto alarm shall, subject to the provisions of paragraph (*d*) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker, during such periods as may be determined by the Administration. Administrations shall, however, have regard to the desirability of requiring, whenever practicable, a listening watch of at least 8 hours a day in the aggregate.

(*d*) (i) During the period when a radio officer is required by this Regulation to listen on the radiotelegraph distress frequency, the radio officer may discontinue such listening during the time when he is handling traffic on other frequencies, or performing other essential radio duties, but only if it is impracticable to listen by split headphones or loudspeaker. The listening watch shall always be maintained by a radio officer using headphones or a loudspeaker during the silence periods provided for by the Radio Regulations.

The term "essential radio duties" in this paragraph includes urgent repairs of:

(1) Equipment for radiocommunication used for safety;

(2) Radio navigational equipment by order of the master.

(ii) In addition to the provisions of sub-paragraph (i) of this paragraph, on ships other than multi-radio officer passenger ships, the radio officer may, in exceptional cases, i.e. when it is impractical to listen by split headphones or loudspeaker, discontinue listening by order of the master in order to carry out maintenance required to prevent imminent malfunction of:

– Equipment for radiocommunication used for safety,

– Radio navigational equipment,

– Other electronic navigational equipment including its repair,

provided that:

(1) The radio officer, at the discretion of the Administration concerned, is appropriately qualified to perform these duties; and

(2) The ship is fitted with a receiving selector which meets the requirements of the Radio Regulations;

(3) The listening watch is always maintained by a radio officer using headphones or loudspeaker during the silence periods provided for by the Radio Regulations.

(*e*) In all ships fitted with a radiotelegraph auto alarm this radiotelegraph auto alarm shall, while the ship is at sea, be in operation whenever there is no listening being kept under paragraphs (*b*), (*c*) or (*d*) of this Regulation and, whenever practicable, during direction-finding operations.

(*f*) The listening periods provided for by this Regulation, including those which are determined by the Administration, should be maintained preferably during periods prescribed for the radiotelegraph service by the Radio Regulations.

Regulation 7. WATCHES; RADIOTELEPHONE

(*a*) Each ship which is fitted with a radiotelephone station in accordance with Regulation 4 of this Chapter shall, for safety purposes, carry at least one radiotelephone operator (who may be the master, an officer or a member of the crew holding a certificate for radiotelephony) and shall, while at sea, maintain continuous watch on the radiotelephone distress frequency in the place on board from which the ship is usually navigated, by use of a radiotelephone distress

frequency watch receiver, using a loudspeaker, a filtered loudspeaker or radiotelephone auto alarm.

(*b*) Each ship which in accordance with Regulation 3 or Regulation 4 of this Chapter is fitted with a radiotelegraph station shall, while at sea, maintain continuous watch on the radiotelephone distress frequency in a place to be determined by the Administration, by use of a radiotelephone distress frequency watch receiver, using a loudspeaker, a filtered loudspeaker or radiotelephone auto alarm.

Regulation 8. WATCHES; VHF RADIOTELEPHONE

Each ship provided with a Very High Frequency (VHF) radiotelephone station, in accordance with Regulation 18 of Chapter V, shall maintain a listening watch on the bridge for such periods and on such channels as may be required by the Contracting Government referred to in that Regulation.

PART C. TECHNICAL REQUIREMENTS

Regulation 9. RADIOTELEGRAPH STATIONS

(*a*) The radiotelegraph station shall be so located that no harmful interference from extraneous mechanical or other noise will be caused to the proper reception of radio signals. The station shall be placed as high in the ship as is practicable, so that the greatest possible degree of safety may be secured.

(*b*) The radiotelegraph operating room shall be of sufficient size and of adequate ventilation to enable the main and reserve radiotelegraph installations to be operated efficiently, and shall not be used for any purpose which will interfere with the operation of the radiotelegraph station.

(*c*) The sleeping accommodation of at least one radio officer shall be situated as near as practicable to the radiotelegraph operating room. In new ships, this sleeping accommodation shall not be within the radiotelegraph operating room.

(*d*) There shall be provided between the radiotelegraph operating room and the bridge and one other place, if any, from which the ship is navigated, an efficient two-way system for calling and voice communication which shall be independent of the main communication system on the ship.

(*e*) The radiotelegraph installation shall be installed in such a position that it will be protected against the harmful effects of water or extremes of temperature. It shall be readily accessible both for immediate use in case of distress and for repair.

(*f*) A reliable clock with a dial not less than 12.5 centimetres (5 inches) in diameter and a concentric seconds hand, the face of which is marked to indicate the silence periods prescribed for the radiotelegraph service by the Radio Regulations, shall be provided. It shall be securely mounted in the radiotelegraph operating room in such a position that the entire dial can be easily and accurately observed by the radio officer from the radiotelegraph operating position and from the position for testing the radiotelegraph auto alarm receiver.

(*g*) A reliable emergency light shall be provided in the radiotelegraph operating room, consisting of an electric lamp permanently arranged so as to provide satisfactory illumination of the operating controls of the main and reserve radiotelegraph installations and of the clock required by paragraph (*f*) of this Regulation. In new installations, this lamp shall, if supplied from the reserve source of energy required by sub-paragraph (*a*)(ii) of Regulation 10 of this Chapter, be controlled by two-way switches placed near the main entrance to the radiotelegraph operating room and at the radiotelegraph operating position, unless the layout of the radiotelegraph operating room does not warrant it. These switches shall be clearly labelled to indicate their purpose.

(*h*) Either an electric inspection lamp, operated from the reserve source of energy required by sub-paragraph (*a*)(iii) of Regulation 10 of this Chapter and provided with a flexible lead of adequate length, or a flashlight shall be provided and kept in the radiotelegraph operating room.

(*i*) The radiotelegraph station shall be provided with such spare parts, tools and testing equipment as will enable the radiotelegraph installation to be maintained in efficient working condition while at sea. The testing equipment shall include an instrument or instruments for measuring A.C. volts, D.C. volts and ohms.

(*j*) If a separate emergency radiotelegraph operating room is provided the requirements of paragraphs (*d*), (*e*), (*f*), (*g*) and (*h*) of this Regulation shall apply to it.

Regulation 10. RADIOTELEGRAPH INSTALLATIONS

(*a*) Except as otherwise expressly provided in this Regulation:

(i) The radiotelegraph station shall include a main installation and reserve installation, electrically separate and electrically independent of each other.

(ii) The main installation shall include a main transmitter, main receiver, radiotelephone distress frequency watch receiver, and main source of energy.

(iii) The reserve installation shall include a reserve transmitter, reserve receiver and reserve source of energy.

(iv) A main and a reserve antenna shall be provided and installed, provided that the Administration may except any ship from the provision of a reserve antenna if it is satisfied that the fitting of such an antenna is impracticable or unreasonable, but in such case a suitable spare antenna completely assembled for immediate installation shall be carried. In addition, sufficient antenna wire and insulators shall in all cases be provided to enable a suitable antenna to be erected. The main antenna, if suspended between supports liable to whipping, shall be suitably protected against breakage.

(*b*) In installations on cargo ships (except those on cargo ships of 1,600 tons gross tonnage and upwards installed on or after 19 November 1952), if the main transmitter complies with all the requirements for the reserve transmitter, the latter is not obligatory.

(*c*) (i) The main and reserve transmitters shall be capable of being quickly connected with and tuned to the main antenna, and the reserve antenna if one is fitted.

(ii) The main and reserve receivers shall be capable of being quickly connected with any antenna with which they are required to be used.

(*d*) All parts of the reserve installation shall be placed as high in the ship as is practicable, so that the greatest possible degree of safety may be secured.

(*e*) The main and reserve transmitters shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency. In addition, the main transmitter shall be capable of transmitting on at least two working frequencies in the authorized bands between 405 kHz and 535 kHz, using classes of emission assigned by the Radio Regulations for these frequencies. The reserve transmitter may consist of a ship's emergency transmitter, as defined in and limited in use by the Radio Regulations.

(*f*) The main and reserve transmitters shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent and a note frequency between 450 amd 1,350 Hz.

(*g*) The main and reserve transmitters shall, when connected to the main antenna, have a minimum normal range as specified below, that is to say, they must be capable of transmitting clearly perceptible signals from ship to ship by day and under normal conditions and cir-

cumstances over the specified ranges.* (Clearly perceptible signals will normally be received if the R.M.S. value of the field strength at the receiver is at least 50 microvolts per metre.)

	Minimum normal range in miles	
	Main transmitter	*Reserve transmitter*
All passenger ships, and cargo ships of 1,600 tons gross tonnage and upwards	150	100
Cargo ships below 1,600 tons gross tonnage	100	75

(*h*) (i) The main and reserve receivers shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency.

(ii) In addition, the main receiver shall permit the reception of such of the frequencies and classes of emission used for the transmission of time signals, meteorological messages and such other communications relating to safety of navigation as may be considered necessary by the Administration.

(iii) The radiotelephone distress frequency watch receiver shall be preset to this frequency. It shall be provided with a filtering unit or a device to silence the loudspeaker if on the bridge in the absence of a radiotelephone alarm signal. The device shall be capable of being easily switched in and out and may be used when, in the opinion of the master, conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship.

(iv) (1) A radiotelephone transmitter, if provided, shall be fitted with an automatic device for generating the radiotelephone alarm signal, so designed as to prevent actuation by mistake, and complying with the requirements of paragraph (*e*) of Regulation 16 of this Chapter. The device shall be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message.

(2) Arrangements shall be made to check periodically the proper functioning of the automatic device for generating the radiotelephone alarm signal on frequencies other than the radiotelephone distress frequency using a suitable artificial antenna.

* In the absence of a direct measurement of the field strength the following data may be used as a guide for approximately determining the normal range:

Normal range in miles	*Metre-amperes*[1]	*Total antenna power* (watts)[2]
200	128	200
175	102	125
150	76	71
125	58	41
100	45	25
75	34	14

[1] This figure represents the product of the maximum height of the antenna above the deepest load water-line in metres and the antenna current in amperes (R.M.S. value).

The values given in the second column of the table correspond to an average value of the ratio

$$\frac{\text{effective antenna height}}{\text{maximum antenna height}} = 0.47.$$

This ratio varies with local conditions of the antenna and may vary between about 0.3 and 0.7.

[2] The values given in the third column of the table correspond to an average value of the ratio

$$\frac{\text{radiated antenna power}}{\text{total antenna power}} = 0.08.$$

This ratio varies considerably according to the values of effective antenna height and antenna resistance.

(*i*) The main receiver shall have sufficient sensitivity to produce signals in headphones or by means of a loudspeaker when the receiver input is as low as 50 microvolts. The reserve receiver shall have sufficient sensitivity to produce such signals when the receiver input is as low as 100 microvolts.

(*j*) There shall be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the main installation over the normal range required by paragraph (*g*) of this Regulation as well as for the purpose of charging any batteries forming part of the radiotelegraph station. The voltage of the supply for the main installation shall, in the case of new ships, be maintained within ± 10 per cent of the rated voltage. In the case of existing ships, it shall be maintained as near the rated voltage as possible and, if practicable, within ±10 per cent.

(*k*) The reserve installation shall be provided with a source of energy independent of the propelling power of the ship and of the ship's electrical system.

(*l*) (i) The reserve source of energy shall preferably consist of accumulator batteries, which may be charged from the ship's electrical system, and shall under all circumstances be capable of being put into operation rapidly and of operating the reserve transmitter and receiver for at least six hours continuously under normal working conditions besides any of the additional loads mentioned in paragraphs (*m*) and (*n*) of this Regulation.*

(ii) The reserve source of energy is required to be of a capacity sufficient to operate simultaneously the reserve transmitter and the VHF installation, when fitted, for at least six hours unless a switching device is fitted to ensure alternate operation only. VHF usage of the reserve source of energy shall be limited to distress, urgency and safety communications. Alternatively, a separate reserve source of energy may be provided for the VHF installation.

(*m*) The reserve source of energy shall be used to supply the reserve installation and the automatic alarm signal keying device specified in paragraph (*r*) of this Regulation if it is electrically operated.

The reserve source of energy may also be used to supply:

(i) The radiotelegraph auto alarm;

(ii) The emergency light specified in paragraph (*g*) of Regulation 9 of this Chapter;

(iii) The direction-finder;

(iv) The VHF installation;

(v) The device for generating the radiotelephone alarm signal, if provided;

(vi) Any device, prescribed by the Radio Regulations, to permit change-over from transmission to reception and vice versa.

Subject to the provisions of paragraph (*n*) of this Regulation, the reserve source of energy shall not be used other than for the purposes specified in this paragraph.

(*n*) Notwithstanding the provisions of paragraph (*m*) of this Regulation, the Administration may authorize the use in cargo ships of the reserve source of energy for a small number of low-power emergency circuits which are wholly confined to the upper part of the ship, such as emergency lighting on the boat deck, on condition that these can be readily discounected if necessary, and that the source of energy is of sufficient capacity to carry the additional load or loads.

(*o*) The reserve source of energy and its switchboard shall be as high as practicable in the ship and readily accessible to the radio officer. The switchboard shall, wherever possible, be situated in a radio room; if it is not, it shall be capable of being illuminated.

* For the purpose of determining the electrical load to be supplied by the reserve source of energy, the following formula is recommended as a guide:

– ½ of the transmitter current consumption with the key down (mark);
– + ½ of the transmitter current consumption with the key up (space);
– + current consumption of receiver and additional circuits connected to the reserve source of energy.

(*p*) While the ship is at sea, accumulator batteries, whether forming part of the main installation or reserve installation, shall be brought up to the normal fully-charged condition daily.

(*q*) All steps shall be taken to eliminate so far as is possible the causes of, and to suppress, radio interference from electrical and other apparatus on board. If necessary, steps shall be taken to ensure that the antennae attached to broadcast receivers do not cause interference to the efficient or correct working of the radiotelegraph installation. Particular attention shall be paid to this requirement in the design of new ships.

(*r*) In addition to a means for manually transmitting the radiotelegraph alarm signal, an automatic radiotelegraph alarm signal keying device shall be provided, capable of keying the main and the reserve transmitters so as to transmit the radiotelegraph alarm signal. The device shall be capable of being taken out of operation at any time in order to permit immediate manual operation of the transmitter. If electrically operated, this keying device shall be capable of operation from the reserve source of energy.

(*s*) At sea, the reserve transmitter, if not used for communications, shall be tested daily using a suitable artificial antenna, and at least once during each voyage using the reserve antenna if installed. The reserve source of energy shall also be tested daily.

(*t*) All equipment forming part of the radiotelegraph installation shall be reliable, and shall be so constructed that it is readily accessible for maintenance purposes.

(*u*) Notwithstanding the provision of Regulation 4 of this Chapter, the Administration may, in the case of cargo ships of less than 1,600 tons gross tonnage, relax the full requirements of Regulation 9 of this Chapter and the present Regulation, provided that the standard of the radiotelegraph station shall in no case fall below the equivalent of that prescribed under Regulation 15 and Regulation 16 of this Chapter for radiotelephone stations, so far as applicable. In particular, in the case of cargo ships of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage, the Administration need not require:

(i) A reserve receiver;

(ii) A reserve source of energy in existing installations;

(iii) Protection of the main antenna against breakage by whipping;

(iv) The means of communication between the radiotelegraph station and the bridge to be independent of the main communication system;

(v) The range of the transmitter to be greater than 75 miles.

Regulation 11. RADIOTELEGRAPH AUTO ALARMS

(*a*) Any radiotelegraph auto alarm installed after 26 May 1965 shall comply with the following minimum requirements:

(i) In the absence of interference of any kind it shall be capable of being actuated, without manual adjustment, by any radiotelegraph alarm signal transmitted on the radiotelegraph distress frequency by any coast station, ship's emergency or survival craft transmitter operating in accordance with the Radio Regulations, provided that the strength of the signal at the receiver input is greater than 100 microvolts and less than 1 volt.

(ii) In the absence of interference of any kind, it shall be actuated by either three or four consecutive dashes when the dashes vary in length from 3.5 to as near 6 seconds as possible and the spaces vary in length between 1.5 seconds and the lowest practicable value, preferably not greater than 10 milliseconds.

(iii) It shall not be actuated by atmospherics or by any signal other than the radiotelegraph alarm signal, provided that the received signals do not in fact constitute a signal falling within the tolerance limits indicated in sub-paragraph (ii) above.

(iv) The selectivity of the radiotelegraph auto alarm shall be such as to provide a practically uniform sensitivity over a band extending not less than 4 kHz and not more than 8 kHz

on each side of the radiotelegraph distress frequency and to provide outside this band a sensitivity which decreases as rapidly as possible in conformity with the best engineering practice.

(v) If practicable, the radiotelegraph auto alarm shall, in the presence of atmospherics or interfering signals, automatically adjust itself so that within a reasonably short time it approaches the condition in which it can most readily distinguish the radiotelegraph alarm signal.

