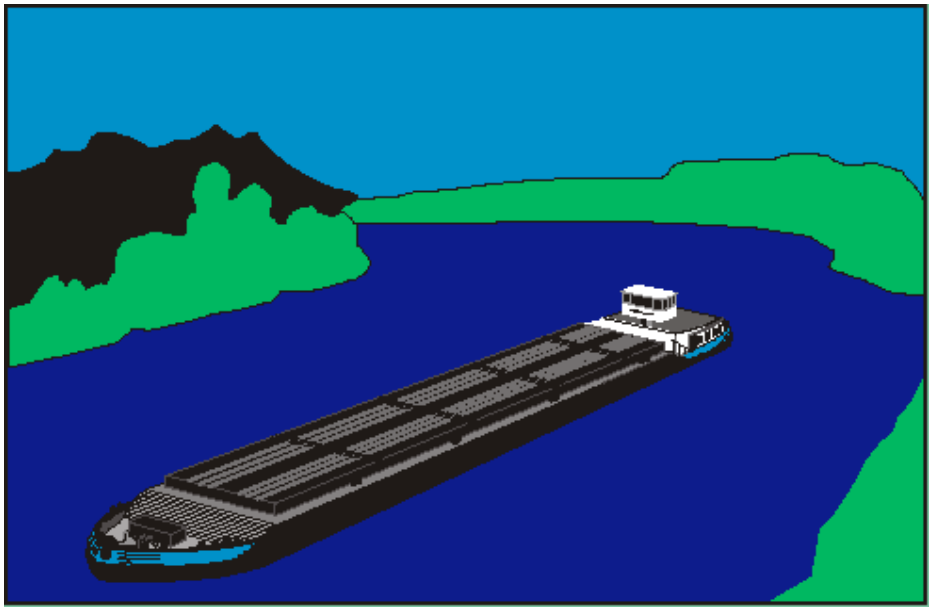
CENTRAL COMMISSION FOR THE NAVIGATION ON THE RHINE

RHINE VESSELS INSPECTION REGULATIONS



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CENTRAL COMMISSION FOR NAVIGATION ON THE RHINE

REVISION OF THE RHINE VESSELS INSPECTION REGULATIONS

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PART I

CHAPTER 1

GENERAL PROVISIONS

Article 1.01

Definitions

In these Regulations:

Types of vessel

1. "Vessel" means a vessel or floating equipment;

2. "Vessel" means an inland waterway vessel or sea-going ship;

3. "Inland waterway vessel" means a vessel designed exclusively or mainly to be used on inland waterways;

4. "Sea-going ship" means a vessel admitted for maritime or coastal trade and mainly intended for this purpose;

5. "Self-propelled vessel" means an ordinary self-propelled vessel or a self-propelled tanker;

6. "Self-propelled tanker" means a vessel designed for the transport of cargo in fixed tanks and built to navigate independently using its own mechanical means of propulsion;

7. "Ordinary self-propelled vessel" means a vessel other than a self-propelled tanker designed for the transport of cargo and built to navigate independently using its own mechanical means of propulsion;

8. "Canal barge" means an inland waterway vessel not exceeding 38.5 m in length and 5.05 m in breadth and normally used on the Rhone-Rhine canal;

9. "Tug" means a vessel specially built for towing;

10. "Pusher" means a vessel specially built to propel a pushed convoy;

11. "Towed barge (chaland)" means an ordinary towed barge or a towed tanker;

12. "Towed tanker" means a vessel designed for the transport of cargo in fixed tanks, built to be towed and not equipped with mechanical means of propulsion, or equipped with mechanical means of propulsion for short hauls only;

13. "Ordinary towed barge" means a vessel other than a towed tanker intended for the transport of cargo, built to be towed and not equipped with mechanical means of propulsion, or equipped with mechanical means of propulsion for short hauls only;

14. "Pushed barge" means a pushed tanker, an ordinary pushed barge or a ship borne barge;

15. "Pushed tanker" means a vessel intended for the transport of cargo in fixed tanks, built or specially fitted to be pushed and not equipped with mechanical means of propulsion, or equipped with mechanical means of propulsion for short hauls only when the vessel is not part of a pushed convoy;

16. “Ordinary pushed barge” means a vessel other than a pushed tanker intended for the transport of cargo, built or specially fitted to be pushed and not equipped with mechanical means of propulsion, or equipped with mechanical means of propulsion for short hauls only when the vessel is not part of a pushed convoy;

17. “Shipborne barge” means a pushed barge built to be carried on board sea-going ships and to be used on inland waterways;

18. “Passenger vessel” means a vessel built and equipped to carry more than 12 passengers;

19. “Day-excursion vessel” means a passenger vessel without overnight passenger cabins;

20. “Passenger cabin-vessel” means a passenger vessel equipped with overnight passenger cabins;

20_{bis}. ‘High-speed vessel’ means a motorized vessel capable of reaching a speed greater than 40 km/h in relation to the water.

21. “Floating equipment” means floating structures carrying equipment used for work, such as cranes, dredgers, pile drivers and elevators;

22. “Worksite vessel” means vessel designed, built and equipped for use at worksites, such as reclamation dredgers, hopper or pontoon barges, pontoons or block-layers;

23. “Sports vessel” means a vessel other than a passenger vessel, designed for sport or leisure;

24. “Floating establishment” means any floating installation that is normally a fixture, such as a swimming bath, dock, wharf or boat-shed;

25. “Assembly of floating material” means a raft or any structure, assembly or object capable of navigation, other than a vessel, floating equipment or floating establishment;

Groups of vessels

26. “Convoy” means a rigid convoy or a towed convoy;

27. “Formation” means the form in which a convoy is made up;

28. “Rigid convoy” means a pushed convoy or side-by-side formation;

29. “Pushed convoy” means a rigid group of vessels, one at least of which is placed in front of the motorized vessel or vessels propelling the convoy and known as “pushers”; a convoy consisting of a pusher and a pushed vessel coupled so as to permit controlled movement between them;

30. “Side-by-side formation” means a group of vessels coupled rigidly side by side, none of which is placed in front of the vessel propelling the formation;

31. “Towed convoy” means a group of one or more vessels, floating establishments or assemblies of floating material towed by one or more motorized vessels forming part of the convoy;

Special areas on vessels

32. “Main machinery space” means the area housing the propelling engines;

33. “Machinery space” means an area housing combustion engines;

34. “Boiler room” means an area housing plant designed to produce steam or a thermal fluid and operated by fuel;

35. “Enclosed superstructure” means a continuous, rigid, watertight structure with rigid bulkheads permanently so assembled with the deck as to be watertight;

36. “Wheelhouse” means the area housing all the controls needed to manoeuvre the vessel;

37. “Accommodation” means premises for the use of persons usually living on board, including galleys, storerooms, toilets, washrooms, laundries, halls and corridors, but excluding the wheelhouse;

38. “Hold” means a part of the vessel bounded by bulkheads fore and aft, open or closed by means of hatch covers, designed to transport packaged or bulk cargo or to accommodate tanks separate from the hull;

39. “Fixed tank” means a tank attached to the vessel with walls consisting either of the hull itself or of a casing separate from the hull;

40. “Work space” means an area in which the crew must perform its duties, including gangways, derricks and dinghies;

41. “Passageway” means an area intended for the normal movement of persons and cargo;

Marine engineering terms

42. “Maximum draught line” means the waterline corresponding to the maximum draught at which the vessel is authorized to navigate;

43. “Safety distance” means the distance measured between the maximum draught level and the parallel line passing through the lowest point above which the vessel cannot be deemed watertight;

44. “Freeboard” or “F” means the vertical distance measured between the maximum draught level and the parallel line passing through the lowest point of the gunwale or, if there is no gunwale, through the upper edge of the side plating at its lowest point;

45. “Margin line” means an imaginary line drawn on the side plating at least 10 cm below the bulkhead deck and at least 10 cm below the lowest non-watertight point of the side plating. If there is no bulkhead deck, a line drawn at least 10 cm below the lowest line up to which the outer side plating is watertight shall be used;

46. “Water displacement” or “$\forall$” means the immersed volume of the vessel, in m^3;

47. “Displacement” or “D” means the total weight of the vessel, including cargo, in t;

48. “Displacement block coefficient” or “δ” means the ratio between the water displacement and the product T of length · breadth · draught T;

49. “Sheer plan above water” or “S” means the sheer plan of the vessel above the waterline, in m^2;

50. “Bulkhead deck” means the deck to which the required watertight bulkheads are taken and from which the freeboard is measured;

51. “Bulkhead” means a wall, usually vertical, subdividing the vessel, bounded by the bottom of the vessel and the plating or other bulkheads and rising to a given height;

52. “Transverse bulkhead” means a bulkhead extending from one side of the vessel to the other;

53. “Wall” means a dividing surface, usually vertical;

54. “Partition wall” means a non-watertight wall;

55. “Length” or “L” means the maximum length of the hull, excluding rudder and bowsprit;

56. “Overall length” means the maximum length of the vessel in m, including all fixtures such as parts of the steering or propulsion gear, mechanical devices and the like (maximum dimension as defined in the Rhine Navigation Police Regulations);

57. “Length” or “L_F ” means the length of the hull in m, measured at maximum draught;

58. “Breadth” or “B” means the maximum breadth of the hull in m, measured to the outer edge of the shell plating (excluding paddle wheels, rubbing strakes, etc.);

59. “Overall breadth” means the maximum breadth of the vessel in m, including all fixed apparatus such as paddle wheels, plinths, mechanical devices and the like (maximum dimension as defined in the Rhine Navigation Police Regulations);

60. “Breadth” or “B_F” of the hull in m, measured from the outside of the side plating at the maximum draught line;

61. “Side height” or “H” means the shortest vertical distance between the top of the keel and the lowest point of the deck at shipside;

62. “Draught” or “T” means the vertical distance between the lowest moulded point of the hull or the keel and the maximum draught line;

63. “Forward perpendicular” means the vertical line at the forward point of the intersection of the hull with the maximum draught line;

64. “Free width of the gunwale” means the distance between the vertical line passing through the most prominent part of the gunwale on the coaming side and the vertical line passing through the inside edge of the slip guard (guard-rail, foot-rail) on the outer side of the gunwale;

Steering gear

65. “Steering gear” means all equipment needed to steer the vessel and to ensure the manoeuvrability prescribed in chapter 5 of these Regulations;

66. “Rudder” means the rudder or rudders, with shaft, including the rudder quadrant and the components connecting with the steering apparatus;

67. “Steering apparatus” means the part of the steering gear which produces the movement of the rudder;

68. “Steering control” means the steering apparatus control, between the power source and the steering apparatus;

69. “Power source” means the power supply to the steering control and the steering apparatus produced by an on-board network, batteries or an internal combustion engine;

70. “Drive unit” means the component parts of and circuitry for the operation of a power-driven steering control;

71. “Steering apparatus control unit” means the control for the steering apparatus, its drive unit and its power source;

72. “Manual control” means a control whereby movement of the rudder is produced by the manual manipulation of the hand wheel, by means of a mechanical or hydraulic transmission, without any additional power source;

73. “Hydraulic manual control” means a manual control with hydraulic transmission;

74. “Rate-of-turn regulator” means a device which sets and automatically maintains a given rate of turn for the vessel, in accordance with preselected values;

75. “Wheelhouse equipped for radar steering by one person” means a wheelhouse equipped to permit the vessel to be steered by one person using radar navigation;

Properties of structural components and materials

76. “Watertight” means a structural component or device so fitted as to prevent any ingress of water;

77. “Sprayproof and weathertight” means a structural component or device so fitted that under normal conditions it allows only a negligible quantity of water to enter the vessel;

78. “Gastight” means a structural component or device so fitted as to prevent the ingress of gas or vapours;

79. “Non-combustible” means a material which does not burn or give off flammable vapours in sufficient quantities to ignite when it reaches a temperature of approximately 750°C; [1/]

80. “Not easily flammable” means a material which will not easily catch fire or the surface of which will not easily catch fire and which impedes the spread of fire in an appropriate manner; [1/]

81. “Fireproof” means a structural component or device which meets certain fire-resistance requirements; [1/]

[1/] See attached directive No.6 for inspection commissions concerning the fire resistance of materials and structural components.

