TRANS/SC.3/131

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Inland Water Transport

COMPENDIUM OF RESOLUTIONS OF THE PRINCIPAL WORKING PARTY ON INLAND WATER TRANSPORT

UNITED NATIONS

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New York, 1993

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Note by the secretariat

1. In accordance with the request of the Principal Working Party on Inland Water Transport (TRANS/SC3/130, paragraph 38) the secretariat reproduces below the compendium of all valid resolutions of the Principal Working Party, together with their annexes as amended.

2. This publication takes account of relevant parts of earlier documents issued in 1977 and 1986 (ECE/TRANS/26 and Add.1) containing the compendium of resolutions of the Inland Transport Committee and its subsidiary bodies.

3. Part I contains a list of all the resolutions of the Principal Working Party, giving the number, title, symbol of document, date of adoption and an indication as to whether or not they are still valid.

4. Part II comprises the resolutions which have neither been superseded nor otherwise become invalid together with their annexes as amended by the date of the issuance of this compendium. Annexes to resolution No. 22 amended by resolution No. 29 (Signs and Signals on Inland Waterways (SIGNI)) and to resolution No. 24 amended by resolutions Nos. 26 and 27 (European Code for Inland Waterways (CEVNI)9 however are not reproduced in this compendium as being too voluminous and requiring colour reproduction. These annexes are available as separate documents: TRANS/SC3/108 and Add.1 and Corr.1 and TRANS/SC3/115 and Add.1 and 2.

PART I

LIST OF RESOLUTIONS OF THE PRINCIPAL WORKING PARTY ON INLAND WATER TRANSPORT

Number or Resolution	*Title*	*Symbol of the document*	*Date of adoption*	*Comments by the Secretariat*
1.	Standardization of Signalling Systems on Inland Waterways	TRANS/195 (Annex 2) Annex issued as document TRANS/325 and Rev.1 and 2	28 August 1957	Modified by resolution No. 16
2.	Unification of Identification Markings on Inland Water Craft	TRAANS/216 (Annex 1)	19 November 1958	Covered by resolution No. 4
3.	Water Pollution	TRANS/228 (Annex 2)	19 November 1958	Covered by resolution No. 18
4.	Application of the European Inland Waterway Navigation Code (CEVNI)	TRANS/270 (Annex 1) Annex issued as document W/TRANS/SC3 /37 and Rev.1 and 2	14 December 1962	Superseded by resolution No. 24
5.	Draught Scales, Freeboard, Maximum Draught and Draught Markings of Inland Water Vessels	TRANS/278 (Annex 1)	13 November 1963	Superseded by resolution No. 7
6.	Regulations Covering Liquified Gas Installations on Inland Water Craft	TRANS/278/Add.1	13 November 1963	Covered by resolution No. 17

7.	Freeboard and Draught Markings	TRANS/316 (Annex 1)	21 October 1966	Amends annex to resolution No. 4
8.	Sound Signs on Inland Waterway Vessels	TRANS/316 (Annex 2)	21 October 1966	Amends annex to resolution No. 4
9.	Signalling Systems on Inland Waterways	TRANS/316 (Annex 3)	21 October 1966	Amends annex to resolution No. 1
10.	Noise Abatement in the Wheelhouse and Living Quarters of Vessels	TRANS/333 (Annex 3)	17 November 1967	Valid
11.	Abatement of the Noise Produced by Motor Vessels	TRANS/333 (Annex 4)	17 November 1967	Valid
12.	Freeboard and Safety Distances	TRANS/386	8 March 1973	Superseded by resolution No. 17
13.	International Certificate (card) for Pleasure Craft	TRANS/SC3/R.26	28 November 1973	Superseded by resolution No. 13, revised
13. Revised	International Certificate (international card) for Pleasure Craft	TRANS/SC3/118 (Annex 2)	14 November 1986	Valid
14.	International Certificate (internatio	TRANS/SC3/83 (Annex 1)	27 November 1974	Superseded by resolution No. 14,

	nal card) of Competence for Pleasure Craft Operators			revised
14. Revised	International Certificate (international card) concerning the Competence for Pleasure Craft Operators	TRANS/SC3/96	29 January 1979	Valid
15.	Ship-borne Barges	TRANS/SC3/83 (Annex 2)	27 November 1974	Valid
16.	Additions and Amendments to the Annex to Resolution No. 1 on Inland Waterway Signs and Signals and Extensions of the Scope of that Annex	TRANS/SC3/85 (Annex 1) Annex issued as document TRANS/SC3/86 and Corr.1-3	3 December 1975	Superseded by resolution No. 22
17.	Standardization of Technical Requirements for Inland Navigation Vessels	TRANS/SC3/85 (Annex 2) Annex issued as document TRANS/SC3/87	3 December 1975	Superseded by resolution No. 17, revised
17. Revised	Recommendations on Technical Requirements for	TRANS/SC3/103 (Annex 1) Annex issued as document	13 November 1981	Valid

	Inland Navigation Vessels	TRANS/SC3/104 and Corr.1		
18.	Water Pollution by Inland Navigation Vessels	TRANS/SC3/85 (Annex 3)	3 December 1975	Covered by resolution No. 21
19.	Additions to the European Code for Inland Waterways (CEVNI) concerning Navigation on Lakes	TRANS/SC3/91 (Annex 1)	18 November 1977	Amends resolution No. 4
20.	Additions to the European Code for Inland Waterways (CEVNI) concerning Navigation on Rivers	TRANS/SC3/95	16 November 1978	Amends resolution No. 4
21.	Prevention of Water Pollution by Inland Navigation Vessels	TRANS/SC3/107 (Annex 1)	12 November 1982	Valid
22.	SIGNI - Signs and Signals on Inland Waterways. Additions and Amendments to Resolution No. 16, Annex.	TRANS/SC3/107 (Annex 2) and Corr.1 Annex issued as document TRANS/SC3/108	12 November 1982	Valid
23.	Application of the	TRANS/SC3/110 (Annex	10 November 1983	Valid

	Recommendations on Technical Requirements for Inland Navigation Vessels (Annex to Resolution No. 17, revised (TRANS/SC3/104) to Existing Vessels	1)		
24.	Resolution on the European Code for Inland Waterways (CEVNI)	TRANS/SC3/114 (Annex 2) Annex issued as document TRANS/SC3/115	15 November 1985	Valid
25.	Guidelines for Passenger Vessels also suited for carrying Disabled Persons	TRANS/SC3/118 (Annex 1)	14 November 1986	Valid
26.	Additions and Amendments to Resolution No. 24 on CEVNI: European Code for Inland Navigation	TRANS/SC3/115/Add.1	2 November 1988	Valid
27.	Additions and Amendments to Resolutions No. 24 on CEVNI:	TRANS/SC3/115/Add.2	14 November 1990	Valid

	European Code for Inland Navigation			
28.	Amendments to Resolution No. 17, revised: Recommendations on Technical Requirements for Inland Navigation Vessels	TRANS/SC3/104/Add.1	14 November 1990	Valid
29.	Additions and Amendments to Resolution No. 22 on SIGNI: Signs and Signals on Inland Waterways	TRANS/SC3/108/Add.1 and Corr.1	14 November 1990	Valid
30.	Classification of European Inland Waterways	TRANS/SC3/131	12 November 1992	Valid
31.	Recommendations on Minimum Requirements for the Issuance of Boarmasters' Licenses in Inland Navigation with a view to their Reciprocal Recognition for Internation	TRANS/SC3/131	12 November 1992	Valid

	al Traffic			
32.	Amendments to Resolution No. 17, revised: Recommendations on Technical Requirements for Inland Navigation Vessels	TRANS/SC3/131	12 November 1992	Valid
33.	Ship's Certificate	TRANS/SC3/131	12 November 1992	Valid

PART II

TEXTS OF RESOLUTIONS OF THE PRINCIPAL WORKING PARTY ON INLAND WATER TRANSPORT WHICH HAVE NEITHER BEEN SUPERSEDED NOR OTHERWISE BECOME INVALID

CONTENTS

NOISE ABATEMENT IN THE WHEELHOUSE AND LIVING QUARTERS OF VESSELS

Resolution No. 10

(adopted by the Subcommittee on Inland Water Transport

on 17 November 1967)

The Subcommittee on Inland Water Transport,

Having considered the report of the Group of Rapporteurs on the Characteristics of Sound Signals of Inland Waterway Vessels on its sixth session (W/TRANS/SC.3/93),

Noting that the upper limit of 80 dB (A) prescribed for the sound pressure level in the wheelhouse so as to ensure the audibility of sound signals is also, having regard to the comfort of members of crews, an upper permissible limit in the living quarters of vessels now in service,

Considering that it appears desirable to obtain an upper limit of 70 dB (A) for the sound pressure level in the wheelhouse and living quarters of vessels to be built,

Considering that only a technical and economic study can make it possible to determine whether the upper limit for the sound pressure level can be brought down below 75 dB (A) in the case of vessels in service and more particularly in the case of those which are in continuous service,

Recommends Governments which have not already done so to take the necessary steps to incorporate in their national regulations adequate provisions concerning the upper limit for the sound pressure level on vessels.

ABATEMENT OF THE NOISE PRODUCED BY MOTOR VESSELS

Resolution No. 11

(adopted by the Subcommittee on Inland Water Transport

on 17 November 1967)

The Subcommittee on Inland Water Transport,

Having considered the report of the Group of Rapporteurs on the Characteristics of Sound Signals of Inland Waterway Vessels on its sixth session (W/TRANS/SC.3/93),

Noting the importance, in view of the development of navigation, of limiting encroachment on the comfort of riverains,

Invites Governments to apply the recommendations annexed hereto.

RECOMMENDATIONS

1. General

The noise produced by a motor vessel under way, and especially engine induction and exhaust noises, shall be abated by appropriate means.

2. Maximum noise level

With the engines running normally, the noise produced by a vessel shall not exceed 75 decibels (A) at a distance of 25 m from the vessel's side.

3. Conditions to be met by vessels when measurements made

Noise shall be measured while vessels are operating in normal conditions.

4. Noise-measuring appliance to be used

4.1 Measurements shall be made with a sonometer conforming to the specifications laid down by the International Electrotechnical Commission (IEC) for appliances of precision class.

4.2 The sonometer shall be used on the weighting curve with a "rapid" dynamic rating. The sonometer readings shall be verified for example with a pistonphone, immediately before and after each series of measurements.

5. Trial site. Background noise

5.1 The trial site shall be such that the noise emitted by the vessel can spread freely without undergoing such reflection or absorption as might appreciably distort the result of the measurement.

5.2 In addition, the site shall be so chosen that the background noise is very weak and in any case at least 10 decibels (A) lower than the noises measured.

6. Site of the microphone

6.1 The microphone shall be sited either on the bank or on a vessel. It shall be at least 1 m above ground level or above the deck of the vessel, but shall not be more than 6 m above the level of the surface of the water.

6.2 When the vessel passes in front of the microphone, the distance between them shall be between 25 and 100 m.

7. Effects of wind

7.1 Wind can both affect sound propagation and distort microphone readings.

7.2 Measurements shall therefore not be made in a strong wind, especially when the distance between the vessel and the microphone is relatively large; and the microphone shall be protected by devices designed for that purpose.

8. Modus operandi

The maximum acoustic pressure level during the passage of the vessel and the corresponding distance between the vessel and the microphone shall be determined.

9. Calculating the acoustic pressure level at a reference distance of 25 m

9.1 All results shall be referred to a distance of 25 m by means of the following formula:

$$L_{p25} = L_p + 20 \log \frac{d}{25}$$

Lp = acoustic pressure level

L_{p25} = acoustic pressure level referred to a distance of 25 m

d = distance in metres between microphone and vessel during measurement.

9.2 Any necessary corrections can be made with the following table by taking the figure corresponding to the distance equal to or immediately below the distance of measurement.

Distance in m	No. of dB to be added	Distance in m	No. of dB to be added
28	1	55	7
32	2	63	8
35	3	70	9
40	4	80	10
45	5	90	11
50	6	100	12

9.3 The report on the result of the measurement shall specify the gross value L_p and the corrected value L_{p25}.

INTERNATIONAL CERTIFICATE (INTERNATIONAL CARD)
FOR PLEASURE CRAFT

Resolution No. 13, revised

(adopted by the Working Party on Inland Water Transport
on 14 November 1986)

The Working Party on Inland Water Transport,

Considering its resolution No. 13 concerning the international certificate (international card) for pleasure craft (TRANS/SC.3/R.26),

Noting the particular desirability of measures to ensure the safety of navigation, protect the environment and facilitate waterborne tourism,

Noting the effectiveness of the measures already taken by the qualified bodies associated in international federations,

Noting the satisfactory experience gained in the use and the reciprocal recognition of the international certificate (international card) and its favourable impact on the facilitation of waterborne tourism,

Bearing in mind the proposals of the Group of Experts on the Standardization of Rules of the Road and Signs and Signals in Inland Navigation with regard to the inclusion in the said international certificate (international card) of indications concerning the maximum number of persons on board, the proof of ownership and the radio equipment (TRANS/SC.3/GE.2/54, paras. 19-23),

Decides to amend annexes I and II to resolution No. 13 accordingly,

1. Recommends the issue on request:

- of an international certificate, made out by Governments or by bodies approved by them, for pleasure craft operators going abroad;

- of an international card made out by the qualified bodies of countries where no international certificate for pleasure craft operators going abroad is issued.

The international certificate (or international card) should so far as possible conform to the model in annex II to this resolution, having due regard to the minimum provisions in annex I;

2. Requests Governments to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution and, if so:

(a) to recognize in their territory the documents issued by Governments which have accepted this resolution, by bodies approved by them or by qualified bodies;

(b) to communicate to the secretariat, where appropriate:

- the restrictions applicable;

- the standards they apply for the construction and fitting out of vessels;

- the name of the authority or bodies qualified to issue the documents referred to in paragraph 1 above;

3. Requests the Executive Secretary of the Economic Commission for Europe to place the application of this resolution on the agenda of the Working Party on Inland Water Transport periodically, to keep the list of countries applying the resolution up to date for the Working Party's sessions, and to supplement or amend the annexes hereto as necessary, with special reference to the possibility of unifying the standards for construction and fitting-out.

ANNEX I TO RESOLUTION NO. 13, REVISED

Minimum provisions governing the issue of the international certificate (international card) for pleasure craft

1. Definitions

For the purposes of these provisions:

(a) A craft shall be deemed to be subject to the rules governing "international navigation for pleasure" in the territory of a State and in the coastal waters which form an integral part thereof if it meets the three following conditions:

(i) it belongs to a natural or legal person normally resident outside that State;

(ii) it is not registered in that State; and

(iii) it is temporarily imported into that State subject to the laws of the host State;

(b) the term "pleasure craft" means any sailing craft or motorized craft used for purposes of recreation and not financial gain.

2. Conditions governing the issue of the international certificate (international card) for pleasure craft

2.01. An international certificate (international card) shall be drawn up in accordance with the requirements applicable in the country of issue.

2.02. The pleasure craft shall bear identification marks in accordance with the regulations.

3. Duration of validity of documents relating to international navigation for pleasure

The validity of the document provided for in paragraph 2 above shall be limited to two years. 1/

4. Bodies authorized to issue documents relating to navigation for pleasure

Governments shall make known to the Executive Secretary:

(1) the bodies they may authorize to issue the certificate provided for in paragraph 2 above;

(2) the bodies qualified to issue the international card.

They shall keep the Executive Secretary informed of changes made in the list of approved bodies for keeping it up to date.

5. Languages

The international certificate (international card) for pleasure craft shall be prepared in the official language or languages of the country of origin and, if possible, in two of the following three languages: English, French and Russian.

6. Maximum number of persons on board

When the international certificate (international card) does not specify the maximum number of persons allowed on board, this may be done by the

competent authorities of the country into which the pleasure craft is temporarily imported taking into account the method prescribed in the "Guidelines for determining the Maximum Number of Persons for which Pleasure Craft are Suited" (TRANS/SC.3/GE.1/46, annex 2).

Note

1/ Governments may decide to accept documents, provided there have been no changes in the construction and fitting out of the craft, whose validity has expired less than two years previously. In this case they shall so notify the Executive Secretary of the Economic Commission for Europe.

ANNEX II TO RESOLUTION NO. 13, REVISED

(Country)

INTERNATIONAL CERTIFICATE (INTERNATIONAL CARD)
FOR PLEASURE CRAFT

(Name and address of the national authority
or of the approved body)

Description of craft

Name .....

Registration number .....

National flag .....

Home port .....

Make/builder ..... Year .....

Maximum number of persons on board*

Dimensions .....

Height of vessel above water line ..... Draught .....

Length ..... Beam .....

Displacement** ..... Type of craft .....

Engine(s)

Made by ..... Serial No.(s) .....

Year ..... HP/kW (indicated) Inboard - outboard

Radio equipment

Transmitter ..... v h f .....

Official No. ..... Transmission power .....

Owner Name .....

Full address .....

No. of certificate (of card) .....

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* The competent authorities may waive this requirement.
** May be replaced by tonnage.

Date of issue .....

Date of expiry .....

At the time of issue of the certificate (of the card) the craft carried the following documents:

Stamp

Signature

Signature of the owner

Prior to issue of this document ownership has been rendered credible.
This certificate (card) is no substitute for the documents required by the competent national authority and does not exempt the craft from the obligation to comply with local regulations, in particular from the special inspections required on certain waterways. It loses its validity if the particulars it bears cease to apply.

INTERNATIONAL CERTIFICATE (INTERNATIONAL CARD) CONCERNING THE COMPETENCE OF PLEASURE CRAFT OPERATORS

Resolution No. 14, revised

(adopted by the Working Party on Inland Water Transport on 29 January 1979)

The Working Party on Inland Water Transport,

Noting the desirability of measures to ensure the safety of navigation, protect the environment and facilitate waterborne tourism,

Noting the effectiveness of measures already taken by Governments and qualified bodies associated in international federations to regulate the issue of documents for pleasure craft operators bound for the waters of foreign countries,

Considering that there is a need to strengthen this action by the introduction of a European Document,

1. Recommends the issue on request:

   - of an international certificate concerning the competence of pleasure craft operators and issued by Governments or bodies approved by them to pleasure craft operators going abroad;

   - of an international card concerning the competence of pleasure craft operators and made out by the qualified bodies of countries where the Government does not itself issue the international certificates to pleasure craft operators going abroad.

The international certificate (international card) concerning the competence of pleasure craft operators should as far as possible conform to the models in annexes I and II to this resolution, and should be made out in the official language or languages of the country, the title of the document being given, if possible, in two of the three languages, English, French and Russian.

2. Requests Governments to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution and its amended annexes and, if so:

   (a) to recognize in their territory the documents issued by the Governments or bodies referred to above,

   (b) to communicate to the secretariat, where appropriate:

      - the restrictions applicable;

      - the conditions for the issue of the international certificate (international card);
      - the name of the authority or bodies qualified to issue the documents referred to in paragraph 1 above and the relationship of those bodies to the Government.

3. Requests the Executive Secretary of the Economic Commission for Europe to place the application of this resolution on the agenda of the Working Party on Inland Water Transport every year, to keep the list of countries applying the resolution up to date for the Working Party's sessions and to supplement or amend the annexes hereto, as necessary.

[Annex I]

[Annex II]

SHIP-BORNE BARGES

Resolution No. 15

(adopted by the Working Party on Inland Water Transport
on 27 November 1974)

The Working Party on Inland Water Transport,

Noting the desirability, in particular, of measures designed to unify the operation of ship-borne barges on European inland waterways,

1. Recommends:

That every ship-borne barge should be registered in a register, whether a maritime register or an inland shipping register, and that dual registration should be prohibited;

That the conditions for operating ship-borne barges on inland waterways should be the same as that of other barges;

That nothing should be done to inhibit the development of transport operations by ship-borne barges which include a maritime movement, and that furthermore the interchangeability of ship-borne barges should be facilitated in order to obtain their optimal use;

That the treatment of ship-borne barges with regard to fees and charges of all kinds payable for the use of harbour installations should be, the conditions being equal, the same as that accorded to any other means of water transport using such installations;

That ship-borne barges should pay the taxes and tolls of all kinds applicable on inland waterways;

2. Requests Governments to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution;

3. Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution on the agenda of the Working Party on Inland Water Transport periodically and to keep up to date, for the sessions of the Working Party, the list of countries applying the resolution.

RECOMMENDATIONS ON TECHNICAL REQUIREMENTS FOR INLAND NAVIGATION VESSELS

Resolution No. 17, revised

(adopted on 13 November 1981 by the Working Party on Inland Water Transport)

The Working Party on Inland Water Transport,

Bearing in mind the reports of the Group of experts on the Standardization of Technical Requirements for Vessels and of Ships' Papers concerning the study of proposals to improve the Recommendations on Uniform Technical Requirements for Inland Waterway Vessels with a view to their implementation in European countries (TRANS/SC.3/GE.1/20, 22, 24, 26, 28, 30, 32 and 34),

Noting that the harmonization of the national and subregional technical requirements for vessels applied on European inland waterways would be of benefit to international trade, the safety of navigation, the protection of human health and life, and also the protection of the environment,

Recommends Governments, international governmental organizations, economic or other unions and river commissions to take such steps as may be necessary for their regulations on the construction and equipment of inland navigation vessels to be harmonized to the greatest extent possible, with the recommendations annexed to this resolution,

Invites Governments, international governmental organizations, economic or other unions and river commissions to keep the secretariat informed of the measures adopted for this purpose, specifying the inland waterways concerned and their zone classification;

Requests the Executive Secretary of the Economic Commission for Europe to include the question of the implementation of this resolution and the periodic updating of its annex to take account of technical changes and the experience gained in its implementation, in the agenda of the Working Party on Inland Water Transport from time to time;

Decides to cancel resolution No. 17, which is replaced by this revised resolution No. 17, the annex to which, reproduced in document TRANS/SC.3/104, replaces that reproduced in document TRANS/SC.3/87.

Annex to resolution No. 17, revised as amended
by resolutions Nos. 28 and 32

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CHAPTER 3

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CHAPTER 1

GENERAL PROVISIONS

1-1 PURPOSE AND SCOPE

1-1.1 The purpose of this text is to provide recommendations on the design and equipment of inland navigation vessels with a view in particular to promoting the safety of vessels and crews; this text is not a substitute for national laws and regulations.

1-1.2 In general, these Recommendations shall not apply to small craft within the meaning of the European Code for Inland Waterways (CEVNI) or to special craft such as hydrofoil craft and air-cushion vehicles.

1-1.3 Unless otherwise stated, these provisions shall apply to new vessels which are intended to navigate in the following zones, differentiated by the maximum significant wave height* corresponding to a 5% probability of over-topping:

Zone 1 = height of up to 2.0 m;

Zone 2 = height of up to 1.2 m; and

Zone 3 = height of up to 0.6 m.

These provisions shall apply to existing inland vessels so far as the Administration considers reasonable and practicable.

1-1.4 The administration may permit derogations from these provisions where operating experience has clearly shown them to be justified.

1-1.5 Vessels intended for the carriage of dangerous goods shall also satisfy the requirements of annex B to the European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway (ADN).

1-2 DEFINITIONS

Administration: the Administration of the country in which the vessel is registered.

Recognized Classification Society: a Classification Society recognized by the Administration.

* In this provision, "significant wave height" means the average of heights of 10% of the total number of waves having the greater heights measured between wave trough and wave crest, observed over a short period.

New vessel: a vessel the keel of which is laid, or which is at a comparable stage of construction, on or after the date of entry into force of these Recommendations decided by the Administration.

Existing vessel: a vessel which is not a new vessel.

Length: unless expressly provided otherwise, the length (L) of the vessel is the maximum length of the hull, excluding rudder and bowsprit.

Breadth: unless expressly provided otherwise, the breadth (B) of the vessel is the maximum breadth measured to the outer edge of the shell plating excluding paddle wheels.

CHAPTER 2

HULL

2-1 STRENGTH

2-1.1 The general structural strength of the hull shall be sufficient for all anticipated loading conditions.

2-1.2 The structure of the hull, superstructures, deckhouses, machinery casings, companionways, hatchways and their closures, etc., and the equipment shall be designed to withstand all foreseeable conditions of the intended service to the satisfaction of the Administration. The Administration may consider this requirement met by an vessel built and maintained in conformity with the rules of a recognized Classification Society.

2-2 STRUCTURAL REQUIREMENTS

2-2.1 Layout of decks

The working areas on decks and on deckways shall be large enough to allow the crew to move about and work safely. Along the shipsides at least foot-rails shall be provided.

2-2.2 Openings in decks

All removable covers shall be protected against accidental shifting. Access openings shall be such as not to interfere with safe movement.

Without prejudice to the requirements of other safety regulations and, in particular, those of chapter 3, the coamings of doorways shall be as low as possible. There shall be no possibility of covers and doors closing accidentally.

2-2.3 Hatchways

2-2.3.1 Construction of hatchways

Cargo hatchways shall be surrounded on all sides by coamings. It shall be made impossible for loading tackle to catch on the lower edges of hold coamings.

2-2.3.2 Hatch covers

Hatch covers and their supporting beams shall be so designed that they cannot be shifted accidentally by the wind, by tackle used for loading or moving the vessel, etc.

The hatch covers and all their components (e.g. fore-and-afters) shall be safe to handle.

CHAPTER 3

FREEBOARD AND SAFETY DISTANCE

3-1 GENERAL

3-1.1 This chapter shall apply solely to inland cargo vessels when navigating on inland waterways (canals, rivers and lakes).

When such vessels are navigating in maritime areas, such as estuaries, they shall also comply with the requirements laid down for those areas by the Administration.

3-1.2 This chapter assumes that the nature and stowage of the cargo, ballast, etc., are such as to ensure adequate stability and as to obviate any excessive structural fatigue.

3-1.3 Freeboards as prescribed in this chapter shall be assigned on the assumption, first, that navigation will cease when weather conditions are such that the maximum wave height defining the zone or zones in which a vessel is to navigate may be exceeded, and second that in such conditions vessels already under way will seek shelter as quickly as possible.

3-2 TYPES OF VESSELS

For the purpose of this chapter, vessels shall be divided into three types:

Type A - Decked vessels
Type B - Tankers
Type C - Open vessels

Type A: Decked vessels. Decked vessels are vessels whose hatch covers are satisfactorily strong, rigid, sprayproof or weathertight.

Type B: Tankers and similar vessels. These vessels have only small openings giving access to the tanks, the openings being closed by steel or equivalent covers with watertight fittings. Such vessels have the following characteristics:

(i) Very high watertight integrity of the exposed deck;

(ii) Very high resistance to flooding, through low permeability of the loaded compartments and through the degree of subdivision applied in general.

Type C: Open vessels. Open vessels are either vessels whose hatch covers are not satisfactorily strong, rigid, sprayproof or weathertight or vessels whose cargo hatchways are open.

3-3 APPLICATION AND DEROGATIONS

3-3.1 The maximum draught level shall be so determined that both the freeboard requirements and the safety-distance requirements are observed. For safety reasons, however, the Administration may prescribe a higher figure for the freeboard.

3-3.2 Vessels so constructed that application of the provisions of this chapter is unwarranted or impracticable shall be assigned freeboards by the Administration in such a way that the safety conditions are equivalent to those of this chapter.

3-3.3 In the case of zone 1, derogations from the conditions of assignment of freeboard may be allowed to vessels to which a freeboard in excess of the minimum freeboard is assigned, provided that the safety conditions are deemed satisfactory by the Administration.

3-4 DETERMINATION OF FREEBOARDS FOR ZONE 1

3-4.1 General

3-4.1.1 Definitions of terms used

Length

The length (L) shall be taken as 96% of the total length on a waterline at 85% of the minimum moulded depth measured from the top of the keel, or as the distance between the foreside of the stem and the axis of the rudder stock on that waterline, whichever is the greater. In vessels with a designed trim, the waterline on which this length is measured shall be parallel to the design load waterline.

Perpendiculars

The forward and after perpendiculars shall be taken at the ends of the length (L). The forward perpendicular shall pass through the point of intersection of the foreside of the stem with the waterline on which the length is measured.

Amidships

Amidships is at the middle of the length (L).

Breadth

The breadth (B) is the maximum breadth measured to the moulded line of the frames in vessels with a metal shell and to the outer surface of the hull in vessels with a shell of any other material.

Moulded depth

The moulded depth (D) is the vertical distance measured from the top of the keel to the top of the freeboard deck beam amidships at the vessel's side.

Freeboard

The assigned freeboard is the vertical distance measured amidships between the upper edge of the deck line as defined in paragraph 3-4.1.2 and the maximum draught level.

Freeboard deck

The deck from which the freeboard is measured shall normally be the uppermost complete deck exposed to the weather, up to which the watertight bulkheads of the hull extend and below which all openings in the shipsides are fitted with permanent watertight closures.

In vessels having a discontinuous freeboard deck, the lowest part of the exposed deck and the continuation of that deck parallel to the upper part of the deck shall be taken as the freeboard deck.

Superstructure

A superstructure is a decked structure on the freeboard deck which extends from side to side of the vessel or whose side walls are not set inboard of the shipsides by more than 4% of the breadth (B).

An enclosed superstructure is a superstructure:

Having closed bulkheads of sufficient strength, permanently so assembled with the deck as to be watertight;

In which the access openings, if any, in these bulkheads are fitted with watertight doors;

In which all other openings in the sides or ends are fitted with watertight closures.

The height of a superstructure is the mean vertical distance measured at the sides from the top of the freeboard deck beams to the top of the superstructure deck beams.

The length of a superstructure is the mean length of that part of the superstructure which lies within the length (L).

If the superstructure is set in from the shipsides, the length shall be multiplied by the ratio of the breadth of the superstructure at the middle of its length to the breadth of the ship at the middle of the length of the superstructure.

A forecastle and a poop are superstructures which extend to the forward and the after perpendicular respectively.

Watertight

Structural components or devices shall be deemed watertight if they are so fitted as to prevent any ingress of water into the vessel when they are subjected to a pressure corresponding to a head of water of one metre for one minute, or to a jet of water at a pressure of not less than 100 kPa (1 bar) for 10 minutes, in all directions over the entire surface of the structural component or device.

Weathertight

A device shall be deemed weathertight if, under all weather conditions encountered in the assigned zone, it prevents water from entering the vessel.

Flush-deck vessel

A flush-deck vessel is a vessel which has no superstructure on its freeboard deck.

3-4.1.2 Deck line

The deck line is the upper edge of a horizontal rectangle 300 mm long and 25 mm wide. This rectangle shall be marked amidships on each side of the hull, and its upper edge shall normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell amidships. However, the deck line may also be marked at a different height provided that the freeboard is corrected accordingly.

3-4.1.3 Freeboard mark

The freeboard mark shall consist of a ring intersected through its centre by a horizontal line which shall be supplemented if necessary by additional freeboard lines.

The width of the ring and of all the other lines of the freeboard mark shall be 30 mm; the outer diameter of the ring shall be 200 mm; the length of the horizontal line intersecting the ring shall be 300 mm; and the size of the numerals designating the zones shall be 60 x 40 mm (fig. 1).

The centre of the ring shall be placed amidships. The lower edge of the horizontal line which intersects the ring shall pass through the centre of the ring and shall constitute the freeboard line.

If the vessel is intended to navigate in several navigation zones, a vertical line and additional freeboard lines 150 mm in length shall be applied forward of the centre of the ring.

The lower edge of each freeboard line shall correspond to the freeboard prescribed for the navigation zone concerned.

3-4.1.4 Mark of assigning authority

The Administration or an organization authorized by the Administration for the assignment of freeboard may place its mark on the hull of the vessel.

3-4.2 Conditions for assignment of freeboard

3-4.2.1 Information to be supplied to skippers

The skipper of every vessel shall be supplied with sufficient information in an approved form to enable him to distribute the load and ballast of his vessel in such a way as to avoid imposing exaggerated stresses on the structure. This requirement need not be applied to vessels of such a length, design or class that the Administration considers its application unnecessary.

Where the Administration considers it necessary, the skipper, if not already provided with stability information, shall be supplied with sufficient information to enable him to assess the stability of the vessel under varying conditions of service. A copy of the information shall be furnished to the Administration.