(vi) When actuated by a radiotelegraph alarm signal, or in the event of failure of the apparatus, the radiotelegraph auto alarm shall cause a continuous audible warning to be given in the radiotelegraph operating room, in the radio officer's sleeping accommodation and on the bridge. If practicable, warning shall also be given in the case of failure of any part of the whole alarm receiving system. Only one switch for stopping the warning shall be provided and this shall be situated in the radiotelegraph operating room.

(vii) For the purpose of regularly testing the radiotelegraph auto alarm, the apparatus shall include a generator pre-tuned to the radiotelegraph distress frequency and a keying device by means of a radiotelegraph alarm signal of the minimum strength indicated in sub-paragraph (i) above is produced. A means shall also be provided for attaching headphones for the purpose of listening to signals received on the radiotelegraph auto alarm.

(viii) The radiotelegraph auto alarm shall be capable of withstanding vibration, humidity and changes of temperature, equivalent to severe conditions experienced on board ships at sea, and shall continue to operate under such conditions.

(*b*) Before a new type of radiotelegraph auto alarm is approved, the Administration concerned shall be satisfied, by practical tests made under operating conditions equivalent to those obtaining in practice, that the apparatus complies with paragraph (*a*) of this Regulation.

(*c*) In ships fitted with a radiotelegraph auto alarm, its efficiency shall be tested by a radio officer at least once every 24 hours while at sea. If it is not in working order, the radio officer shall report that fact to the master or officer on watch on the bridge.

(*d*) A radio officer shall periodically check the proper functioning of the radiotelegraph auto alarm receiver, with its normal antenna connected, by listening to signals and by comparing them with similar signals received on the radiotelegraph distress frequency on the main installation.

(*e*) As far as practicable, the radiotelegraph auto alarm, when connected to an antenna shall not affect the accuracy of the direction-finder.

Regulation 12. DIRECTION-FINDERS

(*a*) (i) The direction-finding apparatus required by Regulation 12 of Chapter V shall be efficient and capable of receiving signals with the minimum of receiver noise and of taking bearings from which the true bearing and direction may be determined.

(ii) It shall be capable of receiving signals on the radiotelegraph frequencies assigned by the Radio Regulations for the purposes of distress and direction-finding and for maritime radio beacons.

(iii) In the absence of interference the direction-finding apparatus shall have a sensitivity sufficient to permit accurate bearings being taken on a signal having a field strength as low as 50 microvolts per metre.

(iv) As far as is practicable, the direction-finding apparatus shall be so located that as little interference as possible from mechanical or other noise will be caused to the efficient determination of bearings.

(v) As far as is practicable, the direction-finding antenna system shall be erected in such a manner that the efficient determination of bearings will be hindered as little as possible by the close proximity of other antennae, derricks, wire halyards or other large metal objects.

(vi) An efficient two-way means of calling and voice communication shall be provided between the direction-finder and the bridge.

(vii) All direction-finders shall be calibrated to the satisfaction of the Administration on first installation. The calibration shall be verified by check bearings or by a further calibration whenever any changes are made in the position of any antennae or of any structures on deck which might affect appreciably the accuracy of the direction-finder. The calibration particulars shall be checked at yearly intervals, or as near thereto as possible. A record shall be kept of the calibrations and of any checks made of their accuracy.

(*b*) (i) Radio equipment for homing on the radiotelephone distress frequency shall be capable of taking direction-finding bearings on that frequency without ambiguity of sense within an arc of 30 degrees on either side of the bow.

(ii) When installing and testing the equipment referred to in this paragraph due regard should be given to the relevant recommendation of the International Radio Consultative Committee (CCIR).

(iii) All reasonable steps shall be taken to ensure the homing capability required by this paragraph. In cases where due to technical difficulties the homing capability cannot be achieved, Administrations may grant to individual ships exemptions from the requirements of this paragraph.

Regulation 13. RADIOTELEGRAPH INSTALLATION FOR FITTING IN MOTOR LIFEBOATS

(*a*) The radiotelegraph installation required by Regulation 14 of Chapter III shall include a transmitter, a receiver and a source of energy. It shall be so designed that it can be used in an emergency by an unskilled person.

(*b*) The transmitter shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency. The transmitter shall also be capable of transmitting on the frequency, and of using a class of emission, assigned by the Radio Regulations for use by survival craft in the bands between 4,000 kHz and 27,500 kHz.

(*c*) The transmitter shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent and a note frequency between 450 and 1,350 Hz.

(*d*) In addition to a key for manual transmissions, the transmitter shall be fitted with an automatic keying device for the transmission of the radiotelegraph alarm and distress signals.

(*e*) On the radiotelegraph distress frequency the transmitter shall have a minimum normal range (as specified in paragraph (*g*) of Regulation 10 of this Chapter) of 25 miles using the fixed antenna.*

(*f*) The receiver shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency.

(*g*) The source of energy shall consist of an accumulator battery with sufficient capacity to supply the transmitter for four hours continuously under normal working conditions. If the battery is of a type that requires charging, means shall be available for charging it from the ship's power supply. In addition there shall be a means for charging it after the lifeboat has been launched.

(*h*) When the power for the radiotelegraph installation and the searchlight required by Regulation 14 of Chapter III are drawn from the same battery, it shall have sufficient capacity to provide for the additional load of the searchlight.

(*i*) A fixed-type antenna will be provided together with means for supporting it at the maximum practicable height. In addition an antenna supported by a kite or balloon shall be provided if practicable.

* In the absence of a measurement of the field strength, it may be assumed that this range will be obtained if the product of the height of the antenna above the water-line and the antenna current (R.M.S. value) is 10 metre-amperes.

(*j*) At sea a radio officer shall at weekly intervals test the transmitter using a suitable artificial antenna, and shall bring the battery up to full charge if it is of a type which requires charging.

Regulation 14. PORTABLE RADIO APPARATUS FOR SURVIVAL CRAFT

(*a*) The apparatus required by Regulation 13 of Chapter III shall include a transmitter, a receiver, an antenna and a source of energy. It shall be so designed that it can be used in an emergency by an unskilled person.

(*b*) The apparatus shall be readily portable, watertight, capable of floating in sea water and capable of being dropped into the sea without damage. New equipment shall be as lightweight and compact as practicable and shall preferably be capable of use in both lifeboats and liferafts.

(*c*) The transmitter shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency, and, in the bands between 4,000 kHz and 27,500 kHz, of transmitting on the radiotelegraph frequency, and of using a class of emission assigned by the Radio Regulations for survival craft. However, the Administration may permit the transmitter to be capable of transmitting on the radiotelephone distress frequency, and of using a class of emission assigned by the Radio Regulations for that frequency, as an alternative or in addition to transmission on the radiotelegraph frequency assigned by the Radio Regulations for survival craft in the bands between 4,000 kHz and 27,500 kHz.

(*d*) The transmitter shall, if modulated emission is prescribed by the Radio Regulations, have a depth of modulation of not less than 70 per cent and in the case of radiotelegraph emission have a note frequency between 450 and 1,350 Hz.

(*e*) In addition to a key for manual transmissions, the transmitter shall be fitted with an automatic keying device for the transmission of the radiotelegraph alarm and distress signals. If the transmitter is capable of transmitting on the radiotelephone distress frequency, it shall be fitted with an automatic device, complying with the requirements of paragraph (*e*) of Regulation 16 of this Chapter, for transmitting the radiotelephone alarm signal.

(*f*) The receiver shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency. If the transmitter is capable of transmitting on the radiotelephone distress frequency the receiver shall also be capable of receiving that frequency and a class of emission assigned by the Radio Regulations for that frequency.

(*g*) The antenna shall be either self-supporting or capable of being supported by the mast of a lifeboat at the maximum practicable height. In addition it is desirable that an antenna supported by a kite or balloon shall be provided if practicable.

(*h*) The transmitter shall supply an adequate radio frequency power* to the antenna required by paragraph (*a*) of this Regulation and shall preferably derive its supply from a hand generator. If operated from a battery, the battery shall comply with conditions laid down by the Administration to ensure that it is of a durable type and is of adequate capacity.

(*i*) At sea a radio officer or a radiotelephone operator, as appropriate, shall at weekly intervals test the transmitter, using a suitable artificial antenna and shall bring the battery up to full charge if it is of a type which requires charging.

(*j*) For the purpose of this Regulation, new equipment means equipment supplied to a ship after the date of entry into force of the present Convention.

* It may be assumed that the purposes of this Regulation will be satisfied by the following performance: At least 10 watts input to the anode of the final stage or a radio-frequency output of at least 2.0 watts (A2 emission) at 500 kHz into an artificial antenna having an effective resistance of 15 ohms and 100×10^{-12} farads capacitance in series. The depth of modulation shall be at least 70 per cent.

Regulation 15. RADIOTELEPHONE STATIONS

(*a*) The radiotelephone station shall be in the upper part of the ship and so located that it is sheltered to the greatest possible extent from noise which might impair the correct reception of messages and signals.

(*b*) There shall be efficient communication between the radiotelephone station and the bridge.

(*c*) A reliable clock shall be seeurely mounted in such a position that the entire dial can be easily observed from the radiotelephone operating position.

(*d*) A reliable emergency light shall be provided, independent of the system which supplies the normal lighting of the radiotelephone installation, and permanently arranged so as to be capable of providing adequate illumination of the operating controls of the radiotelephone installation, of the clock required by paragraph (*c*) of this Regulation and of the card of instructions required by paragraph (*f*).

(*e*) Where a source of energy consists of a battery or batteries, the radiotelephone station shall be provided with a mcans of assessing the charge condition.

(*f*) A card of instructions giving a clear summary of the radiotelephone distress procedure shall be displayed in full view of the radiotelephone operating position.

Regulation 16. RADIOTELEPHONE INSTALLATIONS

(*a*) The radiotelephone installation shall include transmitting and receiving equipment, and appropriate sources of energy (referred to in the following paragraphs as "the transmitter", "the receiver", "the radiotelephone distress frequency watch receiver", and "the source of energy" respectively).

(*b*) The transmitter shall be eapable of transmitting on the radiotelephone distress frequency and on at least one other frequency in the bands between 1,605 kHz and 2,850 kHz, using the classes of emission assigned by the Radio Regulations for these frequencies. In normal operation a double sideband transmission or a single sideband transmission with full carrier (i.e., A3H) shall have a depth of modulation of at least 70 per cent at peak intensity. Modulation of a single sideband transmission with reduced or suppressed carrier (A3A, A3J) shall be such that the intermodulation products shall not exceed the values given in the Radio Regulations.

(*c*) (i) In the case of cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage the transmitter shall have a minimum normal range of 150 miles, i.e., it shall be capable of transmitting clearly perceptible signals from ship to ship by day and under normal conditions and circumstances over this range.* (Clearly perceptible signals will normally be received if the R.M.S. value of the field strength produced at the receiver by the unmodulated carrier is at least 25 microvolts per metre.)

(ii) In the case of cargo ships of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage:

(1) For existing installations the transmitter shall have a minimum normal range of at least 75 miles; and

(2) For new installations the transmitter shall produce a power in the antenna of at Icast 15 watts (unmodulated carrier).

(*d*) The transmitter shall be fitted with a device for generating the radiotelephone alarm signal by automatic means so designed as to prevent actuation by mistake. The device shall be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message. Arrangements shall be made to check periodically the proper func-

* In the absence of field strength measurements, it may be assumed that this range will be obtained by a power in the antenna of 15 watts (unmodulated carrier) with an antenna efficiency of 27 per cent.

tioning of the device on frequencies other than the radiotelephone distress frequency using a suitable artificial antenna.

(*e*) The device required by paragraph (*d*) of this Regulation shall comply with the following requirements:

(i) The tolerance of the frequency of each tone shall be ±1.5 per cent;

(ii) The tolerance on the duration of each tone shall be ±50 milliseconds;

(iii) The interval betwcen successive tones shall not exceed 50 mlliseconds;

(iv) The ratio of the amplitude of the stronger tone to that of the weaker shall be within the range 1 to 1.2.

(*f*) The receiver required by paragraph (*a*) of this Regulation shall be capable of receiving the radiotelephone distress frequency and at least one other frequency available for maritime radiotelephone stations in the bands between 1,605 kHz and 2,850 kHz, using the classes of emission assigned by the Radio Regulations for these frequencies. In addition the receiver shall permit the reception of such other frequencies, using the classes of emission assigned by the Radio Regulations, as are used for the transmission by radiotclephony of meteorological messages and such other communications relating to the safety of navigation as may be considered necessary by the Administration. The receiver shall have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.

(*g*) The radiotelephone distress frequency watch receiver shall be preset to this frequency. It shall be provided with a filtering unit or a device to silence the loudspeaker in the absence of a radiotelephone alarm signal. The device shall be capable of being easily switched in and out and may be used when, in the opinion of the master, conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship.

(*h*) To permit rapid change-over from transmission to reception when manual switching is used, the control for the switching device shall, where practicable, be located on the microphone or the telephone handset.

(*i*) While the ship is at sea, there shall be available at all times a main source of energy sufficient to operate the installation over the normal range required by paragraph (*c*) of this Regulation. If batteries are provided they shall under all circumstances have sufficient capacity to operate the transmitter and receiver for at least six hours continuously under normal working conditions.* In installations in cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage made on or after 19 November 1952, a reserve source of energy shall be provided in the upper part of the ship unless the main source of energy is so situated.

(*j*) The reserve source of energy, if provided, may be used only to supply:

(i) The radiotelephone installation;

(ii) The emergency light required by paragraph (*d*) of Regulation 15 of this Chapter;

(iii) The device required by paragraph (*d*) of this Regulation, for generating the radiotelephone alarm sigual; and

(iv) The VHF installation.

(*k*) Notwithstanding the provisions of paragraph (*j*) of this Regulation, the Administration may authorize the use of the reserve source of energy, if provided, for a direction-finder, if fitted, and for a number of low-power emergency circuits which are wholly confined to the upper part of the ship, such as emergency lighting on the boat deck, on condition that the addi-

* For the purpose of determining the electrical load to be supplied by batteries required to have six hours reserve capacity, the following formula is recommended as a guide:

– ½ of the current consumption necessary for speech transmission;

– + current consumption of receiver;

– + current consumption of all additional loads to which the batteries may supply energy in time of distress or emergency.

tional loads can be readily disconnected, and that the source of energy is of sufficient capacity to carry them.

(*l*) While at sea, any battery provided shall be kept charged so as to meet the requirements of paragraph (*i*) of this Regulation.

(*m*) An antenna shall be provided and installed and, if suspended between supports liable to whipping, shall in the case of cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage be protected against breakage. In addition, there shall be a spare antenna completely assembled for immediate replacement or, where this is not practicable, sufficient antenna wire and insulators to enable a spare antenna to be erected. The necessary tools to erect an antenna shall also be provided.

Regulation 17. VHF RADIOTELEPHONE STATIONS

(*a*) When a VHF radiotelephone station is provided in accordance with Regulation 18 of Chapter V, it shall be in the upper part of the ship and include a VHF radiotelephone installation complying with the provisions of this Regulation and comprising a transmitter and receiver, a souree of power capable of actuating them at their rated power levels, and an antenna suitable for efficient radiating and receiving signals at the operating frequencies.

(*b*) Such a VHF installation shall conform to the requirements laid down in the Radio Regulations for equipment used in the VHF Maritime Mobile Radiotelephone Service and shall be capable of operation on those channels specified by the Radio Regulations and as may be required by the Contracting Government referred to in Regulation 18 of Chapter V.

(*c*) The Contracting Government shall not require the transmitter R.F. carrier power output to be greater than 10 watts. The antenna shall, in so far as is practicable, have an unobstructed view in all directions.*

(*d*) Control of the VHF channels required for navigational safety shall be immediately available on the bridge convenient to the conning position and, where necessary, facilities should also be available to permit radiocommunications from the wings of the bridge.

Regulation 18. RADIOTELEPHONE AUTO ALARMS

(*a*) The radiotelephone auto alarm shall comply with the following minimum requirements:

(i) The frequencies of maximum response of the tuned circuits, and other tone selecting devices, shall be subject to a tolerance of ±1.5 per cent in each instance; and the response shall not fall below 50 per cent of the maximum response for frequencies within 3 per cent of the frequency of maximum response;

(ii) In the absence of noise and interference, the automatic receiving equipment shall be capable of operating from the alarm signal in a period of not less than four and not more than six seconds;

(iii) The automatic receiving equipment shall respond to the alarm signal, under conditions of intermittent interference caused by atmospherics and powerful signals other than the alarm signal, preferably without any manual adjustment being required during any period of watch maintained by the equipment;

(iv) The automatic receiving equipment shall not be actuated by atmospherics or by strong signals other than the alarm signal;

(v) The automatic receiving equipment shall be effective beyond the range at which speech transmission is satisfactory;

* For guidance purposes, it is assumed that each ship would be fitted with a vertically polarized unity gain antenna at a nominal height of 9.15 metres (30 feet) above water, a transmitter R.F. power output of 10 watts, and a receiver sensitivity of 2 microvolts across the input terminals for 20 db signal-to-noise ratio.