Other terms

82. "Approved classification society" means a classification society approved by all Rhine River States and Belgium, namely: Germanischer Lloyd, Bureau Veritas and Lloyds Register of Shipping.

83. "Highest class" is assigned to a vessel if

- its hull including the steering gear and manoeuvring equipment as well as anchors and anchor chains are in conformity with the rules of an approved classification society and has been built and approved under its supervision;
- the propelling and auxiliary machinery together with mechanical and electrical equipment needed for on-board services have been built and approved in conformity with the rules of an approved classification society and have been installed under its supervision; the whole plant shall successfully pass trials after its installation on board.

Radar apparatus

84. 'Radar equipment' means electronic assistance to navigation intended for the detection and representation of the environment and traffic;

85. 'Inland ECDIS' means a standardized electronic chart display and information system for inland navigation, displaying selected information from an Inland System Electronic Navigational Chart drawn up by the manufacturer and, optionally, information from other vessel sensors;

86. 'Inland ECDIS equipment' means equipment intended for the display of inland electronic navigational charts in the following two operational modes: Information Mode and Navigation Mode;

87. 'Information Mode' means the use of the Inland ECDIS for information purposes only without overlaid radar image;

88. 'Navigation Mode' means the use of the Inland ECDIS for conning the vessel with overlaid radar image."

Article 1.02

Scope

Text in English is not available.

Article 1.03

Inspection certificate

Text in English is not available.

Article 1.04

Canal barges navigating between Basel and the Iffezheim locks

Text in English is not available.

Article 1.05

Seagoing ships

Text in English is not available.

Article 1.06

Temporary requirements

Text in English is not available.

Article 1.07

Directives to the Inspection Commissions

Text in English is not available.

CHAPTER 2

PROCEDURE

Article 2.01

Inspection Commissions

1. Inspection Commissions shall be instituted by the Rhine States and Belgium in certain suitable ports.

2. The Inspection Commissions shall comprise a chairman and experts.

   The following shall serve on each Commission as experts, at least:

   (a) one official competent in navigational matters;
   (b) one expert on the construction of inland navigation vessels and their engines;
   (c) a nautical expert holding the Rhine Boatmaster's Certificate.

3. The chairman and experts of each Commission shall be appointed by the authorities of the State to which the Commission is answerable.

   On taking up their duties, the chairman and the experts shall undertake in writing to perform them with complete impartiality. This requirement shall not apply to officials.

4. The Inspection Commissions may be assisted by specialized experts according to the national provisions applicable.

Article 2.02

Request for inspection

1. The owner of a vessel, or his representative, who requests an inspection shall apply to any Inspection Commission of his choice. The Inspection Commission shall specify the documents to be submitted to it.

2. The owner of a vessel not subject to these Regulations or his representative may request an inspection certificate; this request shall be complied with if the vessel conforms to the requirements of these Regulations.

Article 2.03

Presentation of the vessel for inspection

1. The owner, or his representative, shall present the vessel for inspection unladen, cleaned and equipped; he shall be obligated to provide such assistance as may be required for the inspection, such as providing a suitable launch and personnel, and uncovering those parts of the hull or the installations which are not directly accessible or visible.

2. In the case of a first inspection, the Inspection Commission shall require a dry-dock inspection. This inspection may be waived if a certificate of classification or a certificate from an approved classification society can be produced showing that the construction conforms to its requirements. In the event of an additional or special inspection, the Inspection Commission may require a dry-dock inspection.

The Inspection Commission shall make running tests during a first inspection of self-propelled barges or convoys or when substantial changes have been made to the propelling or steering equipment.

3. The Inspection Commission may require additional inspections and running tests, as well as other supporting documents. This provision shall also apply during the construction phase of the vessel.

Article 2.04

Issue of the inspection certificate

1. When, following an inspection of the vessel, the Inspection Commission finds that the vessel meets the requirements of these Regulations concerning the construction, gear and equipment, it shall issue the applicant with an inspection certificate according to the model contained in Annex B.

2. Should the Inspection Commission refuse to issue a certificate, it shall inform the applicant in writing of the reasons for its refusal.

3. The distinctive letters of the Inspection Commission, with the serial number of the inspection certificate shall be indelibly affixed in Latin letters and Arabic numerals at least 2 cm high, at a clearly visible point mentioned in the inspection certificate, on a part of the vessel which must be fixed, protected from shocks and not subject to wear and tear.

Article 2.05

Provisional inspection certificate

1. The Inspection Commission may issue a provisional inspection certificate to:

   (a) vessels which wish to apply to an Inspection Commission of their choice in order to obtain an inspection certificate;

   (b) vessels which are temporarily without their inspection certificate in one of the cases covered by articles 2.07, 2.13, paragraph 1, or 2.14;

   (c) vessels for which the inspection certificate is being prepared following a positive inspection;

   (d) vessels in cases where not all the conditions for obtaining an inspection certificate as set out in Annex B or Annex G have been met;

   (e) vessels which have suffered damage such that their condition no longer conforms to the certificate;

   (f) floating establishments and floating equipment when the competent authorities for the application of article 1.21, paragraph 1, of the Police Regulations for Navigation of the Rhine make the special transport authorization subject to obtaining such a provisional inspection certificate;

   (g) vessels for which the Inspection Commission accepts an equivalent under article 2.19, paragraph 2, in cases in which the Central Commission for the Navigation of the Rhine has not yet established a recommendation.

2. The provisional inspection certificate shall be established according to the model contained in Annex D when the navigability of the vessel, the floating establishment or the floating equipment seems adequately ensured.

It shall indicate the conditions deemed necessary by the Inspection Commission and shall be valid:

(a) in the cases set out in paragraph 1, (a) and (d) to (f), for a single specific voyage to be performed within an appropriate time-limit of not more than one month;

(b) in the cases referred to in paragraph 1, (b) and (c), for an appropriate duration;

(c) in the cases referred to in paragraph 1, (g), for a duration of six months. Extensions shall be permitted only with the agreement of the Central Commission for the Navigation of the Rhine.

Article 2.06

Validity of the inspection certificate

1. For new vessels, the validity of inspection certificates established in accordance with the requirements of these Regulations, shall be:

(a) five years for passenger vessels;

(b) ten years for other vessels.

In certain justified cases, the Inspection Commission may establish shorter periods of validity. The validity period shall be specified in the inspection certificate.

2. For vessels which were in service prior to the inspection, the validity period of the inspection certificate shall be determined by the Inspection Commission in each individual case according to the results of the inspection. However, this validity shall not exceed the period stipulated in paragraph 1.

Article 2.07

Particulars and amendments to the inspection certificate

1. The owner of a vessel, or his representative, shall inform an Inspection Commission of any change in the name or ownership of the vessel, or any remeasurement or change of official number, registration number or home port and shall transmit to it the inspection certificate for amendment.

2. All particulars in or amendments to the inspection certificate provided for in these Regulations, the Police Regulations for Navigation of the Rhine and other requirements drawn up by mutual agreement by the Rhine States and Belgium, may be entered in the certificate by any Inspection Commission.

3. When an Inspection Commission makes an amendment to a certificate or enters particulars in it, it shall so inform the Inspection Commission which issued the certificate.

Article 2.08

Special inspection

1. In the event of modifications or large-scale repairs affecting the solidity of the construction, or the navigability, manoeuvrability or characteristics of the vessel, the latter shall be presented to an Inspection Commission prior to any further voyage, for a special inspection.

2. The Inspection Commission which carries out the special inspection shall establish the validity period of the inspection certificate according to the results of the inspection. This validity period shall not exceed that previously established for the inspection certificate.

   The validity period shall be entered in the inspection certificate and brought to the attention of the Inspection Commission which issued the certificate.

Article 2.09

Additional inspection

1. The vessel shall be subjected to an additional inspection before the validity of its inspection certificate expires.

2. In special cases, at the substantiated request of the owner or his representative, the Inspection Commission may grant an extension of the validity of the certificate of not more than one year without an additional inspection. This extension shall be granted in writing and shall be kept on board the vessel.

3. The Inspection Commission which carries out the additional inspection shall again establish the validity period of the inspection certificate according to the results of the inspection. This validity shall be established in accordance with article 2.06.

   The validity period shall be entered in the inspection certificate and brought to the attention of the Commission which issued the certificate.

4. If, instead of having its validity extended as set out in paragraph 3, an inspection certificate is replaced by a new certificate, the old certificate shall be returned to the Inspection Commission which issued it.

Article 2.10

Voluntary inspection

The owner of a vessel, or his representative, may request a voluntary inspection of the vessel other than the special inspections referred to in article 2.08 or additional inspections referred to in article 2.09.

This request for an inspection shall be complied with.

Article 2.11

Official visit

1. If the authorities responsible for ensuring the safety of navigation on the Rhine consider that a vessel may constitute a danger for the persons on board or for navigation, they may order an inspection of the vessel by an Inspection Commission.

2. The owner of the vessel shall bear the cost of the inspection only if the grounds for the opinion of the authorities are accepted by the Inspection Commission.

Article 2.12

Certification by a classification society

1. The Inspection Commission may refrain from subjecting, all or part of the vessel to the inspections required in Part II and article 23.09 on the production of a valid certificate issued by a classification society approved by all the Rhine States and Belgium declaring that the vessel meets the above-mentioned requirements wholly or partially.

2. The text of this paragraph is not available in English.

Article 2.13

Withholding and return of the certificate

1. When an Inspection Commission ascertains, in the course of an inspection, that a vessel or its equipment suffers from serious defects which might jeopardize the safety of the persons on board or the safety of shipping, it shall withhold the inspection certificate and inform the Inspection Commission which issued it without delay. In the case of pusher barges or shipyard vessels, the metal plate referred to in the Police Regulations for Navigation of the Rhine shall also be removed.