The skipper of every vessel shall be supplied with the necessary information concerning the wave height limit beyond which, having regard to the vessel's characteristics and loading conditions, he is forbidden to navigate or required to place his vessel in shelter.

3-4.2.2 Doors

All outside doors of superstructures, deckhouses and companionways situated on the freeboard deck shall be weathertight.

All access openings in exposed bulkheads and walls of enclosed superstructures, deckhouses and companionways which give access to spaces below the freeboard deck shall be fitted with weathertight closures.

3-4.2.3 Arrangement of openings and coamings

The coamings of hatchways, companionways and access openings to superstructures shall not be less than 300 mm high.

If the coamings are less than 300 mm high, the difference between 300 mm and their actual height shall be added to the minimum freeboard.

Where the coamings of external hatches, other than cargo hatches, giving access to superstructures, deckhouses and companionways are less than 300 mm

high, no correction to the freeboard shall be required on that account if the hatchway closures are watertight.

Exposed cargo hatchways and other hatchways on the freeboard deck of vessels of type A shall be fitted with weathertight closures.

Inspection holes, companionways and other openings on sunk forecastles or raised quarterdecks shall be fitted with weathertight closures; the coamings of inspection holes and other openings shall not be less than 150 mm high.

The coamings of ventilators and airpipes on the exposed parts of the freeboard deck shall not be less than 600 mm high; their openings shall be provided with efficient closures.

Pipe outlets in the shipsides below the freeboard deck shall be fitted with efficient and accessible devices to prevent water from entering the vessel.

Sidescuttles in spaces below the freeboard deck shall be watertight and be provided with permanently attached deadlights. Windows in superstructures, deckhouses and companionways and windows in skylights on the freeboard deck, however, need only be weathertight. The distance between sidescuttles in the shell and the maximum draught level shall not be less than 300 mm.

The scuppers and freeing ports in bulwarks shall be of sufficient size to drain the decks of shipped water.

3-4.3 Freeboards

3-4.3.1 Minimum freeboard tables

For the purposes of this chapter, the basic vessel shall be a vessel without sheer having a forecastle extending over not less than 7% of the length (L) or over a length equal to half the breadth of the vessel, whichever is the greater, and a poop extending over not less than 3% of the length (L), both of a height equal to the prescribed height as given in paragraph 3-4.3.2, table C, hereunder. The poop may, however, be replaced by extended side plating of the same height and the same length, provided that the length is not less than 2 m.

Table A shows the minimum freeboard of a vessel of type A having the characteristics of the basic vessel.

TABLE A*

Minimum freeboard (F) of vessels of type A

Length of vessel in metres	Minimum freeboard (F) in millimetres
30 or less	250
40	340
50	440
60 to 110	570

* The values for freeboard in tables A, B and C are applicable to individual vessels. The values for intermediate lengths of vessels shall be obtained by linear interpolation. For vessels of a length exceeding 110 m the freeboard shall be prescribed by the Administration.

The value for freeboard of each vessel forming a part of a pushed convoy may by increased by the Administration.

Table B shows the minimum freeboard of a vessel of type B having the characteristics of the basic vessel.

TABLE B*

Minimum freeboard (F) of vessels of type B

Length of vessel in metres	Minimum freeboard (F) in millimetres
30 or less	180
40	250
50	330
60 to 110	420

The minimum freeboard of a flush-deck vessel having no cargo hatches shall be determined from table B. The Administration may, however, permit derogations in the case of non-self-propelled flush-deck vessels carrying goods which will not spoil if wetted, provided that the requirements regarding strength and stability are complied with.

The freeboard of a vessel of type C shall in no case be less than 1,000 mm. Moreover, for such vessels, the sum of the freeboard and the height of coamings shall in no case be less than 1,200 mm.

3-4.3.2 Correction of freeboard for forecastle, poop and sheer

In calculating the freeboard, only enclosed superstructures shall be taken into account.

Table C shows the prescribed heights of the superstructures referred to in paragraph 3-4.3.1 according to the length (L).

TABLE C*
Prescribed height (h) of superstructures

Length of vessel in metres	Height (h) in millimetres
30 or less	600
40	700
60	800
80 to 110	900

* Idem.

Forecastle and poop may be replaced by a continuous positive sheer line.

The sheer ordinates shall be measured at the shipside.

The correction for sheer and that for superstructures may be combined.

If the length of the forecastle or poop is greater than 2 L, the extra length shall not be taken into account.

If the height of the forecastle or poop is greater than the prescribed height, the extra height shall not be taken into account.

If the sheer ordinate at the forward perpendicular is greater than the prescribed superstructure height, the extra height shall not be taken into account.

If the sheer ordinate at the after perpendicular is greater than half the prescribed superstructure height, the extra height shall not be taken into account.

Furthermore, in cases where the corrections for sheer and for superstructures are combined, the permissible prescribed heights at the perpendiculars shall be observed.

In cases where the prescribed superstructure height is to be used instead of the actual sheer height, the area to be taken into account shall be that below a standard parabola.

The moments of the fore and after surfaces enclosed between the sheer line and that parallel to the maximum draught level which passes through or touches the sheer line amidships, such moments being calculated in relation to amidships, shall not be less than the values corresponding to the equivalent moments of the basic vessel, i.e.:

forward: $M_{av} = 0.0325\ L^2\ .\ h$

aft: $M_{ar} = 0.0150\ L^2\ .\ h.$

If the moments of the fore and after surfaces (M_{av} and M_{ar}) are less than the above values, the freeboard given by tables A and B shall be adjusted by the value ♠ F (in mm) given by the formula:

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If the after moment exceeds half the forward moment, only half the forward moment shall be taken as the value of the after moment.

Where the forward moment exceeds the standard moment and the after moment is not less than 75% of the standard moment, a reduction in the freeboard shall be allowed for the excess, where the after moment is less than 50% of the standard moment, only the standard moment shall be taken as the value of the forward moment. Where the after moment is between 50% and 75% of the standard moment, proportional reductions may be allowed for the excess forward moment.

The Administration may in special cases allow a lower freeboard than the minimum freeboard, in accordance with the above principle, if there are arrangements ensuring increased safety by comparison with the basic vessel defined in paragraph 3-4.3.1.

3-5 DETERMINATION OF FREEBOARDS AND SAFETY DISTANCES FOR ZONES 2 AND 3

3-5.1 General

3-5.1.1 Definitions of terms used

Amidships

Amidships is at the middle of the length (L) as defined in section 1-2.

Freeboard

The freeboard is the vertical distance measured between the maximum draught level and the top of the deck at its lowest point or, if there is no deck, the upper edge of the fixed side plating at its lowest point.

Safety distance

The safety distance is the vertical distance measured between the maximum draught level and the lowest point above which, disregarding water intakes and outlets, the vessel cannot be deemed watertight.

Enclosed superstructure

An enclosed superstructure is a structure composed of strong watertight bulkheads, standing on the deck and permanently so assembled with the deck as to be watertight.

The height (h) of a superstructure is the mean vertical height measured at the side of the superstructure.

The breadth (b) of a superstructure is its average breadth.

Watertight

Structural components or devices shall be deemed watertight if they are so fitted as to prevent any ingress of water into the vessel when they are subjected to a pressure corresponding to a head of water of 1 metre for 1 minute, or to a jet of water at a pressure of not less than 100 kPa (1 bar) for 10 minutes, in all directions over the entire surface of the structural component or device.

Sprayproof

A device shall be deemed sprayproof if, under all weather conditions encountered in the assigned zone, it allows only a small quantity of water to enter the vessel.

3-5.1.2 Freeboard mark

The freeboard mark for zone 3 shall consist of a rectangle with its longer side horizontal, which may be supplemented by a ring.

The lower edge of the rectangle shall coincide with the maximum draught level. The rectangle shall be 300 mm long and 30 mm wide.

The size of the numeral designating the zone shall be 60 x 40 mm (fig. 2).

If there is a ring, its centre shall coincide with the mid-point of the lower edge of the rectangle; its outer diameter shall be 200 mm and the width of the ring shall be 30 mm.

For a vessel intended to navigate in zones 2 and 3, the mark corresponding to zone 3 shall be applied as stated above; the mark corresponding to zone 2 shall consist of a vertical line and an additional freeboard line 150 mm in length applied forward of the rectangle corresponding to zone 3 (fig. 3).

For a vessel intended to navigate in zones 1, 2 and 3, the freeboard marks shall be applied as prescribed in paragraph 3-4.1.3.

The measurement marking and the freeboard mark may be combined. In such a case, the width of the rectangle of the freeboard mark (or the width of the upper freeboard line where there is more than one freeboard) shall be 40 mm.

3-5.1.3 Mark of assigning authority

The Administration or an organization authorized by the Administration for the assignment of freeboard may place its mark on the hull of the vessel.

3-5.2 General safety conditions

3-5.2.1 General provisions

Vessels shall be so constructed and equipped as to prevent flooding of the holds or to limit the effects of such flooding under normal conditions of navigation in the zone in which they are intended to navigate.

They shall so far as is possible and necessary be equipped with watertight bulkheads providing efficient subdivision, and with a suitable drainage system.

3-5.2.2 Doors

All door openings in exposed bulkheads and walls of enclosed superstructures, deckhouses and companion-ways which give access to spaces below the freeboard deck shall be fitted with sprayproof closures.

Except as otherwise provided in this chapter, the height of the sills of access openings in outer bulkheads of enclosed superstructures shall not be less than 150 mm above the deck.

3-5.2.3 Arrangement of openings and coamings

Coamings

The coamings of hatchways and other openings shall be of sturdy construction and of adequate height.

Hatch covers

Hatch covers for vessels of type A shall be satisfactorily sturdy, rigid and sprayproof. These conditions shall be deemed to be met if the covers are constructed according to the rules of the Administration or of a recognized Classification Society.

Skylights and windows

Skylights and windows shall be of sturdy construction. They may comprise openings fitted with sprayproof covers. The covers shall be permanently attached if the lowest part of the openings falls within the safety distance prescribed for the coamings of uncovered holds (para. 3-5.2.4 below). In such a case the height (h) of the superstructures in which the openings are provided is limited to the lowest point of the openings.

3-5.2.4 Safety distance

In the case of vessels of type A and type B, the safety distance as defined in paragraph 3-5.1.1 shall be not less than 60 cm for zone 2 and not less than 30 cm for zone 3.

In the case of vessels of type C, and of other vessels if they navigate with the holds uncovered, this distance shall be increased by 40 cm for zone 2 and by 20 cm for zone 3.

This increase, however, shall apply only to the coamings of uncovered holds.

3-5.2.5 Basic freeboards

The basic freeboard for a conventional full-decked reference vessel without sheer or superstructure shall be:

300 mm for zone 2;
150 mm for zone 3.

3-5.2.6 Correction of freeboard for superstructures and sheer

The freeboard actually allowed to a vessel may be lower than the basic freeboard specified in paragraph 3-5.2.5 because of the existence of superstructures and a sheer. This freeboard (F), in mm, shall be calculated by the following formula:

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click here to view equation.

where Fo is the basic freeboard specified in paragraph 3-5.2.5, in mm;

α is a correction coefficient allowing for the existing superstructures;

β_1 and β_2 are correction coefficients for the influence of the forward sheer and the after sheer respectively resulting from the existence of superstructures at the vessel's ends;

Se_1 and Se_2 are respectively the effective forward sheer and the effective after sheer in mm.

α shall be calculated as follows:
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where P_e is the effective length of a superstructure in m;

L is the length of the vessel as defined in section 1-2, in m.

β_1 shall be calculated as follows:
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click here to view equation.

β_2 shall be calculated as follows:
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click here to view equation.

where P_{e1} and P_{e2} are respectively the effective length in m of the forward superstructures, and the effective length in m of the after superstructures, existing in the areas comprised between the vessel's ends and points situated at 0.25 L from the vessel's ends.

It may be necessary to increase the freeboard so determined in order to abide by the safety distance prescribed.

* The value taken for F shall in no case be negative.

Calculation of effective sheer

The effective sheer shall be calculated as follows:

$Se = pS$,

where S is the actual sheer at the end considered, in mm; the value taken from S shall, however, never be greater than:

2,000 mm for the forward sheer for zone 2,

1,000 mm for the forward sheer for zone 3,

1,000 mm for the after sheer for zone 2,

500 mm for the after sheer for zone 3;

p is a coefficient obtained from table 1 below as a function of the ratio $\frac{x}{L}$

where x is the abscissa, measured from the end considered, of the point where the ordinate of the sheer is equal to 0.25 S (see sketch below).

Table 1

$\frac{x}{L}$	0.25 and over	0.20	0.15	0.10	0.05	0	*
p	1	0.8	0.6	0.4	0.2	0	

* For intermediate values of the ratio $\frac{x}{L}$, the coefficient p shall be obtained by linear interpolation.

Diagramme

If $\beta_2 Se_2$ is greater than $\beta_1 Se_1$, the value of $\beta_1 Se_1$ shall also be taken for $\beta_2 Se_2$.

Calculation of the effective length of superstructures

The effective length of a superstructure shall be calculated by the formula:

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where P is the actual length of the superstructure considered, in m;

b is the breadth of the superstructure considered, in m;

B is the breadth of the vessel as defined in section 1-2, in m (for P_{e1} and P_{e2}, however, the average breadth of the vessel halfway along the superstructure considered shall be taken);

h is the average height in m, measured from the deck, of the superstructure considered (for cargo hatches, however, h shall be obtained by reducing this height by half the safety distance specified in paragraph 3-5.2.4);

H is the maximum significant wave height, in m, characteristic of the zone considered, as specified in paragraph 1-1.3.

3-5.2.7 Minimum freeboard

Taking reductions into account, the minimum freeboard which may be assigned by the Administration shall be not less than 100 mm for zone 2 and not less than 50 mm for zone 3.

The Administration may, however, accept a lower freeboard if the calculation of the freeboard gives a smaller value than the minimum freeboard prescribed above, provided that the crew are able to move about, for work purposes, under satisfactory conditions of safety throughout the vessel's length and the requirements concerning safety distance are complied with.

* (a) If $\frac{b}{B}$ is less than 0.6, the value of the bracketed term shall be taken as 0.

(b) In no case shall a value greater than 0.6 H be taken for h.

Figure 1

Figure 2 and 3

CHAPTER 4

STABILITY AND SUBDIVISION

4-1 STABILITY

4-1.1 General requirements

4-1.1.1 A vessel shall be designed and constructed to provide sufficient intact stability for all anticipated service conditions.

4-1.1.2 A sufficient margin of stability shall be allowed for every stage of the voyage, taking into account any increase in weight such as might result from the absorption of water by the cargo or from icing, if the vessel is to operate under conditions where increases of this kind may occur.

4-1.1.3 The Administration may exempt a vessel from all stability checks provided that basic stability data are available for a sister vessel and it is shown to the Administration's satisfaction that all the stability information for that vessel can be validly used.

4-1.2 Special requirements for vessels navigating in zone 1

4-1.2.1 Proof of sufficient stability shall be provided by calculation. In cases where the Administration does not apply requirements of its own, a vessel may be considered as having sufficient stability when it satisfies the criteria given in the appendix to this chapter. Every vessel referred to in paragraph 4-1.2.3 shall, on completion, undergo an inclining test in the presence of an expert of the Administration to determine the displacement of the light vessel and the coordinates of its centre of gravity.

4-1.2.2 In the calculations mentioned in paragraph 4-1.2.1, the adverse effects which the carriage of certain bulk cargoes may have on stability shall be taken into account.

4-1.2.3 All new vessels and all vessels which have undergone conversions that may affect their stability shall be furnished with approved information on their stability.

4-1.2.4 In the case of certain cargo vessels known to be stable, the stability information may be based on calculations only, and an inclining test may be dispensed with.

4-1.2.5 The stability information referred to in paragraph 4-1.2.3 shall comprise:

The stability characteristics for typical loading conditions;

Information in the form of tables or diagrams which will enable the skipper to assess the stability of his vessel and verify whether it is sufficient in other loading conditions.

4-1.3 Special requirements for vessels navigating in zones 2 and 3

4-1.3.1 Vessels shall have sufficient stability. In cases where the Administration does not apply stricter requirements of its own, a vessel may be considered as having sufficient stability when it satisfies the criteria given in the appendix to this chapter.

4-2 SUBDIVISION

4-2.1 Watertight bulkheads

4-2.1.1 Watertight bulkheads carried up to the uppermost continuous deck shall be fitted in the places mentioned below.

4-2.1.2 A collision bulkhead shall be fitted at an appropriate distance from the forward perpendicular. If the vessel has a long forecastle, the Administration may require the collision bulkhead to be carried up to the forecastle deck.

4-2.1.3 In vessels navigating in zone 1, the collision bulkhead shall be between 0.05 L and 0.08 L aft of the forward perpendicular, where L is the length defined in paragraph 3-4.1.1.

4-2.1.4 In vessels more than 25 m long, a bulkhead shall be fitted in the after part of the vessel at an appropriate distance from the after perpendicular having regard to the configuration of the vessel's after extremity.

4-2.1.5 In addition the machinery space, including the working spaces which form part of it, shall be bounded at its extremities by watertight bulkheads.

4-2.1.6 Watertight bulkheads other than those mentioned above shall be provided if necessary, having regard to the vessel's design.

4-2.1.7 The Administration may permit derogations from these provisions, provided that equal safety is assured.

4-2.1.8 The bulkheads, the doors and closures in the bulkheads and the methods used for testing them shall comply with the requirements of the Administration or of a recognized Classification Society.

4-2.2 Openings in watertight bulkheads

4-2.2.1 General requirements applicable to all zones

4-2.2.1.1 No door or manhole shall be permitted in the collision bulkhead.

4-2.2.1.2 The number and dimensions of the openings in other watertight bulkheads shall be reduced to the minimum compatible with the design and operation of the vessel; satisfactory devices shall be provided for the watertight closing of these openings, with indicators showing whether the devices are open or closed. It shall be possible to open and close doors on the spot from either side of the bulkhead.

4-2.2.1.3 Where shafts, pipes, scuppers, electric cables, etc., are carried through watertight subdivisions, arrangements shall be made to avoid impairing the watertight integrity of the bulkheads or decks.

4-2.2.1.4 In the collision bulkhead, no valves or cocks shall be fitted which open directly into the compartments lying abaft that bulkhead.

Such devices shall be avoided so far as possible in the other watertight bulkheads; if, however, such devices are fitted, they shall at all times be capable of being opened and closed from an accessible point situated above the uppermost continuous deck. Indicators shall be fitted to show whether the devices are open or closed.

4-2.2.1.5 If the drainage pipes of the forepeak tank pass through the collision bulkhead, each pipe shall be fitted with a valve which is controlled from a point situated above the freeboard deck and which is fitted to the collision bulkhead inside the forepeak.

4-2.2.2 Special requirements for vessels navigating in zone 1

4-2.2.2.1 Doors in watertight bulkheads shall be provided with a system for watertight closing, workable from either side of the bulkhead in proximity to the door and from a point above the maximum draught level. Each door shall be fitted with indicators which show, at all operating stations, whether it is open or closed.

In the accommodation and working spaces, however, and in the tweendeck immediately below the freeboard deck, remote control shall not be required. The doors shall be capable of being opened or closed on the spot from either side of the bulkhead. Hinged doors may be allowed.

4-2.2.3 Special requirements for vessels navigating in zones 2 and 3

4-2.2.3.1 The afterpeak tank may be connected with the compartment immediately forward of it by a draining device which shall be self-closing and accessible in all circumstances.

4-2.3 Bilge pumping and drainage

4-2.3.1 Arrangements shall be provided for draining any watertight compartment separately and effectively. However, compartments which are normally hermetically closed when the vessel is under way need not be connected to the drainage system.

4-2.3.2 Vessels having a crew and pushed barges having compartments for auxiliary engines or boilers shall, and other pushed barges may, be equipped with appliances for draining those compartments.

Vessels having a crew shall be provided with at least one hand-operated drainage pump. Vessels which have propelling machinery developing more than 200 kW or which are of more than 350 t loading capacity shall, however, be equipped with two independent drainage pumps, of which at least one shall be motor-driven.

For watertight compartments less than 4 m long; one hand-operated drainage pump shall be sufficient.

The drainage pipe shall have an internal diameter (d) in mm of not less than:

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click here to view equation.

The branch-pipes of the drainage system which terminate at the various suction strainers shall have an internal diameter (d_a) in mm of not less than:

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click here to view equation.

where L is the length of the vessel between perpendiculars, in m,

B is the breadth of the vessel to the moulded line of the frame, in m,

D is the moulded depth of the vessel, in m,

P is the length of the watertight compartment considered, in m.

The capacity of the motor-driven drainage pump shall not be less than $0.1\ d^2$ l/min.

The capacity of the second drainage pump shall not be less than 0.1 d_a^2 1/min, d_a referring to the longest watertight compartment.

The capacity of a hand-operated drainage pump intended for only one compartment shall not be less than 0.1 d_a^2 1/min, d_a referring to that compartment.

Only self-priming drainage pumps shall be allowed.

In every compartment with a flat bottom over 5 m wide, there shall be at least one suction strainer on each side.

In engine rooms which are more than 5 m long, there shall be at least two suction strainers.

The branch drainage pipes from the different compartments shall be connected to the main drainage pipe by a screw-down non-return valve.

Compartments or other spaces used to hold water ballast need only be connected to the drainage system by a simple stop valve.

Appendix

Criteria for checking the stability of vessels

1 General principles and definitions

1.1 The stability criteria do not take into account any shifting of cargo.

1.2 A vessel shall be deemed sufficiently stable if, for the loading conditions considered in 1.7, it satisfies:

1.2.1 The requirement that the initial metacentric height, corrected for the free-surface effects of liquid cargo, should have a positive value;

1.2.2 Weather criteria, as determined in accordance with the requirements of chapter 2 below;

1.2.3 The requirements for stability, as determined in accordance with the requirements of chapter 3 below with respect to the type and purpose of the vessel.

1.3 The values for the moments of the external forces exerted on the vessel shall be taken as constant for the whole range of inclination of the vessel.

1.4 The definitions used in this appendix, apart from those laid down in the other paragraphs of these Recommendations are as follows:

1.4.1 Liquid cargo = all liquids carried on the vessel, including: cargo, stores, ballast, etc.;

1.4.2 Stores = cargo consumed in the operation of the vessel (fuel, lubricating oil, fresh water, provisions, etc.);

1.4.3 Empty vessel = a vessel that is fully prepared and equipped with machinery and systems, but with no cargo, passengers, liquid ballast or stores;

1.4.4 Critical angle θ_{f1} = angle of heel at which water begins to fill the vessel through unsecured openings, but not exceeding the angle at which the edge of the freeboard deck is submerged, or at which the middle of the bilge leaves the water;

1.4.5 Capsizing angle θ_c = angle of heel at which the vessel begins to capsize under the effect of the heeling moment.

1.4.6 Permissible angle θ_{perm} = angle of heel which should not be exceeded and which should be prescribed by the competent authority for the type of vessel under consideration. In general it corresponds to the critical angle θ_{f1} as defined in 1.4.4, but should not be greater than the capsizing angle as defined in 1.4.5.

1.5 The permissible heeling moment for all required loading conditions shall be determined by means of a static or a dynamic stability curve in accordance with the values of permissible angle of heel given for the various stability criteria in chapters 2 and 3 below.

For vertical-sided vessels, the maximum permissible heeling moments may be determined without constructing a curve, on the basis of the following formulae:

1.5.1 For the dynamic effect for the external forces:

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1.5.2 For the static effect of the external forces:

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where:

Δ = displacement of the vessel for the given loading condition; in tonnes;

$\overline{GM}$, = initial metacentric height corrected for the free-surface effects of liquid cargo, in metres;

M_{perm} = permissible heeling moment;

θ_{perm} = permissible angle of heel, in degrees.

1.6 The free-surface effects of liquid cargo shall be taken into account in the calculation of stability.

For liquid cargo in tanks where the quantity of liquid changes during the operation of the vessel, the calculation shall be made with the tanks filled to 50% of their capacity.

A tank filled with liquid cargo to more than 95% of its capacity shall be deemed completely full.

In calculating the stability of a vessel, the liquid cargo residues commonly found up to a depth of 5 cm in evacuated tanks shall not be taken into account.

If the vessel is intended for the transport of various types of liquid cargo, the calculation shall assume the most unfavourable loading condition.

1.7 The stability of vessels, according to their type or purpose, should be checked for the most unfavourable loading conditions, at least in the cases shown in the following table:

Type of vessel	Loading conditions
Passenger vessels	(i) - With no passengers or cargo, 10% stores (ii) - With 100% passengers and baggage, 10% stores, 100% cargo (iii) - With 100% passengers and baggage, 100% stores, 100% cargo
All other vessels	(i) - With 10% stores, with no cargo (ii) - With 100% stores and 100% cargo

If the vessel carries solid ballast, its mass shall be included as part of the light weight.

For all loading conditions, the inclusion of liquid ballast as part of the load should be agreed with the Administration.

2 Weather criteria

2.1 The vessel shall satisfy the weather criterion if, under the most unfavourable loading condition, the permissible moment produced by dynamic inclinations of the vessel is equal to or greater than the heeling moment resulting from the dynamic pressure of the wind, i.e. if the following condition is met:

$$M_{perm} \exists M_{wd}$$

where:

M_{perm} = permissible moment produced by the dynamic inclinations of the vessel corresponding to the critical angle or to the capsizing angle, if the latter is smaller;

M_{wd} = heeling moment resulting from the dynamic pressure of wind, as in 2.3.

2.2 Certain types or individual vessels need not be checked for stability with respect to the weather criterion if the competent authorities are satisfied beyond doubt that the stability requirements are met by the said vessels in any case.

2.3 The heeling moment resulting from the dynamic pressure of the wind shall be taken as:

$$M_{wd} = 0.001 \$ P_{wd} \$ A_w \$ z \qquad (kNm)$$

where:

P_{wd} = specific wind pressure, whose value shall be taken from the following table for the navigation zone of the vessel and for the lever arm;
Specific wind pressure P_{wd},(Pa):

z (m) Navigation zone	1	2	3	4	5	6
2	232	279	318	345	369	388
3	178	217	247	269	286	302

A_w = effective lateral area (m^2) - see below;

z = level arm of free-floating vessel = distance between the centre of gravity of the lateral area and the plane of the load waterline considered, when the vessel is upright in calm water (m).

The effective lateral area should include all above-water projected surfaces (hull, superstructure, deck machinery, deck cargo, and other elements of the above-water port of the vessel) at the centre of the vessel when it is upright. The projected areas of structures of round section located separately on the deck should be assumed to have an effective coefficient of flow of 0.6.

The lateral area of lattice-type structures above the waterline shall be calculated on the basis of the areas bounded by these structures multiplied by the coefficients of fullness taken from the following table:

Type of lattice structure	Coefficient of fullness
Life rails:	
without guard mesh	0.2
with guard mesh	0.6
Other lattice structures	0.3-0.5

3 Stability requirements for different types of ships

3.1 Passenger vessels

3.1.1 The stability of passenger vessels should satisfy the following requirements:

3.1.1.1 The angle of heel under the most unfavourable distribution of passengers in terms of width and height should not exceed an angle at which 75% of the freeboard or of the distance between the waterline and unsecured openings, whichever is less, is submerged, and that angle should not exceed 10E;

3.1.1.2 The angle of heel should not exceed the critical angle; furthermore that angle should not exceed 12E under:

the combined effect of the heeling moments resulting from the most unfavourable crowding of passengers on one side M_{pass} and from the effect of the centrifugal force exerted by turning M_{cf};

the combined effect of the heeling moments resulting from the most unfavourable crowding of passengers on one side M_{pass} and from the static effect of wind M_{wst}.

3.1.2 The stability of passenger vessels should be checked against the supplementary requirements for the loading conditions shown in the table at paragraph 1.7 and for the loading condition which corresponds to the most dangerous number of passengers with baggage and 10% of stores.

3.1.3 The heeling moment of the vessel resulting from the static effect of wind shall be determined by the formula:

$$M_{wst} = 0.001 \$ P_{wst} \$ A_w \$ (z + \frac{d}{2}) \quad (kNm)$$

where:

P_{wst} = specific pressure exerted by the static effect of wind, amounting to 50% of the pressure value shown in the first table at paragraph 2.3 (Pa);

A, z = as in paragraph 2.3.

3.1.4 The heeling moment resulting from the effect of the centrifugal force exerted by turning the vessel M_{cf} shall be determined by the formula:

$$M_{cf} = \frac{c \cdot \Delta \cdot v^2 \cdot (z_g - \frac{d}{2})}{L} \quad (kNm)$$

where:

c = a coefficient which shall be determined in manoeuvrability trials and which shall not be less than 0.2;

v = speed of the vessel at full power in calm water (m/s);

z_g = height of the vessel's centre of gravity above the base line (m).

3.1.5 The heeling moment of the vessel resulting from the crowding of passengers on one side M_{pass} should be determined having regard to the following conditions:

3.1.5.1 The distribution of passengers should correspond to the most dangerous crowding possible under normal operating conditions, taking into account decks accessible to passengers. In the case of vessels with more than one deck in use for passengers, the most unfavourable distribution of these passengers over the various decks shall be assumed;

3.1.5.2 The number of passengers shall be calculated at the rate of at least four persons per square metre of free deck area;

3.1.5.3 The width of seating space per person shall be taken to be 45 cm;

3.1.5.4 The mass per passenger shall be taken to be 75 kg;

3.1.5.5 The centre of gravity of standing passengers shall be taken to be 1.0 m above the deck level, and that of sitting passengers 0.3 m above the seat.

3.2 Cargo vessels

3.2.1 The stability of cargo vessels carrying deck cargo or cargo in holds, where the centre of gravity of the lateral area of the vessel and cargo is more than 2 m above the load waterline considered, should satisfy the supplementary requirement laid down in 3.2.2.

3.2.2 The heeling moment of a vessel resulting from the static effect of wind M_{wst} should not exceed the maximum permissible moment produced by the static inclinations of the vessel M_{perm}, i.e., the following condition should be met:

$$M_{perm} \exists M_{wst}$$

where:

M_{wst} = as in 3.1.3;

M_{perm} = maximum permissible moment produced by the static inclinations of the vessel = moment corresponding to an angle of heel representing 80% of the critical angle.

3.2.3 All vessels for which the ratio of the total power of the main machinery N_e to the maximum permissible displacement $\in$ is $N_e/ \in > 0.75$ kW/t shall be checked with respect to the turning criterion as in 3.1.4. Their angle of heel should not in this case exceed 80% of the critical angle.

3.3 Tugs

3.3.1 Tug vessels shall have sufficient stability if the maximum permissible moment of the vessel M_{perm} (see 2.1) is greater than or equal to the sum of the heeling moments resulting from the dynamic effect of wind M_{wd} (see 2.3) and the dynamic effect of the lateral component of the bollard pull force M_t (see 3.3.2), i.e, if the following condition is met:

$$M_{perm} \exists M_{wd} + M_t$$

3.3.2 The heeling moment resulting from the dynamic pressure of the lateral component of the bollard pull force shall be determined by the formula:

$$M_t = 1.1 \$ T \$ (z_t - d) \qquad \text{(kNm)}$$

where:

z_t = height of the point of application of the bollard pull force above the base line (m);

T = maximum bollard pull force measured on checking at moorings (kN).

In cases where T is not known, the following values shall be assumed for calculation purposes:

for $\in$ # 30 t:

T = 0.13 N_e - for tugs without propeller nozzles;

T = 0.20 N_e - for tugs with propeller nozzles;

for $\in$ ∃ 30 t:

T = 0.16 N_e - for tugs without propeller nozzles;

T = 0.20 N_e - for tugs with propeller nozzles:
where N_e = the total power of the main machinery (kW).

3.3.3 In addition to the conditions laid down in 3.3.1, the stability of each tug should satisfy the following supplementary requirement:

The angle of heel resulting from the combined effect of the heeling moments produced by the dynamic pressure of wind M_{wd} and the effect of the centrifugal force on turning M_{cf} (see 3.1.4) should not exceed the critical angle and should in no case exceed 15E.