(vi) The automatic receiving equipment shall be capable of withstanding vibration, humidity, changes of temperature and variations in power supply voltage equivalent to the severe conditions experienced on board ships at sea, and shall continue to operate under such conditions;

(vii) The automatic receiving equipment should, as far as practicable, give warning of faults that would prevent the apparatus from performing its normal functions during watch hours.

(*b*) Before a new type of radiotelephone auto alarm is approved, the Administration concerned shall be satisfied by practical tests, made under operating conditions equivalent to those obtained in practice, that the apparatus complies with paragraph (*a*) of this Regulation.

PART D. RADIO LOGS

Regulation 19. RADIO LOGS

(*a*) The radio log (diary of the radio service) required by the Radio Regulations for a ship which is fitted with a radiotelegraph station in accordance with Regulation 3 or Regulation 4 of this Chapter shall be kept in the radiotelegraph operating room during the voyage. Every radio officer shall enter in the log his name, the times at which he goes on and off watch, and all incidents connected with the radio service which occur during his watch which may appear to be of importance to safety of life at sea. In addition, there shall be entered in the log:

(i) The entries required by the Radio Regulations;

(ii) Details of the maintenance, including a record of the charging of the batteries, in such form as may be prescribed by the Administration;

(iii) A daily statement that the requirement of paragraph (*p*) of Regulation 10 of this Chapter has been fulfilled;

(iv) Details of the tests of the reserve transmitter and reserve source of energy made under paragraph (*s*) of Regulation 10 of this Chapter;

(v) In ships fitted with a radiotelegraph auto alarm details of tests made under paragraph (*c*) of Regulation 11 of this Chapter;

(vi) Details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (*j*) of Regulation 13 of this Chapter, and details of the tests required by that paragraph in respect of the transmitters fitted in motor lifeboats;

(vii) Details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (*i*) of Regulation 14 of this Chapter, and details of the tests required by that paragraph in respect of portable radio apparatus for survival craft;

(viii) The time at which the listening watch was discontinued in accordance with paragraph (*d*) of Regulation 6 of this Chapter, together with the reason and the time at which the listening watch was resumed.

(*b*) The radio log (diary of the radio service) required by the Radio Regulations for a ship which is fitted with a radiotelephone station in aecordance with Regulation 4 of this Chapter shall be kept at the place where listening watch is maintained. Every qualified operator, and every master, officer or crew member carrying out a listening watch in accordance with Regulation 7 of this Chapter, shall enter in the log, with his name, the dctails of all incidents comiected with the radio service which occur during his watch which may appear to be of importance to safety of life at sea. In addition, there shall be entered in the log:

(i) The details required by the Radio Regulations;

(ii) The time at which listening watch begins when the ship leaves port, and the time at which it ends when the ship reaches port;

(iii) The time at which listening watch is for any reason discontinued, together with the reason, and the time at which listening watch is resumed;

(iv) Details of the maintenance of the batteries (if provided), including a record of the charging required by paragraph (*l*) of Regulation 16 of this Chapter;

(v) Details of the maintenance of the batteries, including a record of the charging (if applicable) required by paragraph (*j*) of Regulation 14 of this Chapter, and details of the tests required by that paragraph in respect of portable radio apparatus for survival craft.

(*c*) Radio logs shall be available for inspection by the officers authorized by the Administration to make such inspection.

CHAPTER V. SAFETY OF NAVIGATION

Regulation 1. APPLICATION

This Chapter, unless otherwise expressly provided in this Chapter, applies to all ships on all voyages, except ships of war and ships solely navigating the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.

Regulation 2. DANGER MESSAGES

(*a*) The master of every ship which meets with dangerous ice, a dangerous derelict, or any other direct danger to navigation, or a tropical storm, or encounters sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures, or winds of force 10 or above on the Beaufort scale for which no storm warning has been received, is bound to communicate the information by all the means at his disposal to ships in the vicinity, and also to the competent authorities at the first point on the coast with which he can communicate. The form in which the information is sent is not obligatory. It may be transmitted either in plain language (preferably English) or by means of the International Code of Signals. It should be broadcast to all ships in the vicnity and sent to the first point on the coast to which communication can be made, with a request that it be transmitted to the appropriate authorities.

(*b*) Each Contracting Government will take all steps necessary to ensure that when intelligence of any of the dangers specified in paragraph (*a*) of this Regulation is received, it will be promptly brought to the knowledge of those concerned and communicated to other interested Governments.

(*c*) The transmission of messages respecting the dangers specified is free of cost to the ships concerned.

(*d*) All radio messages issued under paragraph (*a*) of this Regulation shall be preeeded by the Safety Signal, using the procedure as prescribed by the Radio Regulations as defined in Regulation 2 of Chapter IV.

Regulation 3. INFORMATION REQUIRED IN DANGER MESSAGES

The following information is required in danger messages:

(a) *Ice, derelicts and other direct dangers to navigation*

(i) The kind of ice, derelict or danger observed;

(ii) The position of the ice, derelict or danger when last observed;

(iii) The time and date (Greenwich Mean Time) when danger last observed.

(b) *Tropical storms (hurricanes in the West Indies, typhoons in the China Sea, cyclones in Indian waters, and storms of a similar nature in other regions)*

(i) A statement that a tropical storm has been encountered; this obligation should be interpreted in a broad spirit, and information transmitted whenever the master has good reason to believe that a tropical storm is developing or exists in his neighbourhood;

(ii) Time, date (Greenwich Mean Time) and position of ship when the observation was taken;

(iii) As much of the following information as is practicable should be included in the message:

- Barometric pressure, preferably corrected (stating millibars, millimetres, or inches, and whether corrected or uncorrected);
- Barometric tendency (the change in barometric pressure during the past three hours);
- True wind direction;
- Wind force (Beaufort scale);
- State of the sea (smooth, moderate, rough, high);
- Swell (slight, moderate, heavy) and the true direction from which it comes; period or length of swell (short, average, long) would also be of value;
- True course and speed of ship.

(c) *Subsequent observations*

When a master has reported a tropical or other dangerous storm, it is desirable, but not obligatory, that further observations be made and transmitted hourly, if practicable, but in any case at intervals of not more than three hours, so long as the ship remains under the influence of the storm.

(d) *Winds of force 10 or above on the Beaufort scale for which no storm warning has been received*

This is intended to deal with storms other than the tropical storms referred to in paragraph (*b*) of this Regulation; when such a storm is encountered, the message should contain similar information to that listed under that paragraph but excluding the details concerning sea and swell.

(e) *Sub-freezing air temperatures associated with gale force winds causing severe ice accretion on superstructures*

(i) Time and date (Greenwich Mean Time);

(ii) Air temperature;

(iii) Sea temperature (if practicable);

(iv) Wind force and direction.

Examples

Ice. TTT Iee. Large berg sighted in 4605 N., 4410 W., at 0800 GMT. May 15.

Derelicts. TTT Derelict. Observed derelict almost submerged in 4006 N., 1243 W., at 1630 GMT. April 21.

Danger to Navigation. TTT Navigation. Alpha lightship not on station. 1800 GMT. January 3.

Tropical Storm. TTT Storm. 0030 GMT. August 18. 2004 N., 11354 E. Barometer corrected 994 millibars, tendency down 6 millibars. Wind NW., force 9, heavy squalls. Heavy easterly swell. Course 067, 5 knots.

TTT Storm. Appearances indicate approach of hurricane. 1300 GMT. September 14. 22 N., 7236 W. Barometer corrected 29.64 inches, tendency down .015 inches. Wind NE., force 8, frequent rain squalls. Course 035, 9 knots.

TTT Storm. Conditions indicate intense cyclone has formed. 0200 GMT. May 4. 1620 N., 9203 E. Barometer uncorrected 753 millimetres, tendency down 5 millimetres. Wind S. by W., force 5. Course 300, 8 knots.

TTT Storm. Typhoon to southeast. 0300 GMT. June 12. 1812 N., 12605 E. Barometer falling rapidly. Wind increasing from N.

TTT Storm. Typhoon to southeast. 0300 GMT. June 12. 1812 N., 12605 E. Barometer falling rapidly. Wind increasing from N.

TTT Storm. Wind force 11, no storm warning received. 0300 GMT. May 4. 4830 N., 30 W. Barometer corrected 983 millibars, tendency down 4 millibars. Wind SW., force 11 veering. Course 260, 6 knots.

Icing. TTT experiencing severe icing. 1400 GMT. March 2. 69 N., 10 W. Air temperature 18. Sea temperature 29. Wind NE., force 8.

Regulation 4. METEOROLOGICAL SERVICES

(*a*) The Contracting Governments undertake to encourage the collection of meteorological data by ships at sea and to arrange for their examination, dissemination and exchange in the manner most suitable for the purpose of aiding navigation. Administrations shall encourage the use of instruments of a high degree of accuracy, and shall facilitate the checking of such instruments upon request.

(*b*) In particular, the Contracting Governments undertake to co-operate in carrying out, as far as practicable, the following meteorological arrangements:

(i) To warn ships of gales, storms and tropical storms, both by the issue of radio messages and by the display of appropriate signals at coastal points;

(ii) To issue daily, by radio, weather bulletins suitable for shipping, containing data of existing weather, waves and ice, forecasts and, when practicable, sufficient additional information to enable simple weather charts to be prepared at sea and also to encourage the transmission of suitable facsimile weather charts;

(iii) To prepare and issue such publications as may be necessary for the efficient conduct of meteorological work at sea and to arrange, if practicable, for the publication and making available of daily weather charts for the information of departing ships;

(iv) To arrange for selected ships to be equipped with tested instruments (such as a barometer, a barograph, a psychrometer, and suitable apparatus for measuring sea temperature) for use in this service, and to take meteorological observations at main standard times for surface synoptic observations (at least four times daily, whenever circumstances permit) and to encourage other ships to take observations in a modified form, particularly when in areas where shipping is sparse; these ships to transmit their observations by radio for the benefit of the various official meteorological services, repeating the information for the benefit of ships in the vicinity; when in the vicinity of a tropical storm, or of a suspected tropical storm, ships should be encouraged to take and transmit their observations at more frequent intervals whenever practicable, bearing in mind navigational preoccupations of ships' officers during storm conditions;

(v) To arrange for the reception and transmission by coast radio stations of weather messages from and to ships; ships which are unable to communicate direct with shore shall be encouraged to relay their weather messages through ocean weather ships or through other ships which are in contact with shore;

(vi) To encourage all masters to inform ships in the vicinity and also shore stations whenever they experience a wind speed of 50 knots or more (force 10 on thc Beaufort scale);

(vii) To endeavour to obtain a uniform procedure in regard to the international meteorological services already specified, and, as far as is practicable, to conform to the Technical Regulations and recommendations made by the World Meteorological Organization, to which the Contracting Governments may refer for study and advice any meteorological question which may arise in carrying out the present Convention.

(*c*) The information provided for in this Regulation shall be furnished in form for transmission and transmitted in the order of priority prescribed by the Radio Regulations, and dur-

ing transmission "to all stations" of meteorological information, forecasts and warnings, all ship stations must conform to the provisions of the Radio Regulations.

(*d*) Forecasts, warnings, synoptic and other meteorological reports intended for ships shall be issued and disseminated by the national service in the best position to serve various zones and areas, in accordance with mutual arrangements made by the Contracting Governments concerned.

Regulation 5. ICE PATROL SERVICE

(*a*) The Contracting Governments undertake to continue an ice patrol and a service for study and observation of ice conditions in the North Atlantic. During the whole of the ice season the south-eastern, southern and south-western limits of the regions of icebergs in the vicinity of the Grand Banks of Newfoundland shall be guarded for the purpose of informing passing ships of the extent of this dangerous region; for the study of ice conditions in general; and for the purpose of affording assistance to ships and crews requiring aid within the limits of operation of the patrol ships. During the rest of the year the study and observation of ice conditions shall be maintained as advisable.

(*b*) Ships and aircraft used for the ice patrol service and the study and observation of ice conditions may be assigned other duties by the managing Government, provided that such other duties do not interfere with their primary purpose or increase the cost of this service.

Regulation 6. ICE PATROL; MANAGEMENT AND COST

(*a*) The Government of the United States of America agrees to continue the management of the ice patrol service and the study and observation of ice conditions, including the dissemination of information received therefrom. The Contracting Governments specially interested in these services undertake to contribute to the expense of maintaining and operating these services; each contribution to be based upon the total gross tonnage of the vessels of each contributing Government passing through the regions of icebergs guarded by the Ice Patrol; in particular, each Contracting Government specially interested undertakes to contribute annually to the expense of maintaining and operating these services a sum determined by the ratio which the total gross tonnage of that Contracting Government's vessels passing during the ice season through the regions of icebergs guarded by the Ice Patrol bears to the combined total gross tonnage of the vessels of all contributing Governments passing during the ice season through the regions of icebergs guarded by the Ice Patrol. Non-contracting Governments specially interested may contribute to the expense of maintaining and operating these services on the same basis. The managing Government will furnish annually to each contributing Government a statement of the total cost of maintaining and operating the Ice Patrol and of the proportionate share of each contributing Government.

(*b*) Each of the contributing Governments has the right to alter or discontinue its contribution, and other interested Governments may undertake to contribute to the expense. The contributing Government which avails itself of this right will continue responsible for its current contribution up to 1 September following the date of giving notice of intention to alter or discontinue its contribution. To take advantage of the said right it must give notice to the managing Government at least six months before the said 1 September.

(*c*) If, at any time, the United States Government should desire to discontinue these services, or if one of the contributing Governments should express a wish to relinquish responsibility for its pecuniary contribution, or to have its contribution altered, or another Contracting Government should desire to undertake to contribute to the expense, the contributing Governments shall settle the question in accordance with their mutual interests.

(*d*) The contributing Governments shall have the right by common consent to make from time to time such alterations in the provisions of this Regulation and of Regulation 5 of this Chapter as appear desirable.

(*e*) Where this Regulation provides that a measure may be taken after agreement among the contributing Governments, proposals made by any Contracting Government for effecting such a measure shall be communicated to the managing Government which shall approach the other contributing Governments with a view to ascertaining whether they accept such proposals, and the results of the enquiries thus made shall be sent to the other contributing Governments and the Contracting Government making the proposals. In particular, the arrangements relating to contributions to the cost of the services shall be reviewed by the contributing Governments at intervals not exceeding three years. The managing Government shall initiate the action necessary to this end.

Regulation 7. SPEED NEAR ICE

When ice is reported on or near his course the master of every ship at night is bound to proceed at a moderate speed or to alter his course so as to go well clear of the danger zone.

Regulation 8. ROUTING

(*a*) The practice of following, particularly in converging areas, routes adopted for the purpose of separation of traffic including avoidance of passage through areas designated as areas to be avoided by ships or certain classes of ships, or for the purpose of avoiding unsafe conditions, has contributed to the safety of navigation and is recommended for use by all ships concerned.

(*b*) The Organization is recognized as the only international body for establishing and adopting measures on an international level concerning routeing and areas to be avoided by ships or certain classes of ships. It will collate and disseminate to Contracting Governments all relevant information.

(*c*) The selection of the routes and the initiation of action with regard to them, and the delineation of what constitutes converging areas, will be primarily the responsibility of the Governments concerned. In the development of routeing schemes which impinge upon international waters, or such other schemes they may wish adopted by the Organization, they will give due consideration to relevant information published by the Organization.

(*d*) Contracting Governments will use their influence to secure the appropriate use of adopted routes and will do everything in their power to ensure adherence to the measures adopted by the Organization in connexion with routeing of ships.

(*e*) Contracting Governments will also induce all ships proceeding on voyages in the vicinity of the Grand Banks of Newfoundland to avoid, as far as practicable, the fishing banks of Newfoundland north of latitude 43° N and to pass outside regions known or believed to be endangered by ice.

Regulation 9. MISUSE OF DISTRESS SIGNALS

The use of an international distress signal, except for the purpose of indicating that a ship or aircraft is in distress, and the use of any signal which may be confused with an international distress signal, are prohibited on every ship or aircraft.

Regulation 10. DISTRESS MESSAGES — OBLIGATIONS AND PROCEDURES

(*a*) The master of a ship at sea, on receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them if possible that he is doing so. If he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress.

(*b*) The master of a ship in distress, after consultation, so far as may be possible, with the masters of the ships which answer his call for assistance, has the right to requisition such one or more of those ships as he considers best able to render assistance, and it shall be the duty of the

master or masters of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.

(*c*) The master of a ship shall be released from the obligation imposed by paragraph (*a*) of this Regulation when he learns that one or more ships other than his own have been requisitioned and are complying with the requisition.

(*d*) The master of a ship shall be released from the obligation imposed by paragraph (*a*) of this Regulation, and, if his ship has been requisitioned, from the obligation imposed by paragraph (*b*) of this Regulation, if he is informed by the persons in distress or by the master of another ship which has reached such persons that assistance is no longer necessary.