   When the Inspection Commission ascertains that these defects have been remedied, the inspection certificate shall be returned to the owner or to his representative.

   This finding and the return of the certificate may, at the request of the owner or his representative, be effected by another Commission.

   Where the Inspection Commission which has withheld the inspection certificate presumes that the defects will not be eliminated in the near future, it shall send the inspection certificate to the Commission which issued it or to the Commission which most recently extended it.

2. When a vessel is finally immobilized or scrapped, the owner shall send back the certificate to the Inspection Commission which issued it.

Article 2.14

Duplicate copy

1. If the inspection certificate is lost, a declaration of loss shall be made to the Inspection Commission which issued it.

The Commission shall issue a duplicate copy of the inspection certificate, which shall be designated as such.

2. If an inspection certificate becomes illegible or unusable for any other reason, the owner of the vessel, or his representative, shall return it to the Inspection Commission which issued it; this Commission shall issue a duplicate copy in accordance with paragraph 1.

Article 2.15

Expenses

1. Notwithstanding article 2.11, paragraph 2, the owner of the vessel, or his representative, shall bear all costs relating to the intervention of the Inspection Commission, in accordance with a detailed tariff to be established by each of the Rhine States and Belgium. There shall be no discrimination in respect of the country of registration, nationality or domicile of the owner.

2. The Inspection Commission may, prior to the inspection, require the owner to provide a sum equal to the probable amount of the expenses.

Article 2.16

Information

The Inspection Commission may permit persons who can show their interest to examine the contents of a vessel's inspection certificate and, at their expense, may issue extracts or certified true copies or the certificate which shall be designated as such.

Article 2.17

Register of inspection certificates

1. The Inspection Commissions shall assign a serial number to the certificates which they issue. They shall keep a register of all the certificates issued, in accordance with Annex C.

2. The Inspection Commissions shall keep a collection of the minutes or a copy of all the certificates which they have issued and enter on them all the particulars and amendments, as well as cancellations and replacements of certificates.

Article 2.18

Official number

1. The Inspection Commission which issues the inspection certificate to a vessel registered in a Rhine State or in Belgium, or whose home port is situated in one of these States, shall affix to the inspection certificate the official number assigned to the vessel by the competent service of the State of its place of registration or its home port.

   As regards vessels belonging to a State other than the Rhine States and Belgium, the official number to be affixed to the inspection certificate shall be assigned by the competent service of the State in which the Inspection Commission issuing this certificate is based.

   These provisions shall not apply to seagoing vessels or to sports vessel.

2. The official number shall be composed of seven Arabic numerals. The first two figures shall identify the State and the office where the number was assigned, according to the following distribution:

France	01-19
Netherlands	20-39
Germany	40-59
Belgium	60-69
Switzerland	70-79
Other States	88-99.

The next five figures of the official number shall correspond to the current number of a register kept by the competent service. For the purposes of technical checks, the official number may be followed by a letter in lower case. For vessels which are neither registered nor domiciled in a Rhine State or in Belgium, the first two figures shall identify the country in which the vessel is registered. These figures shall be assigned by the Central Commission for the Navigation of the Rhine. The next two figures shall identify the State and the office where the official number was assigned.

3. The official number shall remain unchanged throughout the vessel's existence. However, if the vessel is registered in another State or if its home port is transferred to another State, the official number shall no longer be valid. The inspection certificate shall then be presented to an Inspection Commission which shall delete the official number which has ceased to be valid and shall enter, if necessary, the new official number assigned by the relevant service.

4. It shall be incumbent on the owner of the vessel, or his representative, to request the relevant service to assign the official number. It shall also be incumbent on him to affix to the vessel, in accordance with the provisions of article 2.01, paragraph 1 (c) of the Police Regulations for the Navigation of the Rhine, the official number entered on the inspection certificate and to remove it when this number ceases to be valid.

Article 2.19

Equivalences and derogations

1. Where the provisions of Part II require certain materials, installations or equipment to be used or kept on board or certain structural measures to be taken or improvements to be made, the Inspection Commission may permit other materials, installations or equipment to be used or kept on board the vessel or other structural measures to be taken or other layouts adopted if, on the basis of recommendations made by the Central Commission for Navigation of the Rhine, they are recognized as equivalent.

2. Where the Central Commission for Navigation of the Rhine has not made any recommendation in accordance with paragraph 1 above, the Inspection Commission may issue a temporary inspection certificate.

In the case of provisional inspection certificates issued under article 2.05, 1 (g), the competent authority shall notify the Central Commission for Navigation of the Rhine within one month of the name of the vessel for which the provisional inspection certificate has been

issued, specifying its official number, the nature of the derogation and the name of the State in which the vessel in question is registered or in which its home port is situated.

3. The Inspection Commission may, on the basis of recommendations made by the Central Commission for Navigation of the Rhine, issue a trial inspection certificate for a limited period to a specific vessel presenting new specifications which derogate from the requirements of Part II, provided that such specifications afford adequate safety.

4. The equivalences and derogations referred to in 1 and 2 above shall be entered on the inspection certificate.

PART II

CHAPTER 3

STRUCTURAL REQUIREMENTS

Article 3.01

Basic requirement

Vessel must be constructed according to the rules of good shipbuilding practice.

Article 3.02

Hull strength and stability

1. The hull shall have sufficient strength to withstand all the stresses to which it is normally subjected;

   (a) In the case of newly-built vessel or major alterations affecting the strength of the vessel, adequate strength shall be proved by the production of evidence based on calculations. Such evidence shall not be compulsory if a certificate or statement issued by an approved classification society is produced;

   (b) For the inspection referred to in article 2.09, the minimum thicknesses of bottom plating, bilge plating and side plating shall be determined as follows:

   The minimum thickness t_{min} = is taken to be the larger of the values produced by the following formulas:

   1. t_{min} = for craft longer than 40 m : $f \cdot b \cdot c\,(2.3 + 0.04\,L)$ [mm];

      For vessels of 40 m or less in length: $t_{min} = f \cdot b \cdot c\,(1.5 + 0.06\,L)$ [mm], but not less than 3.0 mm.

   2. $t_{min} = 0.005 \cdot a\,\sqrt{T}$ [mm]

      Where a = distance between frames in [mm];

      f = factor for distance between frames:
      - f = 1 for a $\leq$ 500 mm,
      - f = 1 + 0.0013 (a - 500) for a > 500 mm,

      b = factor for bottom, side or bilge plating
      - b = 1.0 for bottom and side plating
      - b = 1.25 for bilge plating.

      In calculating the minimum thickness of bilge plating, f = 1 may be taken for distance between frames. However, the minimum thickness of bilge plating may under no circumstances be less than that of bottom or side plating.

      c = factor for the type of structure
      - c = 0.95 for vessel with double bottoms and double sides and with the hold bulkhead directly under the coaming,
      - c = 1.0 for all other types of structure.

(c) Minimum values calculated by this method shall be regarded as limit values allowing for normal uniform wear and provided that shipbuilding steel is used and that internal structural elements such as floors, ribs, and lengthwise and transverse load-bearing components are in sound condition and that no change to the hull entails a longitudinal rigidity overload.

As soon as these values are no longer attained, the plating in question shall be repaired or replaced. Thicknesses up to 10% less shall, however, be acceptable in some places.

2. The stability of vessel must be consistent with the use for which they are designed.

Article 3.03

Hull

1. Bulkheads carried up to the deck or, if there is no deck, to the top edge of the side-plating shall be fitted in the following places:

(a) A collision bulkhead shall be fitted at an appropriate distance from the bow so that the buoyancy of the vessel when loaded is ensured, with a residual safety distance of 100 mm in the event of flooding of the watertight compartment situated forward of the collision bulkhead.

The requirement of 1 above shall ordinarily be considered to be met if the collision bulkhead is fitted at a distance, measured from the forward perpendicular in the plane of the maximum loaded draught, of between 0.04 L and 0.04 L + 2 m.

If this distance is greater than 0.04 L + 2, compliance with the requirement of 1 above shall be demonstrated by calculation.

This distance may be reduced to 0.03 L, in which case compliance with the requirement of 1 above shall be demonstrated by calculation, assuming the compartment forward of the collision bulkhead and all the adjacent compartments to be flooded.

(b) An afterpeak bulkhead at an appropriate distance from the stern for vessel more than 25 m in length.

2. No accommodation or equipment necessary for the safety of the vessel or its operation shall be located forward of the collision bulkhead line. This requirement shall not apply to anchor gear.

3. Accommodation, and engine and boiler rooms, together with their working spaces, shall be separated from the holds by watertight transverse bulkheads carried up to the deck.

4. Accommodation shall be separated from engine and boiler rooms and holds by gastight bulkheads and be directly accessible from the deck. If there is no such access, an emergency exit shall be provided leading directly to the deck.

5. The bulkheads prescribed in 1 and 3 above and the separation between spaces prescribed in 4 above shall not have any openings.

However, doors in the afterpeak bulkheads and the passage of shafting, piping, etc. shall be permitted if they are executed in a way which does not reduce the effectiveness of such bulkheads and space dividers. Doors in the afterpeak bulkhead shall be clearly marked on both sides with the following inscription:

"Door to be closed immediately after use".

6. Water intakes and outlets, together with their piping, shall be so effected that any accidental ingress of water into the vessel is impossible.

7. The text of this paragraph is not available in English.

Article 3.04

Engine and boiler rooms, bunkers

1. The engine and boiler rooms shall be designed to permit safe and easy operation and maintenance of the equipment installed there.

2. Bunkers for liquid fuel or lubricating oil and accommodation areas shall not have common walls which, under normal operating conditions, are subject to the static pressure of the liquid.

3. Bulkheads, ceilings and doors of engine rooms, boiler rooms and bunkers shall be made of steel or of an equivalent non-flammable material.

4. Engine rooms, boiler rooms and other spaces in which flammable or toxic gases may be released shall be provided with adequate ventilation.

5. Stairways and ladders giving access to engine rooms, boiler rooms and bunkers shall be securely fixed and be made of steel or of an equally strong and non-flammable material.

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

   The second exit may be dispensed with when:

   (a) The total floor area (average length · average width) of the engine room or boiler room does not exceed 35 m^2 and

   (b) The distance from each point where service or maintenance operations have to be carried out to the exit or the foot of the stairway near the exit giving access to the open air is not more than 5 m and

   (c) An extinguisher is placed at the maintenance station furthest from the exit and, notwithstanding article 10.03, paragraph 1 (e), when the installed capacity of the engines is not more than 100 kW.

7. The maximum permissible sound-pressure level in engine rooms shall be 110 dB (A). The measuring points shall be selected on the basis of the maintenance operations required under normal operating conditions.