4 Supplementary requirements for vessels in navigation zone 1

4.1 General provisions

4.1.1 The stability of vessels intended for navigation in zone 1 should satisfy the requirements of chapters 1, 2 and 3 for vessels of zone 2, and also the supplementary requirements of this chapter. Furthermore the conditions for satisfactory stability laid down in paragraphs 1.2.1 and 1.2.2 should also be met for the simultaneous rolling of the vessel.

4.1.1 bis Compliance with the applicable requirements of the IMO Recommendations for sea-going vessels may be considered as equivalent to compliance with these regulations.

4.1.2 When checking stability with respect to the weather criterion, the heeling moment resulting from the dynamic pressure of wind M_{wd} shall be calculated taking the specific wind pressure P_{wd} for navigation zone 2, as in the table at paragraph 2.3.

4.1.3 The permissible heeling moment M_{perm} shall be determined by means of the stability curve, taking into account the value for the amplitude of roll calculated as in 4.2.

4.1.4 The critical angle shall be taken to be the angle of heel at which water begins to fill the vessel through unsecured openings in the side plating or on the deck. The maximum angle may not extend further than the upper edge of the side coaming of the cargo hatch or the upper edge of the expansion trunks of tankers.

4.2 Calculation of the value for the amplitude of roll of a vessel

4.2.1 The value for the amplitude of roll $\underline{\theta}_m$ of a flat-bottomed vessel with a bilge radius of 0.05 B or more not fitted with bilge keels shall be determined from the following table in terms of a value m calculated by the formula:

$$m = 0.66 \$ m_1 \$ m_2 \ (s^{-1})$$

where m_1 and m_2 = factors determined in accordance with paragraphs 4.2.2 and 4.2.3.

$m_1 (s^{-1})$	0.40	0.60	0.80	1.00	1.20	1.40	1.60 or more
θ_m (°)	9	10	13	17	20	23	24

4.2.2 The factor m_1 shall be calculated by the formula:

where:

GM = initial metacentric height for the loading condition considered, without correction for the free-surface effects of liquid cargo;

m_o = a value from the following table in relation to the parameter n_1 determined by the formula:

Install Equation Editor and double-click here to view equation.

where:

$\in$ = see paragraph 1.5;

z_g = see paragraph 3.1.4.

n_1	0.1 or less	0.15	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.0 or more
m_o	0.42	0.52	0.78	1.38	1.94	2.40	3.00	3.00	3.50	3.60

4.2.3 The non-dimensional factor m_2 shall be taken from the following table as a function of the ration B/d.

B/d	2.5 or less	3.0	3.5	4.0	5.0	6.0	7.0	8.0	9.0	10 or more
m_2	1.0	0.9	0.81	0.78	0.81	0.87	0.92	0.96	0.99	1.0

4.2.4 In cases where the bilge radius is less than 0.05 B, the value for the amplitude of roll determined in accordance with paragraph 4.2.1 may be reduced to a value of $\underline{O}$ determined by the formula:

$$\underline{O} = \underline{O}_m \$ (0.75 + \frac{5\ r}{B}) \qquad \text{(degrees)}$$

where: r = bilge radius (m).

4.2.5 The amplitude of roll $\underline{O}_m$ determined in accordance with paragraph 4.2.1 shall be taken into account in the stability curve (see sketches 4.2.5-1 (a) and (b) and 4.2.5-2 (a) and (b)).

4.2.5-1(a) and 4.2.5-2 (a) sketches

4.2.5-1(b) and 4.2.5-2(b) sketches

Explanation of sketches 4.2.5-1 (a) and (b) and 4.2.5-2 (a) and (b)

Sketches 4.2.5-1 (a) and 4.2.5-1 (b) show static stability curves constructed taking into account the amplitude of roll $\underline{\theta}_m$ in the following manner:

The curves are amplified by a static stability curve in the area of negative angles of heel to the abcissa $\underline{\theta}_m$ (segment O-D);

In order to determine the maximum heeling moment, the area on the static stability diagram below the curve up to angle $\underline{\theta}_{perm}$ (ABE) should be equal to the area above the curve (ACD);

The diagram in sketch 4.2.5-1 (a) shows a case in which the angle $\underline{\theta}_{perm}$ equals the capsizing angle, and the diagram in sketch 4.2.5-1 (b) a case in which the angle $\underline{\theta}_{perm}$ equals the angle of maximum heel which is permissible on other grounds.

Sketches 4.2.5-2 (a) and 4.2.5-2 (b) show static stability curves constructed taking into account the amplitude of roll $\underline{\theta}_m$ in the following manner:

The curves are amplified by a dynamic stability curve in the area of negative angles of heel to the abcissa $\underline{\theta}_m$;

A tangent to the dynamic stability curve is produced through new origin O' in order to determine the maximum capsizing moment $\underline{\theta}_{perm}$ (cf. sketch 4.2.5-2 (a)), or a straight line is produced through the point of intersection of the dynamic stability curve with a vertical straight line drawn from the point of the angle of heel $\underline{\theta}_{perm}$ which is permissible on other grounds;

The segment at an angle of 1 radian gives the value of the maximum permissible heeling moment.

CHAPTER 5

MACHINERY

5.1 CONSTRUCTION

5-1.1 General

5-1.1.1 The machinery space is the part of the vessel housing the main and auxiliary machinery.

5-1.1.2 The main machinery is that designed to drive the propelling mechanisms.

5-1.1.3 The auxiliary machinery is that which contributes to the operation of the main machinery and that which supplies the vessel with all forms of power necessary for the operation of the vessel's various systems and installations.

5-1.1.4 The construction of the main and auxiliary machinery shall conform to the rules of the Administration or of a recognized Classification Society. It shall be possible to start and stop the machinery, and if necessary to reverse the main machinery, reliably and quickly without danger to the crew.

5-1.1.5 The liquid fuel for the main or auxiliary machinery shall have a flashpoint above 55E C. For the operation of lifeboat engines and portable motor-driven pumps, the use of a fuel with a flashpoint below 55E C shall be allowed.

5-1.1.6 Boilers and other pressure vessels, including their accessories, shall comply with the regulations of the Administration or with the rules of a recognized Classification Society.

5-1.1.7 The fuel system, the lubricating and cooling-water systems and the starting devices shall conform to the requirements of the Administration or to the rules of a recognized Classification Society.

5-1.2 Main machinery

5-1.2.1 The main machinery power available for going astern shall make the vessel sufficiently manoeuvrable under normal operating conditions.

5-1.2.2 The control devices shall be so constructed that they cannot be accidentally moved from their appointed position.

5-1.2.3 A system of two-way communication shall be provided between the main machinery space and the wheelhouse. If the main machinery is not remote-controlled from the wheelhouse, this communication system shall be an engine telegraph.

5-1.2.4 Where the main machinery is remote-controlled, a local control station shall be provided.

5-1.2.5 It shall be possible to turn the main machinery over in complete safety.

5-1.2.6 If the propeller shafts cannot be disconnected, they shall be equipped with suitable blocking devices.

5-1.3 Machinery space

5-1.3.1 In the machinery space the machinery, accessories and equipment shall be so placed as to be readily accessible for operation, dismantling and maintenance.

5-1.3.2 All moving parts of the machinery and transmissions dangerous to members of the crew shall be fitted with appropriate protective devices.

5-1.3.3 The machinery and equipment shall be installed on sturdy and rigid seatings firmly fixed to the vessel's hull.

5-1.3.4 The machinery space shall be provided with efficient ventilation.

5-1.3.5 The floor plates of the machinery space shall be removable and made of sufficiently firm non-slip sheet metal.

5-1.3.6 All doors and hatch covers usable as exists from the machinery space shall open and close from both inside and outside. The covers of skylights not intended for use as exists shall be closable from outside.

5-1.3.7 Bulkheads, walls, ceilings, floors, landings, doors, skylights, window frames, stairways, ladders and steps shall so far as possible be made of incombustible materials.

5-1.3.8 The installations for draining the machinery-space shall be so arranged that any oil or oily water remains aboard.

5-1.3.9 The sound-pressure level in machinery spaces not permanently attended shall not exceed 110 dB (A). The sound-pressure level in permanently attended machinery spaces shall not exceed 90 dB (A).

5-1.4 Gas exhaust system

5-1.4.1 All exhaust gases shall be evacuated outside the vessel. All necessary steps shall be taken to prevent dangerous gases from penetrating the various compartments.

5-1.4.2 Exhaust pipes shall be suitably shielded, insulated or cooled.

5-1.4.3 Gas exhaust pipes which pass through accommodation or the wheelhouse shall, in those compartments, be enclosed within a gastight protective sleeve. The space between the exhaust pipe and the sleeve shall communicate with the open air.

5-1.4.4 If the exhaust pipes run alongside or pass through inflammable materials, those materials shall be effectively protected.

5-1.5 Fuel system

5-1.5.1 Fuel shall be stored in special tanks built or fitted into the vessel's hull. No tank for any liquid fuel shall be installed forward of the collusion bulkhead.

5-1.5.2 Fuel tanks shall not be situated near sources of heat.

5-1.5.3 Fuel transfer pumps shall be fitted not only with a local control device but also with a stopping device accessible at all times and situated outside the spaces where the pumps are installed.

5-1.5.4 Fuel pipes shall be independent of other piping systems.

5-1.5.5 Fuel may be heated only by devices allowed by the Administration.

5-1.5.6 Fuel tanks, their piping and other accessories shall be so designed and installed that no fuel or gas can escape into the vessel.

5-1.5.7 Fuel shall be supplied by means of a leak-proof connection.

5-1.5.8 If machinery can run on either light or heavy fuel, measures shall be taken to avoid mixing different kinds of fuel.

5-1.5.9 Pipes for liquid fuel shall be fitted with a closing device at the outlet from the tanks.

In addition, pipes which directly supply engines, boilers and heating appliances shall be fitted with a quick-closing valve operated from the deck.

Fuel pipes shall not be exposed to excessive heat and shall be accessible for inspection throughout their length.

5-1.5.10 Pipes for filling liquid-fuel tanks other than daily supply tanks shall have their opening above the deck and shall be fitted with a closing device. Every such tank shall be fitted with a vent pipe leading to the open air above the deck and so placed that no water can enter it.

5-1.5.11 The gauge columns of tanks for liquid fuel shall be effectively protected against impact, fitted at their lower end with a self-closing cock and fitted at their upper end with a return to the tanks.

5-1.5.12 Where the machinery space is not permanently attended, tanks which directly supply essential machinery shall be equipped with a device that gives a visual and acoustic signal in the wheelhouse when their degree of filling is no longer sufficient for reliable operation.

5-1.4.13 Tanks for liquid fuel or lubricating oil shall not have common walls with accommodation spaces.

5-1.5.14 For purposes of cleaning and inspection, tanks for liquid fuel shall be provided with holes having oiltight closures.

5-1.5.15 Fire hazards which might result from the splashing of liquid fuel or other inflammable liquids on to hot surfaces shall so far as possible be prevented by:

(i) Suitable construction, arrangement or shielding of the high-pressure pipes carrying such liquids;

(ii) Heat-resistant insulation of hot surfaces by oil-proof or sheet-metal shielding.

5-1.6 Noise emitted by vessels

The noise emitted by a vessel under way, in particular engine intake and exhaust noise, shall be damped by suitable means.

When the engines are running normally, the sound-pressure level of the noise emitted by the vessel at a lateral distance of 25 m from the shipside shall not exceed 75 dB (A).

CHAPTER 6

ELECTRICAL INSTALLATIONS

6-1 GENERAL PROVISIONS

6-1.1 Definitions

Earthing. "Earthing" means electrical connection to the mass of the hull.

Hull return. The distribution of direct or alternating current is said to be of the "hull return" type when the insulated conductors are connected to one of the feed poles and the hull or superstructure is connected to the other pole.

Safe voltage. "Safe voltage" means a voltage presenting no danger to persons. This condition shall be deemed to be satisfied if the windings of transformers, converters and other voltage-reducing devices are electrically separate and the reduced voltage of such devices or the voltage of sources of electric power does not exceed 50 V between the poles in the case of direct current, or between phases in the case of alternating current.

6-1.2 General requirement

All electrical installations shall be designed, made and installed for a permanent list of up to 15E, an angle of trim of up to 5E, and an ambient temperature of up to 40E C.

6-1.3 Documents required to be available on board

The following documents shall be available on board:

(i) A set of instructions for use and a description of the electrical installations;

(ii) A layout and power supply plan, checked and signed by the Administration or a recognized Classification Society and specifying:

The types and makes of machinery and appliances used;

The types and sections of cables;

All other particulars essential for an assessment of safety.

6-2 TECHNICAL REQUIREMENTS

6-2.1 Maximum permissible voltages

6.2.1.1 The following maximum voltages are allowed:

Nature of installation	Maximum permissible voltage		
	Direct current	Single-phase alternating current	Three-phase alternating current
A. Power and heating installation, including general-purpose outlets for permanently installed appliances	250 V	250 V	500 V
B. Lighting, signalling and internal communication installations, including general-purpose outlets for permanently installed appliances	250 V	250 V	-
C. Outlets for current supply to hand-held appliances used on open decks or in confined or damp metal-enclosed spaces other than boilers and tanks:			
1. With or without isolating transformer	50 V	50 V	-
2. Using an isolating transformer serving a single appliance	-	250 V	-
Both wires of these systems shall be insulated from the mass			
3. Where appliances with reinforced or double insulation are used	250 V	250 V	-
D. Outlets for current supply to hand-held appliances used in boilers and tanks with or without isolating transformer	50 V	50 V	-

6-2.1.2 Subject to compliance with the prescribed safety measures, higher voltages are permissible:

(i) In installations for accumulator battery recharging, if the charging process so requires;

(ii) For machinery whose capacity so requires;

(iii) For some special installations (e.g. radio installations and starting equipment).

6-2.2 Distribution systems

6-2.2.1 Independent distribution

The following distribution systems are allowed:

Direct Current

Single-conductor systems using the hull return principle or systems applying two conductors one of which is earthed;

Insulated two-conductor systems;

Three-conductor systems earthing the middle point.

Alternating current

Single-phase systems having two insulated conductors, one of which may be earthed;

Three-phase systems having three insulated conductors with or without earthing of the neutral point;

Three-phase systems having four insulated conductors with or without earthing of the neutral point.

All such systems shall comply with the rules of the Administration or of a recognized Classification Society.

The use of other distribution systems shall be subject to the prior consent of the Administration.

6-2.2.2 Shore connection

6-2.2.2.1 Where the electrical installation of a vessel is fed by an on-shore source of current, the cables on board shall be equipped with permanent connecting devices.

Cables and their connections shall not be subjected to any pulling load.

6-2.2.2.2 Only flexible cable insulated by oil-resistant and flame-retarding sheathing shall be used.

6-2.2.2.3 If the incoming supply voltage exceeds the safe voltage, the hull shall be effectively earthed. The plug socket on the hull shall be readily identifiable.

6-2.2.2.4 The main switchboard shall include an indicator showing whether the connection to the shore network is live.

Means shall be provided for checking the polarity or phase sequence and voltage of the incoming supply in relation to those of the vessel.

6-2.2.2.5 For the purpose of connecting the vessel's network to an outside source of electric power, a switchboard with switches, protective devices and signalling apparatus shall be installed on board.

6-2.2.3 Special provisions for pushed convoys.

The supply to the barges of the convoy shall be controlled by means of multipole switches installed on the pusher.

Instruction plates shall be affixed to current take-off devices and to craft-coupling devices, stipulating that feeders must be disconnected before barges are coupled or uncoupled.

6-2.3 Generators and motors

6-2.3.1 Generators and motors shall be so installed as to be readily accessible for inspection, measurements and repairs and as to prevent water and oil from reaching the windings. Terminal boxes shall be readily accessible, amply dimensioned and sufficiently waterproof.

6-2.4 Accumulators

6-2.4.1 The accumulators shall be of a construction suitable for use on board a vessel. They shall be grouped in boxes or trays fitted with grips to facilitate handling. Cell boxes shall be made of a shock-resistant material that does not easily catch fire and shall be so made as to prevent any spillage of electrolyte at an inclination of 40E from the vertical.

6-2.4.2 Accumulators shall be so arranged as not to shift with the movements of the vessel. They shall not be exposed to excessive heat, extreme cold, spray, steam or vapour.

They shall be so arranged as to be readily accessible and as to ensure that any gas they give off cannot harm neighbouring appliances.

Accumulator batteries shall not be installed in the wheelhouse, accommodation or holds.

Accumulators for portable appliances, however, may be placed in wheelhouses and accommodation.

6-2.4.3 Accumulator batteries requiring a charging power of more than 2 kW (calculated from the maximum charging current and the nominal voltage of the battery) shall be installed in a special battery room. If placed on deck, they shall be enclosed in a cupboard or chest.

Accumulator batteries requiring a charging power not exceeding 2 kW may be installed below decks in a cupboard or chest. They may be installed in the machinery space or any other well-ventilated place provided that they are protected against falling objects and dripping water.

Special battery rooms shall be capable of being heated when the temperature inside them falls below 5E C.

6-2.4.4 The interior surfaces of all battery rooms, including cupboards, lockers, shelving and other built-in fixtures, shall be protected against action of the electrolyte by a coat of paint or a lining made of a material resistant to the electrolyte.

6-2.4.5 Provision shall be made for effective ventilation when batteries are installed in a closed compartment, cupboard or chest. The air shall enter at the bottom and be discharged at the top so that the whole of the battery is swept by the air stream. Ventilation ducts shall not include devices which obstruct the air flow.

The minimum air throughput for ventilation, in m^3/hour, shall be calculated by the following formula:

$$Q = 0.11 \cdot I \cdot n$$

where:

I represents, in ampères, the maximum charging current (it shall be not less than one quarter of the maximum current admissible by the charging device);

n represents the number of cells.

6-2.4.6 Where natural ventilation is used, the cross-section of the ducts shall be sufficient for the required air throughput at an air-flow velocity of 0.5 m/sec. It shall be not less than 80 cm^2 for lead batteries and not less than 120 cm^2 for alkaline batteries.

6-2.4.7 Where the required ventilation cannot be obtained by natural air flow, an exhauster fan shall be provided; its motor shall be clear of the gas stream.

Special devices shall be provided to prevent gases from entering the motor.

Fans shall be of a construction and material precluding the production of sparks through contact between a blade and the fan casing. In addition, the material shall be such as to dissipate any electrostatic charges.

Warning signs prohibiting smoking and entry by persons carrying a naked flame shall be placed on the doors of rooms or cupboards, or the covers of chests, containing batteries.

6-2.5 Electrical switchboards

6-2.5.1 Switchboards shall be situated in accessible and well-ventilated places protected against gaseous or acid emissions. They shall be so arranged as to be protected against jolting and against the effects of weather, water, oil, liquid fuel, steam and vapour.

Switchboards shall not be placed near sounding pipes or near the vent pipes of liquid-fuel tanks.

No pressure pipes shall be situated above the main or emergency switchboard or the control panels of propulsion equipment. In vessels where this requirement cannot be met, no pipe joint shall be installed above an electrical switchboard.

6-2.5.2 In general, materials used in the construction of switchboards shall have suitable mechanical strength and be durable and non-inflammable. They shall not be hygroscopic.

6-2.5.3 Where the voltage exceeds the safe voltage:

(i) The current-carrying components shall be so arranged or protected as to prevent accidental personal contact;

(ii) An insulating mat or an impregnated wooden grating shall be provided; this shall not apply, however, to subdistribution panels;

(iii) Metal parts of the frames or substructures of control devices and the metal casings of appliances shall be carefully earthed.

6-2.5.4 All parts of switchboards, including the connections, shall be readily accessible for inspection, maintenance or replacement.

6-2.5.5 Marker plates for all circuits shall be affixed to switchboards.

6-2.6 Circuit-breaking and protective equipment

6-2.6.1 All circuits except those earthed to the hull shall be protected by fuses or circuit-breakers on each conductor.

Every generator and every electrical circuit shall be protected against short circuit. They shall also be protected against overload, save in the case of the circuits specified in section 10-15, or where the Administration or a recognized Classification Society grants exemption.

The circuit-breakers shall act simultaneously on all non-earthed poles or conductors.

The circuits shall be designed to carry the normally permitted current and the overload allowed by the protective devices.

The cables supplying the steering-gear motors need to be protected only against short circuit.

6-2.6.2 Fuses must be of the enclosed-melt type.

6-2.6.3 Any appliance requiring a current of more than 10 A shall be supplied by a separate circuit.

6-2.6.4 Every precaution shall be taken to prevent reverse-current flows and to protect generators against accident overload.

6-2.6.5 The entire installation, including the neutral or middle wires, shall be capable of being switched off by means of switches or circuit-breakers cutting out all the conductors simultaneously.

6-2.7 Measuring and monitoring devices

Generators, batteries and distribution installations shall be equipped with measuring and monitoring appliances (ammeters, voltmeters, tell-tale lamps, load-monitoring lamps, frequency meters, etc.), so that any faults can be discovered and corrected.

6-2.8 Cables and circuits

6-2.8.1 Cables shall have a watertight sheathing and shall be flame-retarding. These cables shall be chosen from the list of electrical supplies approved by the Administration or by a recognized Classification Society, having regard to their purpose and place of installation. Their cross-section shall be calculated on the basis of the permissible amperage and permissible voltage drop.

In compartments where under normal operating conditions there are aggressive gases, liquids or vapours, the cables shall be chosen accordingly. In battery rooms in particular, the cables shall withstand the electrolyte. In accommodation other types of cables may be used, provided that they are effectively protected and of a flame-retarding type.

6-2.8.2 Installations and protection of cables.

6-2.8.2.1 Cables shall be protected against any risk of damage under normal operating conditions, in particular above decks and in the holds.

6-2.8.2.2 Armoured cables or cables with an external metal sheathing shall in no case be used for the supply of current to mobile equipment.

6-2.8.2.3 The cable connection to electrical equipment shall be made by means of strong and permanently fixed devices that relieve the electrical connections of any pulling load.

6-2.8.2.4 Every precaution shall be taken to ensure that cables cannot be heated beyond the permissible limits and are well protected against damage of any kind, and in particular against mechanical and chemical damage.

6-2.9 Lighting

6-2.9.1 All lighting appliances shall be so installed that the heat they emit cannot set fire to nearby inflammable objects or components.

6-2.9.2 In spaces in which accumulators are installed or paint and other highly inflammable substances are stored, limited-explosion-risk lighting appliances shall be used.

6-2.9.3 Lighting appliances in engine rooms shall be distributed between at least two circuits.

6-2.9.4 Lighting appliances on open decks shall be so arranged as not to impede the recognition of navigation and signal lights.

6-2.10 Navigation and signal lights

6-2.10.1 The switchboard for the navigation and signal lights shall be installed in the wheelhouse and shall be clearly visible in all circumstances; it shall be used solely to control the said lights and shall be supplied by a separate feeder from the main switchboard.

6-2.10.2 Each light shall be individually supplied from the light-control switchboard and individually protected and controlled. A common supply may be provided for several lights that work simultaneously, constitute a single signal, are controlled by the same switch and are monitored by the same tell-tale lamp, provided that the tell-tale lamp indicates every failure of any of these lights.

6-2.10.3 The tell-tale lamps or other equivalent devices monitoring the navigation and signal lights shall be placed on the light-control switchboard in the wheelhouse unless direct monitoring from the wheelhouse is possible. A fault in a tell-tale lamp shall not affect the operation of the light which it monitors.

Tell-tale lamps may be replaced by an other equivalent device approved by the Administration.

6-2.11 Earthing

6-2.11.1 Metal parts which do not carry current when in use, such as machine frames and casings, appliances, fittings and accessories, shall be earthed if they are not so mounted as to be already in effective metallic contact with the vessel's hull.

6-2.11.2 The metal armour or sheathing of cables and metal ducts for cables shall be earthed at both ends. Where cables are mounted on wood or a plastics material, one earth connection shall suffice. In alternating-current operation, single-conductor cables and ducts shall be earthed at one point only.

6-2.11.3 In installations where the voltage does not exceed the safe voltage, earthing may be dispensed with unless required for radio-interference suppression.

6-2.11.4 Where the voltage exceeds the safe voltage, the casings of mobile current-consuming appliances shall, unless they are made of an insulating material or are protected, be earthed through the supply cable by means of a clearly identified additional conductor not normally carrying current.

6.2.11.5 Earthing shall be effective and reliable.

6.2.12 Emergency source of electric power

6-2.12.1 (i) Every vessel navigating in zone 1 shall be equipped with an emergency source of electric power.

(ii) Every passenger vessel navigating in zones 2 and 3 and every other vessel navigating in those zones whose safety of operation depends on electric power shall be equipped with an emergency source of electric power.

6-2.12.2 If a vessel navigating in zones 2 and 3, other than a passenger vessel not less than 25 m in length, is equipped with two or more independent sources of power, one of them may be accepted as an emergency source of power.

6-2.12.3 The emergency source of power may be:

(i) Either an auxiliary set whose fuel supply system and cooling system are independent of the main machinery, and which is automatically started and connected to the network as soon as the voltage falls on the bus-bars of the main switchboard. The electric power shall be supplied within 30 seconds after the failure of the main electricity supply. The Administration or a recognized Classification Society may permit manual starting if the auxiliary set is installed in the immediate vicinity of a station which is permanently manned and which is outside the machinery space;

(ii) Or an accumulator battery automatically taking up current-supply duty in a network failure and capable of meeting the requirements of paragraph 6-2.12.4 for the prescribed time without having to be recharged and without a voltage drop exceeding that authorized. The Administration or a recognized Classification Society may permit manual switching on from a station which is permanently manned and which is outside the machinery space.

On passenger vessels, power for emergency lighting shall be supplied within seven seconds.

6-2.12.4 The emergency source and its switchboard shall be installed:

(i) On vessels navigating in zone 1, above the freeboard deck and outside the machinery space;

(ii) On passenger vessels navigating in zones 2 and 3, outside the machinery space. If the vessel is less than 25 m in length, the emergency source may be installed in the machinery space, as high up as possible.

(iii) On all other vessels navigating in zones 2 and 3, as high up as possible.

If the space housing the emergency source is situated below the freeboard deck, that space shall be accessible from the deck. On passenger vessels not less than 25 m in length, the space housing the emergency source shall be

enclosed by watertight and fire-resistant decks and watertight and fire-resistant bulkheads.

The emergency source of power shall not be installed forward of the collision bulkhead.

6-2.12.5 The capacity of the emergency source shall be sufficient to supply all consumers necessary to the safety of all persons on board, due account being taken of consumers which may be required to operate simultaneously. At least the following, if their use is prescribed, and if they each have no independent emergency source of power, shall be supplied simultaneously

Navigation and signal lights;

Emergency lighting;

Alarm and safety systems;

Intercommunication systems;

Radio and telephone equipment;

Emergency floodlight;

Controls of fixed fire-fighting installations;

Fire pump and emergency pump (on passenger vessels);

Emergency steering gear.

The length of time for which the emergency source of power shall be required to supply the prescribed consumers shall be fixed according to the vessel's purpose, but shall not be less than 30 minutes.

6-2.12.6 At least the following places and stations shall be provided with sufficient emergency lighting:

Places where collective life-saving appliances are stored, handled and launched;

Accommodation exists and passages;

Machinery spaces and their exits;

The emergency switchboard;

The wheelhouse (with provision for disconnection);

The space housing the emergency source of power;

Fire-fighting stations;

Emergency assembly stations for passengers and crew.

The intensity of the emergency lighting shall be prescribed by the Administration.

CHAPTER 7

HOISTING GEAR, RIGGING AND EQUIPMENT

7-1 MASTS FITTED WITH HOISTING GEAR

7-1.1 Masts for supporting derricks shall be made of standardized material or materials approved by a recognized Classification Society.

7-1.2 The masts shall be suitably fixed to the vessel and shall be built to adequate scantlings, account being taken of the maximum load on the derricks they are intended to support.

7-2 DERRICKS AND OTHER HOISTING GEAR

7-2.1 Hoisting gear (including masts and derricks) and all fixed or movable fittings used on board for loading or unloading shall comply with the requirements of the Convention concerning Occupational Safety and Health in Dock Work 1979 (Convention No. 152) adopted by the International Labour Organisation.

7-3 MISCELLANEOUS EQUIPMENT

Vessels shall be provided with at least the following equipment:

Manned vessels navigating in zone 1:

The appliances and devices needed for the emission of visual and acoustic signals and for marking the vessel;

If necessary, efficient equipment for transmitting manoeuvring orders from the steersman's station;

Spare lamps, oil-burning or electric, for the navigation and riding lights;

A pair of ship's binoculars;

A loud-hailer;

A radio set for receiving weather reports;

A fixed compass of a type approved by the Administration;

A gangway, an accommodation ladder or a similar construction which can be securely fixed, of adequate width (at least 0.40 m in the case of gangways and 0.55 m in the case of accommodation ladders) and fitted with a hand-rail at a height of approximately 0.90 m;

At least two portable hold ladders;

A ship's chronometer at the steersman's station;

An echo sounder or a sounding lead with spare lead;

A sufficient number of fenders of appropriate size;

A sufficient number of boathooks;

A pilot-ladder;

A special tarpaulin for temporary repairs to the hull;

A suitable equipment for stopping miner leaks;

Metal covers for windows, skylights and other openings which may let in water;

Potable water tanks of sufficient capacity;

A first-aid kit and a board displaying instructions for the rescue and revival of the drowning;

Two heaving-lines.

Manned vessels navigating in zones 2 and 3:

The appliances and devices needed for the emission of visual and acoustic signals and for marking the vessel;

Spare lamps, oil-burning or electric, for the prescribed riding lights;

A pair of binoculars, for self-propelled vessels;

A loud-hailer;

A gangway at least 0.4 m wide and 4 m long, fitted with a hand-rail;

At least two hold ladders;

A sounding pole, a sounding lead or another appropriate device;

A sufficient number of buoyant fenders of appropriate size;

A sufficient number of boathooks;

A special tarpaulin for temporary repairs to the hull;

Suitable equipment for stopping minor leaks;

A first-aid kit and a board displaying instructions for the rescue and revival of the drowning;

Two heaving-lines.

CHAPTER 8

ANCHORING, MOORING AND TOWING

8-1 GENERAL

8-1.1 Every vessel shall be provided with anchoring and mooring devices appropriate to its type and size and to the waterways on which its use is allowed.

8-1.2 Every vessel licensed to tow shall be provided with towing devices appropriate to its type and size and to the waterways on which its use in towing is allowed.

8-1.3 The characteristics and construction of the anchoring, mooring and towing devices shall conform to the requirements of the Administration or to the rules of a recognized Classification Society.

8-1.4 The anchoring, mooring and towing devices shall be secured sufficiently firmly to the vessel's hull.

8-1.5 The devices shall be so arranged that anchoring, mooring and towing can be effected without difficulty and without danger to persons.

8-2 ANCHORS AND CHAINS

8-2.1 Anchors and chains shall comply in number, characteristics and dimensions with the requirements of the Administration or the rules of the Classification Society authorized for these purposes. The authorities responsible for the safety of navigation on the waterways used may lay down special requirements for an individual waterway or part thereof.

8-3 ROPES

8-3.1 Every vessel shall be provided with mooring and towing ropes which meet the requirements of the Administration or the rules of a Classification Society authorized for these purposes. The authorities responsible for the safety of navigation on the waterways used may lay down special requirements for an individual waterway or part thereof.

8-4 HAWSE PIPES, STOPPERS, WINDLASSES AND WINCHES AND CHAIN LOCKERS

8-4.1 Every vessel shall be provided with all necessary fittings such as hawse pipes, stoppers and winches and with all such other equipment as is needed for dropping and lifting the anchors and for riding at anchor. If the mass of the main anchor is 50 kg or more, the vessel shall be provided with devices for lifting the anchor.

8-4.2 The fittings and their fastenings to the hull shall be strong enough to withstand a pulling load at least equal to the breaking load of the chains or ropes for which they are intended.

8-4.3 The chain lockers shall be of sufficient capacity to contain the whole of the anchor chain without difficulty. Each anchor chain or rope shall be securely fixed at its end to a reinforced part of the chain locker or of a component of the hull and shall if necessary incorporate a slipping device.