(*e*) The provisions of this Regulation do not prejudice the International Convention for the unification of certain rules with regard to Assistance and Salvage at Sea, signed at Brussels on 23 September 1910, particularly the obligation to render assistance imposed by Article 11 of that Convention.

Regulation 11. SIGNALLING LAMPS

All ships of over 150 tons gross tonnage, when engaged on international voyages, shall have on board an efficient daylight signalling lamp which shall not be solely dependent upon the ship's main source of electrical power.

Regulation 12. SHIPBORNE NAVIGATIONAL EQUIPMENT

(*a*) All ships of 1,600 tons gross tonnage and upwards shall be fitted with a radar of a type approved by the Administration. Facilities for plotting radar readings shall be provided on the bridge in those ships.

(*b*) All ships of 1,600 tons gross tonnage and upwards, when engaged on international voyages, shall be fitted with radio direction-finding apparatus complying with the provisions of Regulation 12 of Chapter IV. The Administration may, in areas where it considers it unreasonable or unnecessary for such apparatus to be carried, exempt any ship of less than 5,000 tons gross tonnage from this requirement, due regard being had to the fact that radio direction-finding apparatus is of value both as a navigational instrument and as an aid to locating ships, aircraft or survival craft.

(*c*) All ships of 1,600 tons gross tonnage and upwards, when engaged on international voyages, shall be fitted with a gyro-compass in addition to the magnetic compass. The Administration, if it considers it unreasonable or unnecessary to require a gyro-compass, may exempt any ship of less than 5,000 tons gross tonnage from this requirement.

(*d*) All new ships of 500 tons gross tonnage and upwards, when engaged on international voyages, shall be fitted with an echo-sounding device.

(*e*) Whilst all reasonable steps shall be taken to maintain the apparatus in an efficient condition, malfunction of the radar equipment, the gyro-compass or the echo-sounding device shall not be considered as making the ship unseaworthy or as a reason for delaying the ship in ports where repair facilities are not readily available.

(*f*) All new ships of 1,600 tons gross tonnage and upwards, when engaged on international voyages, shall be fitted with radio equipment for homing on the radiotelephone distress frequency complying with the relevant provisions of paragraph (*b*) of Regulation 12 of Chapter IV.

Regulation 13. MANNING

The Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficientiy manned.

Regulation 14. AIDS TO NAVIGATION

The Contracting Governments undertake to arrange for the establishment and maintenance of such aids to navigation, including radio beacons and electronic aids as, in their opinion, the volume of traffic justifies and the degree of risk requires, and to arrange for information relating to these aids to be made available to all concerned.

Regulation 15. SEARCH AND RESCUE

(*a*) Each Contracting Government undertakes to ensure that any necessary arrangements are made for coast watching and for the rescue of persons in distress at sea round its coasts. These arrangements should include the establishment, operation and maintenance of such maritime safety facilities as are deemed practicable and necessary having regard to the density of the seagoing traffic and the navigational dangers and should, so far as possible, afford adequate means of locating and rescuing such persons.

(*b*) Each Contracting Government undertakes to make available information concerning its existing rescue facilities and the plans for changes therein, if any.

Regulation 16. LIFE-SAVING SIGNALS

The following signals shall be used by life-saving stations and maritime rescue units when communicating with ships or persons in distress and by ships or persons in distress when communicating with life-saving stations and maritime rescue units. The signals used by aircraft engaged in search and rescue operations to direct ships are indicated in paragraph (*d*) below. An illustrated table describing the signals listed below shall be readily available to the officer of the watch of every ship to which this Chapter applies.

(*a*) Replies from life-saving stations or maritime rescue units to distress signals made by a ship or person:

Signal	*Signification*
By day. Orange smoke signal or combined light and sound signal (thunderlight) consisting of three single signals which are fired at intervals of approximately one minute. *By night.* White star rocket consisting of three single signals which are fired at intervals of approximately one minute.	"You are seen — assistance will be given as soon as possible." (Repetition of such signals shall have the same meaning.)

If necessary the day signals may be given at night or the night signals by day.

(*b*) Landing signals for the guidance of small boats with crews or persons in distress:

Signal	*Signification*
By day. Vertical motion of a white flag or the arms or firing of a green star-signal or signalling the code letter "K" (— · —) given by light or sound-signal apparatus. *By night.* Vertical motion of a white light or flare, or firing of a green star-signal or signalling the code letter "K" (— · —) given by light or sound-signal apparatus. A range (indication of direction) may be given by placing a steady white light or flare at a lower level and in line with the observer.	"This is the best place to land."

Signal	*Signification*
By day. Horizontal motion of a white flag or arms extended horizontally or firing of a red star-signal or signalling the code letter "S" (···) given by light or sound-signal apparatus. *By night.* Horizontal motion of a white light or flare or firing of a red star-signal or signalling the code letter "S" (···) given by light or sound-signal apparatus.	"Landing here highly dangerous."
By day. Horizontal motion of a white flag, followed by the placing of the white flag in the ground and the carrying of another white flag in the direction to be indicated or firing of a red star-signal vertically and a white star-signal in the direction towards the better landing place or signalling the code letter "S" (···) followed by the code letter "R" (·—·) if a better landing place for the craft in distress is located more to the right in the direction of approach or the code letter "L" (·—··) if a better landing place for the craft in distress is located more to the left in the direction of approach. *By night.* Horizontal motion of a white light or flare, followed by the placing of the white light or flare on the ground and the carrying of another white light or flare in the direction to be indicated or firing of a red star-signal vertically and a white star-signal in the direction towards the better landing place or signalling the code letter "S" (···) followed by code letter "R" (·—·) if a better landing place for the craft in distress is located more to the right in the direction of approach or the code letter "L" (·—··) if a better landing place for the craft in distress is located more to the left in the direction of approach.	"Landing here highly dangerous. A more favourable location for landing is in the direction indicated."

(*c*) Signals to be employed in connexion with the use of shore life-saving apparatus:

Signal	*Signification*
By day. Vertical motion of a white flag or the arms or firing of a green star-signal. *By night.* Vertical motion of a white light or flare or firing of a green star-signal.	In general — "Affirmative." Specifically: "Rocket line is held." "Tail block is made fast." "Hawser is made fast." "Man is in the breeches buoy." "Haul away."
By day. Horizontal motion of a white flag or arms extended horizontally or firing of a red star-signal. *By night.* Horizontal motion of a white light or flare or firing of a red star-signal.	In general — "Negative." Specifically: "Slack away." "Avast hauling."

(*d*) Signals used by aircraft engaged on search and rescue operations to direct ships towards an aircraft, ship or person in distress (see explanatory Note below):

(i) The following procedures performed in sequence by an aircraft mean that the aircraft is directing a surface craft towards an aircraft or a surface craft in distress:

(1) Circling the surface craft at least once;

(2) Crossing the projected course of the surface craft close ahead at a low altitude, opening and closing the throttle or changing the propeller pitch;

(3) Heading in the direction in which the surface craft is to be directed.

Repetition of such procedures has the same meaning.

(ii) The following procedure performed by an aircraft means that the assistance of the surface craft to which the signal is directed is no longer required:

— Crossing the wake of the surface craft close astern at a low altitude, opening and closing the throttle or changing the propeller pitch.

NOTE. Advance notification of changes in these signals will be given by the Organization as necessary.

Regulation 17. PILOT LADDERS AND MECHANICAL PILOT HOISTS

Ships engaged on voyages in the course of which pilots are likely to be employed shall comply with the following requirements:

(*a*) *Pilot ladders.* (i) The ladder shall be efficient for the purpose of enabling pilots to embark and disembark safely, kept clean and in good order and may be used by officials and other persons while a ship is arriving at or leaving a port.

(ii) The ladder shall be secured in a position so that it is clear from any possible discharges from the ship, that each step rests firmly against the ship's side, that it is clear so far as is practicable of the finer lines of the ship and that the pilot can gain safe and convenient access to the ship after climbing not less than 1.5 metres (5 feet) and not more than 9 metres (30 feet). A single length of ladder shall be used capable of reaching the water from the point of access to the ship; in providing for this due allowance shall be made for all conditions of loading and trim of the ship and for an adverse list of 15 degrees. Whenever the distanee from sea level to the point of access to the ship is more than 9 metres (30 feet), access from the pilot ladder to the ship shall be by means of an accommodation ladder or other equally safe and convenient means.

(iii) The steps of the pilot ladder shall be:

(1) Of hardwood, or other material of equivalent properties, made in one piece free of knots, having an efficient non-slip surface; the four lowest steps may be made of rubber of sufficient strength and stiffness or of other suitable material of equivalent characteristics;

(2) Not less than 480 millimetres (19 inches) long, 115 millimetres (4½ inches) wide, and 25 millimetres (1 inch) in depth, excluding any non-slip device;

(3) Equally spaced not less than 300 millimetres (12 inches) nor more than 380 millimetres (15 inches) apart and be secured in such a manner that they will remain horizontal.

(iv) No pilot ladder shall have more than two replacement steps which are secured in position by a method different from that used in the original construction of the ladder and any steps so secured shall be replaced as soon as reasonably practicable by steps secured in position by the method used in the original construction of the ladder. When any replacement step is secured to the side ropes of the ladder by means of grooves in the sides of the step, such grooves shall be in the longer sides of the step.

(v) The side ropes of the ladder shall consist of two uncovered manila ropes not less than 60 millimetres (2¼ inches) in circumference on each side. Each rope shall be continuous with no joints below the top step. Two man-ropes properly secured to the ship and not less than

65 millimetres (2½ inches) in circumference and a safety line shall be kept at hand ready for use if required.

(vi) Battens made of hardwood, or other material of equivalent properties, in one piece and not less than 1.80 metres (5 feet 10 inches) long shall be provided at such intervals as will prevent the pilot ladder from twisting. The lowest batten shall be on the fifth step from the bottom of the ladder and thc interval between any batten and the next shall not excecd 9 steps.

(vii) Means shall be provided to ensure safe and convenient passage on to or into and off the ship between the head of the pilot ladder or of any accommodation ladder or other appliance provided. Where such passage is by means of a gateway in the rails or bulwark, adequate handholds shall be provided. Where such passage is by means of a bulwark ladder, such ladder shall be securely attached to the bulwark rail or platform and two handhold stanchions shall be fitted at the point of boarding or leaving the ship not less than 0.70 metre (2 feet 3 inches) nor more than 0.80 metre (2 feet 7 inches) apart. Each stanchion shall be rigidly secured to the ship's structure at or near its base and also at a higher point, shall be not less than 40 millimetres (1½ inches) in diameter and shall extend not less than 1.20 metres (3 feet 11 inches) above the top of the bulwark.

(viii) Lighting shall be provided at night such that both the pilot ladder oversidc and also the position where the pilot boards the ship shall be adequately lit. A lifebuoy equipped with a self-igniting light shall be kept at hand ready for use. A heaving line shall bc kept at hand ready for use if required.

(ix) Means shall be provided to enable the pilot ladder to be used on either side of thc ship.

(x) The rigging of the ladder and the embarkation and disembarkation of a pilot shall be supervised by a responsible officer of the ship.

(xi) Where on any ship constructional features such as rubbing bands would prevent the implementation of any of these provisions, special arrangements shall be made to the satisfaction of the Administration to ensure that persons are able to embark and disembark safely.

(*b*) *Mechanical pilot hoists.* (i) A mechanical pilot hoist, if provided, and its ancillary equipment shall be of a type approved by the Administration. It shall be of such design and construction as to ensure that the pilot can be embarked and disembarked in a safe manner including a safe access from the hoist to the deck and vice versa.

(ii) A pilot ladder complying with the provisions of paragraph (*a*) of this Regulation shall be kept on deck adjacent to the hoist and available for immediate use.

Regulation 18. VHF RADIOTELEPHONE STATIONS

When a Contracting Government requires ships navigating in an area under its sovereignty to be provided with a Very High Frequency (VHF) radiotelephone station to be used in conjunction with a system which it has established in order to promote safety of navigation, such station shall comply with the provisions of Regulation 17 of Chaptcr IV and shall be operated in accordance with Regulation 8 of Chapter IV.

Regulation 19. USE OF THE AUTOMATIC PILOT

(*a*) In areas of high traffic density, in conditions of restricted visibility and in all other hazardous navigational situations where the automatic pilot is used, it shall be possible to establish human control of the ship's steering immediately.

(*b*) In circumstances as above, it shall be possible for the officer of the watch to have available without delay the services of a qualified helmsman who shall be ready at all times to take over steering control.

(*c*) The change-over from automatic to manual steering and vice versa shall be made by or under the supervision of a responsible officer.

Regulation 20. NAUTICAL PUBLICATIONS

All ships shall carry adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage.

Regulation 21. INTERNATIONAL CODE OF SIGNALS

All ships which in accordance with the present Convention are required to carry a radiotelegraph or a radiotelephone installation shall carry the International Code of Signals. This publication shall also be carried by any other ship which in the opinion of the Administration has a need to use it.

CHAPTER VI. CARRIAGE OF GRAIN

PART A. GENERAL PROVISIONS

Regulation 1. APPLICATION

Unless expressly provided otherwise, this Chapter, including Parts A, B and C, applies to the carriage of grain in all ships to which the present Regulations apply.

Regulation 2. DEFINITIONS

(*a*) The term "grain" includes wheat, maize (corn), oats, rye, barley, rice, pulses, seeds and processed forms thereof, whose behaviour is similar to that of grain in its natural state.

(*b*) The term "filled compartment" refers to any compartment in which, after loading and trimming as required under Regulation 3, the bulk grain is at its highest possible level.

(*c*) The term "partly filled compartment" refers to any compartment wherein bulk grain is not loaded in the manner prescribed in paragraph (*b*) of this Regulation.

(*d*) The term "angle of flooding" (θ_f) means an angle of heel at which openings in the hull, superstructures or deckhouses, which cannot be closed weathertight, immerse. In applying this definition, small openings through which progressive flooding cannot take place need not be considered as open.

Regulation 3. TRIMMING OF GRAIN

All necessary and reasonable trimming shall be performed to level all free grain surfaces and to minimize the effect of grain shifting.

(*a*) In any "filled compartment", the bulk grain shall be trimmed so as to fill all the spaces under the decks and hatch covers to the maximum extent possible.

(*b*) After loading, all free grain surfaces in "partly filled compartments" shall be level.

(*c*) The Administration issuing the document of authorization may, under Regulation 9 of this Chapter, grant dispensation from trimming in those cases where the underdeck void geometry resulting from free flowing grain into a compartment, which may be provided with feeding ducts, perforated decks or other similar means, is taken into account to its satisfaction when calculating the void depths.

Regulation 4. INTACT STABILITY REQUIREMENTS

(*a*) The calculations required by this Regulation shall be based upon the stability information provided in accordance with Regulation 19 of Chapter II-1, of the present Convention, or with the requirements of the Administration issuing the document of authorization under Regulation 10 of this Chapter.

(*b*) The intact stability characteristics of any ship carrying bulk grain shall be shown to meet, throughout the voyage, at least the following criteria after taking into account in the manner described in Part B, the heeling moments due to grain shift:

(i) The angle of heel due to the shift of grain shall be not greater than 12 degrees except that an Administration giving authorization in accordance with Regulation 10 of this Chapter may require a lesser angle of heel if it considers that experience shows this to be necessary;*

(ii) In the statical stability diagram, the net or residual area between the heeling arm curve and the righting arm curve up to the angle of heel of maximum difference between the ordinates of the two curves, or 40 degrees or the "angle of flooding" (θ_f), whichever is the least, shall in all conditions of loading be not less than 0.075 metre-radians; and

(iii) The initial metacentric height, after correction for the free surface effects of liquids in tanks, shall be not less than 0.30 metre.

(*c*) Before loading bulk grain the master shall, if so required by the Contracting Government of the country of the port of loading, demonstrate the ability of the ship at all stages of any voyage to comply with the stability criteria required by paragraph (*b*) of this Regulation using the information approved and issued under Regulations 10 and 11 of this Chapter.

(*d*) After loading, the master shall ensure that the ship shall be upright before proceeding to sea.

Regulation 5. LONGITUDINAL DIVISIONS AND SAUCERS

(*a*) In both "filled compartments" and "partly filled compartments", longitudinal divisions may be provided as a device either to reduce the adverse heeling effect of grain shift or to limit the depth of cargo used for securing the grain surface. Such divisions shall be fitted grain-tight and constructed in accordance with the provisions of Section I of Part C of this Chapter.

(*b*) In a "filled compartment", a division, if fitted to reduce the adverse effects of grain shift, shall:

(i) In a 'tween-deck compartment extend from deck to deck; and

(ii) In a hold extend downwards from the underside of the deck or hatch covers as described in Section II of Part B of this Chapter.

Except in the case of linseed and other seeds having similar properties, a longitudinal division beneath a hatchway may be replaced by a saucer formed in the manner described in Section I of Part C of this Chapter.