CHAPTER 4

SAFETY DISTANCE, FREEBOARD AND DRAUGHT MARKS

Article 4.01

Safety distance

1. The safety distance shall be not less than 300 mm.

2. For vessel with openings which cannot be closed by sprayproof and weathertight devices and for vessel navigating with open holds, the safety distance shall be increased so that each such opening is situated at least 500 mm from the maximum loaded draught line.

Article 4.02

Freeboard

1. The freeboard for full-deck vessel without sheer or superstructure shall be 150 mm.

2. For vessel with sheer and superstructure, the freeboard shall be calculated as follows:

$$F = 150\,(1-\alpha\,) - \frac{\beta_v \cdot Se_v + \beta_a \cdot Se_a}{15}\ [mm]$$

Where, α is a correction coefficient allowing for all the relevant superstructures;

β_v is a correction coefficient for the influence of the forward sheer resulting from the existence of superstructures in the forward quarter of the length L of the vessel;

β_a is a correction coefficient for the influence of the after sheer resulting from the existence of superstructures in the after quarter of the length L of the vessel;

Se_v is the effective forward sheer in mm;

Se_a is the effective after sheer in mm.

3. The coefficient α shall be calculated as follows: $\alpha = \dfrac{\sum le_a + \sum le_m + \sum le_v}{L}$

Where, le_m is the effective length in m of superstructures situated in the midsection corresponding to half the length L of the vessel;

le_v is the effective length in m of a superstructure in the forward quarter of the length L of the vessel;

le_a is the effective length of a superstructure in the after quarter of the length L of the vessel.

The effective length of a superstructure shall be calculated as follows:

$$le_m = l\left(2.5 \cdot \frac{b}{B} - 1.5\right) \cdot \frac{h}{0.36} \ [m]$$

$$le_v \text{ or } le_a = l\left(2.5 \cdot \frac{b}{B_1} - 1.5\right) \cdot \frac{h}{0.36} \ [m]$$

Where, l is the effective length of the superstructure in m;

b is the breadth of the superstructure in m;

B_1 is the breadth of the vessel in m, measured from the outside of the side plating at deck level halfway along the superstructure;

h is the height in m of the superstructure. However, in the case of hatches, h shall be obtained by subtracting from the height of the coamings half the safety distance specified in article 4.01. Under no circumstances shall a value of more than 0.36 m be used for h.

If $\frac{b}{B}$ or $\frac{b}{B_1}$ is less than 0.6, the value of the bracketed term shall be taken as zero, i.e. the effective length of the superstructure shall be nil.

4. The coefficients B_v and B_a shall be calculated as follows:

$$B_v = l - \frac{3 \cdot le_v}{L} \qquad B_a = l - \frac{3 \cdot le_a}{L}$$

5. The effective forward sheer Se_v and after sheer Se_a shall be calculated as follows:

$$Se_v = S_v \cdot p \qquad Se_a = S_a \cdot p$$

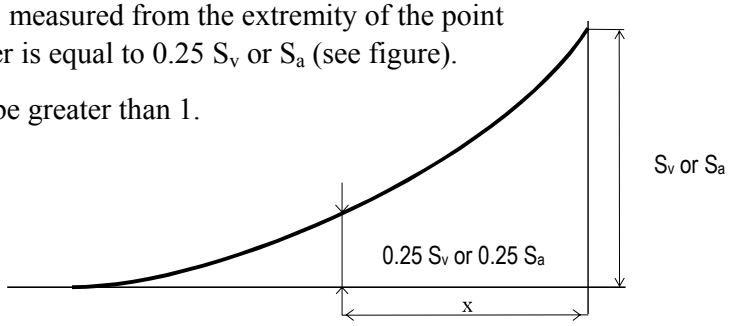
Where, S_v is the effective forward sheer in mm; however, S_v shall not be greater than 1 000 mm;

S_a is the effective after sheer in mm; however, S_a shall not be greater than 500 mm;

p is a coefficient obtained as follows: $p = 4 \cdot \frac{x}{L}$.

x is the abscissa, measured from the extremity of the point where the sheer is equal to 0.25 S_v or S_a (see figure).

However, the coefficient p may not be greater than 1.



6. If $B_a \cdot Se_a$ is greater than $B_v \cdot Se_v$, the value of $B_v \cdot Se_v$ shall also be taken for $B_a \cdot Se_a$.

Article 4.03

Minimum freeboard

Allowing for the reductions referred to in article 4.02, the minimum freeboard shall not be less than 0 mm.

Article 4.04

Draught marks

1. The maximum loaded draught line shall be determined so that the requirements of minimum freeboard and minimum safety distance are fulfilled simultaneously. However, for safety reasons, the Inspection Commission may set a higher value for the safety distance or freeboard.

2. The maximum loaded draught line shall be represented by clearly visible and indelible loaded draught marks.

3. The draught marks shall consist of a rectangle 300 mm long and 40 mm high, the base of which is horizontal and coincides with the authorized maximum draught line. Different draught marks shall include such a rectangle.

4. Vessel must carry at least three pairs of draught marks, one pair amidships and the two others at a distance equal to approximately one sixth of the length from the bow and the stern respectively.

   However,

   (a) for vessel less than 40 mm in length, two pairs of marks placed at a distance equal to one quarter of the length from the bow and the stern respectively shall be sufficient;

   (b) for vessel not designed to carry cargo, one pair of marks placed approximately amidships shall suffice.

5. Marks or indications which, following a further inspection, cease to be valid shall be erased or marked as no longer valid under the supervision of the Inspection Commission. If a draught marking becomes obliterated, it may not be replaced except under the supervision of an Inspection Commission.

6. Where the tonnage of a vessel has been measured in accordance with the International Convention on Tonnage Measurement of Inland Waterway Vessels and the tonnage marks satisfy the requirements of these regulations, the tonnage marks shall be taken as draught marks; this fact shall be recorded on the inspection certificate.

Article 4.05

Maximum loaded draught of vessels whose holds are not always closed so as to be sprayproof and weathertight

If the plane of the maximum draught of a vessel is determined by assuming that the holds may be closed in such a way as to be made sprayproof and weathertight and if the distance between the plane of the maximum draught and the upper edge of the coaming is less than 500 mm, the maximum draught for sailing with uncovered holds shall be determined.

The following entry shall be made on the inspection certificate:

"Where hold hatches are fully or partially open, the vessel may only be loaded up to ... mm below the draught marks."

Article 4.06

Draught scales

1. Vessels whose draught may exceed one metre shall bear a draught scale on each of their sides towards the stern; they may bear additional draught scales.

2. The zero points on each draught scale shall be taken vertically to the scale within the plane parallel to the maximum draught plane passing through the lowest point of the hull or of the keel where this exists. The vertical distance above the zero point shall be graduated in decimetres. The graduation shall be located on each scale, from the unladen water line up to 100 mm above the maximum draught level by means of punched or chiselled marks, and shall be painted in the form of a highly-visible band in two alternating colours. The graduation shall be identified by at least five figures in five decimetres marked next to and at the top of the scale.

3. The two stern measurement scales affixed pursuant to the Convention referred to in article 4.04, paragraph 6, may replace the draught scales, provided that they include a graduation that meets the requirements, supplemented, where appropriate, by figures indicating the draught.

CHAPTER 5

MANOEUVRABILITY

Article 5.01

General

Vessel and convoys shall be sufficiently navigable and manoeuvrable.

Vessel not equipped with propulsion machinery and designed to be towed shall meet the special requirements laid down by the Inspection Commission.

Vessel equipped with propulsion machinery and convoys shall meet the requirements of articles 5.02 to 5.10.

Article 5.02

Navigation tests

1. Navigability and manoeuvrability shall be verified by navigation tests. The following, in particular, shall be tested:

Speed (forward)	(art. 5.06);
Stopping capacity	(art. 5.07);
Navigability while going astern	(art. 5.08);
Capacity to take evasive action	(art. 5.09);
Turning capacity	(art. 5.10).

2. The Inspection Commission may waive all or some of the tests when compliance with navigability and manoeuvrability requirements is demonstrated by another means.

Article 5.03

Test area

1. The navigation tests referred to in article 5.02 shall be performed in areas of the Rhine or other inland waterways designated by the competent authorities.

2. Such test areas shall, if possible, be situated on a straight section not less than 2 km long and sufficiently wide, in flowing or still water, and be equipped with easily distinguishable marks enabling the position of the vessel to be determined.

3. Hydrological data such as depth of water, width of the navigable channel and average current speed in the navigation area at different water levels shall be readable by the Inspection Commission.

Article 5.04

Degree of loading of vessels and convoys during navigation tests

During navigation tests, vessel and convoys designed to carry cargo shall be loaded to not less than 70% of their dead weight and their load distributed so as to ensure horizontal trim as far as possible. Where tests are performed with a smaller load, approval for downstream navigation shall be limited to that load.

Article 5.05

Use of on-board facilities for navigation test

1. During navigation tests, all the equipment mentioned in the inspection certificate under items 34 and 52 which may be controlled from the steering station may be used, with the exception of the anchor.

2. However, during the upstream turning test referred to in article 5.10, bow anchors may be used.

Article 5.06

Prescribed maximum speed (forward)

1. Vessel and convoys shall achieve a speed through the water of at least 13 km/h. This requirement need not be met in the case of pushers sailing light.

2. The Inspection Commission may grant exemptions for vessel and convoys navigating solely in roadsteads and harbours.

3. The Inspection Commission shall check whether the vessel sailing light has the capacity to exceed a speed of 40 km/h relative to the water. If so, the following particular shall be entered in the ship's certificate:

"The vessel has the capacity to exceed a speed of 40 km/h relative to the water.

Article 5.07

Stopping capacity

1. Vessel and convoys proceeding downstream shall be able to stop in good time while remaining sufficiently manoeuvrable.

2. In the case of vessel and convoys up to 86 m long and up to 22.90 m wide, the stopping capacity referred to above may be replaced by turning capacity.

3. Stopping capacity shall be demonstrated by performing stopping manoeuvres in a test zone as described in article 5.03 and turning capacity shall be demonstrated by turning manoeuvres in accordance with article 5.10.

Article 5.08

Navigability while going astern

Where the stopping manoeuvre required under article 5.07 is performed in still water, it shall be followed by a test of navigability while going astern.

Article 5.09

Capacity to take evasive action

Vessel and convoys shall be able to take evasive action in good time. The capacity to take evasive action shall be demonstrated by evasive manoeuvres performed in a test area as described in article 5.03.

Article 5.10

Turning capacity

Vessel and convoys up to 86 m long and up to 22.90 m wide shall be able to turn in good time.

Such turning capacity may be replaced by the stopping capacity described in article 5.07.

Turning capacity shall be demonstrated by upstream turning manoeuvres.

CHAPTER 6

STEERING GEAR

Article 6.01

General requirements

1. Vessel shall be equipped with steering gear which ensures at least the manoeuvrability prescribed in Chapter 5 of these Regulations.

2. The power-driven steering gear shall be so constituted that the rudder position cannot change unexpectedly.

3. The entire steering gear shall be designed for a permanent list of up to 15° and ambient temperature of -20°C to +50°C.