CHAPTER 9

LIQUIFIED GAS INSTALLATIONS FOR DOMESTIC PURPOSES

9-1 GENERAL

9-1.1 Every gas installation shall consist essentially of one or more gas receptacles, one or more pressure reducers, a distribution system and a number of gas-consuming appliances.

9-2.1 Such installations may be operated only with the gas mixture of which the customary name is propane.*

9-2 INSTALLATION

9-2.1 Gas installations shall, in all their parts, be suitable for the use of propane and shall be executed in accordance with the requirements of the Administration.

9-2.2 A gas installation may be used only for domestic purposes in spaces which comply with the requirements of the Administration.

9-2.3 There may be several separate gas installations on board. Accommodation areas separated by a cargo hold or a fixed tank shall not be supplied by the same installation.

9-2.4 Installations which are not permanently fixed may be used only if they meet the special requirements laid down by the Administration.

9-3 RECEPTACLES

9-3.1 Only receptacles with a capacity of between 5 and 35 kg shall be allowed.

9-3.2 The receptacles shall satisfy the requirements in force. They shall bear the official stamp certifying that they have passed the statutory tests.

9-4 LOCATION AND ARRANGEMENT OF THE SUPPLY UNIT

9-4.1 The supply unit shall be installed on deck in a special cupboard located outside the accommodation area in such a position that it does not interfere with movement on board. It shall not, however, be installed against the forward or after bulwark plating. The cupboard may be a wall cupboard set into the superstructure provided that it can only be opened from outside. It shall be so located that the pipes leading to the gas consumption points are as short as possible.

* Gas mixture defined in ADN, annex A, marginal 6201, 4E (b), as mixture C.

Each installation may have up to four receptacles in operation simultaneously, with or without the use of an automatic changeover valve. The number of receptacles on board, including spare receptacles, shall not exceed six per installation.

On passenger vessels having galleys or canteens for the passengers, up to six receptacles per installation may be in operation simultaneously, with or without the use of an automatic changeover valve. The number of receptacles on board such vessels, including spare receptacles, shall not exceed nine per installation.

The pressure reducer or, in the case of two-stage reduction, the first pressure reducer shall be fitted to the inside wall of the cupboard for the receptacles.

9-4.2 The supply unit shall be so installed that any leaking gas can escape from the cupboard without any risk that it may penetrate the vessel or come into contact with any possible source of ignition.

9-4.3 The cupboard shall be constructed of fire-resistant materials and shall be adequately ventilated by openings at the top and bottom. The receptacles shall be placed upright in the cupboard in such a way that they cannot overturn.

9-4.4 The cupboard shall be so constructed and situation that the temperature of the receptacles cannot exceed 50 EC.

9-4.5 The cupboard's outer wall shall bear the inscription "Gas installation" and the "Smoking prohibited" sign of CEVNI (Annex 3, IV.2).

9-4.6 If interior lighting is needed in the cupboard, it shall be electric lighting and the installation shall be explosion-proof.

9-5 SPARE AND EMPTY RECEPTACLES

9-5.1 Spare and empty receptacles which are not stored in the supply unit shall be stored outside the accommodation area and the wheelhouse in a cupboard constructed in accordance with the requirements of section 9-4, paragraphs 9-4.2 to 9-4.6.

9-6 PRESSURE REDUCERS

9-6.1 The gas-consuming appliances may be connected to the receptacles only through a distribution system fitted with one or more pressure reducers to bring the gas pressure down to the working pressure. The pressure may be reduced in one or two stages. All pressure reducers shall be set permanently at a pressure determined in accordance with section 9-7 below.

9-6.2 The final pressure reducer shall be either fitted with or followed by a device to protect the piping automatically against excess pressure in the event of a malfunction of the pressure reducer. Any gas which this protection device allows to escape shall be evacuated into the open air without any risk that it may penetrate the vessel or come into contact with any possible source of ignition; if necessary a special vent shall be fitted for this purpose.

9-6.3 The safety devices and the vents shall be protected against ingress of water.

9-7 PRESSURE

9-7.1 The pressure at the outlet of the final pressure reducer shall not be more than 5 kPa above atmospheric pressure, with a tolerance of 10%.

9-7.2 In the case of two-stage reduction, the intermediate pressure shall not be more than 250 kPa above atmospheric pressure.

9-8 PIPING AND FLEXIBLE TUBES

9-8.1 The piping shall consist of fixed steel or copper tubing.

The pipes connected to the receptacles, however, shall consist of high-pressure flexible tubing or spiral tubes suitable for the gas used. The gas-consuming appliances may, if they are not installed as fixtures, be connected up by means of suitable flexible tubes not more than 1 m long.

9-8.2 The piping shall be able to withstand all influences to which it may be subjected under normal operating conditions on board, in particular corrosion and stresses, and its characteristics and layout shall be such that it ensures a satisfactory flow of gas at the appropriate pressure to the gas-consuming appliances.

9-8.3 The piping shall include as few joints as possible. The piping and the joints shall be gastight and shall remain gastight despite any vibration or expansion to which they may be subjected.

9-8.4 The piping shall be readily accessible, properly fixed and protected at every point where it might be subjected to impact or friction, particularly where it passes through metal bulkheads or other metal partitions.

The entire outer surface of steel piping shall be treated against corrosion.

9-8.5 Flexible pipes and their joints shall be able to withstand any stresses which may occur under normal operating conditions on board. They shall be fitted without load and in such a way that they cannot be overheated and can be inspected throughout their length.

9-9 DISTRIBUTION SYSTEM

9-9.1 No part of a gas installation shall be situated in the machinery space. On tankers to which ADN applies, no part of a gas installation shall be within the cargo zone.

9-9.2 It shall be possible to shut off the entire distribution system by means of a valve which is readily and quickly accessible.

9-9.3 Each gas-consuming appliance shall be supplied by a separate branch of the distribution system, and each such branch shall be controlled by a separate closing device.

9-9.4 The valves shall so far as possible be protected from the weather and against impact.

9-9.5 The ends of pipes intended for connection to gas-consuming appliances shall be closable by a flange or cap even if they are equipped with a shut-off valve.

9-10 GAS-CONSUMING APPLIANCES AND THEIR INSTALLATION

9-10.1 The only consuming appliances that may be installed shall be those which have been approved by the Administration and which are equipped with devices that effectively prevent the escape of gas in case of extinction either of the burner or of the pilot flame.

9-10.2 Each appliance shall be so placed and connected as to avoid any risk that the connecting piping may be accidentally wrenched loose.

9-10.3 Space-heating and water-heating appliances shall be connected to a flue for evacuating the combustion gases.

9-10.4 The installation of gas-consuming appliances in the wheelhouse shall be permitted only if the wheelhouse is so constructed that no leaking gas can escape into the lower parts of the vessel, for instance through the engine telegraph system. On tankers to which ADN applies, no gas-consuming appliances shall be allowed in the wheelhouse.

9-10.5 Gas-consuming appliances may be installed in sleeping rooms only if the combustion process does not depend on the ambient air.

9-10.6 Gas-consuming appliances in which the combustion process depends on the ambient air shall be installed only in rooms of sufficient size.

9-10.7 On tankers to which ADN applies, gas-consuming appliances shall bear a red marking prominently displayed.

9-11 VENTILATION AND EVACUATION OF THE COMBUSTION GASES

9-11.1 In spaces containing gas-consuming appliances in which the combustion process depends on the ambient air, the supply of fresh air and the evacuation of the combustion gases shall be ensured by means of apertures of adequate dimensions determined according to the capacity of the appliances.

9-11.2 The ventilation apertures shall not have any closing device and shall not lead into sleeping rooms.

9-11.3 The evacuation devices shall be such as to ensure reliable and effective evacuation of the combustion gases. They shall be fire-resistant and their effectiveness shall not be impaired by the room ventilators.

9-12 INSTRUCTIONS FOR USE AND SAFETY

9-12.1 A notice containing instructions on the use of the installation shall be affixed on board in a suitable place. The notice shall bear, in particular, the following instructions:

"The valves of receptacles which are not connected to the distribution system shall be closed even if the receptacles are presumed to be empty."

"Flexible pipes shall be renewed as soon as their condition so requires."

"All receptacles shall be kept connected up unless the corresponding connecting pipes are closed by valves or sealed."

9-13 INSPECTION

9-13.1 Before a gas installation is put into service, after any modification or repair and at each renewal of the entry referred to in section 9-15 below, the whole of the installation shall be submitted to an expert of the Administration for inspection. At the time of the inspection, the expert shall check whether the installation complies with:

(i) The requirements of this chapter if the installation is on board a vessel not subject to ADN;

(ii) The requirements of this chapter and of ADN if the installation is on board a vessel to which ADN applies.

The expert shall submit a report to the competent authority of the Administration.

9-14 TESTS AND TRIALS

The completed installation shall be subjected to the following tests and trials:

9-14.1 Medium-pressure piping between the first pressure reducer and the valves upstream of the final pressure reducer:

(i) Strength test, carried out with air, an inert gas or a liquid at a pressure prescribed by the Administration. This pressure shall not be less than 2 MPa above atmospheric pressure;

(ii) Gastightness test, carried out with air or an inert gas at a pressure of 350 kPa above atmospheric pressure.

9-14.2 Piping at the working pressure between the single or final pressure reducer and the valves upstream of the gas-consuming appliances;

Gastightness test, carried out with air or an inert gas at a pressure of 100 kPa above atmospheric pressure.

9-14.3 Piping situated between the single or final pressure reducer and the controls of the gas-consuming appliance:

Gastightness test at a pressure of 20 kPa above atmospheric pressure.

9-14.4 In the tests referred to in paragraph 9-14.1 (ii), 9-14.2 and 9-14.3, the piping shall be considered gastight if, after sufficient time has elapsed for thermal balancing, no drop in the test pressure is noted during the following 10 minutes.

9-14.5 Receptacle connectors, piping and other fittings subjected to the pressure in the receptacles, and joint between the pressure reducer and the piping:

Strength test after assembly, carried out with air, an inert gas or liquid at the pressure prescribed by the Administration but in any case not less than 2.5 MPa above atmospheric pressure;

Gastightness test, carried out with a foam-producing product at the working pressure.

9-14.6 All gas consuming appliances shall, on being put into service, be tested at the working pressure to ensure that combustion is satisfactory with the controls in the different positions.

The safety devices shall be checked to ensure that they work properly.

9-14.7 After the test referred to in paragraph 9-14.6 above, trials shall be carried out with every gas-consuming appliance connected to a flue to check whether, after five minutes' operation at full capacity, with windows and doors closed and the ventilation devices in operation, any combustion gases are escaping through the damper.

If combustion gases are escaping otherwise than sporadically, the cause shall immediately be sought and eliminated. The appliance shall not be approved until all defects have been corrected.

9-15 ENTRY IN THE APPROPRIATE SHIP'S PAPER

9-15.1 For every gas installation, the appropriate ship's paper shall contain an entry stating that the installation complies with the requirements of this chapter and, if applicable, with those of ADN.

9-15.2 This entry shall be made by the Administration following the inspection referred to in section 9-13 above.

9-15.3 The entry shall be valid for a period not exceeding three years and may be renewed only after another inspection has been carried out in accordance with section 9-13.

At the request of the owner of the vessel, accompanied by a statement of his reasons for making the request, the Administration may extend the validity of the entry by not more than six months without carrying out the inspection referred to in section 9-13 above. Such extension shall be granted in a written document which shall be kept on board the vessel. Such extension shall not affect the date of the next scheduled inspection.

CHAPTER 10

STEERING GEAR AND WHEELHOUSE

10-1 GENERAL

10-1.1 Every vessel shall be equipped with appropriate steering gear to ensure its ability to manoeuvre and to maintain course, having regard to its use and principal characteristics and to navigating conditions. Steering gear shall not be required on vessels designed to be manoeuvred by other vessels.

10-1.2 The steering gear shall be such that the rudder cannot change position when not intended to do so.

10-1.3 A hand hydraulic steering gear is an installation in which the steering engine is driven by a pump which in its turn is driven solely by a manually operated steering wheel (the steering-wheel pump).

10-2 CHARACTERISTICS OF THE STEERING GEAR

10-2.1 The steering gear shall have the following characteristics:

(i) Where the steering gear is manually driven, each complete turn of the hand wheel shall correspond to at least 3E of rudder angle. Manual operation of the rudder shall not require an effort exceeding 160 N;

(ii) Where the steering gear is power-driven, it shall be possible to obtain an angular speed of at least 4E per second through not less than 30E to either side of the neutral position of the rudder when the rudder is submerged and the vessel is travelling at full speed. However, the Administration, taking into account the conditions of navigation on certain waterways, may permit a lesser angular speed of the rudder for those waterways, provided that it is not less than 2.5E per second;

(iii) Where power-driven steering gear is provided with a manual second drive, such manual drive shall at least enable the vessel to proceed to a mooring.

10-3 GENERAL REQUIREMENTS RELATING TO CONSTRUCTION

10-3.1 The entire steering gear shall be so designed, constructed and installed as to allow for permanent transverse lists of up to 15E, an angle of trim up to 5E, and ambient temperatures of up to 40E C.

10-3.2 The component parts of the steering gear shall be so dimensioned as to withstand the maximum loads to which they may be subjected under normal operating conditions. In order to be able to withstand abnormal external loads as effectively as possible, the steering engine shall not be the weakest part of the system. The Administration may consider satisfactory in this respect any steering gear designed in accordance with the rules of a recognized Classification Society.

10-4 POWER-DRIVEN STEERING GEAR

10-4.1 Where a vessel is equipped with power-driven steering gear, an independent secondary drive shall be provided in order to ensure sufficient manoeuvrability if the main drive fails.

10-4.2 A power-driven steering gear shall be fitted with an overload protection device to limit the torque exerted by the drive.

10-4.3 Accidental cutting-out or failure of the power drive shall be indicated by visual and acoustic signals at the steersman's station.

10-5 ENGAGEMENT OF THE SECONDARY DRIVE

10-5.1 If the secondary drive does not engage automatically upon failure of the main drive, it shall be possible to engage it by hand immediately and simply for any rudder position. This shall not entail more than two manipulations, and they shall be within the capacity of one person.

10-5.2 It shall be possible to change over to the secondary drive in not more than five seconds. It shall be possible to establish from the steersman's station which drive is in use.

10-6 MANUAL DRIVE

10-6.1 If the independent secondary drive is manual it shall be engaged automatically or be capable of being engaged immediately from the steersman's station in the event that the power drive cuts out or fails. Claw clutches shall be permitted only where they are not subject to torque loads during engagement. For the manual secondary drive, the Administration may authorize a system requiring an effort exceeding 160 N.

10-6.2 The power drive shall not actuate the hand wheel; there shall be a device to prevent the return of the hand wheel for any rudder position when the manual drive is engaged automatically.

10-7 HAND HYDRAULIC DRIVE

10-7.1 Where the sole steering gear has hand hydraulic drive, it shall not be regarded as a power-driven steering gear within the meaning of section 10-4, requiring an independent secondary drive, provided that the dimensions, construction and layout of the piping preclude deterioration through mechanical action or fire.

10-8 HYDRAULIC DRIVE

10-8.1 Where the main steering gear is hydraulically driven and the secondary steering gear has a hand hydraulic drive, each system shall be capable of operating independently of the other.

10-8.2 Where both the main and the secondary steering gear are hydraulically driven, the pump and drive of each system shall be independent.

10-8.3 Where the secondary pump is driven by an auxiliary engine which does not run continuously while the vessel is under way, a buffer device shall be installed to drive the pump while the auxiliary engine is running up.

10-8.4 The piping, valves, controls, etc. of each system shall normally be independent of those of the other. However, the two systems may have some common components, such as the cylinder, provided that they can operate independently of each other.

10-9 ELECTRIC DRIVE

10-9.1 Where both the main and the secondary installation are electrically driven, the feed and control systems of the secondary installation shall be independent of those of the main installation. Each installation shall have its own motor.

10-9.2 Where the feed for the secondary drive motor is supplied by an auxiliary engine which does not run continuously while the vessel is under way, and if the auxiliary engine requires more than five seconds to start up, a buffer device shall be provided to drive the secondary motor during the running-up period.

10-10 RUDDER PROPELLERS AND VOITH-SCHNEIDER PROPELLERS

10-10.1 Where the remote control of rudder propellers and Voith-Schneider propellers is electrical, hydraulic or pneumatic, there shall be two independent control systems linking the steersman's station to the propulsion installation.

Where there are two or more independent propulsion installations, no secondary independent control system is required provided that the vessel remains sufficiently manoeuvrable in the event of failure of one of the installations.

10-11 REMOTE CONTROL INSTALLATIONS

10-11.1 Remote control installations, including their parts outside the wheelhouse, shall be permanently fixed. Installations which can be switched off shall be provided with devices showing whether the equipment is "on" or "off".

10-12 RUDDER INDICATOR

10-12.1 The rudder position shall be clearly perceivable at the steersman's station. The rudder indicator shall be placed in the wheelhouse forward of the steersman's position.

10-13 UNOBSTRUCTED VIEW

10-13.1 The view from the steersman's station shall be sufficiently unobstructed in all directions.

10-13.2 A sufficiently unobstructed view in all directions from the steersman's station shall be deemed to be provided if the following conditions are met:

(i) The unobstructed field of view from the steersman's position shall cover at least 240E of the horizon, including at least 140E in the forward half-circle;

(ii) No window frames, posts, etc. shall be placed in the steersman's normal line of vision.

(iii) On pushers the steersman shall have an unobstructed view of the coupling devices.

(iv) The view through the windows in the steersman's normal line of vision shall be kept clear under all weather conditions (rain, snow, frost) by suitable devices.

10-13.3 The dead area of vision forward of the bow of the unloaded vessel shall not extend beyond 250 m.

The use of optical or electronic aids (e.g. a periscope, closed-circuit television) to reduce the dead area shall be left out of consideration for the purposes of this requirement.

10-14 ACOUSTIC PRESSURE

10-14.1 Under normal operating conditions, the sound-pressure level of the noise produced by the vessel shall not exceed 70 dB (A) at the steersman's head position. However, the Administration may authorize a sound-pressure level of 75 dB (A) at the steersman's head position for vessels not more than 30 m in length, with the exception of pushers.

10-15 ELECTRICAL COMPONENTS OF STEERING GEAR

10-15.1 The nominal rating of the motors shall correspond to the maximum torque of the steering gear. In the case of hydraulic installations, the nominal rating of the drive motor shall be such as to ensure maximum output from the pump at maximum pressure in the installation (safety-valve setting) taking the efficiency of the pumps into account.

10-15.2 Motors shall meet at least the following requirements:

(i) Power-driven steering gear for intermittent operation:

The motors of electrohydraulic drives and the associated converters shall be designed to meet conditions equivalent to continuous duty with intermittent loading without cut-out and a 15% duty factor. A 10-minute duty cycle shall be assumed; The motors of electrically-driven steering gear shall be designed for intermittent operation without being affected by the start-up process, and for a 15% duty factor. A 10-minute duty cycle shall be assumed.

(ii) Power-driven steering gear for continuous operation:

The motors for such steering gear shall be designed for continuous operation.

10-15.3 The electric motors of electric and electrohydraulic steering gear shall be protected only against short circuit; protection against excess voltage or against overload shall be prohibited. Instead of protection against overload, a motor-overload signal shall be installed in the wheelhouse.

10-15.4 The protection of the electric motors and their supply cables shall comply with the requirements of the Administration or the rules of a recognized Classification Society.

10-15.5 The power and control circuits shall be protected only against short circuit. The control circuits shall be protected against twice the maximum rated current of the circuit.

10-15.6 The electrical installations of the steering gear shall be supplied by two feeders laid directly from the main switchboard along separate routes as far apart as possible throughout their length.

It is recommended that one of the feeders should be supplied from the emergency switchboard.

10-15.7 If a changeover switch is provided so that any electric motor or combination of motors can be supplied with current from either feeder, the feeders shall be dimensioned for the heaviest load that may be imposed on them and the changeover switch shall be installed in the wheelhouse.

10-15.8 For the electric equipment the following monitoring and indicating devices must be provided:

(i) a green light indicating that the installation is live;

(ii) a red light which comes on when the installation breaks down or when the electric motor is disconnected or when one phase of a three-phase supply fails. An acoustic signal must sound at the same time as the red light comes on. Where supply is exclusively via circuit-breakers, phase failure monitoring is not required.

The supply of monitoring and indicating devices shall be independent of the current supply of the steering gear itself.

10-15.9 Where the rudder indicator is electrical it shall have an independent current supply.

CHAPTER 11

SPECIAL ARRANGEMENTS FOR RADAR STEERING BY ONE PERSON

11-1 GENERAL PROVISION

A wheelhouse shall be deemed to be specially arranged for radar steering by one person if it meets the requirements of this chapter.

11.2 GENERAL REQUIREMENTS RELATING TO DESIGN

11-2.1 The wheelhouse shall be designed to accommodate a seated steersman.

11.2.2 All appliances, instruments and controls shall be so arranged that the steersman can use them conveniently during the voyage without leaving his seat and without losing sight of the radar screen. The radar display shall be placed in the wheelhouse forward of the steersman's position in such a way that the steersman can observe the image on the screen with no significant change in his line of vision.

11.2.3 The controls shall move easily into the operating position, which shall be unmistakably clear.

11-2.4 Monitoring instruments shall be easy to read whatever the lighting conditions inside the wheelhouse. Their illumination shall be capable of continuous adjustment to the point of extinction, so that the illumination is not dazzling and at the same time there is no impairment of visibility.

11-2.5 The wheelhouse shall be equipped with adjustable heating. The wheelhouse darkening device shall not interfere with ventilation.

11-3 RADAR EQUIPMENT AND RATE-OF-TURN INDICATOR

11-3.1 The radar image shall remain fully visible, with no masking or screening, irrespective of the lighting conditions outside the wheelhouse.

11-3.2 The rate-of-turn indicator shall be installed in immediate proximity to the radar screen.

11-4 SIGNALLING EQUIPMENT

11-4.1 Navigation and signal lights shall be controlled from a light-control switchboard on which the tell-tale lamps shall be arranged in position corresponding to the actual positions of the navigation and signal lights. Failure of a navigation light or signal light shall cause the corresponding tell-tale lamp to go out.

11-4.2 It shall be easy to operate acoustic warning signals while performing steering operations.

11-5 INSTALLATIONS FOR MANOEUVRING THE VESSEL AND CONTROLLING THE PROPELLING MACHINERY

11-5.1 The vessel's steering gear shall be controlled by a device which is easy to operate. Every movement of the steering device shall be accompanied by an exact indication of the position of the rudders. The rudders shall remain in place in the absence of further actuations of the steering device.

11-5.2 If the vessel is also fitted with reversing rudders or bow rudders, they shall be controlled by separate devices meeting the above requirements.

11-5.3 Any malfunction of the steering gear shall be indicated by a visual and acoustic signal at the steersman's station.

11-5.4 Every engine shall be controlled by a single lever moving through the arc of a circle in a vertical plane more or less parallel to the longitudinal axis of the vessel. Forward movement of the lever shall cause the vessel to more forward and movement of the lever towards the stern shall cause the vessel to move astern. The neutral position shall be identified by a distinct mark. The sweep of the lever from the neutral position to the "full speed ahead" position and from the neutral position to the "full speed astern" position shall not exceed 90E.

11-5.5 The number of revolutions of the main engine or the propellers and the direction of rotation of the propellers shall be indicated.

11-5.6 A device for emergency stopping of the main machinery shall be provided and shall function independently of the remote control system.

11-6 ANCHOR AND SEARCHLIGHT CONTROLS

11-6.1 The steersman shall be able, without leaving his seat, to drop the anchors which are necessary for an emergency stop of his vessel, and to operate the searchlight.

11-7 COMMUNICATION EQUIPMENT

11-7.1 If the vessel is to be fitted with a radiotelephone installation for ship-to-ship communication, it shall be possible for the steersman to operate the installation easily from his seat.

The same requirement shall apply as appropriate to the installation for ship-to-shore communication.

11.7.2 The connection to the public communication system shall be independent of the installation referred to in paragraph 11-7.1, so as not to disturb the steersman.

11-7.3 There shall be a voice intercommunication network on board. It shall enable the steersman to communicate at least with the bow of the vessel or the head of the convoy, the skipper's cabin and the crew accommodation. The voice intercommunication network shall be so installed that the steersman can easily use it while carrying out the steering operations.

11-8 ALARM SIGNALS

11-8.1 An acoustic alarm signal controlled by an "off/on" switch shall be available to the steersman. Switches which automatically return to the "off" position when released shall not be allowed.

11-8.2 The sound-pressure level of this signal shall not be less than 75 dB (A) in the accommodation. In the machinery space it shall be 5 dB (A) above the ambient noise level when the propelling machinery is running at full capacity. If this requirement cannot be met, the acoustic signal shall be accompanied by a flashing red light signal.

CHAPTER 11 BIS

HOISTING DEVICES OF WHEELHOUSES OF INLAND NAVIGATION VESSELS

11 bis-1 GENERAL REQUIREMENTS

11 bis-1.1 A vertically movable wheelhouse shall permit efficient steering of the inland navigation vessel.

11 bis-1.2 A vertically movable wheelhouse and its gear shall be designed in such a way as not to adversely affect the safety of persons on board; it shall be possible to fix the wheelhouse in different positions along the vertical axis. A possibility for immediate release of the fixing arrangements should be ensured under all operational conditions inclusive of a total power failure.

11 bis-1.3 Hoisting and lowering shall not interfere with operations performed from the wheelhouse.

11 bis-2 REQUIREMENTS RELATING TO CONSTRUCTION

11 bis-2.1 The hoisting mechanism shall be designed to hoist at least 1.5 times the weight of the wheelhouse fully equipped and fully manned.

11 bis-2.2 The mechanism for hoisting the wheelhouse shall function reliably and without jamming under all possible conditions of asymmetrical load as well as at all angles of ship's list and trim which could occur during its normal operation.

11 bis-2.3 The wheelhouse shall be earthed so that it would be in effective metallic contact with the vessel's hull. The protective earthing device may at the same time form an integral part of the lightning conductor system if the lightning conductor receiver is located on the wheelhouse.

11 bis-2.4 The feed cables for systems inside the wheelhouse shall be laid and fastened in such a way as to exclude the possibility of mechanical damage to them.

11 bis-2.5 The device for fastening the cables may also be used for laying hoses or pipes leading into the wheelhouse. The distance between such hoses or pipes and the cables shall be not less than 100 mm.

11 bis-2.6 Optical signalling of the following positions shall be provided:

(1) Electric drive switchboard live;

(2) Wheelhouse in lower terminal position;

(3) Wheelhouse in upper terminal position.

11 bis-2.7 Optical and acoustic signalling of wheelhouse movements shall be provided. The signals shall be visible and audible in and near the wheelhouse.

11 bis-3 REQUIREMENTS RELATING TO THE HOISTING GEAR DRIVE

11 bis-3.1 The gear for hoisting and lowering the wheelhouse shall have a power drive capable of functioning under all normal conditions of ship's operation.

11 bis-3.2 The wheelhouse shall be equipped with an emergency lowering device independent of the power drive. Emergency lowering of the wheelhouse shall be effected under its own weight and shall be smooth and controllable.

11 bis-3.3 The hoisting mechanism shall enable the wheelhouse to stop and remain fixed in any position. Safe access to and exit from the wheelhouse shall be possible in any position.

11 bis-3.4 Automatic cutting out of the hoisting mechanism in the terminal positions shall be provided.

11 bis-3.5 Lowering of the wheelhouse shall be effected by one person under all conditions. Emergency lowering shall be possible from both inside and outside the wheelhouse. The speed of emergency lowering of the wheelhouse shall be not less than the speed of lowering effected by means of the main drive.

11 bis-3.6 The use of a self-braking hoisting mechanism shall not be permitted.

11 bis-3.7 Connecting the hydraulic system for hoisting the wheelhouse to another hydraulic system must, in each separate case, be approved by the recognized classification society or by the Administration.

11 bis-3.8 The feed for the electric drive of the wheelhouse hoisting gear and the switchboard of its signalling system shall be supplied from busbars on the main distributor panel fed directly from the generator or transformer; these electric drives shall be provided with independent feeders of their own.

Their feed from busbars on the emergency switchboard shall be assured in the same way.

CHAPTER 12

FIRE PROTECTION

12-1 STRUCTURAL REQUIREMENTS

12-1.1 Vessels not less than 85 metres in length navigating in zone 1

12.1.1.1 The hull, superstructures, structural bulkheads, decks and deckhouses shall be made of steel, except where the Administration or a recognized Classification Society may allow the use of other materials in special cases, with due regard to the risk of fire. In accommodation spaces, the corridor bulkheads shall be made of steel, or of other materials approved by the Administration or a recognized Classification Society with due regard to the risk of fire.

12-1.1.2 Deck, wall and ceiling coverings within accommodation spaces, especially on decks forming the upper part of machinery space and store rooms, and also the furniture therein, shall be made of a material which will not easily catch fire. In the event of fire there should not be any dangerous release of smoke or toxic gas.

12-1.1.3 Crew lift trunks within accommodation and interior stairways below the weather deck shall be made of steel or equivalent material.

12-1.1.4 The bulkheads of galleys, paint stores, lamprooms, boatswain's stores (when adjacent to accommodation spaces) and emergency generator rooms, if any, shall be made of steel or equivalent material.

12-1.1.5 Paints, varnishes and similar products having a nitrocellulose or other highly inflammable base shall not be used in machinery spaces.

12-1.1.6 Piping for oil or liquid fuel shall be made of a material approved by the Administration or a recognized Classification Society with due regard to the risk of fire. Materials with a low resistance to heat shall not be used for overboard scuppers, sanitary discharges or other outlets which are close to the water line, or in places where failure of the material in the event of fire might cause flooding.

12-1.1.7 Electric radiators shall be so designed and fixed in position as to reduce fire risks to a minimum.

12-1.1.8 Forced ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

12-1.1.9 Automatic devices for detecting and signalling smoke or heat, which indicate fire on board, shall satisfy the requirements laid down by the Administration or the rules of a recognized Classification Society.

12-1.2 Vessels less than 85 metres in length navigating in zone 1 and vessels navigating in zones 2 and 3

12-1.2.1 Deck, wall and ceiling coverings within accommodation spaces, especially on decks forming the upper part of machinery spaces and storerooms, and also the furniture therein, shall be made of a material which will not easily catch fire. The walls, ceilings and doors of machinery spaces, boiler rooms and bunkers shall be made of steel or of equally fire-resistant material.

12-1.2.2 Stairways and ladders leading to machinery spaces, boiler rooms and bunkers shall be fixed permanently and made of steel or equivalent material.

12-1.2.3 Paints, varnishes and similar products having a nitrocellulose or other highly inflammable base shall not be used in machinery spaces.

12-1.2.4 Piping for oil or liquid fuel shall be made of a material approved by the Administration with due regard to the risk of fire. Materials with a low resistance to heat shall not be used for overboard scuppers, sanitary discharges or other outlets which are close to the waterline and not provided with a closure, or in places where failure of the material in the event of fire might cause flooding.

12-1.2.5 Electric radiators shall be so designed and fixed in position as to reduce fire risks to a minimum.

12-1.2.6 Forced ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.

12-2 MEANS OF ESCAPE

12-2.1 Vessels not less than 85 metres in length navigating in zone 1

12-2.1.1 In all crew spaces and spaces, other than machinery spaces, in which crew members are normally employed, stairways and ladders shall be installed to provide a ready means of escape to an open deck.

12-2.1.2 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 consist of two sets of steel ladders as widely separated as possible leading to doors in the casing which are similarly separated and from which access is provided to an open deck. In the case of vessels less than 125 metres in length the Administration or a recognized Classification Society may dispense with this requirement, taking the width and disposition of the casing into account.

12-2.2 Vessels less than 85 metres in length navigating in zone 1 and vessels navigating in zones 2 and 3

12-2.2.1 In all crew spaces and spaces in which crew members are normally employed, stairways and ladders shall be so installed to provide a direct means of escape to the deck.

12-2.2.2 Engine rooms and boiler rooms shall have two exits, one of which may be an emergency exit.

12-3 FIRE-FIGHTING APPLIANCES

12-3.1 Vessels navigating in zone 1

12-3.1.1 Every vessels shall be provided with fire pumps, pressure piping for fire-extinguishing water, and fire hydrants and hoses. The equipment shall meet the requirements of the Administration or of a recognized Classification Society.