(*c*) In a "partly filled compartment", a division, if fitted, shall extend from one-eighth of the maximum breadth of the compartment above the level of the grain surface and to the same distance below the grain surface. When used to limit the depth of overstowing, the height of the centreline division shall be at least 0.6 metre above the level grain surface.

(*d*) Furthermore, the adverse heeling effects of grain shift may be reduced by tightly stowing the wings and ends of a compartment with bagged grain or other suitable cargo adequately restrained from shifting.

Regulation 6. SECURING

(*a*) Unless account is taken of the adverse heeling effect due to grain shift in accordance with these Regulations, the surface of the bulk grain in any "partly filled compartment" shall be level and topped off with bagged grain tightly stowed and extending to a height of not less than one-sixteenth of the maximum breadth of the free grain surface or 1.2 metres, whichever is the greater. Instead of bagged grain, other suitable cargo exerting at least the same pressure may be used.

(*b*) The bagged grain or such other suitable cargo shall be supported in the manner described in Section II of Part C of this Chapter. Alternatively, the bulk grain surface may be secured by strapping or lashing as described in that Section.

* For example, the permissible angle of heel might be limited to the angle of heel at which the edge of the weather deck would be immersed in still water.

Regulation 7. FEEDERS AND TRUNKS

If feeders or trunks are fitted, proper account shall be taken of the effects thereof when calculating the heeling moments as described in Section III of Part B of this Chapter. The strength of the divisions forming the boundaries of such feeders shall conform with the provisions of Section I of Part C of this Chapter.

Regulation 8. COMBINATION ARRANGEMENTS

Lower holds and 'tween-deck spaces in way thereof may be loaded as one compartment provided that, in calculating transverse heeling moments, proper account is taken of the flow of grain into the lower spaces.

Regulation 9. APPLICATION OF PARTS B AND C

An Administration or a Contracting Government on behalf of an Administration may authorize departure from the assumptions contained in Parts B and C of this Chapter in those cases where it considers this to be justified having regard to the provisions for loading or the structural arrangements, provided the stability criteria in paragraph (*b*) of Regulation 4 of this Chapter are met. Where such authorization is granted under this Regulation, particulars shall be included in the document of authorization or grain loading data.

Regulation 10. AUTHORIZATION

(*a*) A document of authorization shall be issued for every ship loaded in accordance with the Regulations of this Chapter either by the Administration or an organization recognized by it or by a Contracting Government on behalf of the Administration. It shall be accepted as evidence that the ship is capable of complying with the requirements of these Regulations.

(*b*) The document shall accompany and refer to the grain loading stability booklet provided to enable the master to meet the requirements of paragraph (*c*) of Regulation 4 of this Chapter. This booklet shall meet the requirements of Regulation 11 of this Chapter.

(*c*) Such a document, grain loading stability data and associated plans may be drawn up in the official language or languages of the issuing country. If the language used is neither English nor French, the text shall include a translation into one of these languages.

(*d*) A copy of such a document, grain loading stability data and associated plans shall be placed on board in order that the master, if so required, shall produce them for the inspection of the Contracting Government of the country of the port of loading.

(*e*) A ship without such a document of authorization shall not load grain until the master demonstrates to the satisfaction of the Administration or the Contracting Government of the port of loading on behalf of the Administration that the ship in its proposed loaded condition will comply with the requirements of these Regulations.

Regulation 11. GRAIN LOADING INFORMATION

This information shall be sufficient to allow the master to determine in all reasonable loading conditions the heeling moments due to grain shift calculated in accordance with Part B of this Chapter. It shall include the following:

(*a*) Information which shall be approved by the Administration or by a Contracting Government on behalf of the Administration:

(i) Curves or tables of grain heeling moments for every compartment, filled or partly filled, or combination thereof, including the effects of temporary fittings;

(ii) Tables of maximum permissible heeling moments or other information sufficient to allow the master to demonstrate compliance with the requirements of paragraph (*c*) of Regulation 4 of this Chapter;

(iii) Details of the scantlings of any temporary fittings and where applicable the provisions necessary to meet the requirements of Section I(E) of Part C of this Chapter;

(iv) Typical loaded service departure and arrival conditions and where necessary, intermediate worst service conditions;

(v) A worked example for the guidance of the master;

(vi) Loading instructions in the form of notes summarizing the requirements of this Chapter.

(*b*) Information which shall be acceptable to the Administration or to a Contracting Government on behalf of the Administration:

(i) Ship's particulars;

(ii) Lightship displacement and the vertical distance from the intersection of the moulded base line and midship section to the centre of gravity (KG);

(iii) Table of free surface corrections;

(iv) Capacities and centres of gravity.

Regulation 12. EQUIVALENTS

Where an equivalent accepted by the Administration in accordance with Regulation 5 of Chapter I of this Convention is applied, particulars shall be included in the document of authorization or grain loading data.

Regulation 13. EXEMPTIONS FOR CERTAIN VOYAGES

The Administration, or a Contracting Government on behalf of the Administration may, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of any of the requirements of Regulations 3 to 12 of this Chapter unreasonable or unnecessary, exempt from those particular requirements individual ships or classes of ships.

PART B. CALCULATION OF ASSUMED HEELING MOMENTS

Section I. *Description of the assumed voids and method of calculating intact stability*

(A) *General*

(*a*) For the purpose of calculating the adverse heeling moment due to a shift of cargo surface in ships carrying bulk grain it shall be assumed that:

(i) In "filled compartments" which have been trimmed in accordanee with Regulation 3 of this Chapter a void exists under all boundary surfaces having an inclination to the horizontal less than 30 degrees and that the void is parallel to the boundary surface having an average depth calculated aecording to the formula:

$$Vd = Vd_1 + 0.75(d - 600) \text{ mm},$$

where:

Vd = Average void depth in mm;

Vd_1 = Standard void depth from Table I below;

d = Actual girder depth in mm.

In no case shall Vd be assumed to be less than 100 mm.

TABLE I

Distance from hatchend or hatchside to boundary of compartment (metres)	*Standard void depth Vd_1 (mm)*
0.5	570
1.0	530
1.5	500
2.0	480
2.5	450
3.0	440
3.5	430
4.0	430
4.5	430
5.0	430
5.5	450
6.0	470
6.5	490
7.0	520
7.5	550
8.0	590

NOTES ON TABLE I. For distances greater than 8.0 metres the standard void depth Vd_1 shall be linearly extrapolated at 80 mm increase for each 1.0 metre increase in distance. Where there is a difference in depth between the hatchside girder or its continuation and the hatchend beam the greater depth shall be used except that:

(1) When the hatchside girder or its continuation is shallower than the hatchend beam the voids abreast the hatchway may be calculated using the lesser depth; and

(2) When the hatchend beam is shallower than the hatchside girder or its continuation the voids fore and aft of the hatchway inboard of the continuation of the hatchside girder may be calculated using the lesser depth;

(3) Where there is a raised deck clear of a hatchway the average void depth measured from the underside of the raised deck shall be calculated using the standard void depth in association with a girder depth of the hatchend beam plus the height of the raised deck.

(ii) In "filled compartments" which are not trimmed in accordance with Regulation 3 of this Chapter and where the boundary surface has an inclination to the horizontal which is less than 30 degrees, the cargo surface has an inclination of 30 degrees to the horizontal after loading.

(iii) Within filled hatchways and in addition to any open void within the hatch cover there is a void of average depth of 150 mm measured down to the grain surface from the lowest part of the hatch cover or the top of the hatchside coaming, whichever is the lower.

(*b*) The description of the pattern of grain surface behaviour to be assumed in "partly filled compartments" is shown in Section IV of this Part.

(*c*) For the purpose of demonstrating compliance with the stability criteria in paragraph (*b*) of Regulation 4 of this Chapter (see Figure 1), the ship's stability calculations shall be normally based upon the assumption that the centre of gravity of cargo in a "filled compartment" is at the volumetric centre of the whole cargo space. In those cases where the Administration authorizes account to be taken of the effect of assumed underdeck voids on the vertical position of the centre of gravity of the cargo in "filled compartments" it will be necessary to compensate for the adverse effect of the vertical shift of grain surfaces by increasing the assumed heeling moment due to the transverse shift of grain as follows:

total heeling moment = 1.06 × calculated transverse heeling moment.

In all cases the weight of cargo in a "filled compartment" shall be the volume of the whole cargo space divided by the stowage factor.

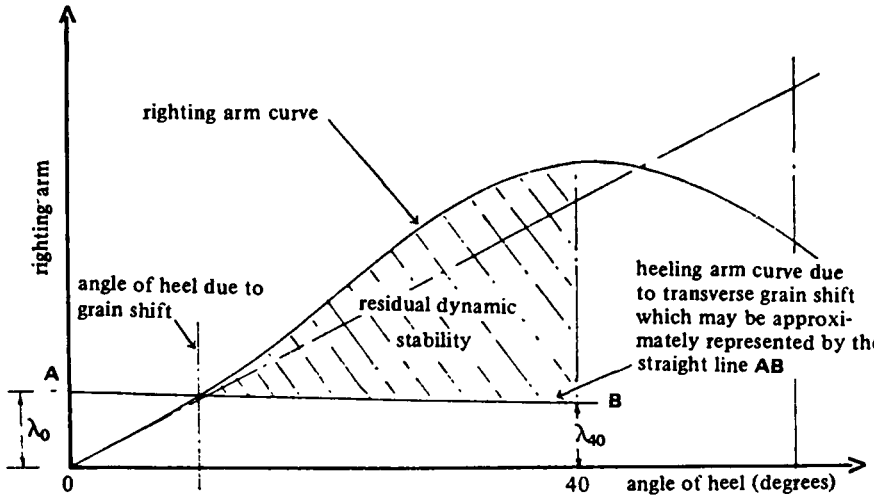

FIGURE 1

NOTES ON FIGURE 1. (1) Where:

$$\lambda_0 = \frac{\text{Assumed Volumetric Heeling Moment due to Transverse Shift}}{\text{Stowage Factor} \times \text{Displacement}};$$

$\lambda_{40} = 0.8 \times \lambda_0$;

Stowage factor = Volume per unit weight of grain cargo;

Displacement = Weight of ship, fuel, fresh water, stores etc. and cargo.

(2) The righting arm curve shall be derived from cross-curves which are sufficient in number to accurately define the curve for the purpose of these requirements and shall include cross-curves at 12 degrees and 40 degrees.

(*d*) In "partly filled compartments" the adverse effect of the vertical shift of grain surfaces shall be taken into account as follows:

total heeling moment = 1.12 × calculated transverse heeling moment.

(*e*) Any other equally effective method may be adopted to make the compensation required in paragraphs (*c*) and (*d*) above.

Section II. *Assumed volumetric heeling moment of a filled compartment*

(A) *General*

(*a*) The pattern of grain surface movement relates to a transverse section across the portion of the compartment being considered and the resultant heeling moment should be multiplied by the length to obtain the total moment for that portion.

(*b*) The assumed transverse heeling moment due to grain shifting is a consequence of final changes of shape and position of voids after grain has moved from the high side to the low side.

(*c*) The resulting grain surface after shifting shall be assumed to be at 15 degrees to the horizontal.

(*d*) In calculating the maximum void area that can be formed against a longitudinal structural member, the effects of any horizontal surfaces, e.g. flanges or face bars, shall be ignored.

(*e*) The total areas of the initial and final voids shall be equal.

(*f*) A discontinuous longitudinal division shall be considered effective over its full length.

(B) *Assumptions*

In the following paragraphs it is assumed that the total heeling moment for a compartment is obtained by adding the results of separate considerations of the following portions:

(*a*) *Before and abaft hatchways.* (i) If a compartment has two or more main hatchways through which loading may take place the depth of the underdeck void for the portion(s) between such hatchways shall be determined using the fore and aft distance to the midpoint between the hatchways.

(ii) After the assumed shift of grain the final void pattern shall be as shown in Figure 2 below:

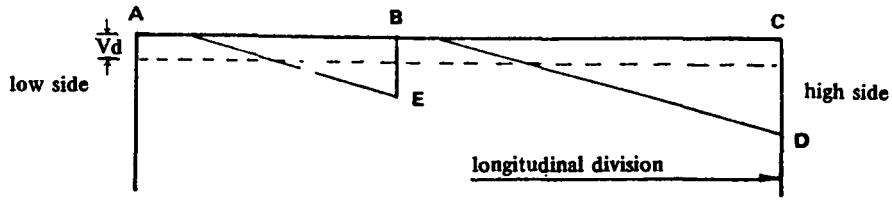

FIGURE 2

NOTES ON FIGURE 2. (1) If the maximum void area which can be formed against the girder at B is less than the initial area of the void under AB, i.e. AB × Vd, the excess area shall be assumed to transfer to the final void on the high side.

(2) If the longitudinal division at C is one which has been provided in accordance with sub-paragraph (*b*)(ii) of Regulation 5 of this Chapter it shall extend to at least 0.6 metre below D or E whichever gives the greater depth.

(*b*) *In and abreast hatchways.* After the assumed shift of grain the final void pattern shall be as shown in the following Figure 3 or Figure 4.

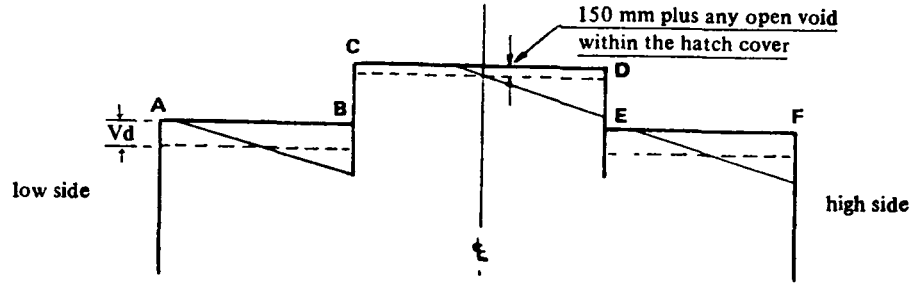

FIGURE 3

NOTES ON FIOURE 3. (1) AB: any area in excess of that which can be formed against the girder at B shall transfer to the final void area in the hatchway.

(2) CD: any area in excess of that which can be formed against the girder at E shall transfer to the final void area on the high side.

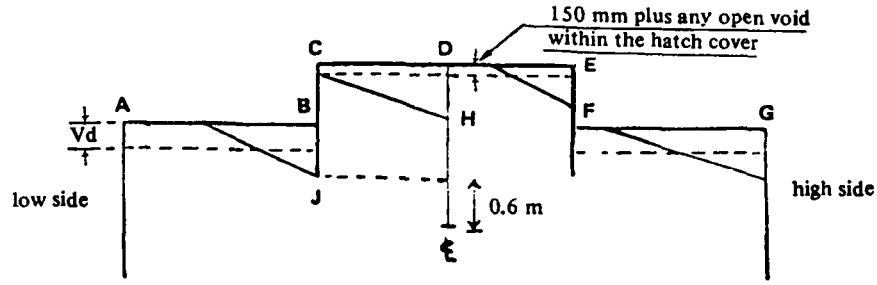

FIGURE 4

NOTES ON FIGURE 4. (1) If the centreline division is one which has been provided in accordance with sub-paragraph (*b*)(ii) of Regulation 5 of this Chapter it shall extend to at least 0.6 metre below H or J, whichever gives the greater depth.

(2) The excess void area from AB shall transfer to the low side half of the hatchway in which two separate final void areas will be formed, viz., one against the centreline division and the other against the hatchside coaming and girder on the high side.

(3) If a bagged saucer or bulk bundle is formed in a hatchway it shall be assumed, for the purpose of calculating transverse heeling moment, that such a device is at least equivalent to the centreline division.

(C) *Compartments loaded in combination*

The following paragraphs describe the pattern of void behaviour which shall be assumed when compartments are loaded in combination:

(*a*) *Without effective centreline divisions.* (i) Under the upper deck, as for the single deck arrangement described in Section II(B) of this Part.

(ii) Under the second deck, the area of void available for transfer from the low side, i.e. original void area less area against the hatchside girder, shall be assumed to transfer as follows: one half to the upper deck hatchway and one quarter each to the high side under the upper and second deck.

(iii) Under the third and lower decks, the void areas available for transfer from the low side of each of these decks shall be assumed to transfer in equal quantities to all the voids under the decks on the high side and the void in the upper deck hatchway.

(*b*) *With effective centreline divisions which extend into the upper deck hatchway.* (i) At all deck levels abreast the division the void areas available for transfer from the low side shall be assumed to transfer to the void under the low side half of the upper deck hatchway.

(ii) At the deck level immediately below the bottom of the division the void area available for transfer from the low side shall be assumed to transfer as follows: one half to the void under the low side half of the upper deck hatchway and the remainder in equal quantities to the voids under the decks on the high side.

(iii) At deck levels lower than those described in sub-paragraphs (i) and (ii) of this paragraph the void area available for transfer from the low side of each of those decks shall be assumed to transfer in equal quantities to the voids in each of the two halves of the upper deck hatchway on each side of the division and the voids under the decks on the high side.