4. The constituent parts of the steering gear shall have sufficient resistance to allow them to withstand the stresses to which they may be subjected under normal operating conditions. Pressures on the rudder from external forces shall not obstruct the operating capacity of the steering gear and its controls.

5. The steering gear shall comprise a power-driven steering control if the forces required to activate the rudder so require.

6. Power-controlled steering gear shall be fitted with a protection against overloading by restricting the torque imposed by the control.

7. The housings of rudder stock shafts shall be such that water-polluting lubricants cannot leak out.

Article 6.02

Steering apparatus control unit

1. If the steering gear has a power-driven control, in the event of the failure or breakdown of the steering apparatus control unit, it shall be possible to bring a second control unit or a manual control into service within 5 seconds.

2. If the second control unit or manual control is not automatically brought into service, it shall be possible for the steersman simply and rapidly to bring it into service immediately with a single manipulation.

3. The second control unit or the manual control shall ensure the manoeuvrability prescribed in Chapter 5 of these Regulations.

Article 6.03

Steering apparatus hydraulic drive unit

1. No user appliance may be connected to the steering apparatus hydraulic drive unit. When there are two independent steering controls, such a connection to one of the two units is, however, permissible if the users are connected to the return piping and may be cut off from the steering control by a shut-off device.

2. If there are two hydraulic units, a hydraulic tank is required for each of the two units; double tanks, however, are permitted. The hydraulic tanks shall be equipped with an alarm device if the oil level drops below the lowest filling level for safe operation.

3. The control box does not require to be duplicated if it can be activated manually or by a manual hydraulic control from the wheelhouse.

4. The dimensions, construction and arrangement of the piping shall ensure as far as possible that they will not be damaged as a result of mechanical acts or fire.

5. In the case of hydraulic drive units, a separate piping system is not required for the second steering apparatus control unit if the independent operation of the two control units is guaranteed and if the piping system is adjusted to a pressure at least equal to 1.5 times the maximum service pressure.

6. Hoses are only permitted when their use is indispensable to absorb vibrations or to permit the freedom of movement of the constituent parts. They shall be designed for a pressure at least equal to the maximum service pressure.

Article 6.04

Power source

1. If the steering gear is equipped with two power-driven controls it shall have two power sources.

2. If the second power source of the power-driven steering apparatus is not permanently available while the vessel is in motion, a buffer device with sufficient capacity shall provide power until it can start working.

3. In the case of electrical power sources, no appliance shall be powered by the network supplying the steering gear.

Article 6.05

Manual drive

1. The hand wheel shall not be actuated by the power-driven control.

2. The return of the hand wheel shall be prevented for all rudder positions when the hand wheel is automatically engaged.

Article 6.06

Rudder-propeller, water-jet, cycloidal-propeller installations and active bow rudders

1. In the case of rudder-propeller, water-jet, cycloidal-propeller installations and active bow rudders where the remote control of the modification of the direction of the drive is electric, hydraulic or pneumatic, there shall be two control systems, independent of each other, for the steering gear and the installation, on analogy with articles 6.01 to 6.06.

These installations shall only be subject to this article if they are not needed to obtain the manoeuvrability described in Chapter 5 of these regulations or if they are only required for the stop test.

2. In the case of several rudder-propeller, water-jet, cycloidal-propeller installations and active bow rudders which are independent of each other, the second control system is not necessary if, in the event of the failure of one of these installations, the vessel conserves the manoeuvrability prescribed in Chapter 5 of these regulations.

Article 6.07

Indicators and monitoring devices

1. The rudder position shall be clearly indicated in the steering control. If the rudder position indicator is electrical, it shall have its own power supply.

2. The text of this paragraph is not available in English.

Article 6.08

Rate-of-turn regulators

Text in English is not available

Article 6.09

Acceptance

1. The compliance of the installed steering system must be checked by an Inspection Commission, which may, for this purpose, request the following documents:

   (a) Description of the steering system;
   (b) Drawings and information on the steering system actuation systems and on the operating controls;
   (c) Information concerning the steering system;
   (d) Electrical wiring diagram;
   (e) Description of the rate-of-turn regulator;
   (f) System-use instructions.

2. Operation of the entire steering system must be checked by means of a navigation test. It must be checked that a predetermined course can be reliably maintained by the rate-of-turn regulators and that bends can be negotiated safely.

CHAPTER 7

WHEELHOUSE

Article 7.01

General

1. Wheelhouses shall be so equipped that the steersman can at all times perform his tasks while the vessel is under way.

2. Under normal operating conditions, the sound pressure level of the noise emitted by the vessel in the wheelhouse, at the level of the steersman's head, shall not exceed 70 dB(A).

3. In wheelhouses equipped for radar steering by one person, the steersman shall be able to perform his duties seated. All the indicators and monitoring devices and all the controls required to operate the vessel shall be so arranged so that the steersman can use them conveniently while the vessel is under way, without leaving his post and without taking his eyes off the radar screen.

Article 7.02

Unobstructed view

1. It shall be ensured that the view from the wheelhouse is sufficiently unobstructed in all directions.

2. For the steersman, the area of non-visibility in front of the unladen vessel carrying half stores but no ballast shall not exceed 250 metres.

   The optical means of reducing the area of non-visibility referred to in article 1.09 of the Police Regulations for the Navigation of the Rhine may not be taken into consideration during the inspection.

3. The field of visibility at the steersman's normal post shall be not less than 240° of the horizon, of which not less than 140° in the semi-circle forward of the vessel.

   No support, post or superstructure shall be in the steersman's normal line of vision.

   If a sufficiently unobstructed view cannot be ensured astern, the Inspection Commission may require other measures to be taken, such as the installation of auxiliary optical equipment.

4. A clear view from the forward window shall be ensured by appropriate means at all times.

5. The window glass used in wheelhouses shall have at least a 75% degree of transparency.

Article 7.03

General requirements concerning control and monitoring equipment

1. It must be easily possible to place in their position of use those controls that are needed to operate the vessel. That position must be unambiguously clear.

2. The monitoring instruments must be easily legible. It must be possible to adjust their lighting continuously downwards until they are extinguished. Light sources shall be neither intrusive nor impair the legibility of the monitoring instruments.

3. There must be a system for testing the warning lights.

4. It must be possible to establish clearly whether a system is in operation. If its functioning is indicated by means of a warning light, this shall be green.

5. Any malfunctioning or failure of systems that require monitoring shall be indicated by means of red warning lights.

6. An audible warning shall sound at the same time that the red warning lights light up. The audible warnings may consist of a single, common signal. The sound pressure level of that signal shall exceed the maximum sound pressure level of the ambient noise at the steering position by at least 3 dB(A).

7. The audible warning system may be switched off after the malfunction or failure has been confirmed. The shutdown shall not prevent the alarm signal from being triggered by other malfunctions. The red warning lights shall only go out when the malfunction has been corrected.

8. The monitoring and display devices shall be automatically connected to an alternative power supply if their own power supply fails.

Article 7.04

Special requirements concerning devices for controlling, indicating and monitoring the operation of propelling machinery and steering gear

1. It shall be possible to control and monitor propelling machinery and steering gear from the wheelhouse. Propelling machinery fitted with a clutch which can be operated from the wheelhouse or actuating a rudder propeller that can be operated from the wheelhouse may be started and stopped only from the engine room.

2. Each propelling engine shall be controlled by a single lever moving through a vertical arc roughly parallel with the longitudinal axis of the vessel. Moving this lever towards the bow of the vessel shall produce forward motion and moving it towards the stern shall produce movement astern. Engaging and reversing the engine shall be carried out with the lever in neutral position, which shall be indicated by a clearly audible click. Shifting from neutral position to the "full speed ahead" or "full speed astern" positions shall not involve moving the lever through more than 90°.

3. In wheelhouses equipped for radar steering by one person, the direction of the thrust exerted on the vessel by the propelling gear and the rotation speed of the propeller or propelling machinery shall be indicated.

4. The indicators and monitoring devices prescribed in article 6.07, para. 2, article 8.03, para. 2, and article 8.05, para. 11, shall be situated in the wheelhouse.

5. In wheelhouses equipped for radar steering by one person, the vessel's steering apparatus shall be controlled by one lever, which can be easily manipulated manually. The angle between the lever and the vessel's axis shall correspond exactly to the angle of the rudder plates. It shall be possible to release the lever in any position without any change occurring in the position of the rudder plates. The neutral position shall be indicated by a clearly audible click.

6. In wheelhouses equipped for radar steering by one person, if the vessel is fitted with bow rudders or special rudders, e.g. for going astern, they shall be controlled by special levers meeting the requirements laid down in 5 above.

   This requirement shall also apply to convoys where the steering gear of vessels other than the vessels propelling the convoy is used.

7. Where rate-of-turn regulators are used, it shall be possible to release the rate-of-turn control in any position without any change occurring in the selected rate.

   The sector through which the control rotates shall be large enough to ensure that it can be positioned with sufficient accuracy. The neutral position shall be clearly distinguishable from the other positions. Illumination of the scale shall be continuously adjustable.

8. Devices for the remote control of the steering gear as a whole shall be installed permanently and so that the heading selected is clearly visible. If the remote control devices can be disengaged, they shall be fitted with an indicator showing whether the device is "in use" or "not in use". The arrangement and operation of the controls shall be functional.

   In the case of auxiliary steering gear such as active bow rudders, non-fixed remote control devices shall be permitted provided that control of the auxiliary device can be taken over in the wheelhouse at any time by means of an override.

9. In the case of rudder-propeller, water-jet and cycloidal-propeller installations and of active bow rudders, equivalent control, indicator and monitoring devices shall be permitted.

   The requirements stipulated in 1 to 8 above shall apply by analogy, with due regard to the specific characteristics and selected arrangement of the steering and propelling gear referred to above. For each installation, depending on its position, the direction of the thrust exerted on the vessel, or the direction of the jet, shall be clearly indicated.

Article 7.05

Control and monitoring of signal lights, light signals and sound signals

1. In this article the term:

   (a) “Signal lights” means the mast, side and stern lights, and the lights visible from all sides, the blue flashing lights and the blue lights for the carriage of dangerous substances;

   (b) “Light signals” means the lights accompanying the audible signals and the light assigned to the blue panel.

2. Warning lights or any other equivalent device for monitoring the signal lights shall be installed in the wheelhouse unless that monitoring can be performed directly from the wheelhouse.

3. In wheelhouses designed for radar navigation by one person warning lights must be installed on the control panel in order to monitor the signal lights and the light signals. Signal light switches must be included in the warning lights or be adjacent to them.

   The layout and colour of the warning lights for the signal lights and light signals must correspond to the actual position and colour of those lights and signals.

   The failure of a signal light or light signal to function must cause the corresponding warning light to go out or to be signalled in another manner by the corresponding warning light.