12-3.1.2 Save where exemption from this requirement is granted by the Administration, the cargo holds of vessels not less than 125 metres in length shall be protected by a common fixed fire-fighting installation. The installation shall be approved by the Administration or a recognized Classification Society.

12-3.1.3 On vessels not less than 110 metres in length, a fixed fire-fighting installation approved by the Administration or a recognized Classification Society shall be provided in:

Rooms in which main or auxiliary oil-fired boilers are installed and rooms containing fuel pumps or settling tanks;

Rooms containing internal-combustion engines constituting the main means of propulsion or used as auxiliary engines with an installed capacity of not less than 750 kW.

12-3.2 Vessels navigating in zones 1, 2 and 3

12-3.2.1 There shall be at least:

For the wheelhouse: one extinguisher;

For each separate room or for each group of rooms with heating, cooking or refrigerating equipment of any kind in which solid or liquid fuel or liquefied gas is used: one extinguisher;

For main or auxiliary engine rooms equipped with internal combustion engines and not interconnected:

100 kW or less: one extinguisher;
over 100 kW: two extinguishers.

12-3.2.2 The extinguishers shall be suitable for their purpose and shall be inspected and checked at least once every two years.

12-3.2.3 In addition the following requirements shall be met;

(i) The fire extinguishers shall be of a type approved by the Administration or a recognized Classification Society;

(ii) On vessels with electrical installations supplying current at a voltage higher than the safe voltage (6-1.1), there shall be a suitable extinguisher for fighting fire in the electrical installations;

(iii) The fire extinguishers shall not contain extinguishing compounds liable to give off toxic gases either spontaneously or when in use.

12-3.2.4 Extinguishers sensitive to frost or heat shall be installed or protected in such a manner that they are always ready for use.

12-3.2.5 If the fire-fighting appliances are so installed as to be concealed from view, the plates or doors concealing them shall bear a red symbol not less than 100 mm high.

12-3.2.6 Fixed fire-extinguishing installations shall meet the requirements of the Administration or of a recognized Classification Society.

CHAPTER 13

LIFE-SAVING APPLIANCES

13-1 COLLECTIVE LIFE-SAVING APPLIANCES

13-1.1 Lifeboats

13-1.1.1 All lifeboats shall be well designed and of such shape and proportions that they have ample stability and sufficient freeboard when carrying their full load of persons and equipment.

13-1.1.2 All lifeboats shall be strong enough to be lowered into the water with complete safety when carrying their full load of persons and equipment. They shall be of such strength that they will not suffer permanent deformation if subjected to an overload of 25%.

13-1.1.3 Every lifeboat shall meet the following requirements:

It shall be equipped with seats sufficient for at least three persons;

The number of persons whom the lifeboat is permitted to carry shall be determined according to its cubic capacity as calculated by the recognized methods, on the basis of not less than 0.225 m^3 per person.

The seating capacity of the lifeboat shall be determined by tests to find out how many adults wearing lifejackets or lifebelts can be accommodated without interfering with the rowing and steering of the lifeboat;

Its stability shall be adequate for the maximum number of persons it may carry; its stability shall be deemed to be adequate if, with half the maximum permissible number of persons seated on one side of the lifeboat, there remains a freeboard of not less than 100 mm;

There shall be a seat width of not less than 0.45 m per person;

The lifeboat shall remain sufficiently buoyant and sufficiently stable when carrying its full load of persons and equipment and filled with water.

13-1.1.4 All lifeboats shall have a sufficient freeboard at maximum load.

In zones 2 and 3 the following freeboard shall be considered sufficient at maximum load:

For boats up to 3.5 m long, 280 mm;

For boats over 3.5 m and up to 4.5 m long, 280 + 40 (L-3.5) mm;

For boats over 4.5 m long, 320 mm,

where L is in metres.

13-1.1.5 The lifeboat equipment shall meet the requirements of the Administration.

13-1.1.6 Lifeboats of vessels navigating in zone 1 shall correspond to the relevant ISO International Standards.

13-1.2 Liferafts

Every liferaft shall be fitted with a line securely becketed round the outside and with devices for mooring and towing.

In zone 1, every liferaft shall be so constructed as to comprise units containing a volume of air of at least 0.096 m^3 (or equivalent buoyancy devices in the case of rigid liferafts), and a deck area of at least 0.372 m^2, for every person it is permitted to carry.

In zones 2 and 3, the values for the necessary air volume and deck area shall be prescribed by the Administration.

13-1.2.1 Inflatable liferafts

13-1.2.1.1 Every inflatable liferaft shall be so designed that, when fully inflated and floating, it is stable in the water.

13-1.2.1.2 The liferaft shall be so constructed that if it is dropped into the water from a height of 6 metres in zones 2 and 3, or 10 metres in zone 1, neither the liferaft nor its equipment will be damaged.

13-1.2.1.3 The liferaft shall be capable of being easily righted by one person in the water if it inflates upside down.

13-1.2.1.4 The liferaft shall be fitted with appropriate means of enabling persons in the water to climb on board.

13-1.2.1.5 The liferaft shall be packed in a valise or container capable of withstanding hard wear and use. The liferaft in its valise or container shall float in such a way as to permit the immediate operation of the inflation system.

13-1.2.2 Rigid liferafts

13-1.2.2.1 Every rigid liferaft shall be so constructed as to retain its shape in all weather conditions, on deck and in the water.

13-1.2.2.2 The liferaft shall be so constructed that if it is dropped into the water from a height of 6 metres in zones 2 and 3, or 10 metres in zone 1, neither the liferaft nor its equipment will be damaged.

13-1.2.2.3 The deck area of the liferaft shall be situated within that part of the liferaft which affords protection to its occupants. The nature of the deck shall be such as to prevent so far as practicable the ingress of water and it shall effectively hold the occupants out of the water.

13-1.2.2.4 The equipment of the liferaft shall be so stowed as to be readily accessible whichever way up the liferaft is floating.

13-2 INDIVIDUAL LIFE-SAVING APPLIANCES

13-2.1 Lifejackets

13-2.1.1 A lifejacket shall satisfy the following requirements:

(i) It shall be properly designed and made of suitable materials;

(ii) It shall be capable of supporting a mass of 7.5 kg in fresh water for 24 hours;

(iii) It shall be capable of keeping the head of an exhausted or unconscious person above water;

(iv) It shall be so designed as to eliminate so far as possible all risk of its being put on incorrectly; however, it shall be capable of being worn inside out;

(v) It shall be capable of turning the wearer's body, on entering the water, to a safe floating position slightly inclined backwards from the vertical;

(vi) It shall withstand the effects of oil and oil products and of temperatures up to 50EC;

(vii) It shall be reflecting orange in colour;

(viii) It shall be easy and quick to put on, and shall fasten securely to the body;

(ix) It shall be fitted with a whistle held in a pocket at the request of the Administration;

(x) It shall bear the following particulars:

Name of manufacturer;

Type;

Year of manufacture.

13-2.1.2 Inflatable lifejackets shall comprise two separate air chambers and shall satisfy the requirements laid down in paragraph 13-2.1.1 even if one of the air chambers is not inflated.

They shall, in addition:

Inflate automatically and be inflatable by manual control and by mouth;

Be capable of functioning in all weathers.

The Administration may authorize the use of single-chamber lifejackets where lifejackets are required to be worn for long periods by crew members at work.

13-2.2 Lifebuoys and floating balls

13-2.2.1 The lifebuoys and floating balls shall be ready for use and secured on deck at suitable places, but shall not be fastened into their holders. At least one lifebuoy shall be placed in the immediate vicinity of the wheelhouse.

13-2.2.2 Lifebuoys shall:

(i) Be capable of supporting a mass of 7.5 kg in fresh water;

(ii) Be made of suitable materials and withstand the effects of oil and oil products and of temperatures up to 50EC;

(iii) Be reflecting orange in colour;

(iv) Have a mass of not less than 2.5 kg;

(v) Have an internal diameter of 0.45 m± 10%;

(vi) Be encircled with rope which can be grasped.

13-2.2.3 At least one lifebuoy on each side of the vessel shall be fitted with a buoyant lifeline which is not less than 25 m long and which is firmly secured by a hook.

13-2.2.4 Floating balls shall:

(i) Be capable of supporting a mass of 7.5 kg in fresh water;

(ii) Be made of suitable materials and withstand the effects of oil and oil products and of temperatures up to 50E C;

(iii) Have a mass of not less than 1 kg;

(iv) Be surrounded by a net which can be grasped.

13-3 STOWAGE AND HANDLING OF COLLECTIVE LIFE-SAVING APPLIANCES

13-3.1 Collective life-saving appliances shall be stowed satisfactorily.

13-3.2 Suitable arrangements shall be made for access to the lifeboats and rafts.

13-3.3 Effective means shall be provided for lighting the life-saving appliances and their launching devices.

13-3.4 The launching devices provided for lifeboats shall be so designed and arranged that the lifeboats can be lowered reliably, quickly and without danger to persons.

13-3.5 The launching devices - davits, falls, blocks and other gear - shall be of such strength that the lifeboats can be safely lowered on either side in unfavourable conditions of list or trim.

13-3.6 All collective life-saving appliances shall be so stowed that they can be launched as quickly as possible.

13-4 NUMBER AND CAPACITY OF LIFE-SAVING APPLIANCES

13-4.1 General

13-4.1.1 In general, all vessels shall be provided with life-saving appliances appropriate to the navigation zone, as specified below.

13-4.2 Vessels navigating in zone 1

13-4.2.1 Vessels navigating in zone 1 shall have:

(i) Either on each side of the vessel, one or more lifeboats of sufficient aggregate capacity to accommodate all persons on board;

Or one or more lifeboats capable of being launched on either side of the vessel and of sufficient aggregate capacity to accommodate all persons on board;

Or a man-overboard dinghy conforming to the requirements of the Administration and, on each side of the vessel, one or more liferafts of sufficient aggregate capacity to accommodate all persons on board;

(ii) One or more liferafts of sufficient aggregate capacity to accommodate half the total number of persons on board;

(iii) A sufficient number of lifejackets for all persons on board;

(iv) At least four lifebuoys, of which at least two shall be equipped with a source of light if the vessel travels at night.

13-4.2.2 Vessels navigating in zone 1 need not be equipped with liferafts provided that they are equipped with lifeboats in accordance with paragraph 13-4.2.1, subparagraph (i), first item above.

13-4.3 Vessels navigating in zones 2 and 3

13-4.3.1 Vessels navigating in zones 2 and 3 shall have:

(i) Collective life-saving appliances conforming in number and capacity to the requirements of the Administration. For vessels of more than 100 tonnes loading capacity or more than 50 m^3 displacement, and for tugs, pushers and pusher-tugs navigating in zone 3, a lifeboat capable of carrying only three persons may be used as a collective life-saving appliance;

(ii) A sufficient number of lifejackets for all persons on board; for short voyages in international traffic, the Administration may prescribe a smaller number of lifejackets;

(iii) At least two lifebuoys and, for vessels more than 75 m in length, at least three lifebuoys or two lifebuoys and two floating balls. At least one of these buoys shall be equipped with a source of light if the vessel travels at night.

These provisions shall not apply to unmanned vessels such as pushed barges.

CHAPTER 14

PUSHERS, PUSHED BARGES AND PUSHED CONVOYS

14-1 PUSHERS

14-1.1 Pushers shall have at the bow a device of a width not less than two-thirds of the greatest breadth of the vessel and so designed that, from the start of the coupling manoeuvres:

(i) The pusher can take up a specified position in relation to the pushed barges;

(ii) The crew can perform easily and without danger the manoeuvres required for coupling the pusher to the barges.

14-1.2 Pushers shall be equipped with power-driven winches for handling the stern anchors.

14-1.3 Pushers shall be equipped with the necessary coupling devices, which shall satisfy the following requirements:

(i) All components of the coupling device shall be capable of withstanding the maximum operational stresses imposed under the severest conditions to be encountered in the navigation zone for which the vessel is intended;

(ii) The design of the coupling device shall afford the vessels the necessary degree of freedom of relative movement when pitching and rolling;

(iii) It shall be possible to couple the pusher to both loaded and empty barges;

(iv) The coupling device shall be so positioned on deck as not to interfere with the operation of other deck mechanisms, and the parts of the coupling device shall not project beyond the vessel's breadth over-all.

14-1.4 The main machinery shall be controlled from the wheelhouse. Its operation shall be monitored by means of instruments installed in the wheelhouse.

14-1.5 In order to be able to carry out pushing operations, self-propelled barges and pushers shall:

Either have the device referred to in paragraph 14-1.1 above;

Or be fitted with suitable and effective devices to prevent the vessel's bow from moving sideways in relation to the stern of the vessel to be pushed.

14-2 PUSHED BARGES

14-2.1 Sections 7-3 and 10-1 to 10-15 and paragraphs 13-1.1.3 and 13-2.2 shall not apply to pushed barges,

14-3 PUSHED CONVOYS

14-3.1 Pushed convoys shall satisfy the following requirements:

(i) They shall have adequate stability of course;

(ii) They shall be able to effect a major change of course quickly and easily;

(iii) They shall be able to attain sufficient speed;*

(iv) Depending on the characteristics of the waterway, they shall be able either to stop, facing downstream, and remain manoeuvrable during and after the stop, or to turn upstream quickly and easily.

* The Administration or the competent authority for the waterway may prescribe a minimum speed for particular sectors of the waterway.

CHAPTER 15

SPECIAL PROVISIONS FOR PASSENGER VESSELS

15-1 DEFINITIONS

For the purposes of this chapter:

15-1.1 The term "passenger vessel" means any vessel built and equipped to carry more than 12 passengers;

15-1.2 The term "length" means the length measured at the maximum draught level;

15-1.3 The term "breadth" means the greatest breadth of the hull measured to the moulded line of the frames at or below the maximum draught level;

15-1.4 The term "draught" means the vertical distance from the lowest point of the hull at the moulded line of the frames to the plane of the maximum draught level;

15-1.5 The term "subdivision loadline" means the waterline which corresponds to the greatest draught permitted by the applicable subdivision requirements;

15-1.6 The term "bulkhead deck" means the uppermost deck up to which the transverse watertight bulkheads are carried;

15-1.7 The term "margin line" means a continuous line drawn on the shell plating at least 75 mm below the intersection of the plating with the upper surface of the bulkhead deck or passing at least 75 mm below the lowest point at which the shell plating is not watertight. On vessels with a sunk superstructure, this line shall be drawn at least 100 mm below the intersection of the shell plating with the upper surface of the bulkhead deck;

15-1.8 The term "permeability of a space" means the percentage of that space which can be occupied by water;

15-1.9 The term "machinery space" means the space 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 machinery, boilers serving the needs of propulsion, and all permanent coal bunkers.

In the case of unusual arrangements, the Administration may define the machinery spaces;

15-1.10 The term "passenger spaces" means the spaces provided for the accommodation and use of passengers, excluding baggage, store, provision and mail rooms. Spaces provided below the bulkhead deck for the accommodation and use of crew shall be regarded for safety purposes as passenger spaces;

15-1.11 The term "freeboard" means the vertical distance measured between the maximum draught level and the top of the deck at its lowest point or, if there is no deck, the upper edge of the fixed side plating at its lowest point;

15-1.12 The term "safety distance" means the vertical distance measured between the maximum draught level and the lowest point above which, disregarding water intakes and outlets, the vessel cannot be deemed watertight.

15-2 SCOPE

The requirements of this chapter shall apply to self-propelled passenger vessels navigating in zones 2 and 3. They shall apply to other vessels in so far as the Administration deems that safety considerations so require.

15-3 GENERAL PROVISIONS

15-3.1 Passenger vessels shall be subject to the general provisions of these recommendations, save as otherwise provided in this chapter.

15-4 SPECIFIC REQUIREMENTS CONCERNING TRANSVERSE BULKHEADS

15-4.1 For vessels not less than 25 m long in length, proof of buoyancy and stability in the event of a leak shall be furnished for all the anticipated loading conditions.

15-4.2 In addition to the bulkheads prescribed in paragraph 4.2.1, the provision of transverse bulkheads as indicated by the subdivision calculation shall be compulsory. All prescribed transverse bulkheads shall be watertight and shall be carried up to the bulkhead deck. In addition any cargo holds shall be separated from the passenger spaces by watertight bulkheads.

15-4.3 The number of openings in the watertight transverse bulkheads prescribed in paragraph 15-4.2 shall be as small as the design and normal operation of the vessel allow.

The wheelhouse shall be equipped with indicators showing whether the watertight doors are open or closed.

15-4.3.1 No access openings or doors shall be permitted in the collision bulkhead below the bulkhead deck or in the bulkheads separating the machinery spaces from the passenger spaces.

15-4.3.2 Doors in watertight bulkheads which are manually operated and not remote-controlled shall be permitted only at places to which passengers have no access. They shall normally be kept closed, and may be opened only momentarily to permit passage. Suitable devices shall be provided to ensure that they are quickly and securely bolted. Both sides of such doors shall bear a notice reading: "Door to be closed immediately after each use".

15-4.3.3 Bulkhead doors which remain open for long periods shall be capable of being closed on the spot from either side, and also from an easily accessible place above the bulkhead deck. When a door has been closed by remote control, it shall be possible to open it again on the spot and to close it securely on the spot.

The closing time shall be sufficiently long in order to exclude the possibility of an accident, but shall not exceed 60 seconds. During the closing operation, an automatic acoustic alarm signal shall sound at the door. The door-opening and door-closing installations and the alarm installations shall also be capable of functioning independently of the vessel's main electricity supply. At the remote control station there shall be a device showing whether the door is open or closed.

15-4.3.4 The distance from bulkhead doors and their opening and closing devices to the shell plating shall not be less than one fifth of the vessel's breadth, this distance being measured perpendicularly to the plane of the centre line of the vessel at the maximum draught level.

15-4.3.5 Pipes with open orifices, and ventilation ducts, shall be so arranged that in the event of a leak no water can enter other compartments or tanks. Safety shall be deemed to be assured in this respect if such pipes or ventilation ducts are at the distance from the shell plating defined in paragraph 15-4.3.4, or if their openings are above the waterline in the most unfavourable conditions of flooding. If this arrangement is not possible, pipes which have open orifices and which pass through several compartments shall be equipped with closures remote-controlled from above the bulkhead deck; this rule shall also apply if the height of such pipes above the base line of the vessel is less than 0.5 m.

The passage of cables shall be so arranged as not to affect the water-tightness of the bulkheads.

15-4.4 Instructions shall be provided on board stipulating that in an emergency all openings and doors in watertight bulkheads shall be hermetically closed without delay.

15-4.5 A transverse bulkhead may be recessed or stepped, provided that all parts of the recess or step are at a distance from the shell plating greater than one-fifth of the vessel's breadth as defined in paragraph 15-4.3.4. If this requirement is not met, the bulkhead in question shall be disregarded in the subdivision calculations.

15-4.6 The distribution of bulkheads shall be such that, in the event of floodings of any one watertight compartment, the hull is not submerged beyond the margin line and the condition laid down in paragraph 15-5.4 is fulfilled. The calculation shall take into account the possibility of unsymmetrical flooding.

15-4.7 Watertight windows may be fitted in the shell plating below the margin line, provided that they cannot be opened and are sufficiently strong.

15-4.8 In general, a compartment permeability of 95% shall be assumed. If a statement of calculation shows that in a given compartment the average permeability is less than 95%, the calculated permeability may be used instead. In making such a calculation, however, the following minimum values shall be observed:

Passenger spaces: 95%;
Machinery spaces: 85%;
Cargo holds, baggage rooms and store rooms: 75%;
Double bottoms, fuel bunkers and other tanks: 0-95%, depending on whether such spaces, according to their intended use, are to be assumed to be full or empty, the vessel's waterline being the subdivision loadline.

15-4.9 Only watertight compartments whose length is at least 10% of the length of the vessel but not less than 4 m shall be deemed to be watertight compartments within the meaning of paragraph 15-4.6.

15-4.10 If the length of the compartment adjoining the collision bulkhead is less than 10% of the vessel's length of 4 m, the forepeak and the compartment may, for the calculation of stability, be regarded as being liable to be flooded simultaneously; however, their combined length shall not be less than that prescribed in paragraph 15-4.9.

15-4.11 The distance between the collision bulkhead and the forward perpendicular shall not be less than 4% of the vessel's length, but shall not exceed 4% of that length + 2 m.

15.5 INTACT STABILITY AND DAMAGE STABILITY IN THE EVENT OF A LEAK

15-5.1 Adequate stability shall be proved by calculation based on the results of an inclining experiment.

15-5.2 In the case of vessels not more than 25 m in length, proof of adequate stability by calculation, as required by paragraph 15-5.1, may be replaced by a load test conforming to the regulations of the Administration.

15-5.3 Without prejudice to the various national requirements, proof of adequate stability by calculation shall be deemed to be furnished if the calculation shows that all the relevant requirements of the appendix to chapter 4 have been satisfied.

15-5.4 The damage stability of a vessel shall be deemed sufficient if the calculation shows that in the event of a leak the stability characteristics in the final stage of flooding meet the requirements laid down by the Administration.

15-6 CALCULATION OF NUMBER OF PASSENGERS ON THE BASIS OF FREE DECK AREA

15-6.1 Provided that the requirements laid down in section 15-5 are met, the Administration shall determine the maximum permitted number of passengers in the following manner:

(i) The total area of passenger spaces and of free deck normally reserved for passengers shall be taken as the basis of calculation.

On the other hand, deck space occupied by cabins and lavatories and space used permanently or temporarily for operating the vessel shall not be included in the calculation even if passengers have access to them. The area of spaces situated below the main deck, other than spaces having large windows, may be disregarded in the calculation.

(ii) The following shall be deducted from the total area calculated in accordance with subparagraph (i):

The area of corridors, stairways and other passageways;
The area under stairways;
Areas permanently occupied by gear;
The areas under lifeboats and other boats if these are placed too low for passengers to occupy the space underneath.

(iii) The number of passengers shall be calculated at the rate of 2.5 passengers per square metre of free deck area determined in accordance with subparagraphs (i) and (ii) above. For vessels not more than 25 m in length, however, the applicable rate shall be 2.8 passengers per square metre.

15-6.2 Clearly legible notices stating the maximum permitted number of passengers shall be posted in clearly visible places.

15-7 FREEBOARD, SAFETY DISTANCE AND FREEBOARD MARKS

15-7.1 The remaining freeboard should not be less than 200 mm taking into account the immersion, measured at the shell plating, resulting from the highest of the values calculated for the list in accordance with the relevant requirements of the appendix to chapter 4.

However, the remaining freeboard shall be not less than 400 mm in zone 2 and not less than 300 mm in zone 3.

15-7.2 The remaining safety distance shall not be less than 100 mm for vessels in whose shell plating there are side windows that can be opened and other openings not secured against the ingress of water (not complying with the provisions of paragraph 15-4.7), taking into account the immersion, measured at the shell plating, resulting from the highest of the values calculated for the list in accordance with the relevant requirements of the appendix to chapter 4.

For vessels without a bulkhead deck, the safety distance shall be not less than 1,000 mm in zone 2 and not less than 500 mm in zone 3.

15-7.3 The maximum draught level shall be so determined as to provide the freeboard prescribed in paragraph 15-7.1 above and the safety distance prescribed in paragraph 15-7.2, and as to meet the requirements of sections 15-4 and 15-5.

15-7.4 A freeboard mark shall be applied near the mid-point of the length on both sides of the vessel. Additional pairs of marks or a continuous marking shall be permissible. The position of these marks shall be clearly specified in the International Ship's Certificate.

15-8 PASSENGER ACCOMMODATION

15-8.1 Non-enclosed areas of deck intended for passengers shall be surrounded by a bulwark or railing not less than 0.90 m high. The railing shall be so arranged that children cannot fall through it. The openings and installations used for boarding and leaving the vessel and the openings for loading and unloading shall be fitted with a suitable safety device.

15-8.1.1 Disembarkation gangways shall not be less than 0.60 m wide; they shall be fitted with a hand-rail on both sides.

15-8.1.2 Communicating corridors, stairways, doors and exits intended for passengers' use shall have a clear width of not less than 0.80 m. The doors of passenger cabins and of other small spaces may have a smaller clear width.

Where access to part of the vessel or to a space intended for passengers is limited to a single communicating corridor or stairway, the clear width of such corridor or stairway shall not be less than 1 metre; on small vessels, however, the Administration may allow a width of less than 0.80 m.

In the case of spaces or groups of spaces designed for more than 80 passengers, the sum of the widths of all the exits available for use by passengers in case of need shall be at least equivalent to 0.01 m per passenger.

15-8.1.3 If it has only one ordinary exit, accommodation designed or equipped for more than 30 but fewer than 50 passengers shall also have at least one emergency exit.

Accommodation designed or equipped for 50 or more passengers, or including berths for 12 or more passengers, shall have at least two exits, one of which may be replaced by two emergency exits. These exits shall be suitably placed and shall be of the same width.

Any accommodation below the bulkhead deck shall be provided with an exit or emergency exit giving access to the deck or to the open air.

Emergency exits shall have a clear opening of not less than 0.60 x 0.60 m.

15-8.1.4 Stairways below the bulkhead deck shall be situated at a distance from the shell plating of not less than one-fifth of the breadth of the vessel measured perpendicularly to the plane of the centre line of the vessel at its maximum draught level. This distance shall not be compulsory if there is at least one stairway at each side of the vessel in the same space. The stairways shall be fitted with hand-rails on both sides.

15-8.2 The doors of public rooms shall open outwards. It shall not be possible for any unauthorized person to lock them or bolt them when the vessel is in service.

15-8.3 On vessels licensed to carry up to 300 passengers, there shall be at least one water closet per 100 passengers. On vessels licensed to carry more than 300 passengers there shall be separate water closets for men and women in the proportion of at least one per 200 passengers; half the water closets provided for men may be replaced by urinals.

15-8.4 There shall be no access for unauthorized persons to those parts of the vessel which are not intended for passengers, and in particular to the wheelhouse or machinery spaces. In addition the entrances to those parts of the vessel shall bear, in a clearly visible place, a notice reading "No admittance" or a corresponding symbol.

15-9 SPECIFIC REQUIREMENTS FOR LIFE-SAVING APPLIANCES

15-9.1 Passenger vessels shall be provided with the number of lifebuoys shown in the following table:

Length of the vessel in metres	Maximum permitted number of passengers	Number of lifebuoys
Up to 35	Not more than 300	4
Over 35 to 50	301 to 600	6
Over 50	601 to 900	8
-	901 to 1 200	10
-	More than 1 200	12

In determining the number of lifebuoys, the highest resultant figure derived from the first or second column shall be the deciding factor.

Up to one third of the prescribed number of lifebuoys, however, may be replaced by double that number of floating balls.

15-9.2 Vessels not more than 25 m in length which are not subject to any requirement regarding proof of buoyancy in the event of a leak shall carry on board, in addition to the lifebuoys and floating balls prescribed in paragraph 15-9.1 above, individual or collective life-saving appliances for the maximum number of passengers permitted for the mode of use of the vessel, and for the vessel's crew.

Vessels more than 25 m in length shall carry on board a sufficient number, as determined by the Administration, of collective and/or individual life-saving appliances. The equipment shall include at least one lifeboat or liferaft.

15-9.3 The expression "individual life-saving appliances" means the lifebuoys, floating balls and lifejackets mentioned in section 13-2 and any equivalent appliances approved by the Administration and capable of supporting a person in the water.

15-9.4 The expression "collective life-saving appliances" means the lifeboats and liferafts mentioned in section 13-3 and other appropriate equipment which is capable of supporting several persons in the water.

15-10 FIRE PROTECTION

15-10.1 Bulkheads and doors between corridors and cabins and those between cabins shall be made of fire-retarding materials. Opening systems shall remain operational for a sufficiently long time in case of fire.

Bulkheads between corridors and cabins shall extend from deck to deck or up to a fireproof ceiling. If suitable water-sprinklers are installed, the requirements of the first and second sentences above shall not be mandatory. The free spaces above ceilings and behind coverings shall be divided up at intervals of not more than 15 m by fireproof structural elements.

15-10.2 Stairways, exits and emergency exits shall be so arranged that, if fire breaks out in any one space, the other spaces can be evacuated in complete safety.

Any stairway connecting two enclosed spaces situated one above the other shall on one of the two levels be enclosed in fire-retarding bulkheads with self-closing fire-retarding doors.

The well of any stairway or group of stairways connecting more than two enclosed spaces situated one above the other shall be entirely enclosed from bottom to top by fire-retarding bulkheads with self-closing fire-retarding doors and shall afford a means of escape to an open deck. Stairways shall be of steel frames construction.

Where suitable water-sprinklers are installed, service stairways which are not prescribed exists and merely serve to connect two decks need not be protected by a stairway enclosure.

Self-closing doors may be left open in normal operation.

15-10.3 In accordance with the requirements of the Administration, the increased risk of fire in galleys, hairdressing salons and perfume shops shall be taken into account.

15-10.4 Paints, varnishes and other surface-treatment products used in interior spaces, and covering and insulating materials, shall be of a type which will not easily catch fire. In the event of fire they shall not cause any dangerous release of smoke or toxic gas.

15-10.5 Corridors more than 40 m long shall be subdivided at intervals of not more than 40 m by fire-retarding bulkheads equipped with self-closing doors.

15-10.6 Ventilation systems shall be so designed as to prevent the spread of fire through them. The air intakes and outlets shall be capable of being closed.

Ventilation ducts shall be fitted with a firestop valve at any point where they pass through stairway enclosures or engine-room bulkheads. Continuous ducts shall be subdivided by a firestop valve at intervals of not more than 40 m.

Built-in ventilators shall be capable of being stopped from a central control station outside the machinery space.

15-11 SUPPLEMENTARY REQUIREMENTS

15-11.1 Only electric lighting shall be used. The boarding places shall be capable of being adequately lighted.

15.11.2 If direct oral communication is not possible between the wheelhouse and the crew's quarters, and between the bow and the stern of the vessel, facilities shall be provided for rapid and reliable two-way communication.

15-11.3 Vessels not less than 35 m in length and vessels licensed to carry more than 60 passengers shall be equipped with a public-address system.

15.11.4 On vessels with cabin accommodation for passengers a general-alarm system shall be installed.

15-11.5 Vessels with cabin accommodation for passengers shall be equipped with a ship-to-shore and ship-to-ship communication system.

CHAPTER 16

AUTOMATION

16-1 GENERAL

The provisions of this chapter are optional. They are intended as guidelines for the owner who decides in favour of automation where no continuous watch is kept in the engine room.

An automatic mechanical installation is an installation equipped with automatic control and automatic protection of the main and auxiliary machinery and its systems and with remote control and signalling devices.

16-1.1 Application

The following provisions shall apply, in addition to the provisions of other chapters, to the control and monitoring equipment of inland vessels equipped with remote-controlled and automated machinery.

16-1.2 Approval, tests and inspections

The control and monitoring equipment and systems of inland vessels operating without a continuous watch in the engine room shall comply with the provisions set up below or with the rules of a recognized Classification Society. Alternative arrangements deviating from the said provisions but affording equivalent protection may be accepted.

After installation on board, the equipment shall be subjected to functional tests. Periodic inspection of automated machinery shall be carried out in accordance with the requirements of the Administration or the rules of a recognized Classification Society.

16-2 GENERAL PROVISIONS

16-2.1 All equipment shall be selected with due regard to the operating conditions to be expected on board.

16-2.2 Particular attention shall be given to:

(i) List and trim of the vessel;

(ii) Weather conditions and climate;

(iii) Vibration and impact;

(iv) Failure and restoration of the power supply;

(v) Variations in voltage and frequency.

(vi) Pressure variations in pneumatic and hydraulic equipment;

(vii) Dangerous areas requiring certified-safe equipment.

16-3 LAYOUT

16-3.1 Layout of operating and monitoring equipment

The main propelling machinery and its essential auxiliaries shall be built and equipped for unattended operation. Remote control and alarm systems shall be such as to ensure smooth functioning of the plant and unimpeded monitoring and inspection of all its important parts.