(*c*) *With effective centreline divisions which do not extend into the upper deck hatchway.* Since no horizontal transfer of voids may be assumed to take place at the same deck level as the division the void area available for transfer from the low side at this level shall be assumed to transfer above the division to voids on the high sides in accordance with the principles of paragraphs (*a*) and (*b*) above.

Section III. *Assumed volumetric heeling moment of feeders and trunks*

(A) *Suitably placed wing feeders (see figure 5)*

It may be assumed that under the influence of ship motion underdeck voids will be substantially filled by the flow of grain from a pair of longitudinal feeders provided that:

(*a*) The feeders cxtend for the full length of the deck and that the perforations therein are adequately spaced;

(*b*) The volume of each feeder is equal to the volume of the underdeck void outboard of the hatchside girder and its continuation.

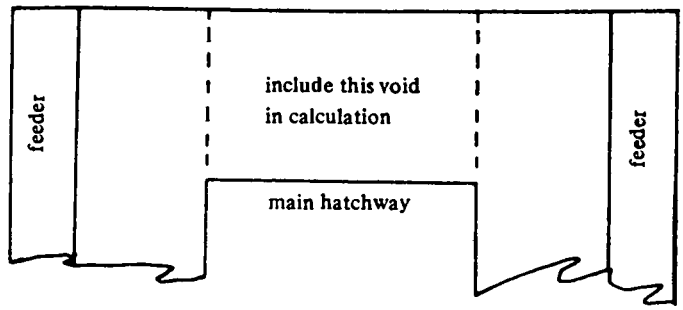

FIGURE 5

(B) *Trunks situated over main hatchways*

After the assumed shift of grain the final void pattern shall be as shown in Figure 6.

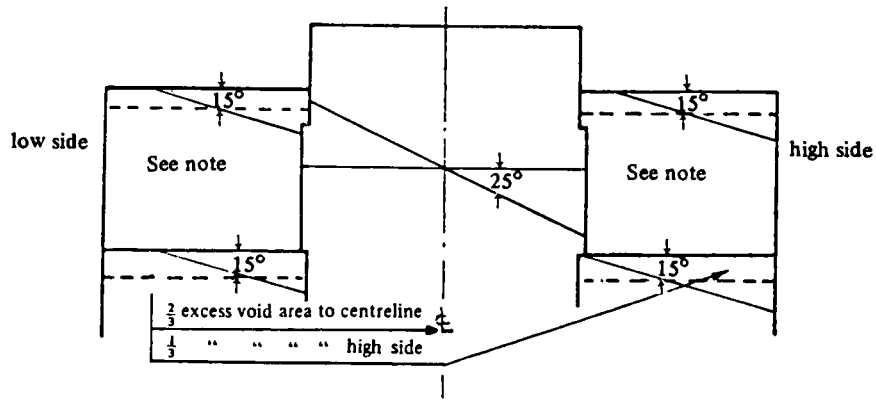

FIGURE 6

NOTES ON FIGURE 6. If the wing spaces in way of the trunk cannot be properly trimmed in accordance with Regulation 3 of this Chapter it shall be assumed that a 25 degree surface shift takes place.

Section IV. *Assumed volumetric heeling moment of partly filled compartments*

(A) *General*

When the free surface of the bulk grain has not been secured in accordance with Regulation 6 of this Chapter it shall be assumed that the grain surface after shifting shall be at 25 degrees to the horizontal.

(B) *Discontinuous longitudinal divisions*

In a compartment in which the longitudinal divisions are not continuous between the transverse boundaries, the length over which any such divisions are effective as devices to prevent full width shifts of grain surfaces shall be taken to be the actual length of the portion of the division under consideration less two-sevenths of the greater of the transverse distances between the division and its adjacent division or ship's side.

This correction does not apply in the lower compartments of any combination loading in which the upper compartment is either a "filled compartment" or a "partly filled compartment".

Section V. *Alternative loading arrangements for existing ships*

(A) *General*

A ship loaded in accordance with either Sub-Section (B) or Sub-Section (C) below shall be considered to have intact stability characteristics at least equivalent to the requirements of paragraph (*b*) of Regulation 4 of this Chapter. Documents of authorization permitting such loadings shall be accepted under the provisions of paragraph (*e*) of Regulation 10 of this Chapter.

For the purpose of this Part, the term "Existing Ship" means a ship, the keel of which is laid before the date of coming into force of this Chapter.

(B) *Stowage of specially suitable ships*

(*a*) Notwithstanding anything contained in Part B of this Chapter, bulk grain may be carried without regard to the requirements specified therein in ships which are constructed with two or more vertical or sloping grain-tight longitudinal divisions suitably disposed to limit the effect of any transverse shift of grain under the following conditions:

(i) As many holds and compartments as possible shall be full and trimmed full;

(ii) For any specified arrangement of stowage the ship will not list to an angle greater than 5 degrees at any stage of the voyage where:

(1) In holds or compartments which have been trimmed full the grain surface settled 2 per cent by volume from the original surface and shifts to an angle of 12 degrees with that surface under all boundaries of these holds and compartments which have an inclination of less than 30 degrees to the horizontal;

(2) In "partly filled compartments or holds" free grain surfaces settle and shift as in sub-paragraph (ii)(1) of this paragraph or to such larger angle as may be deemed necessary by the Administration, or by a Contracting Government on behalf of the Administration, and grain surfaces if overstowed in accordance with Regulation 5 of this Chapter shift to an angle of 8 degrees with the original levelled surfaces; for the purpose of sub-paragraph (ii) of this paragraph shifting boards, if fitted, will be considered to limit the transverse shift of the surface of the grain;

(iii) The master is provided with a grain loading plan covering the stowage arrangements to be adopted and a stability booklet, both approved by the Administration, or by a Contract-

ing Government on behalf of the Administration, showing the stability conditions upon which the calculations given in sub-paragraph (ii) of this paragraph are based.

(*b*) The Administration, or a Contracting Government on behalf of the Administration, shall prescribe the precautions to be taken against shifting in all other conditions of loading of ships designed in accordance with paragraph (B)(*a*) of this Section which meet the requirements of sub-paragraphs (ii) and (iii) of that paragraph.

(C) *Ships without documents of authorization*

A ship not having on board documents of authorization issued in accordance with Regulations 4 and 10 of this Chapter may be permitted to load bulk grain under the requirements of Sub-Section (B) of this Section or provided that:

(*a*) All "filled compartments" shall be fitted with centreline divisions extending for the full length of such compartments which extend downwards from the underside of the deck or hatch covers to a distance below the deck line of at least one-eighth of the maximum breadth of the compartment or 2.4 metres, whichever is the greater except that saucers constructed in accordance with Section II of Part C may be accepted in lieu of a centreline division in and beneath a hatchway.

(*b*) All hatches to "filled compartments" shall be closed and covers secured in place.

(*c*) All free grain surfaces in "partly filled compartments" shall be trimmed level and secured in accordance with Section II of Part C.

(*d*) Throughout the voyage the metacentric height after correction for the free surface effects of liquids in tanks shall be 0.3 metre or that given by the following formula, whichever is the greater:

$$GM_R = \frac{L\ B\ Vd\ (0.25\ B - 0.645\sqrt{Vd\ B})}{SF \times \Delta \times 0.0875}$$

where:

L = total combined length of all full compartments;
B = moulded breadth of vessel;
SF = stowage factor;
Vd = calculated average void depth as per paragraph (*a*)(i) of Section I(A) of this Part;
Δ = displacement.

PART C. GRAIN FITTINGS AND SECURING

Section I. Strength of grain fittings
- (A) General (including working stresses)
- (B) Divisions loaded on both sides
- (C) Divisions loaded on one side only
- (D) Saucers
- (E) Bundling of bulk
- (F) Securing hatch covers of filled compartments

Section II. Securing of partly filled compartments
- (A) Strapping or lashing
- (B) Overstowing arrangements
- (C) Bagged grain

Section I. *Strength of grain fittings*

(A) *General*

(*a*) *Timber.* All timber used for grain fittings shall be of good sound quality and of a type and grade which has been proved to be satisfactory for this purpose. The actual finished dimensions of the timber shall be in accordance with the dimensions hereinafter specified in this Part. Plywood of an exterior type bonded with waterproof glue and fitted so that the direction of the grain in the face plies is perpendicular to the supporting uprights or binder may be used provided that its strength is equivalent to that of solid timber of the appropriate scantling.

(*b*) *Working stresses.* When calculating the dimensions of divisions loaded on one side, using the Tables in paragraphs (*a*) and (*b*) of Sub-Section (C) of this Section, the following working stresses should be adopted:

— For divisions of steel, 2000 kg per square cm;

— For divisions of wood, 160 kg per square cm.

(*c*) *Other materials.* Materials other than wood or steel may be approved for such divisions provided that proper regard has been paid to their mechanical properties.

(*d*) *Uprights.* (i) Unless means are provided to prevent the ends of uprights being dislodged from their sockets, the depth of housing at each end of each upright shall be not less than 75 mm. If an upright is not secured at the top, the uppermost shore or stay shall be fitted as near thereto as is practicable.

(ii) The arrangements provided for inserting shifting boards by removing a part of the cross-section of an upright shall be such that the local level of stresses is not unduly high.

(iii) The maximum bending moment imposed upon an upright supporting a division loaded on one side shall normally be calculated assuming that the ends of the uprights are freely supported. However, if an Administration is satisfied that any degree of fixity assumed will be achieved in practice, account may be taken of any reduction in the maximum bending moment arising from any degree of fixity provided at the ends of the upright.

(*e*) *Composite section.* Where uprights, binders or any other strength members are formed by two separate sections, one fitted on each side of a division and inter-connected by through bolts at adequate spacing, the effective section modules shall be taken as the sum of the two moduli of the separate sections.

(*f*) *Partial division.* Where divisions do not extend to the full depth of the hold such divisions and their uprights shall be supported or stayed so as to be as efficient as those which do extend to the full depth of the hold.

(B) *Divisions loaded on both sides*

(*a*) *Shifting boards.* (i) Shifting boards shall have a thickness of not less than 50 mm and shall be fitted grain-tight and where necessary supported by uprights.

(ii) The maximum unsupported span for shifting boards of various thicknesses shall be as follows:

Thickness	*Maximum unsupported span*
50 mm	2.5 metres
60 mm	3.0 metres
70 mm	3.5 metres
80 mm	4.0 metres

If thicknesses greater than these are provided the maximum unsupported span will vary directly with the increase in thickness.

(iii) The ends of all shifting boards shall be securely housed with 75 mm minimum bearing length.

(*b*) *Other materials.* Divisions formed by using materials other than wood shall have a strength equivalent to the shifting boards required in paragraph (*a*) of this Sub-Section.

(*c*) *Uprights.* (i) Steel uprights used to support divisions loaded on both sides shall have a section modulus given by

$$W = a \times W_1$$

where:

W = section modulus in cm^3;

a = horizontal span between uprights in metres.

The section modulus per metre span W_1 shall be not less than that given by the formula:

$$W_1 = 14.8 (h_1 - 1.2) \text{ cm}^3 \text{ per metre,}$$

where:

h_1 is the vertical unsupported span in metres and shall be taken as the maximum value of the distance between any two adjacent stays or between the stay or either end of the upright. Where this distance is less than 2.4 metres the respective modulus shall be calculated as if the actual value was 2.4 metres.

(ii) The moduli of wood uprights shall be determined by multiplying by 12.5 the corresponding moduli for steel uprights. If other materials are used their moduli shall be at least that required for steel increased in proportion to the ratio of the permissible stresses for steel to that of the material used. In such cases attention shall be paid also to the relative rigidity of each upright to ensure that the deflection is not excessive.

(iii) The horizontal distance between uprights shall be such that the unsupported spans of the shifting boards do not exceed the maximum span specified in sub-paragraph (ii) of paragraph (*a*) of this Sub-Section.

(*d*) *Shores.* (i) Wood shores, when used, shall be in a single piece and shall be securely fixed at each end and heeled against the permanent structure of the ship except that they shall not bear directly against the side plating of the ship.

(ii) Subject to the provisions of sub-paragraphs (iii) and (iv) below, the minimum size of wood shores shall be as follows:

Length of shore in metres	*Rectangular section (mm)*	*Diameter of circular section (mm)*
Not exceeding 3 m	150 × 100	140
Over 3 m but not exceeding 5 m	150 × 150	165
Over 5 m but not exceeding 6 m	150 × 150	180
Over 6 m but not exceeding 7 m	200 × 150	190
Over 7 m but not exceeding 8 m	200 × 150	200
Exceeding 8 m	200 × 150	215

Shores of 7 metres or more in length shall be securely bridged at approximately mid-length.

(iii) When the horizontal distance between the uprights differs significantly from 4 metres, the moments of inertia of the shores may be changed in direct proportion.

(iv) Where the angle of the shore to the horizontal exceeds 10 degrees the next larger shore to that required by sub-paragraph (ii) of this paragraph shall be fitted provided that in no case shall the angle between any shore and the horizontal exceed 45 degrees.

(*e*) *Stays.* Where stays are used to support divisions loaded on both sides, they shall be fitted horizontally or as near thereto as practicable, well secured at each end and formed of steel wire rope. The sizes of the wire rope shall be determined assuming that the divisions and upright which the stay supports are uniformly loaded at 500 kg/m^2. The working load so assumed in the stay shall not exceed one-third of its breaking load.

(C) *Divisions loaded on one side only*

(*a*) *Longitudinal divisions.* The load in kg per metre length of the division shall be taken to be as follows:

TABLE I[1]

B (*m*)

h (*m*)	2	3	4	5	6	7	8	10
1.5	850	900	1010	1225	1500	1770	2060	2645
2.0	1390	1505	1710	1985	2295	2605	2930	3590
2.5	1985	2160	2430	2740	3090	3435	3800	4535
3.0	2615	2845	3150	3500	3885	4270	4670	5480
3.5	3245	3525	3870	4255	4680	5100	5540	6425
4.0	3890	4210	4590	5015	5475	5935	6410	7370
4.5	4535	4890	5310	5770	6270	6765	7280	8315
5.0	5185	5570	6030	6530	7065	7600	8150	9260
6.0	6475	6935	7470	8045	8655	9265	9890	11150
7.0	7765	8300	8910	9560	10245	10930	11630	13040
8.0	9055	9665	10350	11075	11835	12595	13370	14930
9.0	10345	11030	11790	12590	13425	14260	15110	16820
10.0	11635	12395	13230	14105	15015	15925	16850	18710

h = height of grain in metres from the bottom of the division[2]
B = transverse extent of the bulk grain in metres

[1] For the purpose of converting the above loads into British units (ton/ft) 1 kg per metre length shall be taken to be equivalent to 0.0003 ton per foot length.

[2] Where the distance from a division to a feeder or hatchway is 1 metre or less, the height – h – shall be taken to the level of the grain within that hatchway or feeder. In all cases the height shall be taken to the overhead deck in way of the division.

For other values of h or B the loads shall be determined by linear interpolation or extrapolation as necessary.

(*b*) *Transverse divisions.* The load in kg per metre length of the division shall be taken to be as follows:

TABLE II[1]

L (*m*)

h (*m*)	2	3	4	5	6	7	8	10	12	14	16
1.5	670	690	730	780	835	890	935	1000	1040	1050	1050
2.0	1040	1100	1170	1245	1325	1400	1470	1575	1640	1660	1660
2.5	1460	1565	1675	1780	1880	1980	2075	2210	2285	2305	2305
3.0	1925	2065	2205	2340	2470	2590	2695	2845	2925	2950	2950
3.5	2425	2605	2770	2930	3075	3205	3320	3480	3570	3595	3595
4.0	2950	3160	3355	3535	3690	3830	3950	4120	4210	4235	4240
4.5	3495	3725	3940	4130	4295	4440	4565	4750	4850	4880	4885
5.0	4050	4305	4535	4735	4910	5060	5190	5385	5490	5525	5530
6.0	5175	5465	5720	5945	6135	6300	6445	6655	6775	6815	6825
7.0	6300	6620	6905	7150	7365	7445	7700	7930	8055	8105	8115
8.0	7425	7780	8090	8360	8590	8685	8950	9200	9340	9395	9410
9.0	8550	8935	9275	9565	9820	9930	10205	10475	10620	10685	10705
10.0	9680	10095	10460	10770	11045	11270	11460	11745	11905	11975	11997

h = height of grain in metres from the bottom of the division[2]
L = longitudinal extent of the bulk grain in metres

[1] For the purpose of converting the above loads into British units (ton/ft) 1 kg per metre length shall be taken to be equivalent to 0.0003 ton per foot length.

[2] Where the distance from a division to a feeder or hatchway is I metre or less, the height – h – shall be taken to the level of the grain within that hatchway or feeder. In all cases the height shall be taken to the overhead deck in way of the division.

For other values of h or L the loads shall be determined by linear interpolation or extrapolation as necessary.