4. The audible warning devices shall be foot actuated in wheelhouses that have been designed for radar navigation by one person. That requirement shall not apply to the "do not approach" signal referred to in article 8.12 of the Police Regulations for the Navigation of the Rhine.

Article 7.06

Radar installations and rate-of-turn indicators

1. The radar equipment and rate-of-turn indicators must be of a type that has been approved by the competent authorities. The requirements concerning installation and operational monitoring of appliances for navigation by radar and rate-of-turn indicators for navigation on the Rhine must be complied with. Inland ECDIS appliances that can be used in navigation mode are considered to be radar appliances. They shall also meet the requirements of the inland ECDIS standard.

   The rate-of-turn indicator must be located ahead of the helmsman and within his field of vision.

2. In wheelhouses designed for radar navigation by one person:

   (a) The radar screen shall not be significantly to one side of the line of sight of the helmsman in its normal position;

   (b) The radar image shall continue to be perfectly visible, without a mask or screen, whatever the lighting conditions applying outside the wheelhouse;

   (c) The rate-of-turn indicator shall be installed directly above or below the radar image or be incorporated into it.

Article 7.07

Radiotelephone installations for vessels with special wheelhouse arrangements for radar steering by one person

Text in English is not available

Article 7.08

Sound links on board

Vessel with wheelhouses equipped for radar steering by one person shall have an on-board sound link for internal communication.

From the wheelhouse, it shall be possible to establish sound links with:

(a) The bow of the vessel or head of the convoy;

(b) The stern of the vessel or convoy if no other means of communication from the wheelhouse is possible;

(c) The crew accommodation area or areas;

(d) The boatmaster's cabin.

At all sound-link locations, reception shall be by loudspeaker and transmission by fixed microphone. The link with the bow and stern of the vessel or head and stern of the convoy may be by radio telephone.

Article 7.09

Alarm system

1. There must be an independent alarm system enabling the accommodation, engine rooms and, where appropriate, the separate pump rooms to be reached.

2. The helmsman must have within reach an on/off switch controlling the alarm signal; switches which automatically return to the off position when released are not acceptable.

3. The sound pressure level for the alarm signal shall be at least 75 dB(A) within the accommodation area.

In the engine rooms and pump rooms the alarm signal shall take the form of a flashing light that is visible on all sides and clearly perceptible at all points.

Article 7.10

Heating and ventilation

Wheelhouses shall be equipped with a heating and ventilation system that can be regulated.

Article 7.11

Installations for stern anchor manoeuvres

On vessel and convoys where the wheelhouse is equipped for radar steering by one person, where the length is more than 86 m or the breadth more than 22.90 m, the steersman shall be able to drop the stern anchors from his post.

Article 7.12

Moveable wheelhouses

When the height of the wheelhouses is adjustable it shall be fitted with an emergency lowering system.

Any lowering manoeuvre shall automatically set off a clearly audible warning signal. This requirement does not apply if appropriate construction measures ensure that there is no risk of personal injury as a result of the lowering manoeuvre.

It shall be possible to leave the wheelhouse safely whatever its position.

Article 7.13

Entry in the inspection certificate of vessels with special wheelhouse arrangements for radar steering by one person

Where a vessel complies with articles 7.01, 7.04 to 7.08, and 7.11 in respect of wheelhouses that have been designed for radar navigation by one person, the following entry shall be made in the certificate:

“The vessel has special wheelhouse arrangements for steering on radar by one person.”

CHAPTER 8

ENGINE CONSTRUCTION

Article 8.01

General

1. Machinery and auxiliary installations shall be designed, built and installed according to good engineering practice.

2. Installations requiring continuous supervision, such as boilers and other pressure vessels, including their accessories, and lifts shall conform to the regulations of one of the Rhine River States or of Belgium.

3. Only internal combustion engines operating on fuels with a flashpoint above 55°C may be installed.

Article 8.02

Safety equipment

1. Machinery shall be installed and fitted so as to be sufficiently accessible for operation and maintenance and so as not to endanger crew members assigned to those tasks. They shall be protected against unintentional operation.

2. Propelling machinery, auxiliary machinery, boilers and other pressure vessels, including their accessories, shall be fitted with safety devices.

3. It shall be possible to stop motors driving suction-and-pressure fans if necessary from outside the space in which they are fitted and from outside the engine room.

Article 8.03

Propelling gear

1. It shall be possible to start, stop or reverse the propelling gear reliably and quickly.

2. The following:

   (a) The temperature of the main engine cooling water;
   (b) The lubricant pressure of the main engines and transmissions; and
   (c) The oil pressure and air pressure of the reversing gear of the main engines, reversible transmissions or propellers

   shall be monitored by appropriate devices which shall give an alarm signal when a critical level is reached.

3. For vessel with only one propelling engine, the engine shall not be stopped automatically except as protection against over-speeding.

4. The housings of shafts shall be such that water-polluting lubricants cannot leak out.

Article 8.04

Gas exhaust system

1. All exhaust gases shall be evacuated outside the vessel.

2. All necessary steps shall be taken to prevent exhaust gases from penetrating the various spaces. Exhaust pipes which pass through accommodation areas or the wheelhouse shall, within those spaces, be enclosed with a gastight protective sleeve. The space between the exhaust pipe and the sleeve shall communicate with the open air.

3. Exhaust pipes shall be so placed and protected that they cannot cause a fire.

4. In engine rooms, exhaust pipes shall be appropriately insulated and cooled. Outside engine rooms, protection against contact may be sufficient.

Article 8.05

Fuel tanks, pipes and accessories

1. Liquid fuels shall be stored in tanks which are made of steel or, if the construction of the vessel so requires, of a material with equivalent fire-resistant properties, and which form part of, or are securely attached to, the hull. This requirement shall not apply to tanks built into auxiliary equipment by the manufacturer and having a capacity of not more than 12 l. Fuel tanks shall not have common walls with drinking water tanks.

2. Tanks, their pipes and other accessories shall be so installed and fitted that no fuel or gas can escape accidentally into the vessel. The fuel-supply or water-evacuation valves of tanks shall close automatically.

3. Fuel tanks shall not be installed forward of the collision bulkhead.

4. Daily-supply tanks and their fittings shall not be installed above engines or exhaust pipes.

5. Fuel tank filling openings shall be clearly marked.

6. Pipes for filling liquid fuel tanks other than daily-supply tanks shall have their opening above the deck and be fitted with a closing device. Such tanks shall be fitted with a vent pipe leading to the open air above the deck and so placed that no water can enter it; its section shall be at least 1.25 times that of the filling pipe.

   Where liquid fuel tanks are interconnected, the section of the connecting pipe shall be at least 1.25 times that of the filler pipe.

7. Pipes supplying liquid fuel shall be fitted, at the tank outlet, with a closing device which can be operated from the deck.

   This requirement shall not apply to tanks mounted directly above the engine.

8. Fuel pipes, together with their connections, joints and fittings shall consist of materials able to withstand the mechanical, chemical, and heat stresses to which they may be exposed. Fuel pipes shall not be exposed to excessive heat and shall be accessible for inspection throughout their length.

9. Fuel tanks shall be fitted with a gauge which can provide readings up to the maximum filling level. The gauge columns shall be effectively protected against impact, fitted at their lower end with automatic closing devices and connected at their upper end to the tanks above the maximum filling level. The gauge columns shall be made of a material which does not buckle at normal ambient temperatures.

10. Liquid fuel tanks shall be provided with leakproof openings for cleaning and inspection.

11. Fuel tanks which directly supply propelling machinery and engines necessary for navigation shall be fitted with a device which emits a visible and audible signal in the wheelhouse when the fuel level is not sufficient for continued reliable operation.

Article 8.06

Bilge pumping and drainage

1. It shall be possible to drain each watertight compartment separately. However, this requirement shall not apply to compartments which are normally hermetically closed when the vessel is under way.

2. The vessels for which a crew is required must be equipped with two independent drainage pumps which shall not be installed in the same space and at least one of which shall be motor-driven. However, vessel having propelling machinery developing less than 225 kW or a deadweight of less than 350 t or, in the case of vessel not designed to carry cargo, a displacement of less than 250 m^3, one hand-operated or motor-driven pump shall suffice.

   It shall be possible to use each of the prescribed pumps for each watertight compartment.

3. The capacity of the first drainage pump shall be calculated as follows:

$$Q_1 = 0.1 \cdot d_1^{\,2} \quad [l/\min]$$

d_1 shall be calculated as follows:

$$d_1 = 1.5\sqrt{L(B+H)} + 25 \quad [mm].$$

The capacity of the second drainage pump in $l/\min$ shall be calculated as follows:

$$Q_2 = 0.1 \cdot d_2^{\,2} \quad [l/\min]$$

d_2 shall be calculated as follows:

$$d_2 = 2\sqrt{1(B+H)} + 25 \quad [mm].$$

However, the value d_2 may be taken as not greater than the value of d_1.

To determine Q_2, l shall be taken as the length of the longest watertight compartment.

Where, l = the length of the relevant watertight compartment, in m;
d_1 = the calculated internal diameter of the drainage pipe, in mm;
d_2 = the calculated internal diameter of the branch pipes, in mm.

4. Where drainage pumps are connected to a drainage system, the drainage pipes must have an internal diameter not less than d_1 in mm and the branch pipes an internal diameter not less than d_2 in mm.

   For vessel less than 25 m in length, these values may be reduced to 35 mm.

5. Only self-priming drainage pumps shall be allowed.

6. In every drainable compartment with a flat bottom over 5 m wide, there shall be at least one suction strainer on the port and starboard sides.

7. The afterpeak compartment may be drained to the main engine room via an easily accessible self-closing draining device.

8. The branch drainage pipes from the various 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 be connected to the drainage system only by a simple stop valve. This requirement shall not apply to holds designed for ballast. The filling of such holds with water ballast must be performed via permanently installed ballast piping separate from the drainage pipes or via branch pipes consisting of hoses or intermediate pipes which can be connected to the main drainage pipe. Bottom valves shall not be used for this purpose.

9. Bilges of cargo holds must be equipped with sounding devices.

10. In the case of drainage systems with permanently installed piping, the drainage pipes of bilges used for the collection of oily water shall be fitted with closure devices sealed in the closed position by an Inspection Commission. The number and positions of such closure devices shall be recorded in the inspection certificate.

Article 8.07

Collectors for oily water and drained oil

1. It shall be possible to keep on board oily water produced by the operation of the vessel. The engine room bilge shall be used for such storage.

2. For the collection of used oil, engine rooms shall be equipped with one or more specific receptacles with a capacity equal to at least 1.5 times the quantity of oils drained from the crank cases of all internal combustion engines and all installed machinery, as well as of hydraulic oils from hydraulic oil tanks.

   Connections for the drainage of such receptacles shall conform to European standard EN 1305:1996.

3. In the case of vessel operated only on short sectors, the Inspection Commission may grant exemptions from the requirements of 2 above.

Article 8.08

Noise emitted by vessels

1. Noise emitted by vessels under way, in particular engine intake and exhaust noise, shall be damped by appropriate means.