16-3.2 Control and regulating equipment

16-3.2.1 With due regard for the safety of navigation, care shall be taken to ensure that, in the event of a malfunction or breakdown of the electrical, pneumatic or hydraulic supply system for the regulating or control equipment, the controlled components remain in the position in which they were before the failure. The failure shall be signalled.

16-3.2.2 Local manual control

Automated or remote-controlled systems shall also be equipped with local manual controls. The manual controls shall be such that they cannot be put out of action by any breakdown of the automated or remote-controlled system.

16-3.3 Energy supply for essential systems of remote or automatic control

An emergency source of energy supply shall be provided. It shall be possible to keep essential remote control or automatic-control components continuously supplied with energy from the emergency source, which shall come into operation automatically upon failure of the normal supply system.

16-4 ALARM SYSTEM

16-4.1 Machinery alarm systems

16-4.1.1 An alarm system shall be provided to signal attainment of the set thresholds of cooling-water temperature and lubricating-oil pressure in the main machinery and the transmission system and the set of thresholds of oil pressure or air pressure in the mechanism for reversing the propelling machinery or the propellers.

16-4.1.2 (i) The alarm system shall sound an acoustic signal in the wheelhouse and engine room and actuate visual signals in appropriate places for each separate alarm function.

(ii) The alarm system shall so far as is practicable be designed on the fail-safe principle.

16-4.1.3 (i) The alarm system shall be continuously powered. In the event of failure of the power supply, it shall be connected automatically to a standby source of supply. Such standby source of supply may be the emergency source prescribed in paragraph 16-3.3 for remote control or automatic-control systems.

(ii) Failure of the normal power supply to the alarm system shall be signalled.

16-4.1.4 (i) The alarm system shall be capable of indicating more than one fault at the same time, and acknowledgement of one alarm signal shall not inhibit another.

(ii) Acoustic alarms shall be maintained until they are acknowledged, and the visual indication shall persist until the fault has been remedied, when the alarm system shall automatically reset to its normal position.

16-4.2 Fire detection system for the machinery space

(i) An approved fire detection system, self-monitoring and with facilities for periodic testing, shall be installed in the machinery space.

(ii) This system shall be capable of detecting rapidly an outbreak of fire in any part of the machinery space under any normal

conditions of operation of the machinery and variations of ventilation required by the possible range of ambient temperatures. The installation of thermal detectors shall be permitted only in spaces of restricted height or where their use is specially appropriate. The detection system shall actuate acoustic and visual alarms, different from the signals emitted by any other system, in places where they can be heard or seen from the wheelhouse and in the cabin of the crew member on duty.

If the main electrical circuit fails, the fire detection system shall automatically be connected by a separate feeder to an emergency generator.

(iii) If the vessel is not under way and the wheelhouse is unmanned, the alarm signal shall be receivable in a place where a responsible person is on duty.

(iv) After installation, the system shall be tested under the conditions of actual operation of the vessel.

16-4.3 Personnel call and alarm system

A reliable intercommunication system shall be provided between the wheelhouse and the crew accommodation.

The steersman shall have available to him an alarm signal controlled by an on/off switch. The sound-pressure level of this signal shall not be less than 75 dB (A) in the crew accommodation. In the engine room the sound-pressure level of the signal shall be 5 dB (A) greater than the ambient noise when the propelling machinery is working at fall speed. The alarm signal shall be distinguishable by its tone from the ambient noise and from the other acoustic signals.

16-5 SAFETY SYSTEM

16-5.1 A safety system shall be provided such that a breakdown in the machinery or boilers presenting an immediate danger will initiate the automatic shutdown of the affected part of the plant and activate an alarm.

There shall be no possibility of all or part of the propulsion systems being automatically shut down unless there is an immediate danger of complete breakdown, serious damage or explosion.

Devices shall be fitted for overriding the shutdown of the main propelling machinery. It shall be impossible to activate these devices accidentally. If they are used, a signal lamp shall light up.

16-5.2 For multi-shaft systems and multi-engine installations, automatic stopping of an engine caused by a failure of the lubricating-oil system shall be acceptable provided that there is no interference with the other engines.

16-5.3 In the case of propulsion systems with controllable-pitch propellers means shall be provided to prevent engine overload due to propeller-pitch adjustments.

16-6 MAIN SOURCE OF ELECTRIC POWER

On vessels where the electric power can normally be supplied by one generator, there shall be suitable load-shedding arrangements to ensure the vessel's safety and a full supply of power to its propelling and steering mechanisms. To cope with the failure of the generator there shall be an emergency source of supply which starts up automatically and is of sufficient capacity to ensure the vessel's propulsion, steering and safety.

16-7 STANDBY INSTALLATIONS

Where standby units are needed for auxiliary machinery essential to propulsion, automatic changeover devices shall be provided. The automatic changeover shall actuate a signal.

16-8 REMOTE CONTROL OF PROPULSION INSTALLATION

16-8.1 Under all operating conditions, including manoeuvring, the number of revolutions, the direction of thrust and, if adjustable, the pitch of the propeller shall be fully controllable from the wheelhouse.

16-8.2 The remote control referred to in paragraph 16-0.1 shall be performed by a single control device for each propeller, the functioning of all the related services, including where necessary the means of preventing engine overload, being automatic.

16-8.3 The main engine shall be equipped with an emergency stopping device in the wheelhouse, independent of the remote control system referred to in paragraph 16-8.1.

16-8.4 Remote control of the propulsion installation shall be possible only from one station at a time. Secondary control stations interconnected with the control mechanisms in the wheelhouse are allowed. If there is more than one control station, an indicator shall be fitted at each station showing from which station the installation is controlled. The changeover of control between the wheelhouse and the engine room shall be possible only from the wheelhouse.

16-8-5 Unless the Administration considers it impracticable, the design of the remote control system shall be such that in the event of its failure an alarm will be given and the present speed and direction of thrust will be maintained until another control is in operation.

16-8.6 Indicators shall be fitted in the wheelhouse for:

(i) Propeller speed and direction in the case of fixed-pitch propellers;

(ii) Propeller speed and pitch in the case of controllable-pitch propellers.

16-8.7 Where remote control of the propulsion installation is automatic, the number of successive automatic attempts to produce a start shall be limited in order to keep enough air pressure for starting. A signal lamp shall light up at the lowest air pressure still sufficient for starting the main engine.

16-9 BILGE-LEVEL ALARM

A bilge-level alarm system shall be fitted in all machinery spaces. The level sensor or sensors shall be suitably placed to ensure an early warning.

CHAPTER 17

CREW ACCOMMODATION AND WORKING SPACES

17-1 DEFINITIONS

17-1.1 The term "accommodation" means the following spaces intended for the accommodation of crew members and their families: living quarters, including dayrooms with cooking facilities, sleeping rooms, messrooms and recreational accommodation; galleys, including provisions store rooms; sanitary installations, including water closets, washrooms and laundries; and the halls and corridors therein.

17-1.2 Working spaces comprise both inside working spaces in a closed compartment, whether individual or grouped according to service requirements (such as an engine room, a wheelhouse, a store room or a hold), and outside working spaces on deck (e.g. for the operation of deck installations and equipment).

17-2 ACCOMMODATION

17.2.1 Location and condition of the accommodation

17-2.1.1 Vessels on which off-duty crew members have to be housed shall be fitted with accommodation.

17-2.1.2 The location, furnishing, size and layout of the accommodation shall be such as to meet the requirements of the crew members' safety and health.

17-2.1.3 In special circumstances the Administration may prescribe stricter requirements when they seem necessary in order to safeguard the life or health of the crew members. The Administration may permit exceptions in special circumstances when the safety and health of the crew are ensured in an equivalent manner by other measures.

17-2.1.4 No accommodation shall be situated forward of the collision bulkhead.

17-2.1.5 The accommodation shall be so situated as to ensure maximum protection of the crew in the event of a collision.

17-2.1.6 The bulkheads separating the accommodation and machinery spaces from the holds shall be watertight. The bulkheads separating the accommodation from the machinery spaces shall be gas-tight. The accommodation shall have direct access to the deck through either a normal or an emergency exit. The accommodation shall not have common walls with bunkers for liquid fuel or lubricating oil.

17-2.1.7 The accommodation shall be easily and safely accessible.

17-2.1.8 The accommodation shall be protected against air pollution from other parts of the vessel. The air intakes of mechanical ventilation systems shall be so arranged as to prevent the intake of polluted air. The exhaust air from galleys or spaces equipped with sanitary installations shall be expelled directly from the vessel.

17-2.1.9 The accommodation, except the provision store rooms and sanitary installations, shall be protected, so far as is economic, from the noise and vibration produced by the engines, propellers, winches, ventilation and space-heating systems and other noisy machinery and appliances.

17-2.1.10 The accommodation shall be provided with emergency exits permitting rapid evacuation if the vessel sinks or fire breaks out. This requirement shall not apply to:

(i) Accommodation with doors, windows or skylights permitting rapid evacuation;

(ii) Provisions store rooms.

17-2.2 Number of occupants and dimensions of the accommodation

17-2.2.1 The clear headroom in the accommodation shall not be less than 1.90 m.

17-2.2.2 The free floor area of the accommodation shall not be less than 2 m^2 per occupant.

17-2.2.3 The volume of air per person shall be not less than 3.5 m^3 in the dayrooms and not less than 5 m^3 in the sleeping rooms. The volume of air is that remaining after the appropriate deductions have been made for lockers, berths, etc.

17-2.2.4 The cubic capacity of each unit in the living quarters shall not be less than 7 m^3.

17-2.2.5 The floor area of each water closet shall be not less than 1 m^2, not less than 0.75 m wide and not less than 1.10 m long.

17-2.2.6 The sleeping rooms shall be occupied by not more than two adults and, in the case of officers, by only one person if possible.

17-2.2.7 The sleeping rooms for married couples shall be separate from those for the rest of the crew.

17-2.2.8 The maximum number of persons to be accommodated in any sleeping room shall be indelibly and legibly marked at some place in the room where it can easily be seen.

17-2.3. Comfort

17.2.3.1 The accommodation space shall be planned and equipped to ensure comfort.

17-2.3.2 Pipes which carry gases or liquids dangerous to health, or which are subjected to such high internal pressure that in the event of defective gas- or liquid-tightness the crew's life or health might be endangered, shall not be laid in the accommodation or in the alleyways leading to it. This provision does not apply to pipes for heating and to the pipes of liquified gas installations for domestic purposes, if they are fitted with protecting metallic tubes.

17-2.3.3 The accommodation shall be protected against the intrusion of vermin. The accommodation and its furniture and fittings shall be such as entirely or largely to prevent infestation.

17-2.4 Approaches, doors and stairways

17-2.4.1 The approaches to the accommodation shall be so arranged and of such dimensions as to be negotiable without danger or difficulty. This requirement shall be deemed to be met when:

(i) There is enough space in front of the access opening to permit unimpeded entrance;

(ii) The openings are far enough away from the installations which might be a source of danger, for instance winches and towing and loading gear;

(iii) Ropes or cables which may be under traction do not pass close to the approach openings;

(iv) Passageways have minimum width of 600 mm and a minimum headroom of 1,900 mm. The prescribed headroom may be obtained by the use of domes or of sliding or hinged covers;

(v) Any sills fitted in doorways are not more than 400 mm high, without prejudice to the requirements of other safety regulations.

17-2.4.2 Arrangements shall be made to prevent doors and hinged covers from closing accidentally.

17-2.4.3 Doors shall be fitted with locks and shall be so constructed that they can be opened and closed from either side.

17-2.4.4. When there is no deck-level approach to it, the accommodation shall be accessible by stairways.

17-2.4.5 Stairways shall be fixed and made safe against slipping and falling. They shall be safely negotiable. Stairways shall be deemed to be safely negotiable when:

(i) They are not less than 500 mm wide;

(ii) The tread is not less than 150 mm;

(iii) The steps are non-slip;

(iv) Stairways with more than three steps are fitted with hand-rails on both sides.

17-2.5 Floors, walls and ceilings

17-2.5.1 The floors, walls and ceilings shall be so executed that they can easily be kept clean. Floorings shall be non-slip and impervious to damp. The wall and ceiling surfaces shall be impermeable and not easily inflammable, so as to prevent or substantially reduce the spread of a fire. The covering material used shall not be dangerous to health.

17-2.5.2 The crew's quarters, including the corridors in the accommodation, shall be insulated against cold and heat from outside or from nearby or adjacent compartments. The insulation against cold shall not cause condensation. Machinery casings, steam or hot-water service pipes and other similar installations likely to have an adverse effect on the temperature in the accommodation shall, whenever technically possible, be so installed as not to pass through the accommodation. If they do pass through it, they shall be insulated.

17-2.5.3 Steel walls and ceilings in the accommodation and galleys shall be covered with an insulating material.

17-2.5.4 All practicable measures shall be taken to keep flies and other insects out of the accommodation.

17-2.6 Room-heating and ventilation

17-2.6.1 The accommodation shall be provided with a system of room-heating which is capable of maintaining a temperature according to the requirements of the Administration under the conditions of weather and climate to which the vessel is exposed durings its voyage.

17-2.6.2 It shall be possible to ventilate the accommodation according to the requirements of the Administration.

17-2.7. Daylight and lighting

17-2.7.1 The accommodation shall be adequately lighted. The living quarters, galleys and, if possible, the other compartments shall be accessible to daylight.

17-2.7.2 Electric lighting shall be installed in the accommodation of self-propelled vessels in such a way as to give the occupants the maximum benefit. Tables and desks shall be lighted sufficiently for reading and writing. Standards of natural and artificial lighting shall be fixed by the Administration.

17-2.7.3 The electric lighting installations shall be fixed and shall comply with electrotechnical standards.

17-2.7.4 Lamps burning liquid fuel shall be made of metal and shall be designed for use only with fuels whose flashpoint is over 55E C or with paraffin oil. They shall be so supported that they can be moved. Care shall be taken to ensure that there is no danger of inflammable substances being ignited near them.

17-2.7.5 The accommodation, including corridors situated therein, shall be provided with emergency lighting. On self-propelled vessels, electric emergency lighting shall be provided.

17-2.8 Fittings

17-2.8.1 Every member of the crew shall be provided with an individual berth. The minimum inside length of a berth shall be 2 m and the minimum width 0.8 m.

17-2.8.2 Berths shall not be placed side by side in such a way that it is necessary to climb over one berth in order to reach another. Berths shall not be arranged in tiers of more than two. Berths shall not be directly underneath air vents.

17-2.8.3 The clear headroom above each berth shall not be less than 0.6 m.

17-2.8.4 Berths, including their frames, shall be made of a hard, smooth material protected against corrosion. Where one berth is placed above another, a dust-proof covering shall be fitted underneath the upper berth.

17-2.8.5 A suitable clothes locker fitted with a lock shall be provided for each member of the crew. The clothes lockers shall have an available height of not less than 1.7 m and an available horizontal area of 0.25 m^2.

17-2.8.6 Ventilated storerooms for clothes used for work shall be provided outside the accommodation but close to it.

17-2.9 Galleys, messrooms and storerooms

17-2.9.1 In vessels of not more than 500 tonnes loading capacity, at least one space separate from the sleeping room shall be provided for use as a dayroom and galley (dayroom with cooking facilities). In vessels of more than 500 tonnes loading capacity, galleys shall be provided.

17-2.9.2 Galleys and dayrooms with cooking facilities shall be equipped with:

Cooking appliances;

A sink with drainage;

An installation supplying hot and cold potable water;

If necessary, a refrigerator of sufficient capacity for the number of crew members;

The necessary cupboards or shelves.

17-2.9.3 In vessels with messrooms, the floor area of the messrooms shall not be less than 1 m^2 per seat provided. The messrooms shall:

(i) Be able to accommodate the number of crew members likely to use them at the same time;

(ii) Be close to the galley.

17-2.9.4 Messrooms shall be equipped with an adequate number of tables and seats with back-rests, made of damp-resistant material without cracks and easy to clean.

17-2.9.5 Where necessary, vessels shall also have storerooms and refrigerators to hold various foodstuffs. It shall be possible to keep the storerooms and refrigerators in a hygienic condition. It shall be possible to maintain the temperature in the storerooms and refrigerators at the appropriate level for the goods stored. It shall be possible to open cold storerooms from the inside even when they have been closed from the outside.

17-3 SANITARY INSTALLATIONS

17-3.1 At least the following sanitary installations shall be provided on board:

(i) One wash basin with hot and cold potable water per accommodation unit or per four crew members;

The wash basins shall be of suitable size and made of a smooth material which does not crack or corrode;

(ii) One bath or shower with hot and cold potable water per accommodation unit or per six crew members;

(iii) One water closet per accommodation unit or per six crew members.

17-3.2 The sanitary installations shall be in close proximity to the living quarters. The water closets shall not be directly connected to the galleys, messrooms or dayrooms with cooking facilities.

17-3.3 The spaces containing sanitary installations shall comply with the following requirements:

(i) Floors shall be made of durable materials, easy to clean, impervious to damp and fitted with a suitable drain;

(ii) The walls shall be made of steel or equivalent material and shall be watertight up to at least 0.2 m above floor level.

Drain and waste pipes shall not be easily stopped, shall be easy to clean, and shall drain off waste water freely even at low outside temperatures.

17-3.4 Water closets shall have:

Ventilation to the open air;

A wash basin;

A hygienic and efficient hand-drier.

17-3.5 Water closets shall be provided with an individual and constantly available flush of water. The lavatory seats shall be made of non-absorbent materials which are easy to clean.

17-4 POTABLE-WATER INSTALLATIONS

17-4.1 On vessels fitted with accommodation, the potable-water installations shall be sufficiently large and so arranged as to preserve the water from pollution. The inside of the potable-water tanks shall be accessible for cleaning.

17-4.2 Potable-water tanks shall be so placed or protected as to ensure that the potable water is not overheated.

17-4.3 Potable-water tanks shall not have a common wall with tanks intended for other liquids or gas.

17-4.4 Potable-water pipes shall not pass through tanks containing other liquids. Pipes carrying other liquids or gas shall not pass through potable-water tanks.

Connections between the potable-water supply systems and other piping systems shall not be permitted.

Flexible pipes reserved for potable water shall be available on every vessel. The pipes shall be durable, with a smooth lining, and shall be fitted with unions for water hydrants on quays.

17-4.5 The filling apertures of potable-water tanks shall be so marked as to warn the user against introducing other liquids.

17-4.6 Pressurized-water cisterns for potable water shall operate only on compressed air of natural composition. If the compressed air is obtained from pressurized receptacles used to operate the vessel or for other purposes, or produced by means of compressors, an air filter shall be installed directly upstream of the pressurized-water cistern unless the water and air are separated by a diaphragm.

17-4.7 The construction and equipment of the pressurized-water cisterns shall conform to the requirements of the Administration.

17-5 HEATING, COOKING AND REFRIGERATING EQUIPMENT

17-5.1 Use of fuel

17-5.1.1 In heating, cooking and refrigerating equipment which burns liquid fuel, only fuels with a flashpoint above 55E C may be used.

17-5.1.2 Notwithstanding the foregoing provisions, cooking equipment with wick-type paraffin burners used for cooking, heating and refrigeration may be allowed in accommodation and wheelhouses, provided that the capacity of their fuel tank does not exceed 12 litres.

17-5.1.3 Heating, cooking and refrigerating equipment shall not be installed in spaces or engine rooms where substances of ADN Class 3, category K1 or K2, having a flashpoint below 55E C are stored or used. No exhaust piping for such equipment may pass through such rooms or spaces.

17-5.1.4 Electrically operated heating, cooking and refrigerating equipment shall comply with electrotechnical standards.

17-5.1.5 Cooking and refrigerating equipment which burns gaseous fuel shall comply with the special requirements of chapter 9.

17-5.1.6 Appliances with wick burners shall be deemed to be safe under the following conditions:

(i) When they are equipped with a metal fuel tank whose filling aperture can be closed;

(ii) When they are so designed and installed that their fuel tank cannot open or empty accidentally;

(iii) When they can be lit without using another combustible liquid;

(iv) When they have no soft soldering below the maximum filling level.

17-5.2 Installation and layout

17-5.2.1 Heating, cooking and refrigerating equipment and its accessories shall be so constructed and placed that they are not dangerous even when overheated; that they cannot overturn; and that they cannot be shifted either intentionally or accidentally. Adequate protection and insulation against fire shall be provided around and underneath such equipment and its flues.

The layout of the flues of heating equipment burning solid fuel shall be such as to limit the possibility of obstruction by combustion products and to permit cleaning.

17-5.2.2 The heating capacity of the equipment shall be suited to the dimensions of the room in which it is installed.

17-5.2.3 The safety regulators of heating and cooking equipment burning liquid fuel shall be of a type approved by the Administration.

17-5.2.4 The air intake necessary for combustion shall be ensured. Ventilation fans shall not be fitted with any closing device.

17-5.2.4 Heating and cooking equipment shall be securely connected to the flues. The flue tubes shall be in good working order and fitted with suitable caps or devices affording protection from wind.

17-5.2.6 Vents shall be fitted above the outlets of refrigerating equipment burning liquid fuel.

17-5.2.7 Suitable devices shall be provided to catch falling or dripping fuel safely.

17-5.2.8 If the equipment cannot be kept at an adequate distance from walls or inflammable objects, other protective measures shall be taken, such as the fitting of plates which afford protection from heat radiation or the laying of tubing made of refractory material for the flues.

17-5.3 Fuel tanks

17-5.3.1 Tanks holding fuel for heating, cooking and refrigerating equipment shall be so installed that the permissible limit regarding height is not exceeded. They shall also be so installed and protected as to prevent the escape of fuel into the vessel's holds.

17-5.3.2 Reserve fuel tanks shall be so installed or protected as to prevent any excessive variation in the temperature of their contents.

17-6 WORKING SPACES

17-6.1 The position, equipment and design of the working spaces shall conform to the rules set forth below concerning the safety and comfort of the crew.

17-6.2 Working spaces shall be readily and safely accessible.

17-6.3 Working spaces which are in constant use during the operation of the vessel and to which there is no deck-level approach shall be accessible by stairways. Access to all other working spaces to which there is no deck-level approach may be provided by means of ladders, climbing steps or similar devices.

17-6.4 The number, design and dimensions of exits, including emergency exits, shall be in keeping with the purpose and size of the compartments.

17-6.5 Where there are several exits, they shall be as far apart as possible.

17-6.6 Emergency exits shall be clearly marked as such.

17-6.7 The clear headroom in permanent working spaces shall not be less than 1.98 m.

17-6.8 Every working space shall be large enough:

To provide every crew member performing physical labour in it with a net volume of air of not less than 7.00 m^3;

For its floor area to afford adequate freedom of movement for operation, inspection and ordinary maintenance and repair work.

17-6.9 Outside working spaces shall be large enough to afford adequate freedom of movement for every crew member working in them.

17-6.10 Working spaces situated close to the water or in positions involving differences in level of more than 1 m shall be equipped with fittings to prevent crew members from falling, and particularly from falling overboard.

17-6.11 Passageways, approaches and corridors for the movement of persons and cargo shall be so arranged and of such dimensions that they are easily negotiable for their intended purpose without risk of accident. The minium requirements shall be deemed to be met when:

There is enough space in front of the access opening to permit unimpeded movement;

The openings are far enough away from installations which might be a source of danger;

The clear width of the passageway is in keeping with the purpose of the working space, and is not less than 0.6 m;

The clear headroom is not less than 1.98 m.

17-6.12 The design and layout of doors shall be such as not to endanger any person opening or closing them. Doors shall be protected against accident closing.

17-6.13 Doors shall be so constructed that they can be opened and closed from either side.

17-6.14 Stairways and ladders shall be so constructed and arranged that they can be used without risk. The minimum requirements shall be deemed to be met when:

Stairways are permanently fixed or secured against slipping and overturning;

Stairways are not less than 0.5 m wide, ladders not less than 0.4 m wide and climbing steps not less than 0.3 m wide;

The tread is not less than 0.15 m;
Steps and rungs can be safely negotiated with no risk of side-slipping;

Stairways with more than three steps are fitted with hand-rails.

Vertical ascent devices are fitted with handholds above the exits;

Portable ladders (hold ladders) are secured against overturning and slipping and are long enough to extend 0.5 m beyond the rim of the hatchway when inclined at an angle of 60E from the horizontal.

17.6.15 The floors and planking of inside working spaces, deck surfaces at outside working spaces and corridor surfaces shall be strongly made and designed to prevent slipping and falling.

17-6.16 Steps shall be marked.

17-6.17 Openings in floors or deck surfaces shall be fitted with protection against falling.

17-6.18 Floors, deck surfaces, planking, walls and ceilings shall be fitted for ease of cleaning.

17-6.19 Windows and skylights shall be so arranged and designed that they can be handled and cleaned without risk to the person engaged in this work.

17-6.20 Working spaces, except store rooms and empty spaces, shall be capable of being ventilated. The ventilation devices shall be such that, without causing draughts, they provide the persons employed in the working spaces with an adequate and regularly renewed supply of air.

17-6.21 Installations that consume or emit air shall not cause any deterioration in the quality of the air.

17-6.22 Permanent working spaces shall be equipped with room-heating devices capable of maintaining a satisfactory temperature.

17-6.23 Where possible, working spaces shall receive adequate daylight even when the doors are closed.

17-6.24 Lighting shall be so arranged as to eliminate dazzle.

17-6.25 The light switches for the working spaces shall be installed in readily accessible positions near doors.

17-6.26 Permanent working spaces and the installations established therein shall be so designed and soundproofed that, so far as possible, the safety and health of the users are protected against noise and vibration.

17-6.27 The possibility of dangerous concentrations of fumes, gases and dust in working spaces shall be precluded.

17-6.28 The installations shall be so designed, arranged and shielded that they can be handled, used, maintained and repaired with ease and safety.

17-6.29 First-aid instructions shall be so posted as to be clearly visible.

PREVENTION OF WATER POLLUTION BY INLAND NAVIGATION VESSELS

Resolution No. 21

(adopted by the Working Party on Inland Water Transport
on 12 November 1982)

The Working Party on Inland Water Transport,

Having regard to resolution No. 3 of the Subcommittee on Inland Water Transport (TRANS/228, annex 2) and resolution No. 18 of the Working Party on Inland Water Transport (TRANS/SC.3/85, annex 3),

Having regard to the Recommendations on Technical Requirements for Inland Navigation Vessels (TRANS/SC.3/104) and the European Requirements concerning the International Carriage of Dangerous Goods by Inland Waterway (ADN), a body of regulations which make a positive contribution to the control of water pollution by inland navigation vessels,

Having regard to the report of the Ad hoc Meeting on the Control of Water Pollution by Inland Navigation Vessels (TRANS/SC.3/R.16), and to the reports of the Group of Experts on the Standardization of Technical Requirements for Vessels and of Ships' Papers on its sixteenth, nineteenth and twentieth sessions (TRANS/SC.3/GE.1/30, annex 2, TRANS/SC.3/GE.1/36, TRANS/SC.3/GE.1/38),

Considering that the amount of pollution caused by inland navigation vessels, of which they themselves suffer the adverse consequences, is relatively small but nevertheless not negligible, and that it contributes to the deterioration of the environment and the quality of life,

Desiring to reduce to a minimum the pollution caused by inland navigation vessels to European waterways and, to that end, to standardize the relevant requirements,

Recommends that Governments and river commissions should supplement their regulations as necessary, being guided in so doing by the recommendations annexed to the present resolution;

Requests Governments and river commissions to inform the Executive Secretary of the Economic Commission for Europe by 15 August 1983 whether they accept this resolution;

Requests the Executive Secretary of the Economic Commission for Europe to have the question of the implementation of the present resolution included periodically in the agenda of the Working Party on Inland Water Transport and to place before the Working Party any appropriate suggestions for additions or amendments to the accompanying annexes.

Annex I to the resolution

RECOMMENDATIONS FOR THE CONTROL OF WATER POLLUTION BY INLAND NAVIGATION VESSELS

MEASURES TO BE TAKEN IN TRANSLOADING HYDROCARBONS OR DANGEROUS SUBSTANCES

1. Promote and improve the standardization of equipment with a view to avoiding and minimizing any risk of discharge during the loading, unloading and transloading of hydrocarbons and other dangerous substances.

2. Design quays in such a way that any petroleum products or other dangerous substances spilt on the quay cannot flow off into the water (drainage of spillage into a sewage system equipped with purification plant or other devices).

3. Equip loading and unloading points with facilities (articulated rigid pipes for transloading, vertical "aprons" to be placed between the bank and the vessel during transloading operations, or other devices) so that petroleum products or other dangerous substances spilt can be recovered.

4. Provide for floating booms or other suitable devices to limit the spread of petroleum products in basins or waterways.

MEASURES TO BE TAKEN AND OPTIMUM INSTALLATIONS AND EQUIPMENT TO BE USED BY AUTHORITIES IN THE EVENT OF LARGE-SCALE ACCIDENTAL SPILLAGE OF HYDROCARBONS OR OTHER DANGEROUS SUBSTANCES

5. Prepare and coordinate technical and operational plans against spillage hazards and limit and reduce the subsequent damage if any such spillage occurs, at the national level and with riparian countries. These plans should be prepared with due regard to the particular circumstances of the country and the particular characteristics of the waterway. The plans would include in particular:

(a) The installation of a communication and warning system;

(b) The designation of competent authorities for bringing the plan into operation;

(c) A list of equipment available, specifying where it is kept, and the organization of facilities for its conveyance to the site of the operation;

(d) The training of personnel and organization of practical exercises in the use of the equipment.

MEASURES TO PREVENT THE DISCHARGE OF OIL RESIDUES, PETROLEUM PRODUCTS AND MIXTURES OF SUCH PRODUCTS WITH WATER, INCLUDING WASHING WATER

6. Prohibit the discharge of such products into waterways.

7. Except where separators installed on board comply with unified standards, prescribe equipment and receptacles for the storage of such products pending their collection.

8. Provide for this purpose, especially in ports, appropriate installations for the collection of such products and special collecting vessels;

9. Introduce a log-book to record the disposal of oil residues and liquid fuel residues.

MEASURES TO PREVENT THE DISCHARGE OF CHEMICAL PRODUCTS

10. Prohibit the discharge of such products in waterways, either in the form of cargo residue or of washing water.

11. Require the storage of such products on board pending their disposal on land at points to be determined by the competent authority.

12. If necessary, provide for a log-book to record the disposal of these products.

MEASURES TO PREVENT THE DISCHARGE OF GARBAGE

13. Prohibit the discharge of garbage in waterways.

14. Require the storage of such garbage on board pending its discharge in ports or at other appropriate disposal points.

CONTROL AND PENALTIES

15. Check effectively the application of the regulations established for preventing pollution of the inland waterway network as a whole.

16. Penalties for violation of these regulations should be adequate in severity to discourage any violation.

Annex II to the resolution

REQUIREMENTS CONCERNING THE TECHNICAL EQUIPMENT OF INLAND NAVIGATION VESSELS WITH A VIEW TO THE PREVENTION OF WATER POLLUTION

1. Scope

1.1 These provisions, intended to apply to new vessels under construction and to vessels which are being refitted or modernized, establish the basic requirements to be satisfied by equipment with a view to the prevention of water pollution by oil, oily mixtures and/or garbage.

2. Definitions

2.1 "Oil" means petroleum in any form, including crude oil, fuel oil, sludge, oil refuse and refined products.

2.2 "Oily mixture" means a mixture with any oil content.

2.3 "Garbage" means all kinds of rubbish, domestic waste and waste generated during the normal operation of the vessel which may require continuous or periodic disposal.

2.4 "Reception facilities" means shore and floating installations for the deposit of all kinds of pollutants from vessels with a view to their treatment, utilization, etc.

3. Prevention of pollution by oily mixtures.

3.1 In order to prevent pollution by oily mixtures where a vessel has no on-board separator for cleansing the oil-polluted water approved by the administration, provision must be made for collecting and storing all oily mixtures on board the vessel, for subsequent transfer to reception facilities.

In the case of a vessel having a separator it will suffice for the vessel to have equipment for collection and storage of cleansing residues.

3.2 The storage tanks or other on-board facilities (engine-room bilges) for the collection of oily mixtures shall be of a sufficient capacity to hold the whole of the aforesaid mixtures during the vessel's sojourn in a region where discharge into reception facilities is impossible.