(*c*) *Vertical distribution of the loads.* The total load per unit length of divisions shown in the Tables I and II above may, if considered necessary, be assumed to have a trapezoidal distribution with height. In such cases, the reaction loads at the upper and lower ends of a vertical member or upright are not equal. The reaction loads at the upper end expressed as percentages of the total load supported by the vertical member or upright shall be taken to be those shown in Tables III and IV below.

TABLE III. LONGITUDINAL DIVISIONS LOADED ON ONE SIDE ONLY

Bearing reaction at the upper end of upright as percentage of load (table I)

B (*m*)

h (*m*)	2	3	4	5	6	7	8	10
1.5	43.3	45.1	45.9	46.2	46.2	46.2	46.2	46.2
2	44.5	46.7	47.6	47.8	47.8	47.8	47.8	47.8
2.5	45.4	47.6	48.6	48.8	48.8	48.8	48.8	48.8
3	46.0	48.3	49.2	49.4	49.4	49.4	49.4	49.4
3.5	46.5	48.8	49.7	49.8	49.8	49.8	49.8	49.8
4	47.0	49.1	49.9	50.1	50.1	50.1	50.1	50.1
4.5	47.4	49.4	50.1	50.2	50.2	50.2	50.2	50.2
5	47.7	49.4	50.1	50.2	50.2	50.2	50.2	50.2
6	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
7	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
8	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
9	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2
10	47.9	49.5	50.1	50.2	50.2	50.2	50.2	50.2

B = transverse extent of the bulk grain in metres

For other values of h or B the reaction loads shall be determined by linear interpolation or extrapolation as necessary.

TABLE IV. TRANSVERSE DIVISIONS LOADED ON ONE SIDE ONLY

Bearing reaction at the upper end of upright as percentage of load (table II)

L (*m*)

h (*m*)	2	3	4	5	6	7	8	10	12	14	16
1.5	37.3	38.7	39.7	40.6	41.4	42.1	42.6	43.6	44.3	44.8	45.0
2	39.6	40.6	41.4	42.1	42.7	43.1	43.6	44.3	44.7	45.0	45.2
2.5	41.0	41.8	42.5	43.0	43.5	43.8	44.2	44.7	45.0	45.2	45.2
3	42.1	42.8	43.3	43.8	44.2	44.5	44.7	45.0	45.2	45.3	45.3
3.5	42.9	43.5	43.9	44.3	44.6	44.8	45.0	45.2	45.3	45.3	45.3
4	43.5	44.0	44.4	44.7	44.9	45.0	45.2	45.4	45.4	45.4	45.4
5	43.9	44.3	44.6	44.8	45.0	45.2	45.3	45.5	45.5	45.5	45.5
6	44.2	44.5	44.8	45.0	45.2	45.3	45.4	45.6	45.6	45.6	45.6
7	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
8	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
9	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6
10	44.3	44.6	44.9	45.1	45.3	45.4	45.5	45.6	45.6	45.6	45.6

L = longitudinal extent of the bulk grain in metres

For other values of h or L the reaction loads shall be determined by linear interpolation or extrapolation as necessary.

The strength of the end connexions of such vertical members or uprights may be calculated on the basis of the maximum load likely to be imposed at either end. These loads are as follows:

- Longitudinal divisions:
  - Maximum load at the top, 50% of the appropriate total load from Table I;
  - Maximum load at the bottom, 55% of the appropriate total load from Table I;
- Transverse divisions:
  - Maximum load at the top, 45% of the appropriate total load from Table II;
  - Maximum load at the bottom, 60% of the appropriate total load from Table II.

The thickness of horizontal wooden boards may also be determined having regard to the vertical distribution of the loading represented by Tables III and IV above and in such cases

$$t = 10a\sqrt{\frac{p \times k}{h \times 213.3}}$$

where:

t = thickness of board in mm;

a = horizontal span of the board i.e. distance between uprights in metres;

h = head of grain to the bottom of the division in metres;

p = total load per unit length derived from Table I or II in kilogrammes;

k = factor dependent upon vertical distribution of the loading.

When the vertical distribution of the loading is assumed to be uniform, i.e. rectangular, k shall be taken as equal to 1.0. For a trapezoidal distribution

$$k = 1.0 + 0.06(50 - R)$$

where:

R is the upper end bearing reaction taken from Table III or IV.

(*d*) *Stays or shores.* The sizes of stays and shores shall be so determined that the loads derived from Tables I and II in the preceding paragraphs (*a*) and (*b*) shall not exceed one-third of the breaking loads.

(D) *Saucers*

When a saucer is used to reduce the heeling moments in a "filled compartment", its depth, measured from the bottom of the saucer to the deck line, shall be as follows:

- for ships with a moulded breadth of up to 9.1 metres, not less than 1.2 metres;
- for ships with a moulded breadth of 18.3 metres or more, not less than 1.8 metres;
- for ships with a moulded breadth between 9.1 metres and 18.3 metres, the minimum depth of the saucer shall be calculated by interpolation.

The top (mouth) of the saucer shall be formed by the underdeck structure in the way of the hatchway, i.e. hatchside girders or coamings and hatchend beams. The saucer and hatchway above shall be completely filled with bagged grain or other suitable cargo laid down on a separation cloth or its equivalent and stowed tightly against adjacent struetures and the portable hatchway beams if the latter are in place.

(E) *Bundling of bulk*

As an alternative to filling the saucer with bagged grain or other suitable cargo a bundle of bulk grain may be used provided that:

(*a*) The saucer is lined with a material acceptable to the Administration having a tensile strength of not less than 274 kg per 5 cm strip and which is provided with suitable means for securing at the top.

(*b*) As an alternative to paragraph (*a*) above a material acceptable to the Administration having a tensile strength of not less than 137 kg per 5 cm strip may be used if the saucer is constructed as follows:

- Athwartship lashings acceptable to the Administration shall be placed inside the saucer formed in the bulk grain at intervals of not more 2.4 metres; these lashings shall be of sufficient length to permit being drawn up tight and secured at the top of the saucer;
- Dunnage not less than 25 mm in thickness or other suitable material of equal strength and between 150 to 300 mm in width shall be placed fore and aft over these lashings to prevent the cutting or chaffing of the material which shall be placed thereon to line the saucer.

(*c*) The saucer shall be filled with bulk grain and secured at the top except that when using material approved under paragraph (*b*) above further dunnage shall be laid on top after lapping the material before the saucer is secured by setting up the lashings.

(*d*) If more than one sheet of material is used to line the saucer they shall be joined at the bottom either by sewing or a double lap.

(*e*) The top of the saucer shall be coincidental with the bottom of the beams when these are in place and suitable general cargo or bulk grain may be placed between the beams on top of the saucer.

(F) *Securing hatch covers of filled compartments*

If there is no bulk grain or other cargo above a "filled compartment" the hatch covers shall be secured in an approved manner having regard to the weight and permanent arrangements provided for securing such covers.

The documents of authorization issued under Regulation 10 of this Chapter shall include reference to the manner of securing considered necessary by the Administration issuing such documents.

Section II. *Securing of partly filled compartments*

(A) *Strapping or lashing*

(*a*) When, in order to eliminate heeling moments in "partly filled compartments", strapping or lashing is utilized, the securing shall be accomplished as follows:

(i) The grain shall be trimmed and levelled to the extent that it is very slightly crowned and covered with burlap separation cloths, tarpaulins or the equivalent.

(ii) The separation cloths and/or tarpaulins shall overlap at least 1.8 metres.

(iii) Two solid floors of rough 25 mm by 150 mm to 300 mm lumber shall be laid with the top floor running longitudinally and nailed to an athwartships bottom floor. Alternatively, one solid floor of 50 mm lumber, running longitudinally and nailed over the top of a 50 mm bottom bearer not less than 150 mm wide, may be used. The bottom bearers shall extend the full breadth of the compartment and shall be spaced not more than 2.4 metres apart. Arrangements utilizing other materials and deemed by an Administration to be equivalent to the foregoing may be accepted.

(iv) Steel wire rope (19 mm diameter or equivalent), doubled steel strapping (50 mm × 1.3 mm and having a breaking load of at least 5000 kg), or chain of equivalent strength, each of which shall be set tight by means of a 32 mm turnbuckle, may be used for lashings. A winch tightener, used in conjunction with a locking arm, may be substituted for the 32 mm turnbuckle when steel strapping is used, provided suitable wrenches are available for setting up as necessary. When steel strapping is used, not less than three crimp seals shall be used for securing the ends. When wire is used, not less than four clips shall be used for forming eyes in the lashings.

(v) Prior to the completion of loading the lashing shall be positively attached to the framing at a point approximately 450 mm below the anticipated final grain surface by means of either a 25 mm shackle or beam clamp of equivalent strength.

(vi) The lashings shall be spaced not more than 2.4 metres apart and each shall be supported by a bearer nailed over the top of the fore and aft floor. This bearer shall consist of not less than 25 mm by 150 mm lumber or its equivalent and shall extend the full breadth of the compartment.

(vii) During the voyage the strapping shall be regularly inspected and set up where necessary.

(B) *Overstowing arrangements*

Where bagged grain or other suitable cargo is utilized for the purpose of securing "partly filled compartments", the free grain surface shall be covered with a separation cloth or equivalent or by a suitable platform. Such platforms shall consist of bearers spaced not more than 1.2 metres apart and 25 mm boards laid thereon spaced not more than 100 mm apart. Platforms may be constructed of other materials provided they are deemed by an Administration to be equivalent.

(C) *Bagged grain*

Bagged grain shall be carried in sound bags which shall be well filled and securely closed.

CHAPTER VII. CARRIAGE OF DANGEROUS GOODS

Regulation 1. APPLICATION

(*a*) Unless expressly provided otherwise, this Chapter applies to the carriage of dangerous goods in all ships to which the present Regulations apply.

(*b*) The provisions of this Chapter do not apply to ship's stores and equipment or to particular cargoes carried in ships specially built or converted as a whole for that purpose, such as tankers.

(*c*) The carriage of dangerous goods is prohibited except in accordance with the provisions of this Chapter.

(*d*) To supplement the provisions of this Chapter each Contracting Government shall issue, or cause to be issued, detailed instructions on the safe packing and stowage of specific dangerous goods or categories of dangerous goods which shall include any precautions necessary in their relation to other cargo.

Regulation 2. CLASSIFICATION

Dangerous goods shall be divided into the following classes:

- Class 1, explosives;
- Class 2, gases, compressed, liquefied or dissolved under pressure;
- Class 3, inflammable* liquids;
- Class 4.1, inflammable solids;
- Class 4.2, inflammable solids, or substances, liable to spontaneous combustion;
- Class 4.3, inflammable solids, or substances, which in contact with water emit inflammable gases;
- Class 5.1, oxidizing substances;
- Class 5.2, organic peroxides;
- Class 6.1, poisonous (toxic) substances;

* "Inflammable" has the same meaning as "flammable".

- Class 6.2, infectious substances;
- Class 7, radioactive substances;
- Class 8, corrosives;
- Class 9, miscellaneous dangerous substances, that is, any other substance which experience has shown, or may show, to be of such a dangerous character that the provisions of this Chapter should apply to it.

Regulation 3. PACKING

(*a*) The packing of dangerous goods shall be:

(i) Well made and in good condition;

(ii) Of such a character that any interior surface with which the contents may come in eontact is not dangerously affected by the substance being conveyed; and

(iii) Capable of withstanding the ordinary risks of handling and carriage by sea.

(*b*) Where the use of absorbent or cushioning material is customary in the packing of liquids in receptacles that material shall be:

(i) Capable of minimizing the dangers to which the liquid may give rise;

(ii) So disposed as to prevent movement and ensure that the receptacle remains surrounded; and

(iii) Where reasonably possible of sufficient quantity to absorb the liquid in the event of breakage of the receptacle.

(*c*) Receptacles containing dangerous liquids shall have an ullage at the filling temperature sufficient to allow for the highest temperature during the course of normal carriage.

(*d*) Cylinders or receptacles for gases under pressure shall be adequately constructed, tested, maintained and correctly filled.

(*e*) Empty receptacles which have been used previously for the carriage of dangerous goods shall themselves be treated as dangerous goods unless they have been cleaned and dried or, when the nature of the former contents permit with safety, have been closed securely.

Regulation 4. MARKING AND LABELLING

Each receptacle containing dangerous goods shall be marked with the correct technical name (trade names shall not be used) and identified with a distinctive label or stencil of the label so as to make clear the dangerous character. Each receptacle shall be so labelled except receptacles containing chemicals packed in limited quantities and large shipments which can be stowed, handled and identified as a unit.

Regulation 5. DOCUMENTS

(*a*) In all documents relating to the carriage of dangerous goods by sea where the goods are named the correct technical name of the goods shall be used (trade names shall not be used) and the correct description given in accordance with the classification set out in Regulation 2 of this Chapter.

(*b*) The shipping documents prepared by the shipper shall include, or be accompanied by, a certificate or declaration that the shipment offered for carriage is properly packed, marked and labelled and in proper condition for carriage.

(*c*) Each ship carrying dangerous goods shall have a special list or manifest setting forth, in accordance with Regulation 2 of this Chapter, the dangerous goods on board and the location thereof. A detailed stowage plan which identifies by class and sets out the location of all dangerous goods on board may be used in place of such special list or manifest.

Regulation 6. STOWAGE REQUIREMENTS

(*a*) Dangerous goods shall be stowed safely and appropriately according to the nature of the goods. Incompatible goods shall be segregated from one another.

(*b*) Explosives (except ammunition) which present a serious risk shall be stowed in a magazine which shall be kept securely closed while at sea. Such explosives shall be segregated from detonators. Electrical apparatus and cables in any compartment in which explosives are carried shall be designed and used so as to minimize the risk of fire or explosion.

(*c*) Goods which give off dangerous vapours shall be stowed in a well ventilated space or on deck.

(*d*) In ships carrying inflammable liquids or gases special precautions shall be taken where necessary against fire or explosion.

(*e*) Substances which are liable to spontaneous heating or combustion shall not be carried unless adequate precautions have been taken to prevent the outbreak of fire.

Regulation 7. EXPLOSIVES IN PASSENGER SHIPS

In passenger ships the following explosives only may be carried:

(i) Safety cartridges and safety fuses;

(ii) Small quantities of explosives not exceeding 9 kilogrammes (20 pounds) total net weight;

(iii) Distress signals for use in ships or aircraft, if the total weight of such signals does not exceed 1,016 kilogrammes (2,240 pounds);

(iv) Except in ships carrying unberthed passengers, fireworks which are unlikely to explode violently.

(*b*) Notwithstanding the provisions of paragraph (*a*) of this Regulation additional quantities or types of explosives may be carried in passenger ships in which there are special safety measures approved by the Administration.

CHAPTER VIII. NUCLEAR SHIPS

Regulation 1. APPLICATION

This Chapter applies to all nuclear ships except ships of war.

Regulation 2. APPLICATION OF OTHER CHAPTERS

The Regulations contained in the other Chapters of the present Convention apply to nuclear ships except as modified by this Chapter.

Regulation 3. EXEMPTIONS

A nuclear ship shall not, in any circumstances, be exempted from compliance with any Regulations of this Convention.

Regulation 4. APPROVAL OF REACTOR INSTALLATION

The design, construction and standards of inspection and assembly of the reactor installation shall be subject to the approval and satisfaction of the Administration and shall take account of the limitations which will be imposed on surveys by the presence of radiation.

Regulation 5. SUITABILITY OF REACTOR INSTALLATION FOR SERVICE ON BOARD SHIP

The reactor installation shall be designed having regard to the special conditions of service on board ship both in normal and exceptional circumstances of navigation.

Regulation 6. RADIATION SAFETY

The Administration shall take measures to ensure that there are no unreasonable radiation or other nuclear hazards, at sea or in port, to the crew, passengers or public, or to the waterways or food or water resources.

Regulation 7. SAFETY ASSESSMENT

(*a*) A Safety Assessment shall be prepared to permit evaluation of the nuclear power plant and safety of the ship to ensure that there are no unreasonable radiation or other hazards, at sea or in port, to the crew, passengers or public, or to the waterways or food or water resources. The Administration, when satisfied, shall approve such Safety Assessment which shall always be kept up-to-date.

(*b*) The Safety Assessment shall be made available sufficiently in advance to the Contracting Governments of the countries which a nuclear ship intends to visit so that they may evaluate the safety of the ship.

Regulation 8. OPERATING MANUAL

A fully detailed Operating Manual shall be prepared for the information and guidance of the operating personnel in their duties on all matters relating to the operation of the nuclear power plant and having an important bearing on safety. The Administration, when satisfied, shall approve such Operating Manual and a copy shall be kept on board the ship. The Operating Manual shall always be kept up-to-date.

Regulation 9. SURVEYS

Survey of nuclear ships shall include the applicable requirements of Regulation 7 of Chapter 1, or of Regulations 8, 9 and 10 of Chapter I, except in so far as surveys are limited by the presence of radiation. In addition, the surveys shall include any special requirements of the Safety Assessment. They shall in all cases, notwithstanding the provisions of Regulations 8 and 10 of Chapter I, be carried out not less frequently than once a year.