2. Noise emitted by a vessels shall not exceed 75 dB (A) at a lateral distance of 25 m from the shipside.

3. With the exception of transshipment operations the noise emitted by stationary vessel, shall not exceed 65 dB (A) at a lateral distance of 25 metres.

CHAPTER 8 bis

EXHAUST AND POLLUTANT PARTICLE EMISSIONS FROM DIESEL ENGINES

Article 8 bis.01

Definitions

For the purposes of this chapter:

1. "Engine" means an engine operating according to the compression ignition principle (diesel engine);

2. "Type approval" means the decision whereby the competent authority certifies that an engine type, family or group meets the technical requirements of this chapter in respect of emissions of engine exhaust and air-pollutant particles;

3. "Installation check" means the procedure whereby the competent authority ascertains that an engine installed on a vessel meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions, including those occurring after any modifications and adjustments which may have taken place after type approval;

4. "Interim check" means the procedure whereby the competent authority ascertains that an engine installed on a vessel meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions, including those occurring after any modifications and/or adjustments which may have taken place after the mounting check;

5. "Special check" means the procedure whereby the competent authority ascertains that an engine used on board a vessel still meets the technical requirements of this chapter as regards exhaust and air-pollutant emissions after each major modification;

6. "Engine type" means a batch of engines which are identical in terms of the essential features of the engine as set out in Annex J, Part II, Appendix 1; at least one unit of the engine type must be constructed;

7. "Engine family" means a grouping of engines by the constructor, approved by the competent authority, which as a result of their design must all have similar features as regards the level of exhaust and air-pollutant particle emissions and meet the requirements of this chapter;

8. "Engine group" means a group of engines selected by the constructor, approved by the competent authority, which as a result of their design must all have similar features as regards the level of exhaust and air-pollutant particle emissions and meet the requirements of this chapter, the adjustment or modification of individual engines being permissible after the type approval within fixed limits;

9. "Representative engine" means an engine selected within an engine family or engine group such as meets the requirements of Annex J, Part I, Section 5;

10. "Rated power" means the net power of the engine at rated speed and at full load;

11. "Constructor" means the physical person or the agency responsible to the competent authority for all aspects of the type approval and conformity of production process. This

person or agency is not required to participate directly in all the stages of engine construction. If, after initial manufacture, the engine undergoes adaptations and improvements for use on board a vessel within the meaning of this chapter, the constructor is in principle the physical person or agency executing the adaptations or improvements;

12. "Data sheet" means the document referred to in Annex J, Part II containing the data to be furnished by the applicant;

13. "Constructor's documents" means the full set of data, designs, photographs and other documents furnished by the applicant to the Technical Service or to the competent authority in accordance with the particulars of the data sheet;

14. "Approval documents" means the constructor's documents accompanied by test reports or other documents which the Technical Service or the competent authority have added in the execution of their tasks;

15. "Type approval certificate" means the document referred to in Annex J, Part III, by which the competent authority certifies the type approval;

16. "Collection of engine parameters" means the document referred to in Annex J, Part VIII containing all the parameters, including the parts (components) and adjustments of the engine, which have an impact on exhaust and air-pollutant particle emissions and their modifications.

Article 8 bis.02

Fundamental principles

1. This chapter applies to all engines of a rated power (P_N) equal to or greater than 37 kW installed on board vessels or machines on board vessels where they are not already covered by the EU directives concerning exhaust and air-pollutant particle emissions.

2. Carbon monoxide (CO), hydrocarbon (HC), nitrogen oxide (NO_x) and particle (PT) emissions from these engines must not exceed the following values, in terms of the rated speed n:

P_N [kW]	CO [g/kWh]	HC [g/kWh]	NO_X [g/kWh]	PT [g/kWh]
$19 \leq P_N < 37$	5.5	1.5	8.0	0.8
$37 \leq P_N < 75$	5.0	1.3	7.0	0.4
$75 \leq P_N < 130$	5.0	1.0	6.0	0.3
$130 \leq P_N < 560$	3.5	1.0	6.0	0.2
$P_N \geq 560$	3.5	1.0	$N \geq 3150\ min^{-1} = 6.0$ $343 \leq n < 3150\ min^{-1} = 45 \cdot n^{(-0.2)} - 3$ $n < 343\ min^{-1} = 11.0$	0.2

3. Compliance with the requirements of paragraph 2 by an engine type, group or family can be observed by means of a type inspection. The type inspection is certified by a type approval certificate. The owner or his representative is required to attach a copy of the type approval certificate to the request for inspection referred to in article 2.02. A copy of the type approval certificate and the collection of engine parameters shall also be on board.

4. After the installation of the engine on board, but before it is brought into service, an installation check is made. This check, which is part of the first inspection of the vessel or of a special inspection justified by the installation of the engine in question, leads either to the registration of the engine in the first inspection certificate drawn up or to an amendment to the existing inspection certificate.

5. Interim engine checks shall be effected as part of an additional inspection in accordance with article 2.09.

6. A special check shall be made after each major modification to the engine with an impact on exhaust and air-pollutant particle emission.

7. The type approval and identification numbers of all the engines referred to in this chapter installed on board a vessel shall be registered in No. 52 of the inspection certificate by the inspection commission.

8. The competent authority may have recourse to a Technical Service in order to effect the tasks referred to in this chapter.

Article 8 bis.03

Application for type approval

1. Any application for type approval by engine type, family or group is submitted by the constructor to one of the competent approval authorities. It shall be accompanied by the constructor's documents and a draft of the collection of engine parameters. For the approval tests, the constructor shall submit an engine with the basic features set out in Annex J, Part II, Appendix 1.

2. Where an application concerns the type approval of an engine family or engine group, if the competent authority considers that, as regards the representative engine selected, the application does not correspond to the engine family or engine group described in Annex J, Part II, Appendix 2, a replacement representative engine and, if necessary, an additional representative engine selected by it, shall be supplied for the purposes of the approval referred to in paragraph 1.

3. An application for approval of an engine type, an engine family or an engine group may only be submitted to a single authority. A separate application shall be submitted for each engine type or engine family or engine group to be approved.

Article 8 bis.04

Type approval procedure

1. The competent authority receiving the application shall grant type approval to all engine types or families or groups in conformity with the information contained in the constructor's documents and meeting the requirements of this chapter.

2. The competent authority shall complete all the relevant entries in the type approval certificate, a model of which can be found in Annex J, Part III, for each engine type or family it approves and shall draw up or check the contents of the index of the approval

documents. The approval certificates shall be numbered using the method described in Annex J, Part IV. The completed type approval certificate and its annexes shall be sent to the applicant.

3. Where the engine to be approved does not fulfil its function or presents certain features only in connection with other elements of the vessel in which it is to be installed, such that conformity with one or more requirements can be certified only when the engine to be approved functions in connection with other elements of the vessel, whether real or simulated, the scope of the engine approval type shall be restricted in consequence. The type approval certificate of the engine or of the engine family or engine group shall then include any restrictions on use and conditions for installation.

4. The competent authority:

(a) Shall, at each modification, send the other competent authorities a list (containing the information specified in Annex J, Part V) of type approvals of engines, engine families or engine groups that it has granted, refused or withdrawn during the period in question;

(b) At the request of another competent authority, the competent authority shall send:

(aa) a copy of the type approval certificate of the engine, the engine family or the engine group concerned, with or without the approval documents for each type of engine or engine family or engine group to which its acceptance, refusal or withdrawal of approval has applied and, where applicable,

(bb) the list referred to in article 8 bis.06, paragraph 3, of engines produced in accordance with the type approvals granted, with the information referred to in Annex J, Part VI.

5. Each year, and every time it is requested to do so, each competent approval authority shall send the secretariat of the Central Commission for the Navigation of the Rhine a copy of the data sheet referred to in Annex J, Part VII, concerning the engine types, families and groups approved since the last notification.

Article 8 bis.05

Modification of approvals

1. The competent authority which has processed a type approval shall take the necessary steps to ensure that it is informed of any modification of the data contained in the approval documents.

2. The application for modification or extension of a type approval shall be submitted exclusively to the competent authority which processed the original approval.

3. If particulars contained in the approval documents have been modified, the competent authority:

(a) shall, if required, prepare one or more revised pages of the approval documents, indicating clearly on each revised page the nature of the modification and the date of the new version. Each time revised pages are published, the summary of the approval documents (annexed to the type approval certificate) shall be updated;

(b) shall prepare a revised type approval certificate (with an extension number) if one of the particulars it contains (except for its annexes) has been modified or if the standards of the present chapter have been modified since the initial date of approval affixed to it. The revised certificate shall indicate clearly the reason for the revision and the date on which the new version was prepared.

If the competent authority which issued the type approval certificate considers that a modification of the approval documents justifies further tests or checks, it shall so inform the constructor and shall prepare the aforementioned documents only after making further satisfactory tests or checks.

Article 8 bis.06

Conformity

1. The constructor shall affix to each unit manufactured in accordance with the approved type the markings defined in Annex J, Part I, Section 1, including the type approval number.

2. If the type approval certificate makes provision for restrictions on use, in accordance with article 8 bis.04, paragraph 3, the constructor shall furnish details of such restrictions for each unit manufactured and attach the conditions for installation.

3. On request, the constructor shall send the authority which issued the type approval certificate, within 45 days of the end of each calendar year and immediately following any other date which the authority may decide, a list with the series of identification numbers (serial numbers) of each engine type produced in accordance with the requirements of the present chapter since the last date of notification or since the first date on which these provisions were implemented. This list shall indicate the relations between the identification numbers and the corresponding engine types, families or groups and the type approval numbers if the engine coding system does not make these relations explicit. It shall furthermore include details where the constructor has ceased to produce an approved engine type, engine family or engine group. Where the competent authority does not request that this list should be regularly communicated to it, the constructor shall keep these data for 40 years at least.

Article 8 bis.07

Acceptance of other equivalent standards

The Central Commission for the Navigation of the Rhine may acknowledge the equivalence between corresponding standards contained in international regulations, the requirements of a riparian State of the Rhine or Belgium or a third country as regards the approval of engines and the conditions and provisions established in this chapter.

Article 8 bis.08

Control of identification numbers

1. The competent authority which issued the type approval certificate shall take all necessary measures to record and check, if necessary in cooperation with the other competent

authorities, the identification numbers of engines produced in accordance with the requirements of this chapter.

2. An additional check of identification numbers may take place when conformity of production is certified as stated in article 8 bis.09.

3. As regards the check of identification numbers, the constructor or his agents established in riparian States of the Rhine or in Belgium shall transmit without delay to the competent authority which so requests all necessary information on their customers and the identification numbers of engines declared to have been manufactured in accordance with article 8 bis.06, paragraph 3.

4. If, at the request of the competent authority, the constructor is not in a position to check the requirements referred to in article 8 bis.06, type approval of the engine, the engine family or the engine group concerned may be withdrawn. The information procedure described in article 8 bis.10, paragraph 4, shall then be initiated.