3.3 If storage tanks are used, they shall be equipped with:

A manhole for access and cleaning;

An air vent;

An automatic level-indicator or other indicating devices.

3.4 If storage tanks are used, a special pipe leading to the open deck shall be provided for the discharge of oily mixtures into reception facilities.

3.5 As a rule, the discharge pipe shall have outlets on both sides of the vessel. Where circumstances so justify, the pipe may have an outlet on only one side of the vessel. The discharge-pipe side branches shall be situated in open parts of the deck where the discharge sleeves can be connected to them without difficulty, and they shall be fitted with distinguishing plates and equipped with standard connections. In normal operating conditions the discharge apertures shall be hermetically closed.

3.6 With the agreement of the competent authorities, the discharge of oily mixtures from the storage tanks into the reception facilities may be effected

either by means of equipment available or installed on board by external means.

4. Prevention of pollution by garbage.

4.1 Passenger vessels and cargo vessels except those that operate on short routes and can discharge their garbage regularly shall be equipped with garbage-collection and garbage-storage installations.

4.2 Garbage-collection and garbage-storage installations may either be removable or be incorporated in the vessel's hull. They shall be equipped with a device for opening and closing the covers of the outer discharge apertures.

4.3 Removable receptacles for the collection and storage of garbage shall be either containers or bins lined with plastic bags.

4.4 The design of garbage-collection receptacles and their location on vessels shall be such as to enable the garbage to be discharged from the vessel without risk of its being scattered or of its fouling the side of the vessel.

4.5 Garbage-storage receptacles shall have covers fitting snugly over the loading aperture.

4.6 The total capacity of the installations shall be calculated on the basis of the amount of garbage collected during the period of the vessel's sojourn in a region where discharge into reception facilities is impossible.

4.7 At the discretion of the Administration, vessels may be equipped with garbage incinerators.

SIGNI-SIGNS AND SIGNALS ON INLAND WATERWAYS

ADDITIONS AND AMENDMENTS TO RESOLUTION NO. 16, ANNEX

Resolution No. 22

(adopted by the Working Party on Inland Water Transport
on 12 November 1982)

The Working Party on Inland Water Transport

Having considered resolution No. 1, the annex to which describes a signalling system for inland waterways which is applicable to inland waterways not forming a closed system unconnected with inland waterways of international concern,

Having considered resolution No. 16, the annex to which describes a signalling system for inland waterways, SIGNI, applicable to all inland waterways (TRANS/SC.3/85, annex 1 - TRANS/SC.3/86 and Corr.1-3),

Having requested its Group of Experts on the Standardization of Rules of the Road and Signs and Signals in Inland Navigation to examine the possibility of revising the provisions of SIGNI when the new maritime buoyage rules drawn up by the International Association of Lighthouse Authorities (IALA) and adopted by the International Maritime Organization (IMO) have been finalized (TRANS/SC.3/85, para. 14),

Having examined the new IALA maritime buoyage system as set out in the Agreement of 15 April 1982,

Having considered the reports of the Group of Experts on its thirteenth, fifteenth, sixteenth, eighteenth, nineteenth and twenty-first sessions (TRANS/SC.3/GE.2/24, 28, 30, 34, 37 and 40),

Noting the desirability, for the safety of navigation, of harmonizing the system of signs and signals on inland waterways with the maritime system of buoyage,

Considering therefore that it would be desirable for the provisions of SIGNI to be based on the IALA system of maritime buoyage, so far as it can be applied to inland waterways,

Decides to replace the annex to resolution No. 16 (TRANS/SC.3/86 and Corr.1-3) by the annex to the present resolution entitled "SIGNI - SIGNS AND SIGNALS ON INLAND WATERWAYS", which will be reproduced in document TRANS/SC.3/108;

Requests Governments to inform the Executive Secretary of the Economic Commission for Europe whether they agree to apply the additions and amendments contained in the new "SIGNI" and, if so, to inform the Executive Secretary of the waterways or waterway systems to which the provisions of this resolution will apply;

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Working Party on Inland Water Transport.

APPLICATION OF THE RECOMMENDATIONS ON TECHNICAL REQUIREMENTS FOR INLAND NAVIGATION VESSELS (ANNEX TO RESOLUTION NO. 17, REVISED (TRANS/SC.3/104) TO EXISTING VESSELS)

Resolution No. 23

(adopted by the Working Party on Inland Water Transport on 10 November 1983)

The Working Party on Inland Water Transport,

Bearing in mind the Recommendations on Technical Requirements for Inland Navigation Vessels (annex to resolution No. 17 revised), and in particular article 1-1.3 thereof (TRANS/SC.3/104), adopted by the Working Party on Inland Water Transport (TRANS/SC.3/103, annex 1),

Noting that commonly agreed minimum conditions for the application of the provisions of the said "Recommendations" to existing vessels, would be of benefit to international trade, the safety of navigation, the protection of human health and life, and also the protection of the environment,

Noting the results of the work done by the Group of Experts on the Standardization of Technical Requirements for Vessels and of Ship's Papers with regard to the application of the said "Recommendations" to existing vessels and the minimum conditions laid down for that purpose (TRANS/SC.3/GE.1/40, annex 1),

Recommends Governments, international governmental organizations, economic or other unions and river commissions to take, where necessary, steps enabling their regulations on the construction and equipment applicable to existing inland navigation vessels to be harmonized to the greatest extent possible with the Recommendations on Technical requirements for Inland Navigation Vessels (annex to resolution No. 17 revised) (TRANS/SC.3/104), in accordance with the minimum conditions laid down in the annex to this resolution*;

Invites Governments, international governmental organizations, economic or other unions and river commissions to keep the secretariat informed of the measures adopted to take account of the Recommendations, and of the time-limits stipulated for this purpose;

Requests the Executive Secretary of the Economic Commission for Europe to include the question of the implementation of this resolution and the updating of its annex to take account of any amendments to the Recommendations on Technical Requirements (TRANS/SC.3/104), in the agenda of the Working Party on Inland Water Transport from time to time.

* This annex is reproduced in the appendix to the present resolution.

Appendix

(Annex to the resolution)

APPLICATION OF THE RECOMMENDATIONS ON TECHNICAL REQUIREMENTS FOR INLAND NAVIGATION VESSELS (ANNEX TO RESOLUTION NO. 17 REVISED (TRANS/SC.3/104)) TO EXISTING VESSELS

The Recommendations on Technical Requirements for Inland Navigation Vessels (annex to resolution No. 17, revised) contained in document

TRANS/SC.3/104 apply to existing vessels, subject to the conditions shown in the table.

In this Table:

The first column indicates the number of the requirement concerned;

A cross in the second column indicates that the requirement is to apply immediately;

A cross in the third column indicates that the requirement is to apply within a maximum period of five years;

A cross in the fourth column indicates that the requirement is not applicable;

The fifth column is used for remarks.

If the Administration considers that the application of the foregoing provisions is unreasonable or unjustified, it may accept other arrangements provided that safety is adequately ensured.

1	2	3	4	5
1-1.1	x			
1-1.2	x			
1-1.3	x			
1-1.4	x			
1-1.5	x			In accordance with ADN
1-2	x			
2-1	x			
2-2		x		
3-1	x			
3-2	x			
3-3			x	
3-4.1.1	x			
3-4.1.2		x		
3-4.1.3		x		
3-4.1.4		x		
3-4.2.1		x		
3-4.2.2			x	
3-4.2.3			x	
3-4.3			x	
3-5.1.1	x			
3-5.1.2		x		
3-5.1.3		x		
3-5.2			x	
4-1.1	x			
4-1.2			x	
4-1.3			x	
4-2.1			x	
4-2.2			x	
4-2.3			x	

1	2	3	4	5
5-1.1.1	x			

5-1.1.2	x			
5-1.1.3	x			
5-1.1.4	x			
5-1.1.5			x	
5-1.1.6	x			
5-1.1.7	x			
5-1.2.1	x			
5-1.2.2	x			
5-1.2.3			x	
5-1.2.4			x	
5-1.2.5			x	
5-1.2.6			x	
5-1.3.1			x	
5-1.3.2	x			
5-1.3.3		x		
5-1.3.4		x		
5-1.3.5		x		
5-1.3.6			x	
5-1.3.7			x	
5-1.3.8	x			In accordance with resolution No. 21
5-1.3.9			x	
5-1.4.1		x		
5-1.4.2		x		
5-1.4.3		x		
5-1.4.4		x		
5-1.5.1		x		
5-1.5.2			x	
5-1.5.3		x		

1	2	3	4	5
5-1.5.4		x		
5-1.5.5		x		
5-1.5.6		x		

5-1.5.7			x	
5-1.5.8		x		
5-1.5.9		x		
5-1.5.10		x		
5-1.5.11		x		
5-1.5.12			x	
5-1.5.13			x	
5-1.5.14		x		
5-1.5.15		x		
5-1.6			x	
6-1.1	x			
6-1.2			x	
6-1.3			x	
6-2.1			x	
6-2.2			x	
6-2.3			x	
6-2.4.1		x		
6-2.4.2		x		
6-2.4.3			x	
6-2.4.4		x		
6-2.4.5		x		
6-2.4.6			x	
6-2.4.7			x	
6-2.5.1			x	
6-2.5.2			x	
6-2.5.3		x		
6-2.5.4		x		

1	2	3	4	5
6-2.5.5		x		
6-2.6			x	
6-2.7			x	
6-2.8.1			x	

6-2.8.2.1			x	
6-2.8.2.2	x			
6-2.8.2.3			x	
6-2.8.2.4			x	
6-2.9.1	x			
6-2.9.2	x			
6-2.9.3			x	
6-2.9.4	x			
6-2.10			x	
6-2.11		x		One-year period for 6-2.11.4
6-2.12			x	
7-1.1			x	
7-1.2		x		
7-2		x		
7-3		x		
8-1		x		
8-2	x			
8-3	x			
8-4	x			
9			x	Unless otherwise decided by the Administration
10-1.1	x			
10-1.2	x			
10-1.3	x			
10-2			x	
10-3			x	

1	2	3	4	5
10-4.1		x		
10-4.2			x	Required only when a new drive is installed
10-4.3			x	Required only when a new drive is installed
10-5			x	Required only when a new drive is installed

10-6			x	Required only when a new drive is installed
10-7	x			
10-8			x	Required only when a new drive is installed
10-9			x	Required only when a new drive is installed
10-10			x	Required only when a new drive is installed
10-11		x		
10-12		x		
10-13.1		x		
10-13.2			x	
10-13.3			x	The Administration may require the use of auxiliary optical aids
10-14			x	
10-15.1			x	
10-15.2			x	
10-15.3		x		
10-15.4		x		
10-15.5		x		
10-15.6			x	
10-15.7			x	
10-15.8	x		x	Applicable if there are no other equivalent installations

1	2	3	4	5
10-15.9		x		
11	x			
12-1.1.1			x	
12-1.1.2			x	
12-1.1.3			x	
12-1.1.4			x	
12-1.1.5	x			Required only when repainting is being done
12-1.1.6		x		
12-1.1.7		x		

12-1.1.8		x		
12-1.1.9		x		
12-1.2.1			x	
12-1.2.2		x		
12-1.2.3	x			Required only when repainting is being done
12-1.2.4		x		
12-1.2.5		x		
12-1.2.6		x		
12-2.1.1		x		
12-2.1.2		x		
12-2.2.1		x		
12-2.2.2			x	
12-3.1			x	
12-3.2		x		
13-1.1.1	x			
13-1.1.2	x			
13-1.1.3			x	
13-1.1.4			x	
13-1.1.5	x			
13-1.1.6			x	

1	2	3	4	5
13-1.2			x	
13-2.1			x	
13-2.2			x	
13-3.1	x			
13-3.2	x			
13-3.3		x		
13-3.4		x		
13-3.5			x	
13-3.6	x			
13-4		x		
14		x		
15-1	x			

15-2	x			
15-3	x			Having regard to the decisions on the various points
15-4.1			x	
15-4.2			x	
15-4.3			x	
15-4.4	x			
15-4.5			x	
15-4.6			x	
15-4.7			x	
15-4.8			x	
15-4.9			x	
15-4.10			x	
15-4.11			x	
15-5			x	
15-6.1			x	
15-6.2	x			
15-7.1			x	

1	2	3	4	5
15-7.2			x	
15-7.3			x	
15-7.4		x		
15-8.1	x			
15-8.1.1	x			
15-8.1.2			x	
15-8.1.3			x	
15-8.1.4			x	
15-8.2			x	
15-8.3			x	
15-8.4	x			
15-9.1		x		
15-9.2		x		
15-9.3	x			

15-9.4	x			
15-10			x	As the strict application of the provisions of this chapter is not possible for existing vessels, the administration may prescribe measures to provide sufficient fire protection
15-11.1	x			
15-11.2		x		
15-11.3		x		
15-11.4		x		
15-11.5		x		
16	x			This chapter is optional
17-1	x			
17-2.1.1	x			
17-2.1.2			x	
17-2.1.3			x	
17-2.1.4			x	

1	2	3	4	5
17-2.1.5			x	
17-2.1.6			x	
17-2.1.7			x	
17-2.1.8			x	
17-2.1.9			x	
17-2.1.10			x	
17-2.2			x	
17-2.3			x	
17-2.4.1			x	
17-2.4.2		x		
17-2.4.3		x		
17-2.4.4			x	
17-2.4.5			x	
17-2.5			x	
17-2.6			x	
17-2.7.1			x	

17-2.7.2			x	
17-2.7.3		x		
17-2.7.4		x		
17-2.7.5			x	
17-2.8			x	
17-2.9			x	
17-3			x	
17-4		x		
17-5.1.1		x		
17-5.1.2		x		
17-5.1.3		x		
17-5.1.4		x		
17-5.1.5			x	Unless otherwise decided by the Administration
17-5.1.6		x		
17-5.2		x		

1	2	3	4	5
17-5.3		x		
17-6.1			x	
17-6.2	x			
17-6.3			x	
17-6.4	x			
17-6.5			x	
17-6.6	x			
17-6.7			x	
17-6.8			x	
17-6.9			x	
17-6.10		x		
17-6.11			x	
17-6.12		x		
17-6.13		x		
17-6.14			x	
17-6.15		x		
17-6.16	x			
17-6.17		x		

17-6.18			x	
17-6.19			x	
17-6.20			x	
17-6.21			x	
17-6.22			x	
17-6.23			x	
17-6.24		x		
17-6.25		x		
17-6.26			x	
17-6.27	x			
17-6.28			x	
17-6.29	x			

RESOLUTION ON THE EUROPEAN CODE FOR INLAND WATERWAYS (CEVNI)

Resolution No.24

(adopted by the Working Party on Inland Water Transport
on 15 November 1985)

The Working Party on Inland Water Transport,

Having regard to resolution No. 4 of the Subcommittee on Inland Water Transport (TRANS/270, annex 1) concerning the application of the European Inland Waterway Navigation Code (CEVNI), and to the amended text of CEVNI reproduced in document W/TRANS/SC.3/37/Rev.2, which takes into account the Subcommittee's resolutions Nos. 7 and 8 and its report TRANS/333, annex 1,

Noting that amendments concerning navigation on lakes and concerning navigation on rivers, in particular for small craft, have been added to CEVNI by resolutions Nos. 19 and 20 respectively (TRANS/SC.3/91, annex 1 and TRANS/SC.3/95),

Noting that, through the application of these resolutions by Governments and river commissions, the corresponding regulations in force on European inland waterways have to a large extent been harmonized,

Noting the increase in traffic on inland waterways and, inter alia, the development of river/sea transport and of modern techniques in navigation,

Noting the desirability, in the interest of safety in navigation, of taking into account in CEVNI developments in inland navigation and their consequences for the regulations in force,

Noting further the desirability of incorporating the special provisions concerning navigation on lakes and the rules of the road for small craft in the relevant parts of CEVNI,

Having considered the request by the Inland Transport Committee that CEVNI should be revised (W/TRANS/SC.3/37/Rev.2) (ECE/TRANS/23, para. 115),

Decides to replace the text of CEVNI, as reproduced in document W/TRANS/SC.3/37/Rev.2, and the amendments thereto reproduced in documents TRANS/SC.3/91, annex 1 and TRANS/SC.3/95, by the annex to this resolution, entitled "CEVNI: European Code for Inland Waterways", which is reproduced in document TRANS/SC.3/115;

Decides to formulate annexes 9, 10 and 11 after the revision of the European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway (ADN) (resolution No. 223 of the Inland Transport Committee);

Reiterates its recommendation addressed in resolution No. 4 to Governments and river commissions to undertake, on the basis of the recommendations in paragraphs 1 and 2 below, the revision of regulations in force on inland waterways;

1. National regulations should consist of two parts:

(a) The first part should embody the provisions contained in the annex to this resolution under the title "CEVNI: European Code for Inland Waterways";

In reproducing these provisions, it is most desirable to maintain the existing order and numbering of the chapters and, so far as possible, the existing order, titles, and wording of the articles themselves, but

(i) In cases where CEVNI provides for several possibilities, not all of these possibilities need be included in the national regulations;

(ii) Governments may omit certain provisions of CEVNI, or may enact additional or different provisions in cases where footnotes give them discretion to do so or where such additional or different provisions are necessitated by changes in the conditions of navigation (in the latter case, they should inform the secretariat of the changes they have made);

(b) The second part should contain the specific provisions which Governments consider necessary in view of local conditions. These specific provisions should not be at variance with the provisions of CEVNI, including any which may not have been reproduced in the first part. Further, with regard to matters to which the provisions of CEVNI apply, and particularly to the marking of vessels, Governments should not, in the absence of very special local conditions, impose any obligations which are not contained in CEVNI itself;

2. In every country, the first part of the regulations should, if possible, be the same for all the inland waterways of the country concerned; nevertheless a Government may depart from this rule if the special characteristics of the various inland waterway networks in the country concerned are so different that it cannot be applied;

Requests Governments and river commissions to inform the Executive Secretary of the Economic Commission for Europe by 1 July 1987 whether they can implement this resolution;

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Working Party on Inland Water Transport.

GUIDELINES FOR PASSENGER VESSELS ALSO SUITED FOR CARRYING DISABLED PERSONS

Resolution No. 25

(adopted by the Working Party on Inland Water Transport on 14 November 1986)

The Working Party on Inland Water Transport,

Noting the United Nations General Assembly resolutions 31/123 of 16 December 1976, by which it proclaimed the year 1981 International Year of Disabled Persons, 35/133 of 11 December 1980, 36/77 of 8 December 1981 and 37/52 of 3 December 1982, in which it adopted the World Programme of Action Concerning Disabled Persons, and 37/53 of 3 December 1982, in which it proclaimed the period 1983-1992 United Nations Decade of Disabled Persons as a long-term plan of action ... and encouraged Member States to utilize this period as one of the means to implement the World Programme of Action Concerning Disabled Persons,

Noting the request of the General Assembly to all organs, organizations and agencies of the United Nations system to formulate and undertake measures within their respective spheres of competence to ensure early implementation of the World Programme of Action Concerning Disabled Persons and the request in particular, to the regional commissions to implement suitable programmes on the understanding that effective consultations and coordination between the various bodies are essential,

Recognizing the need to ensure the right of disabled persons to participate fully in the social life and development of their societies and to enjoy living conditions equal to those of their fellow citizens,

Considering the work done so far in the Group of Experts on the Standardization of Technical Requirements for Vessels and of Ships' Papers with respect to the modification of equipment and arrangements of normal passenger ships for use also by disabled persons,

Recommends Governments, international governmental organizations, economic or other unions and river commissions to take such steps as may be necessary to supplement their regulations on the construction and equipment of inland navigation vessels if necessary, taking into account the "Guidelines for passenger vessels also suited for carrying disabled persons", reproduced in the annex to this resolution;

Invites Governments, international governmental organizations, economic or other unions and river commissions to keep the secretariat informed of the measures adopted for this purpose;

Requests the Executive Secretary of the Economic Commission for Europe to include periodically the question of the application of this resolution in the agenda of the Working Party on Inland Water Transport.

Annex to resolution No. 25

GUIDELINES FOR PASSENGER VESSELS ALSO SUITED FOR CARRYING DISABLED PERSONS

1. Objective

The guidelines provide information concerning the adaptation of equipment and arrangements of passenger vessels to facilitate their use by disabled persons as well. They deal only with aspects which are not covered by the

requirements in force or by recommendations for the construction of passenger vessels and their gear and equipment.

In this context, disabled persons are considered to be an integral part of the passengers using the vessel. These guidelines do not cover vessels specially built for the carriage of disabled persons. The guidelines may serve as a guide to shipowners and shipbuilders and particularly to facilitate proper planning for new construction or major conversion work. For this reason, they do not contain any binding regulations.

2. Passenger areas and lounges

2.1 Passenger areas

Passenger areas and corridors should have a clear width of at least 1.30 m so as to be accessible to wheelchairs.

Projecting elements should be avoided as much as possible and sharp edges should be rounded off. Especially wardrobes, shelves and cupboards should be set into walls; vertical pipes should as far as possible be located in recesses or corners.

Anti-slip coverings and coatings should be provided, particularly where there are gradients (ramps, cambers), in the gangways and corridors between the various lounges and between the lounges and the stairs. These coverings and coatings should not generate static electricity. Handrails or other means of support may also usefully be provided.

2.2 Gangways for disembarkation

The gangways for passenger disembarkation should have on each side a handrail at a height of 1 m and a second at the height of 0.75 m above the actual gangway. It is important for the handrails to extend in length 0.3 m beyond each end of the gangway. The gangway should have a minimum clear width of at least 0.9 m. Each railing should have at least three stanchions. To allow for the use of wheelchairs, the anti-slip cross-pieces should not be more than 0.3 m long and 0.03 m high. The holes of perforated surfaces should not be more than 0.01 m wide or 0.03 m long. The best method of solving the problem caused by the difference in level between the gangway and the pier or deck is to place movable flaps at each end of the gangway*.

2.3 Door sills and coamings

Door sills in the passenger areas should be avoided wherever possible. If they cannot be avoided, they should have a maximum height of 0.025 m. Open-deck coamings should be kept as low as possible taking into account other requirements in force. They can be eliminated by installing drainage wells, which may be covered by a close-mesh grille and drained outside the hull. If the door sills and coamings should have the height of more than 0.025 m, they should be removable, or consist of a low flexible rubber section or allow clearance by movable ramps.

2.4 Stairs, lifts

The stairs should not be too steep (maximum gradient 38E if possible). Stairs should be straight and placed in fore and aft direction. The steps should have a maximum height of 0.18 m and a minimum depth of 0.3 m. It is particularly important to ensure that the steps are anti-slip and have no projections or hollows.

The deck areas immediately before stairs or steps should be properly marked by different floor coverings. It is advisable to avoid single steps in the corridors, particularly in front of or behind doors. Lifts should have the following dimensions:

Cabin: at least 1.1 m wide, 1.4 m deep.
Lift door: at least 0.8 m clear width (if possible in the form of a sliding or folding door).

Control panel: between 0.9-1.2 m above the floor.
Handrails: 0.9 m above the floor.

There should be a clear space of at least 1.4 m x 1.4 m in front of the door of the lift.

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* Attention is drawn to the fact that a person in a wheelchair cannot cope with gradients of more than 1:20 (3E) without the help of another person, while ascending a gradient of more than 1:4 (14E) is very difficult even with the help of another person. If a landing-stage necessitates a steeply inclined gangway for disembarkation (for example 1:4), the gangway should not exceed 2 m in length.

2.5 Handrails and guardrails

The handrail on each side of the stairs should be placed at a height of 0.90 m above the front edge of the steps, follow the stair without interruption and extend approximately 0.3 m beyond the top and bottom of the stairs. The bars of the handrail should be circular, with a diameter of 0.04-0.05 m and the distance between the handrail and the wall should be at least 0.06 m. At the end of the handrails the bars should be bent towards the wall.

In addition, handrails should be provided for guidance and support along corridor walls and open-deck superstructures at a height of 0.9 m above the deck.

The height of the guardrails should be at least 1.1 m above the deck.

2.6 Doors

Except for those opening into corridors, the doors of passenger lounges should open outwards. When open, the doors should fold back against a wall and be capable of being held fast.

Special door-construction such as swing doors and revolving doors should be avoided. In the case of sliding doors, the lower guiderail should be sunk into the floor. The clear width of the doors should be at least 0.9 m in order to allow the easy passage of wheelchairs. In order to permit access to doors from the direction in which they open, there should be a minimum clearance of 0.5 m between the inner edge of the door-frame on the lock side and an adjacent perpendicular wall.

It should not be possible for unauthorized persons to lock or bar the doors of the passenger lounges.

The doors of toilets for disabled persons should open outwards or should be sliding doors. The locking device should be incorporated in the door handle.

2.7 Toilets and wash-rooms

At least one toilet and one wash-room should be accessible to disabled persons and adapted to their specific needs. Toilets suitable to disabled persons using wheelchairs should be at least 1.5 m x 1.82 m. The height of the toilet seat should be approximately 0.4 m. Handgrips for disabled persons should be fixed to the walls and attention given to ensuring that the fittings are quite stable and firmly attached. The toilet-paper holder should be well within reach and a person should be able to use it with one hand.

There should be a free space of 0.6 m height and 0.7 m width under the wash-basin.

The height of the upper side of the wash-basin above the floor should be 0.8-0.85 m.

If necessary the mirror should extend down as far as the wash-basin.

2.8 Cabins and public areas

Cabins for disabled persons should where possible be located on the same deck of the vessel, being preferably the deck on which the public area is located. They should be centrally situated and easily accessible. The counters of offices open to the public (for example, the information office and the ticket office) should be accessible to disabled persons in wheelchairs.

Tables and seats should be so constructed that they will not overturn when used for support. Clearance under tables should be 0.7 m in order to provide a sufficiently large space for the legs to knee-height.

When tables and seats in the lounges or on the deck are permanently fixed, a number of seats (one for every 100 passengers admitted but at least 4) should be specially adapted and reserved for persons suffering from motor disablement.

2.9 Measures for allergic persons

The furnishings shall as far as possible be made from non-allergenic material. The use of some areas should be prohibited for passengers who are accompanied by furred animals.

3. Information, communication and services

3.1 Markings, indications, signs and lighting

Sills, ramps, guardrails and handrails should be easily recognizable by their different colours.

In order to indicate special lounges and facilities for disabled persons the appropriate symbols specified in international regulations should be used. The direction indicator signs on the vessel and the instruction panels regarding conduct on board should be attached to the walls and not to the doors. The letters should be at least 0.015 m high. The text or symbol should stand out clearly against the main colour of the sign, which should in turn contrast with its background.

Signs indicating the emergency exits or containing prohibitions or obligations must be capable of being lit so as to be clearly visible. Stairs

and areas accessible to disabled persons must at all times be well lit. Fluorescent tubes of the daylight type are the best form of artificial lighting.

3.2 Loudspeakers, public address systems

It should be possible to reach all the decks and cabins accessible to passengers by a loudspeaker system. The loudspeakers should be sufficiently powerful for messages to be clearly distinguished from background noise (for example, engines, ventilators, etc.). In the toilets and wash-rooms adapted for disabled persons a suitable device for calling a person for help should be provided.

3.3 Information

Details of information offices and possibilities of assistance should be displayed at appropriate points on the vessel.

4. Safety

4.1 General provisions

If the requirements in force do not provide for them the following safety measures must be given special attention.

4.2 Disembarkation

Passenger cabins for disabled persons should not be located below the disembarkation deck.

Vessels should have on each side of the vessel on the main deck at least one passenger disembarkation place with a minimum free opening for disembarkation of 1.5 m in width.

Accommodation for disabled persons should be so arranged that evacuation of all passengers is possible at any time to an open and sufficiently large deck. From this deck there should be in any case one emergency disembarkation opening of 1.0 m in width.

4.3 Special protection against fire

Liquid fuel having a flash-point of 55E C and lower should not be used, except for outboard engines for lifeboats.

Engine-rooms should be equipped with a fixed fire extinguishing installation of a suitable type. This installation should be capable of being activated from outside the engine-room.

There should be at least two independent fire-fighting pumps on board, one of which should be installed outside the main engine-room. The capacity of each pump and the number and distribution of hose connections should be such that any part of the vessel can be reached from at least two separate connections, each with a single length of hose.

Bulkheads and doors between public corridors and cabins and between the cabins themselves, bulkheads and doors of staircases connecting more than two decks, as well as ceilings and surface coatings of bulkheads and planking should be fire resistant.

On vessels with cabins, all accommodation and cabins for passengers, crew and other personnel should be equipped with suitable sprinkler systems. The fire-protection flaps prescribed for air and ventilation ducts should close

automatically when the temperature of the air in the ducts exceeds 70E C. It should also be possible to close them manually.

4.4 Additional arrangements

Life-jackets should be kept within reach at appropriate points on the gangway giving access to exits. In addition, cabins suited for disabled persons should be provided with life-jackets.

The scheduled period of operation of the emergency power plant should be at least 60 minutes.

If the emergency power plant is not located above the bulkhead deck, the engine-room and the space occupied by the emergency power plant should be separated by at least one watertight compartment.

An emergency lighting system should be provided in the passenger accommodation and cabins.

An installation giving a general alarm by both optical and acoustic means should be provided.

Vessels should be equipped with a radiotelephone installation for:

Public communication;

Shipping notices;

Ship-to-ship communication.

4.5 Safety instructions

The safety instructions for the crew should state the special safety measures required for disabled persons in an emergency.

ADDITIONS AND AMENDMENTS TO RESOLUTION NO. 24 ON CEVNI: EUROPEAN CODE FOR INLAND NAVIGATION

Resolution No. 26

(adopted by the Principal Working Party on Inland Water Transport on 31 October 1988)

The Principal Working Party on Inland Water Transport,

Considering resolution No. 24 of the Working Party on Inland Water Transport concerning CEVNI: European Code for Inland Waterway (TRANS/SC.3/115),

Bearing in mind the reports of the Group of Experts on the Standardization of Rules of the Road and Signs and Signals in Inland Navigation on its twenty-ninth and thirtieth sessions (TRANS/SC.3/GE.2/54 and 56) and the report of the Working Party on the Standardization of Rules of

the Road and Signs and Signals in Inland Navigation on its first session (TRANS/SC.3/WP.2/2),

Noting the desirability in the interest of safety in navigation of taking into account in CEVNI developments in inland navigation and their consequences for the regulations in force,

Decides to amend and supplement the text of CEVNI and its annexes 3, 6 and 7 by the text and signs contained in the annex to this resolution,

Requests Governments and River Commissions to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution,

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda on the Principal Working Party on Inland Water Transport.

ADDITIONS AND AMENDMENTS TO RESOLUTION NO. 24 ON CEVNI:
EUROPEAN CODE FOR INLAND NAVIGATION

Resolution No. 27

(adopted by the Principal Working Party on Inland Water Transport
on 12 November 1990)

The Principal Working Party on Inland Water Transport,

Considering resolution No. 24 of the Working Party on Inland Water Transport concerning CEVNI: European Code for Inland Waterway (TRANS/SC.3/115), as amended by its resolution No. 26 (TRANS/SC.3/115/Add.1),

Bearing in mind the reports of the Working Party on the Standardization of Rules of the Road and Signs and Signals in Inland Navigation on its third, fourth and fifth sessions (TRANS/SC.3/WP.2/6, 8 and 10),

Noting the desirability in the interest of safety in navigation of taking into account in CEVNI developments in inland navigation and their consequences for the regulations in force,

Decides to amend and supplement the text of CEVNI and its annexes 3 and 7 by the text contained in the annex to this resolution,

Requests Governments and River Commissions to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution,

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Principal Working Party on Inland Water Transport.

AMENDMENTS TO RESOLUTION NO. 17, REVISED: RECOMMENDATIONS ON TECHNICAL REQUIREMENTS FOR INLAND NAVIGATION VESSELS*

Resolution No. 28

(adopted by the Principal Working Party on Inland Water Transport on 12 November 1990)

The Principal Working Party on Inland Water Transport,

Considering resolution No. 17, revised of the Principal Working Party on Inland Water Transport (TRANS/SC.3/103, annex 1) containing in its annex the Recommendations on Technical Requirements for Inland Navigation Vessels (TRANS/SC.3/104),

Bearing in mind the report of the Working Party on the Standardization of Technical Requirements for Vessels and of Ship's Papers on its fourth session (TRANS/SC.3/WP.1/8),

Decides to amend the Recommendations on Technical Requirements for Inland Navigation Vessels by the text contained in the annex to this resolution,

Requests Governments and River Commissions to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution,

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Principal Working Party on Inland Water Transport.