Regulation 10. CERTIFICATES

(*a*) The provisions of paragraph (*a*) of Regulation 12 of Chapter I and of Regulation 14 of Chapter I shall not apply to nuclear ships.

(*b*) A Certificate, called a Nuclear Passenger Ship Safety Certificate shall be issued after inspection and survey to a nuclear passenger ship which complies with the requirements of Chapters II-1, II-2, III, IV and VIII, and any other relevant requirements of the present Regulations.

(*c*) A Certificate, called a Nuclear Cargo Ship Safety Certificate shall be issued after inspection and survey to a nuclear cargo ship which satisfies the requirements for cargo ships on survey set out in Regulation 10 of Chapter I, and complies with the requirements of Chapters II-1, II-2, III, IV and VIII and any other relevant requirements of the present Regulations.

(*d*) Nuclear Passenger Ship Safety Certificates and Nuclear Cargo Ship Safety Certificates shall state: "That the ship, being a nuclear ship, complied with all requirements of Chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship".

(*e*) Nuclear Passenger Ship Safety Certificates and Nuclear Cargo Ship Safety Certificates shall be valid for a period of not more than 12 months.

(*f*) Nuclear Passenger Ship Safety Certificates and Nuclear Cargo Ship Safety Certificates shall be issued either by the Administration or by any person or organization duly authorized by it. In every case, that Administration assumes full responsibility for the certificate.

Regulation 11. SPECIAL CONTROL

In addition to the control established by Regulation 19 of Chapter 1, nuclear ships shall be subject to special control before entering the ports and in the ports of Contracting Governments, directed towards verifying that there is on board a valid Nuclear Ship Safety Certificate and that there are no unreasonable radiation or other hazards at sea or in port, to the crew, passengers or public, or to the waterways or food or water resources.

Regulation 12. CASUALTIES

In the event of any accident likely to lead to an enviromental hazard the master of a nuclear ship shall immediately inform the Administration. The master shall also immediately inform the competent Governmental authority of the country in whose waters the ship may be, or whose waters the ship approaches in a damaged condition.

APPENDIX

FORM OF SAFETY CERTIFICATE FOR PASSENGER SHIPS

PASSENGER SHIP SAFETY CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

for $\frac{\text{an}}{\text{a short}}$ international voyage.

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Particulars of voyages, if any, sanctioned under regulation 27(c)(vii) of chapter III*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

I. That the above-mentioned ship has been duly surveyed in accordance with the provisions of the Convention referred to above.

II. That the survey showed that the ship complied with the requirements of the Regulations annexed to the said Convention as regards:

(1) The structure, main and auxiliary boilers and other pressure vessels and machinery;

(2) The watertight subdivision arrangements and details;

(3) The following subdivision load lines:

Subdivision load lines assigned and marked on the ship's side at amidships (regulation 11 of chapter II-1)	*Freeboard*	*To apply when the spaces in which passengers are carried include the following alternative spaces*
C.1	...	...
C.2	...	...
C.3	...	...

III. That the life-saving appliances provide for a total number of ..... persons and no more, viz.:

— ..... lifeboats (including ..... motor lifeboats) capable of accommodating ..... persons, and ..... motor lifeboats fitted with radiotelegraph installation and searchlight (included in the total lifeboats shown above) and ..... motor lifeboats fitted with searchlight only (also included in the total lifeboats shown above), requiring ..... certificated lifeboatmen;

— ..... liferafts, for which approved launching devices are required, capable of accommodating ..... persons; and

— ..... liferafts, for which approved launching devices are not required, capable of accommodating ..... persons;

— ..... buoyant apparatus capable of supporting ..... persons;

— ..... lifebuoys;

— ..... life-jackets.

IV. That the lifeboats and liferafts were equipped in accordance with the provisions of the Regulations.

V. That the ship was provided with a line-throwing appliance and portable radio apparatus for survival craft in accordance with the provisions of the Regulations.

VI. That the ship complied with the requirements of the Regulations as regards radiotelegraph installations, viz.:

	Requirements of regulations	*Actual provision*
Hours of listening by operator	...	...
Number of operators	...	...
Whether auto alarm fitted	...	...
Whether main installation fitted	...	...
Whether reserve installation fitted	...	...
Whether main and reserve transmitters electrically separated or combined	...	...
Whether direction-finder fitted	...	...
Whether radio equipment for homing on the radiotelephone distress frequency fitted	...	...
Whether radar fitted	...	...
Number of passengers for which certificated	...	...

VII. That the functioning of the radiotelegraph installations for motor lifeboats and/or the portable radio apparatus for survival craft, if provided, complied with the provisions of the Regulations.

VIII. That the ship complied with the requirements of the Regulations as regards fire-detecting and fire-extinguishing appliances, radar, echo-sounding device and gyro-compass and was provided with navigation lights and shapes, pilot ladder, and means of making sound signals, and distress signals in accordance with the provisions of the Regulations and also the International Regulations for Preventing Collisions at Sea in force.

IX. That in all other respects the ship complied with the requirements of the Regulations, so far as these requirements apply thereto.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue this certificate:

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1952, 1965 and the year of the coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.

In the case of a ship which is converted as provided in Regulation 1(*b*)(i) of Chapter II-1 or Regulations I(*a*)(i) of Chapter II-2 of the Convention, the date on which the work of conversion was begun should be given.

FORM OF SAFETY CONSTRUCTION CERTIFICATE FOR CARGO SHIPS

CARGO SHIP SAFETY CONSTRUCTION CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

That the above-mentioned ship has been duly surveyed in accordance with the provisions of Regulation 10 of Chapter I of the Convention referred to above, and that the survey showed

that the condition of the hull, machinery and equipment, as defined in the above Regulation, was in all respects satisfactory and that the ship complied with the applicable requirements of Chapter II-1 and Chapter II-2 (other than that relating to fire-extinguishing appliances and fire control plans).

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue the certificate.

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1952, 1965 and the year of the coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.

FORM OF SAFETY EQUIPMENT CERTIFICATE FOR CARGO SHIPS

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

I. That the above-mentioned ship has been duly inspected in accordance with the provisions of the Convention referred to above.

II. That the inspection showed that the life-saving appliances provided for a total number of . . . . . persons and no more, viz.:

— . . . . . lifeboats on port side capable of accommodating . . . . . persons;

— . . . . . lifeboats on starboard capable of accommodating . . . . . persons;

— . . . . . motor lifeboats (included in the total lifeboats shown above), including . . . . . motor lifeboats fitted with radiotelegraph installation and searchlight, and . . . . . motor lifeboats fitted with searchlight only;

— . . . . . liferafts, for which approved launching devices are required, capable of accommodating . . . . . persons; and

— . . . . . liferafts, for which approved launching devices are not required, capable of accommodating . . . . . persons;

— . . . . . lifebuoys;

— . . . . . life-jackets.

III. That the lifeboats and liferafts were equipped in accordance with the provisions of the Regulations annexed to the Convention.

IV. That the ship was provided with a line-throwing apparatus and portable radio apparatus for survival craft in accordance with the provisions of the Regulations.

V. That the inspection showed that the ship complied with the requirements of the said Convention as regards fire-extinguishing appliances and fire control plans, echo-sounding device and gyro-compass and was provided with navigation lights and shapes, pilot ladder, and means of making sound signals and distress signals, in accordance with the provisions of the Regulations and the International Regulations for Preventing Collisions at Sea in force.

VI. That in all other respects the ship complied with the requirements of the Regulations so far as these requirements apply thereto.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue the certificate.

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1952, 1965 and the year of the coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.

FORM OF SAFETY RADIOTELEGRAPHY CERTIFICATE FOR CARGO SHIPS

CARGO SHIP SAFETY RADIOTELEGRAPHY CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

I. That the above-mentioned ship complies with the provisions of the Regulations annexed to the Convention referred to above as regards radiotelegraphy and radar:

	Requirements of regulations	*Actual provision*
Hours of listening by operator	...	...
Number of operators	...	...
Whether auto alarm fitted	...	...
Whether main installation fitted	...	...
Whether reserve installation fitted	...	...
Whether main and reserve transmitters electrically separated or combined	...	...
Whether direction-finder fitted	...	...
Whether radio equipment for homing on the radiotelephone frequency fitted	...	...
Whether radar fitted	...	...

II. That the functioning of the radiotelegraphy installation for motor lifeboats and/or the portable radio apparatus for survival craft, if provided, complies with the provisions of the said Regulations.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue the certificate.

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1952, 1965 and the year of coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.

FORM OF SAFETY RADIOTELEPHONY CERTIFICATE FOR CARGO SHIPS

CARGO SHIP SAFETY RADIOTELEPHONY CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

1. That the above-mentioned ship complies with the provisions of the Regulations annexed to the Convention referred to above as regards radiotelephony:

	Requirements of regulations	*Actual provision*
Hours of listening	...	...
Number of operators	...	...

II. That the functioning of the portable radio apparatus for survival craft, if provided, complies with the provisions of the said Regulations.

This certificate is issued under the authority of the ..... Government. It will remain in force until .....

Issued at ..... the ..... day of ..... 19 .....

Here follows the seal or signature of the authority entitled to issue the certificate.

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1952, 1965 and the year of coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.

FORM OF EXEMPTION CERTIFICATE

EXEMPTION CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*

The (NAME) Government certifies

I, the undersigned (NAME) certify

That the above-mentioned ship is, under the authority conferred by Regulation . . . . . of Chapter . . . . . of the Regulations annexed to the Convention referred to above, exempted from the requirements of(†) . . . . . of the Convention on the voyage . . . . . to . . . . . .

*Insert here the conditions, if any, on which the exemption certificate is granted.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue this certificate:

(SEAL)

(†) Insert here references to Chapters and Regulations, specifying particular paragraphs.

If signed, the following paragraph is to be added:

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

(SIGNATURE)

FORM OF SAFETY CERTIFICATE FOR NUCLEAR PASSENGER SHIPS

NUCLEAR PASSENGER SHIP SAFETY CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Particulars of voyages, if any, sanctioned under regulation 27(c)(vii) of chapter III*	*Date on which keel was laid (see Note below)*

The (NAME) Government certifies

I, the undersigned (NAME) certify

I. That the above-mentioned ship has been duly surveyed in accordance with the provisions of the Convention referred to above.

II. That the ship, being a nuclear ship, complied with all requirements of Chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship.

III. That the survey showed that the ship complied with the requirements of the Regulations annexed to the said Convention as regards:

(1) The structure, main and auxiliary boilers and other pressure vessels and machinery;

(2) The watertight subdivision arrangements and details;

(3) The following subdivision load lines:

Subdivision load lines assigned and marked on the ship's side at amidships (regulation 11 of chapter II-1)	*Freeboard*	*To apply when the spaces in which passengers are carried include the following alternative spaces*
C.1	. . .	. . .
C.2	. . .	. . .
C.3	. . .	. . .

IV. That the life-saving appliances provided for a total number of . . . . . persons and no more, viz.:

— . . . . . lifeboats (including . . . . . motor lifeboats) capable of accommodating . . . . . persons, and . . . . . motor lifeboats fitted with radiotelegraph installation and searchlight (included in the total lifeboats shown above) and . . . . . motor lifeboats fitted with searchlight only (also included in the total lifeboats shown above), requiring . . . . . certificated lifeboatmen;

— . . . . . liferafts, for which approved launching devices are required, capable of accommodating . . . . . persons; and

— . . . . . liferafts, for which approved launching devices are not required, capable of accommodating . . . . . persons;

— . . . . . buoyant apparatus capable of supporting . . . . . persons;

— . . . . . lifebuoys;

— . . . . . life-jackets.

V. That the lifeboats and liferafts were equipped in accordance with the provisions of the Regulations.

VI. That the ship was provided with a line-throwing appliance and portable radio apparatus for survival craft, in accordance with the provisions of the Regulations.

VII. That the ship complied with the requirements of the Regulations as regards radiotelegraph installations, viz.:

	Requirements of regulations	*Actual provision*
Hours of listening by operator	...	...
Number of operators	...	...
Whether auto alarm fitted	...	...
Whether main installation fitted	...	...
Whether reserve installation fitted	...	...
Whether main and reserve transmitters electrically separated or combined	...	...
Whether direction-finder fitted	...	...
Whether radio equipment for homing on the radiotelephone distress frequency fitted	...	...
Whether radar fitted	...	...
Number of passengers for which certificated	...	...

VIII. That the functioning of the radiotelegraph installations for motor lifeboats and/or the portable radio apparatus for survival craft, if provided, complied with the provisions of the Regulations.

IX. That the ship complied with the requirements of the Regulations as regards fire-detecting and fire-extinguishing appliances, radar, echo-sounding device and gyro-compass and was provided with navigation lights and shapes, pilot ladder, and means of making sound signals, and distress signals in accordance with the provisions of the Regulations and also the International Regulations for Preventing Collisions at Sea in force.

X. That in all other respects the ship complied with the requirements of the Regulations, so far as these requirements apply thereto.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue this certificate:

(SEAL)

If signed, the following paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for 1965 and the year of the coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the acutal date should be given.

In the case of a ship which is converted as provided in Regulation 1(*b*)(i) of Chapter II-1 or Regulations 1(*a*)(i) of Chapter II-2, the date on which the work of conversion was begun should be given.

FORM OF SAFETY CERTIFICATE FOR NUCLEAR CARGO SHIPS

NUCLEAR CARGO SHIP SAFETY CERTIFICATE

(OFFICIAL SEAL) (COUNTRY)

Issued under the provisions of the International Convention for the Safety of Life at Sea, 1974

Name of ship	*Distinctive number or letters*	*Port of registry*	*Gross tonnage*	*Date on which keel was laid (see Note below)*

The _____ (NAME) Government certifies

I, the undersigned _____ (NAME) certify

I. That the above-mentioned ship has been duly surveyed in accordance with the provisions of the Convention referred to above.

II. That the ship, being a nuclear ship, complied with all requirements of Chapter VIII of the Convention and conformed to the Safety Assessment approved for the ship.

III. That the survey showed that the ship satisfied the requirements set out in Regulation 10 of Chapter I of the Convention as to hull, machinery and equipment, and complied with the relevant requirements of Chapter II-1 and Chapter II-2.

IV. That the life-saving appliances provided for a total number of . . . . . persons and no more, viz.:

— . . . . . lifeboats on port side capable of accommodating . . . . . persons;

— . . . . . lifeboats on starboard side capable of accommodating . . . . . persons;

— . . . . . motor lifeboats (included in the total lifeboats shown above) including . . . . . motor lifeboats fitted with radiotelegraph installation and searchlight, and . . . . . motor lifeboats fitted with searchlight only;

— . . . . . liferafts, for which aproved launching devices are required, capable of accommodating . . . . . persons; and

— . . . . . liferafts for which approved launching devices are not required, capable of accommodating . . . . . persons;

— . . . . . lifebuoys;

— . . . . . life-jackets.

V. That the lifeboats and liferafts were equipped in accordance with the provisions of the Regulations annexed to the Convention.

VI. That the ship was provided with a line-throwing apparatus and portable radio apparatus for survival craft in accordance with the provisions of the Regulations.

VII. That the ship complied with the requirements of the Regulations as regards radiotelegraph installations, viz.:

	Requirements of regulations	*Actual provision*
Hours of listening by operator	...	...
Number of operators	...	...
Whether auto alarm fitted	...	...
Whether main installation fitted	...	...
Whether reserve installation fitted	...	...
Whether main and reserve transmitters electrically separated or combined	...	...
Whether direction-finder fitted	...	...
Whether radio equipment for homing on the radiotelephone distress frequency fitted	...	...
Whether radar fitted	...	...

VIII. That the functioning of the radiotelegraph installations for motor lifeboats and/or the portable radio apparatus for survival craft, if provided, complied with the provisions of the Regulations.

IX. That the inspection showed that the ship complied with the requirements of the said Convention as regards fire-extinguishing appliances, radar, echo-sounding device and gyrocompass and was provided with navigation lights and shapes, pilot ladder, and means of making sound signals and distress signals in accordance with the provisions of the Regulations and the International Regulations for Preventing Collisions at Sea in force.

X. That in all other respects the ship complied with the requirements of the Regulations so far as these requirements apply thereto.

This certificate is issued under the authority of the . . . . . Government. It will remain in force until . . . . . .

Issued at . . . . . the . . . . . day of . . . . . 19 . . . . . .

Here follows the seal or signature of the authority entitled to issue this certificate:

(SEAL)

If signed, the folowing paragraph is to be added:

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

(SIGNATURE)

NOTE. It will be sufficient to indicate the year in which the keel was laid or when the ship was at a similar stage of construction except for the year 1965 and the year of the coming into force of the International Convention for the Safety of Life at Sea, 1974, in which cases the actual date should be given.