* The annex to this resolution appears as a new appendix of Chapter IV and new paragraphs 15-4.6, 15-5, 15-7.1 and 15-7.2 of Chapter XV of the annex to resolution No. 17, revised, above.

ADDITIONS AND AMENDMENTS TO RESOLUTION NO. 22 ON SIGNI:
SIGNS AND SIGNALS ON INLAND WATERWAYS

Resolution No.29

(adopted by the Principal Working Party on Inland Water Transport
on 12 November 1990)

The Principal Working Party on Inland Water Transport,

Considering resolution No. 22 of the Working Party on Inland Water Transport concerning SIGNI: signs and signals on inland waterways (TRANS/SC.3/108),

Bearing in mind the report of the Working Party on the Standardization of Rules of the Road and Signs and Signals in Inland Navigation on its fifth session TRANS/SC.3/WP.2/10),

Noting the desirability of bringing the text of SIGNI in line with CEVNI: European Code for Inland Waterways as amended (TRANS/SC.3/115 and Add.1),

Decides to amend and supplement the text of SIGNI by the text and signs contained in the annex to this resolution,

Requests Governments and River Commissions to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution,

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Principal Working Party on Inland Water Transport.

CLASSIFICATION OF EUROPEAN INLAND WATERWAYS

Resolution No. 30

(adopted by the Principal Working Party on Inland Water Transport on 12 November 1992)

The Principal Working Party on Inland Water Transport,

Having considered the report of the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation on its fourth session (TRANS/SC.3/WP.3/8),

Considering it desirable that a unique classification of inland waterways be established in Europe and taking therefore into account a new classification table recently adopted within the European Conference of Ministers of Transport,

Bearing in mind the changes which have occurred in the inland water transport technology since the adoption within the ECE in the early 1960s of the existing system of classification of European inland waterways based mainly on the carrying capacity of vessels using them,

Desiring to further the development of combined and, in particular, container and ro-ro transport by inland waterways,

Desiring also to assist inland water transport to play a greater role in domestic as well as international transport of goods and passengers in Europe, with a view to decreasing the social cost and negative impact on the environment of the inland transport industry as a whole,

Seeking to facilitate the establishment of the network of main European inland waterways of international importance based on standardized parameters of vessels and convoys which would be able to navigate on it,

Believing that the new system of classification of European inland waterways should:

(i) be illustrative, giving a clear and unequivocal description of existing inland waterways;

(ii) be forward-looking, specifying the parameters to be complied with when constructing new or modernizing existing inland waterways;

(iii) provide for class hierarchy, ensuring that a vessel normally operating on waterways of one class could be used on waterways belonging to a higher category without restriction as to the parameters covered by the classification;

(iv) be based on the modular principle with regard to dimensions of vessels;

(v) be set up on a long-term basis so as to accommodate future developments in inland water transport technology;

(vi) be universal in character so that it could be applied over the largest possible territorial range on the European continent;

(vii) provide for flexibility concerning the draught and bridge clearance values to be determined with due regard to local conditions,

Adopts a new classification of European inland waterways as set out in the annex to this resolution,

Recommends that governments give full consideration to the new classification with a view to:

classifying their inland waterways accordingly; and

complying with its requirements when building new or modernizing existing waterways of international importance;

Requests the Executive Secretary of the Economic Commission for Europe to prepare and circulate a map of European inland waterways based on the new classification.

CLASSIFICATION OF EUROPEAN INLAND WATERWAYS * – CLASSIFICATION DES VOIES NAVIGABLES EUROPEENNES * - КЛАССИФИКАЦИЯ ЕВРОПЕЙСКИХ ВНУТРЕННИХ ВОДНЫХ ПУТЕЙ *

Waterway type Type de voie navigable Тип водных путей	Waterway class Classe de voie navigable Класс водных путей		Motor vessels and barges – type of vessel: general characteristics Automoteurs ou chalands – type de bateau : caractéristiques générales Самоходные суда и баржи – тип судна: общие характеристики					Pushed convoys – type of convey; general characteristics Convois poussés – type de convoi : caractéristiques générales Толкаемые составы – тип состава: общие характеристики					Minimum height under bridges Hauteur minimale sous les ponts Миним. высота под мостами 2/	Symbol on maps Symbole sur les cartes Обозначение на карте
			Designation Dénomination Наименование	Max. length Longueur max. Максим. длина	Max. beam Largeur max. Максим. ширина	Draught Tirant d'eau Осадка	Tonnage Tonnage Тоннаж		Length Longueur Длина	Beam Largeur Ширина	Draught Tirant d'eau Осадка	Tonnage Tonnage Тоннаж		
				L(m)	B(m)	d (m) 7/	T (t)		L (m)	B (m)	D (m) 7/	T (t)	H (m)	
Of regional importance d'intérêt régional Регионального значения	west of Elbe à l'Ouest de l'Elbe к западу от Эльбы	I	Barge – Péniche - Баржа	38.50	5.05	1.80-2.20	250-400						4.00	
		II	Kampine– Campinoise – "Кампин"	50-55	6.60	2.50	400-650						4.00-5.00	
		III	Gustav Koenigs – "Густав Кенигс"	67-80	8.20	2.50	650-1000						4.00-5.00	
	east of Elbe À l'Est de l'Elbe к востоку от Эльбы	I	Gross Finow – "Гросс Финоу"	41	4.70	1.40	180						3.00	
		II	Type BM-500 – Типа БМ-500	57	7.50-9.00	1.60	500-630						3.00	
		III	6/	67-70	8.20-9.00	1.60-2.00	470-700		118-132	8.20-9.00	1.60 - 2.00	1000 – 1200	4.00	
of international importance d'intérêt international Международного значения	IV			80-85	9.50	2.50	1000-1500		85	9.50 5/	2.50 - 2.80	1250 – 1450	5.25/7.00 4/	
	Va			95-110	11.40	2.50-2.80	1500-3000		95 - 110 1/	11.40	2.50 - 4.50	1600 – 3000	5.25 / 7.00 / 9.10 4/	
	Vb								172 - 185 1/	11.40	2.50 - 4.50	3200 – 6000		
	VIa								95 - 110 1/	22.80	2.50 - 4.50	3200 – 6000	7.00/9.10 4/	
	VIb		3/	140.00	15.00				185 - 195 1/	22.80	2.50 - 4.50	6400 – 1200	7.00/9.10 4/	
	VIc								270 - 280 1/ 195 - 200 1/	22.80 33.0-34.20 1/	2.50 - 4.50 2.50 - 4.50	9600 – 1800 9600 - 1800	9.10 4/	
	VII							8/	285	33.0-34.20 1/	2.50 - 4.50	14500 - 27000	9.10 4/	

* For footnotes to this table, see UNECE document TRANS/SC.3/131, page 183 - * Pour les notes explicatives de ce tableau, voir le document de la CEE ONU TRANS/SC.3/131, page 185 - * Сноски к настоящей таблице приведены в документе ЕЭК ООН TRANS/SC.3/131, стр. 188

Footnotes to the classification table

1/ The first figure takes into account the existing situations, whereas the second one represents both future developments and, in some cases, existing situations.

2/ Takes into account a security clearance of about 30 cm between the uppermost point of the vessel's structure or its load and a bridge.

3/ Takes into account the self-propelled unit dimensions expected in ro-ro and container transport; the dimensions given being of an approximate nature.

4/ Checked for container transport:

5.25 m for vessels transporting two layers of containers;
7.00 m for vessels transporting three layers of containers;
9.10 m for vessels transporting four layers of containers.

50% of the containers may be empty or ballast should be used.

5/ Some existing waterways can be considered as Class IV by virtue of the maximum permissible length for vessels and convoys, even though the maximum beam is 11.40 m and the maximum draught 4.00 m.

6/ Vessels used in the region of the river Oder and on the waterways between the Oder and the Elbe.

7/ The draught value for a particular inland waterway is to be designated according to the local conditions.

8/ Convoys consisting of a higher number of barges can also be used on some sections of waterways of Class VII. In this case the horizontal dimensions may exceed the values shown in the table.

General remarks related to the classification table

(a) The class of a waterway is determined by the horizontal dimensions of motor vessels, barges and pushed convoys and primarily by the main standardized dimension, namely by their beam or width;

(b) The parameters of regional waterways do not meet the main principles of the international classification system. They are first of all not based on the modular principle and do not have a European-wide character. Therefore, regional waterways in western and eastern Europe should be considered separately. There are practically no waterways of regional importance in the Danubian basin;

(c) When modernizing regional waterways and waterways of Class IV, it is recommended to meet the parameters of at least Class Va or of a higher category if possible;

(d) For the modernization of existing waterways of international importance and for the construction of new ones, the higher values of vessel or convoy dimensions should always be taken into account;

(e) New waterways of international importance should meet the requirements of Class Vb as a minimum. In this regard, a minimum draught of 280 cm should be ensured;

(f) In order to obtain a higher efficiency of container transport, the highest possible bridge clearance value should be ensured according to footnote 4/ of the table. For inland waterways where a bridge clearance of 700 cm is not considered as economically reasonable, the possibility of using longer convoys (Class Vb) should be taken into account;

(g) Inland waterways where an important container and ro-ro transport is expected, should meet as a minimum the requirements of Class VIa. Alternatively, an increase by 7 to 10% of the beam value of 11.4 m of specific vessels may also be envisaged in order to meet the requirements of the future evolution of container dimensions and of easy transport of trailers;

(h) On the waterways with fluctuating water levels, the value of the recommended draught should correspond to the draught reached or exceeded for 240 days on average per year. The value of recommended bridge clearance (525, 700 or 910 cm) should be ensured, even over the highest navigational level, where possible and economically reasonable;

(i) The draught of 4.50 m appearing in the table represents a value which could in the future be reached by barges currently used with a draught limited to 3.90 m. This draught of 4.50 m is not considered practicable for all waterways of Classes IV to VII and in any case it is not practicable for non-canalized stretches of rivers;

(j) Some existing waterways can only be used by vessels with limited values of water draught d, air draught h, length L or width B which may not be in strict conformity with the parameters due for classes prescribed by the classification table. In order to give better information on particular stretches of such waterways, it is recommended to supplement the class symbol (as well as the graphical symbol on the map) with a fraction h/d followed with L and B, in accordance with local police regulations in force.

RECOMMENDATIONS ON MINIMUM REQUIREMENTS FOR THE ISSUANCE OF BOATMASTER'S LICENCES IN INLAND NAVIGATION WITH A VIEW TO THEIR RECIPROCAL RECOGNITION FOR INTERNATIONAL TRAFFIC

Resolution No. 31

(adopted by the Principal Working Party on Inland Water Transport on 12 November 1992)

The Principal Working Party on Inland Water Transport,

Noting the important role of the international carriage of goods and passengers via inland waterways in the ECE region,

Believing that in the next few years this role will probably continue to grow as an alternative to the unbridled growth of road transport, which on some European arteries has already reached saturation point and has an unacceptably high level of negative impact on the environment, and also in connection with the establishment and further development of combined transport,

Believing also that the opening of traffic through the Rhine-Main-Danube water link will give further impetus to the development of international transport by inland waterways in the region,

Desiring to ensure a high level of safety of navigation and protection of human life, property and the environment on inland waterways,

Considering that this can be achieved inter alia through the agreed application by the countries concerned of standardized requirements for the training and licensing of boatmasters for vessels engaged in the international carriage of cargo and passengers on inland waterways,

Being of the opinion that this would also help to facilitate international transport on inland waterways,

1. Recommends that Governments should:

Take such steps as may be necessary to comply with the requirements contained in the annex to this resolution with regard to the training and licensing of boatmasters in their countries for vessels engaged in international transport on inland waterways;

Recognize licences issued under the provisions of this resolution or take them duly into account when issuing other licences required for given waterways;

2. Requests the Executive Secretary of the Economic Commission for Europe to include the question of the application of this resolution periodically in the agenda of the Principal Working Party on Inland Water Transport and to bring up to date the list of countries applying this resolution.

CHAPTER 1 - GENERAL PROVISIONS

Article 1.1 - Purpose and Scope

1.1.1. The purpose of this text is to provide recommendations on minimum requirements for the issuance of boatmaster's licences with a view to increasing the safety of navigation and protection of human life; this text is not a substitute for national laws and regulations.

1.1.2. In general, these recommendations shall apply to boatmasters of vessels designed for carrying cargo or passengers on inland waterways, and shall include boatmasters of self-propelled ships, tugs, pushers, towed convoys, pushed convoys and side-by-side formations.

Unless otherwise stated by the Administration, they shall not apply to the boatmasters of:

(a) seagoing vessels on inland waterways;

(b) pleasure craft;

(c) small craft, floating equipment, assembly of floating material and ferry-boats, as defined in the European Code for Inland Waterways (CEVNI);

(d) special craft, such as hydrofoil craft and air-cushion vehicles.

1.1.3. Without prejudice to paragraph 1.1.2 the Administration may supplement these minimum requirements with additional ones:

(a) where special provisions relating to the type of vessel, to the waterway, to radar navigation and/or transport of dangerous goods and passengers so require under national regulations or international regulations;

(b) where operating experience clearly shows them to be justified;

(c) where vessels operate on waterways where a knowledge of local geography and of special regulations is indispensable and required.

Article 1.2 - Definitions

For the purposes of these recommendations:

(a) "Administration" means the competent authorities empowered by the Government of a country to issue the boatmaster's licences;

(b) "Boatmaster" means a person who has the required aptitude and qualifications to ensure that he can navigate a vessel on inland waterways and who assumes nautical responsibility on board;

(c) "Boatmaster's licence" means a valid document, whatever its title, issued by an Administration and stating that the holder is qualified to navigate a vessel on inland waterways.

CHAPTER 2 - MINIMUM REQUIREMENTS FOR THE ISSUANCE OF BOATMASTER'S LICENCES

Article 2.1 - Scope

This chapter is exclusively concerned with boatmaster's licences for the international carriage of cargo or passengers on inland waterways.

Article 2.2 - General Provisions

The issuance of boatmaster's licences shall be contingent on their satisfying the following minimum requirements:

(a) The applicant must be not less than 21 year of age;*

* Not less than 18 years of age in certain cases.

(b) The applicant must demonstrate his physical fitness by passing a medical examination which tests among other things eyesight, hearing and the ability to distinguish colours;

(c) The applicant must have a minimum of two years' professional experience, acquired in the deck department on board an inland navigation vessel, at least as a rating;

(d) The applicant must have passed the examination of professional knowledge to the satisfaction of the Administration; this examination shall cover at least the general subjects set out in the annex to these recommendations.

Article 2.3 - Special provisions concerning professional experience

2.3.1. In order to be taken into consideration, the professional experience must have been validated and/or approved by the Administration. It may have been acquired on any inland waterway without distinction as to area.

2.3.2. The minimum duration of the professional experience stipulated in paragraph 2.2 (c) may be reduced:

(a) when the administration requires special training which may be considered as equivalent;

(b) when the applicant holds a diploma of specialized inland navigation training which comprises a period of mandatory on-board service.

2.3.3. The Administration may also take into account to some extent professional experience on a seagoing vessel as a member of the deck crew.

Article 2.4 - Special provisions concerning the examination of professional knowledge

2.4.1. In so far as it deems necessary the Administration may supplement the examination syllabus mentioned in paragraph 2.2 (d) with particular and/or additional subjects in order to meet the requirements of paragraph 1.1.3. In this case, the Administration shall specify in the boatmaster's licence its field of application and/or issue a special licence.

2.4.2. The Administration shall designate the Examination Committee responsible for administering the appropriate examination of professional knowledge.

2.4.3. The Administration or the Examination Committee duly mandated by it shall establish the procedure and conditions of the examinations so as to enable the theoretical and practical knowledge required for the operation of vessels on inland waterways to be verified.

CHAPTER 3 - RECOGNITION OF THE LICENCE

States which issue the boatmaster's licence as from the age of 21 years shall recognize foreign licences issued by States which issue the boatmaster's licence as from the age of 18 years when the boatmaster reaches the age of 21 years.

States which issue the boatmaster's licence as from the age of 18 years shall recognize foreign licences issued for that age.

States which issue general licences for navigating cargo and passenger vessels recognize general licences issued by other States under the same conditions for navigating passenger vessels, as well as special licences issued for navigating passenger vessels.

States which issue the special licences for passenger vessels recognize, in international traffic, general licences for navigating passenger vessels on their territory and take them duly into account when issuing special licences required for the operation of a passenger vessel on their territory.

Annex

Professional knowledge required to obtain a boatmaster's licence

A. General subjects concerning the carriage of cargo and passengers

1. Navigation

(a) Knowledge of the rules of the road and signs and signals on inland waterways, particularly those included in CEVNI;

(b) Knowledge of general characteristics of main waterways from the standpoint of geography and hydrography;

(c) Knowledge of the buoyage system;

(d) Ability to use navigational documents (charts, shipping notices, etc.) and navigational instruments (compass, echo-sounder, etc.);

(e) Ability to determine the position of the vessel under any meteorological conditions (poor visibility, ice, etc.).

2. Vessel manoeuvring and handling

(a) Piloting the vessel, having regard to the effects of current and winds, and the depth under the keel;

(b) Function and operation of the rudder and propeller;

(c) Anchoring and mooring under all conditions;

(d) Manoeuvring in entering and leaving a lock, in entering and leaving port harbours as well as in meeting and overtaking.

3. Vessel design and stability

(a) Knowledge of the basic principles of vessel design, particularly as relates to the safety of persons and the vessel;

(b) Knowledge of the main structural elements of the vessel;

(c) General theoretical knowledge of buoyancy and the rules of stability;

(d) Measures to be taken to ensure the stability of the vessel under different circumstances.

4. Engines of the vessel

(a) Basic knowledge of how engines are constructed and work so as to ensure their proper operation;

(b) Checking of the operation of the main and auxiliary engines and action to be taken.

5. Loading and unloading

(a) Use of draught marks;

(b) Determining the weight of the cargo by means of the measurement certificate;

(c) Loading and unloading operations.

6. Procedure in special circumstances

(a) Steps to be taken in the event of damage, collision or grounding (before, during and after the event), including plugging of leaks;

(b) Use of life-saving material and equipment;

(c) First aid in the event of an accident;

(d) Prevention of fire and use of fire-fighting equipment;

(e) Prevention of pollution of waterways.

7. Communications

Knowledge of procedures of usage of radio telephone.

8. Transport of passengers

The Administration may in so far as it deems necessary require a more thorough professional knowledge for navigating passenger vessels.

B. Special subjects for the transport of passengers required for the issuance of special licences for navigating passenger vessels

For the issuance of a boatmaster's licence for a passenger vessel, the Administration may, in so far as it deems necessary from the safety point of view, make provision for more detailed professional knowledge than appears under A as regards paragraphs 2, 3, 5 and 6, and require additional professional knowledge concerning in particular the following points:

(a) Knowledge of safety instructions concerning the vessel;

(b) Specific provisions for passenger safety in general and in the event of accidents, fire, explosion or shipwreck;

(c) Ability to direct passenger movements, embarkation and disembarkation, and deal with the effects of panic;

(d) Rules to be followed in assisting drowned persons (knowledge of first aid);

(e) Special case of vessels equipped to provide meals or accommodation.

The Administration may make provision for an additional test of knowledge of local geography in all cases in which it deems it justified.

Practical tests should be carried out on a passenger vessel in normal operation.

Theoretical tests should be of a particularly thorough character concerning passenger vessels.

C. Additional subjects for radar navigation

(a) Knowledge of the theory of radar: general information on radio waves and the principles of radar operation;

(b) Ability to use the radar apparatus, interpretation of the radar image, analysis of the information supplied by the apparatus and knowledge of the limitations of the radar information;

(c) Use of the rotation-speed indicator;

(d) Knowledge of regulations of CEVNI relating to radar navigation.

D. Additional subjects for the carriage of dangerous goods

(a) Familiarity with international regulations and recommendations concerning the carriage of dangerous goods by inland waterway;

(b) General requirements concerning the carriage of dangerous goods;

(c) Special steps to be taken during the loading and unloading of dangerous goods as well as during the voyage;

(d) Signalling of vessels and labelling of packages;

(e) Steps to be taken to prevent accidents, during and following an accident.

AMENDMENTS TO RESOLUTION NO. 17, REVISED: RECOMMENDATIONS ON TECHNICAL REQUIREMENTS FOR INLAND NAVIGATION VESSELS*

Resolution No. 32

(adopted by the Principal Working Party on Inland Water Transport on 12 November 1992)

The Principal Working Party on Inland Water Transport,

Considering resolution No. 17, revised (TRANS/SC.3/103, annex 1), containing in its annex the Recommendations on Technical Requirements for Inland Navigation Vessels (TRANS/SC.3/104),

Bearing in mind the report of the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation on its fourth session (TRANS/SC.3/WP.3/8),

Decides to amend the Recommendations on Technical Requirements for Inland Navigation Vessels by the text contained in the annex to this resolution,

Requests Governments and River Commissions to inform the Executive Secretary of the Economic Commission for Europe whether they accept this resolution,

Requests the Executive Secretary of the Economic Commission for Europe to place the question of the application of this resolution periodically on the agenda of the Principal Working Party on Inland Water Transport.

* The annex to this resolution appears as Chapter 11-bis of the annex to resolution No. 17, revised, above.

SHIP'S CERTIFICATE

Resolution No. 33

(adopted by the Principal Working Party on Inland Water Transport on 12 November 1992)

The Principal Working Party on Inland Water Transport,

Noting the contribution made by the agreement on technical requirements for inland navigation vessels to increasing the safety of navigation on European inland waterways, safeguarding the health of persons on board and protecting the environment,

Considering that, in order to facilitate navigation on European inland waterways, compliance with the provisions of the Recommendations on Technical Requirements for Inland Navigation Vessels, as set out in document TRANS/SC.3/104 (annex to resolution No. 17, revised), as amended, should be confirmed by the presence on board of an appropriate ship's paper,

1. Recommends that to that end Governments should:

Issue to vessels making international voyages on European inland waterways a Ship's Certificate conforming to the model annexed to this resolution;

Carry out initial and periodic surveys of vessels in order to verify compliance with the provisions of the Recommendations on Technical Requirements for Inland Navigation Vessels and to establish the possibility of extending the period for which the certificate referred to above remains valid;

Draw up the Ship's Certificate in the official language(s) of the issuing country, giving the title of the certificate and the non-uniform entries in the official language(s) of the issuing country and in one of the following languages: English, French, Russian, German, Dutch, Greek, Italian, Portuguese or Spanish;

Issue the Ship's Certificate for a period not exceeding five years for passenger vessels and not exceeding 10 years for other vessels. The Certificate may be extended by the Administration without inspection for no longer than six months, and this fact shall be noted on the Certificate;

Carry out an initial inspection before the vessel is put into service or before the vessel is issued with a Ship's Certificate for the first time, such inspection to include a complete check of the structure, equipment and fittings of the vessel;

Carry out periodic inspections on the expiry of the Certificate, including a check of the vessel's structure, equipment and fittings so as to ascertain that the vessel is in a satisfactory state and suitable for operation in the zone(s) specified in the Ship's Certificate;

Carry out, when the Ship's Certificate ceases to be valid as the result of major repairs or refitting of the structure which have the effect of altering the main technical characteristics, or where the structure no longer conforms to the provisions of the basic requirements on the basis of which the Certificate was issued, a special inspection to ensure that the repairs or refitting are satisfactory and that the vessel conforms in all respects to the provisions of the Recommendations on Technical Requirements for Inland Navigation Vessels;

2. Requests Governments:

To accept the ship's certificate as documentary evidence that the vessel complies with the Recommendations on Technical Requirements for Inland Navigation Vessels (as set out in document TRANS/SC.3/104 as amended) and to take it duly into consideration when issuing other certificates required for given waterways;

In this connection, technical inspection of the vessel may be wholly or partly dispensed with, in so far as regulations in force so permit;

3. Requests the Executive Secretary of the Economic Commission for Europe annually to include the question of the implementation of this resolution in the agenda of the Principal Working Party on Inland Water Transport and to revise the list of countries applying this resolution.

Annex

SHIP'S CERTIFICATE

GENERAL PROVISIONS

1. The Ship's Certificate attests that the vessel complies with the Recommendations on Technical Requirements for Inland Navigation Vessels.

2. The Ship's Certificate shall cease to be valid:

(1) If the vessel's main technical characteristics are modified as a result of structural alterations;

(2) On the expiry of its period of validity;

(3) If the vessel no longer meets the requirements of the regulations under which this Certificate has been issued;

(4) If the vessel leaves the zone or zones in which it is authorized to navigate.

3. Entries in the Ship's Certificate may be made only by inspectors duly authorized thereto by the competent authorities. All entries shall be dated, signed by the inspector, and stamped by the competent authority.

....
(Country and ISO ALPHA-2 country code) (Name of authority issuing the Ship's Certificate)

No. of issue: .....

SHIP'S CERTIFICATE

I

GENERAL INFORMATION

1.1 Type of vessels:*

1.2 Vessel's name and/or identification number: .....

1.3 Authorized to navigate under the national flag of** .....
Country of registration** .....(name of country)

1.4 Name and address of owner or operator .....

1.5 Place of registration .....

1.6 Registration number .....

1.7 Port of registry .....

1.8 Navigation zone(s) and area of navigation .....

1.9 Year and place of construction .....

1.10 Name of building yard .....
and yard number .....

1.11 Maximum length ..... m

1.12 Maximum breadth ..... m

1.13 Maximum height*** (from the bottom of the vessel to the highest fixed point) ..... m
The highest fixed point means .....

* Indicate: tug, pusher, passenger vessel, self-propelled vessel, self-propelled tanker, barge, pushed barge, tank barge, pushed tank barge, etc. whatever applies.

** In the certificate, the competent authorities shall include one of the variants, at their discretion.

*** This item is optional.

	Zone 1	Zone 2	Zone 3
1.14 Assigned freeboard, cm*			
1.15 Increased assigned freeboard, cm**			
1.16 Maximum draught, m			
1.17 Maximum displacement, m^3			

1.18 Maximum deadweight, t			
1.19 Number of persons authorized for carriage, other than crew members			

1.20 Measurement certificate No. ... issued by ..... measurement office.

1.21 Number and type of main engine(s)***

... internal combustion engine(s)
... steam engine(s)
... steam turbine(s)
... electric motor(s)
... gas turbine(s)

1.22 Manufacturer and mark of main engine .....

1.23 Total rated power ..... kW

1.24 Number of propulsors and mode of propulsion***

... propeller(s)
... paddle-wheel(s)
... voith-Schneider propulsor(s)
... water-jet propulsor(s)
... Z-drive(s)
... others

* Assigned freeboard from the deckline, from the lowest point of the gunwale, or from the lowest point of the fixed planking, for decked vessels, a dumb tanker or an open vessel.

** Where a decked vessel is sailed open, the assigned freeboard shall be increased.

*** Underline whatever applies and strike out the remainder.

1.25 Main Steering gear:

	For steering ahead	For steering astern
Type of rudder and number of blades		
Number of nozzle rudders		
Control of the gear manual-mechanical* manual-hydraulic* electric-hydraulic* electric*		

1.26 Stand-by steering gear

Control of the gear:

manual-mechanical*
manual-hydraulic*
electric-hydraulic*
electric*

Put into operation:

manually*
automatically*

Manufacturer and type .....

.....

1.27 Bow-steering gear: yes/no*

Manufacturer and type .....

.....

Remote-controlled from the wheelhouse: yes/no*

1.28 Wheelhouse: movable or fixed*

1.29 Wheelhouse specially arranged - not arranged - to enable steering by radar to be done by one person*

* Underline whatever applies and strike out the remainder.

II

EQUIPMENT

2.1* Anchors

bow anchor, mass ..... kg, type .....
bow anchor, mass ..... kg, type .....
stern anchor, mass ..... kg, type .....
stern anchor, mass ..... kg, type .....

2.2* Anchor chains**

bow anchor chain, length ..... m, diameter ..... mm, breaking load ..... kN

bow anchor chain, length ..... m, diameter ..... mm, breaking load ..... kN

stern anchor chain, length ..... m, diameter ..... mm, breaking load ..... kN

stern anchor chain, length ..... m, diameter ..... mm, breaking load ..... kN

2.3* Life-saving appliances

... lifeboat(s) with a capacity of ... persons

... liferaft(s) with a capacity of ... persons
... lifejackets
... lifebuoys

2.4* Fire-fighting

... portable extinguishers
... fixed extinguishing installations
... other installations: .....

.....

2.5* Drainage installations

... portable motor pumps, with a total capacity of ..... m^3/h
... fixed motor pumps, with a total capacity of ..... m^3/h
... hand pumps, with a total capacity of ..... l/min.

* Underline whatever applies and strike out the remainder.

** Breaking load to be inserted at the discretion of the competent authorities.

2.6* Navigation equipment

a pair of ship's binoculars
a loud-hailer
a radio-receiver
a binnacle chronometer

2.7* Miscellaneous equipment

an echo-sounder
a manually operated depth-finder with spare lead
a sounding-pole
an access gangway
an accommodation ladder
..... (other embarkation equipment)
..... fenders
..... boat-hooks

a pilot ladder

a first-aid kit and a board displaying instructions for the rescue and revival of the drowning
..... hose-pipes
suitable equipment for stopping leaks

2.8* Audible communications between vessel's bow and wheelhouse

two-way, one way at a time
simultaneous two-way telephone

2.9* Radio-telephone installations

vessel-to-vessel communication
maritime operations
public calls
internal service connections

2.10 Cables

	Purpose of cable		
	Towing	Coupling	Mooring
Number			
Length (m)			
Breaking load kN**			

* Underline whatever applies and strike out the remainder.

** This item may be inserted at the discretion of the competent authorities.

2.11* (The number of liquefied gas installations for domestic use, their type and the term of validity of their certificates are indicated in a separate document.)

2.12* Remarks .....
.....
.....

2.13* Visual and auditory signals** .....

III

MINIMUM CREW***

IV

FINAL PARTICULARS

4.1 The vessel is authorized:

1. to two

   1.1 up-stream and down-stream
   1.2 only up-stream
   1.3 only as an auxiliary tug

2. to take vessels coupled alongside

3. to push

4. to be towed

5. to be taken coupled alongside

6. to be pushed

4.2 Restrictions on or special authorizations relating to the operation of the vessel or the carriage of cargo and passengers: .....
.....
.....

* This item may be inserted at the discretion of the competent authorities.

** Details shall be given regarding vessel's visual and auditory signals according to the relevant provisions of the European Code for Inland Waterways (CEVNI).

*** Insertion of this section is left to the discretion of the competent authorities.

4.3 On the basis of the technical inspection it has undergone, the vessel is hereby certified to be fit for operation in the zone or zones indicated in paragraph 1.8.

4.4* This certificate has been issued in exchange of certificate

No. ..... issued by .....
name of competent authority

of ..... at .....
name of country place

on .....
date of issue

4.5 The certificate is valid until: .....

Date: .....

Stamp Signature: .....

V

RENEWAL OF THE SHIP'S CERTIFICATE

5.1 On the basis of the survey it has undergone, the vessel is hereby certified to be fit for operation in the zone or zones indicated in paragraph 1.8. This certificate is hereby renewed valid until .....

Remarks .....
.....
.....

Date: .....

Stamp Signature: .....

5.2 On the basis of the survey it has undergone, the vessel is hereby certified to be fit for operation in the zone or zones indicated in paragraph 1.8. This certificate is hereby renewed valid until .....

Remarks .....
.....
.....

Date: .....

Stamp Signature: .....

* This item may be inserted at the discretion of the competent authorities.

VI

RECORD CONCERNING CHANGES IN THE SHIP'S CERTIFICATE

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....

6.1 Entry of item(s) ..... changed

New entry (entries) .....
.....
.....

Date: .....

Stamp Signature: .....