Article 8 bis.09

Conformity of production

1. The competent authority which carries out a type approval shall ensure first of all that the necessary steps have been taken to guarantee the effective certification of conformity of production, in respect of the requirements defined in Annex J, Part I, Section 4, if necessary in cooperation with the competent authorities.

2. The competent authority which has carried out a type approval shall ensure that, as regards the provisions defined in Annex J, Part I, Section 4, where necessary in cooperation with the competent authorities, the measures referred to in paragraph 1 are always adequate and that each engine produced bearing a type approval number in accordance with the requirements of the present chapter conforms to the description contained in the type approval certificate of the approved engine, the engine family or the engine group and its annexes.

Article 8 bis.10

Non-conformity with the approved engine type, family or group

1. Non-conformity with the approved engine type, family or group exists when, in relation to the information furnished in the type approval certificate and/or in the approval documents, divergences are observed which have not been authorized, under article 8 bis.05, paragraph 3, by the competent authority which carried out the type approval.

2. If the competent authority which carried out the type approval notes that engines accompanied by a certificate of conformity or carrying an approval mark do not conform to the type, family or group which it has approved, it shall take the necessary measures for the re-establishment of the conformity of engines in the process of production to the approved type, family or group. The competent authority which carried out the type approval shall notify the other competent authorities of the measures taken which, as applicable, may include withdrawal of the type approval.

3. If a competent authority establishes that engines bearing a type approval number do not conform to the approved type, family or group, it may request the competent authority which carried out the type approval to check the conformity of engines under construction with the approved type, family or group. The required measures should be taken in the six months following the date of the request.

4. The competent authorities shall inform each other and also the secretariat of the Central Commission for the Navigation of the Rhine, within one month, of the withdrawal of a type approval and the reasons justifying that measure.

Article 8 bis.11

Installation check, interim check and special check

1. When the installation check referred to in article 8 bis.02, paragraph 4, the interim check referred to in article 8 bis.02, paragraph 5 and the special check referred to in article 8 bis.02, paragraph 6, are made, the competent authority shall check the current state of the engine with reference to its components and to the calibration and regulation of its parameters as specified in the descriptive documents.

   If a competent authority observes that the engine does not conform to the approved engine type, family or group, it may request that the conformity of the engine should be re-established, that the type approval referred to in article 8 bis.05 should be modified accordingly or that measurements should be made of the actual emissions.

   If the conformity of the engine is not re-established or if the type approval is not modified or if the measurements made show that emissions do not conform to the permitted rates referred to in chapter 8 bis.02, paragraph 2, the competent authority shall refuse to issue an inspection certificate and shall withdraw any inspection certificate previously drawn up.

2. Engines fitted with an exhaust after-treatment system shall be checked for the correct functioning of this system in the context of the installation, interim and special checks.

Article 8 bis.12

Competent authorities and Technical Services

1. The riparian States of the Rhine and Belgium shall notify the Central Commission for the Navigation of the Rhine of the names and address of the competent authorities and Technical Services responsible for questions relating to this chapter. The services notified shall comply with the standards for testing laboratories (EN ISO/IEC 17025 : 2000) and meet the following requirements:

   (a) Engine constructors may not be recognized as Technical Services;

   (b) For the purposes of this chapter, a Technical Service may, with the approval of the competent authority, use monitoring facilities other than its own.

2. Technical Services other than those of a State member of the Central Commission for the Navigation of the Rhine may only be recognized on the recommendation of the Central Commission for the Navigation of the Rhine.

CHAPTER 9

ELECTRICAL INSTALLATIONS

Article 9.01

General

1. When no special requirements are specified for certain parts of an installation, the safety level shall be considered satisfactory when these parts have been installed in accordance with an approved European standard or in accordance with the requirements of an approved classification society.

   The relevant documents must be presented to the Inspection Commission.

2. The following documents bearing the stamp of the Inspection Commission, shall be available on board:

   (a) General plans relating to the whole of the electrical installation;

   (b) The layout of the main switchboard, and the emergency installation and distribution switchboards, showing the most important technical data such as intensity and rated current of protective and control devices;

   (c) Indications of power requirements for electrical service equipment;

   (d) Types of wiring indicating conductor sections.

   For vessels without crews, these documents shall not be required to be on board but shall at all times be available with the owner.

3. The installations shall be designed for a permanent list of up to 15° and internal ambient temperatures from 0°C to +40°C and –20°C to +40°C on deck. They shall be fully functional up to these limits.

4. Electrical and electronic installations and equipment shall be easily accessible and easy to maintain.

Article 9.02

Power supply systems

1. Where vessel are fitted with an electrical system that system shall in principle have at least two power sources such that where one power source fails the remaining source is able to supply the equipment needed for navigational safety for at least 30 minutes.

2. Adequate sizing of the power supply shall be demonstrated by means of a power budget. An appropriate simultaneity factor may be taken into account.

3. Independently of section 1 above, article 6.04 shall apply to the power supplies for the steering system (rudder installations).

4. The power supplies referred to in section 1 shall be independent of each other on board passenger vessels.

5. Article 9.18 shall apply to emergency power supplies on board day-excursion vessels whose length L_F is not less than 25 m, and on vessels with cabins.

Article 9.03 [2/]

Protection against physical contact, insertion of solid objects and infiltration of water

The type of minimum protection for parts of permanent fixtures shall be as set out in the table.

Location	Type of minimum protection (in accordance with IEC publication 529)					
	Generators	Motors	Transformers	Panels Distributors Switches	Installation equipment	Lighting devises
Service premises, engine rooms, steering-gear compartments	IP 22	IP 22	[2)] IP 22	[1) 2)] IP 22	IP 44	IP 22
Holds					IP 55	IP 55
Battery and paint lockers						IP 44 and (Ex)[3)]
Unroofed decks and steering positions		IP 55		IP 55	IP 55	IP 55
Enclosed wheelhouse		IP 22	IP 22	IP 22	IP 22	IP 22
Accommodation apart from health facilities and wash rooms				IP 22	IP 20	IP 20
Health facilities and wash rooms		IP 44	IP 44	IP 44	IP 55	IP 44

Remarks

1) Where appliances release large amounts of heat: IP12.

2) Where appliances or panels do not have this type of protection, their location shall meet the conditions indicated in the table.

3) Electrical equipment of the certified safety type, e.g.

(a) European standards EN 50014:1997; 50015:1998; 50016:2002; 50017:1998; 50018:2000; 50019:2000 and 50020:2002, or

(b) IEC 60079 publications of corresponding content in force at 1 October 2003.

Article 9.04

Protection against explosion

Only electrical equipment that has been explosion proofed (safety-certified) may be installed in premises where potentially explosive gases or mixtures of gases are likely to accumulate, such as compartments set aside for accumulators or the storage of highly inflammable products. No light switches or other electrical appliances shall be installed on those premises. The explosion proofing shall take account of the characteristics of the potentially explosive gases or mixtures of gases that are likely to arise (explosion-potential group, temperature class).

Article 9.05

Earthing

1. Earthing shall be required in installations where voltages exceed 50 V.

2. Exposed metal parts which under normal operating conditions are not live, such as machine and frames and casings, appliances and lighting appliances, shall be earthed separately if they are not so mounted as to be already in electrical contact with the vessel's hull.

3. The casings of mobile and portable electric appliances shall be earthed by means of an additional conductor not normally carrying current and incorporated in the supply cable.

   This requirement shall not apply when a circuit-isolating transformer is used or to appliances fitted with protective insulation (double insulation).

[2/] Article 9.03 is in force from 1 October 2003 to 30 September 2006 (Resolution 2003-I-25).

4. The cross-section of earth wires shall be at least equal to the values obtained from the following table:

Cross-section of external conductors [mm²]	Minimum cross-section of earth wires	
	Insulated cables [mm²]	Separately mounted [mm²]
From 0.5 to 4	same cross-section as for the external conductor	4
More than 4 to 16	same cross-section as for the external conductor	same cross-section as for the external conductor
More than 16 to 35	16	16
More than 35 to 120	half of the cross-section of the external conductor	half of the cross-section of the external conductor
More than 120	70	70

Article 9.06

Maximum permissible voltages

1. The following voltages may not be exceeded:

Nature of installation	Maximum permissible voltage		
	Direct current	Single-phase alternating current	Three-phase alternating current
(a) Power and heating installation, including the relevant outlets	250 V	250 V	500 V
(b) Installations for lighting, and for communication, of orders and information, including the relevant outlets	250 V	250 V	-
(c) Outlets for current supply to handheld appliances used on open decks or in confined or damp metal-enclosed spaces other than boilers and tanks:			
(1) in general	50 V 1/	50 V 1/	-
(2) using an isolating transformer serving a single appliance	-	250 V 2/	-
(3) using appliances with protective insulation (double insulation)	250 V	250 V	-
(4) using fault current circuit-breakers ≤ 30 mA	-	250 V	500 V
(d) Mobile units such as electrical installations of containers, engines, fans and mobile pumps which are not normally adjusted during operation whose exposed conductive parts are earthed by a protective conductor incorporated in the connecting cable and which are connected to the hull, not only by this protective conductor, but by their location or by another conductor	250 V	250 V	500 V
(e) Outlets for current supply to handheld appliances used in boilers and tanks	50 V 1/	50 V 1/	-

Comments:
1/ When this voltage comes from higher voltage networks, a galvanic isolator (safety transformer) must be used.
2/ The secondary electrical circuit must be insulated from the chassis for all polarities.

2. If the required protective measures are complied with, higher voltages are permissible:

   (a) For power installations whose capacity so requires;

   (b) For special installations on board such as radio and lighting installations.

Article 9.07

Distribution systems

1. The following distribution systems are allowed for single-phase direct and alternating current:

   (a) two-conductor systems of which one is earthed (L1/N/PE);

   (b) single-conductor systems using the hull return principle, only for local installations (for example, starting installations for combustion engines, cathodic protection) (L1/PEN);

   (c) two-conductor systems insulated from the hull (L1/L2/PE).

2. The following distribution systems are allowed for three-phase alternating current:

   (a) four-conductor systems with earthing of the neutral point, not using the hull return principle (L1/L2/L3/N/PE) = network (TN-S) or network (IT);

   (b) three-conductor system insulated from the hull (L1/L2/L3/PEN) = network (IT);

   (c) three-conductor systems with earthing of the neutral point using the hull return principle except for terminal circuits (L1/L2/L3/PEN).

3. The Inspection Commission may allow the use of other systems.

Article 9.08

Connection to the shore or other external networks

1. Incoming supply lines from landbased networks or other external networks to the installations of the onboard network shall have a permanent connection on board in the form of fixed terminals or fixed plug sockets. The cable connections shall not be subjected to any pulling load.

2. The hull shall be capable of being earthed effectively when the connection voltage exceeds 50 V. The earthing connection should be specially marked.

3. The switching devices of the connection shall be capable of being locked so as to prevent the concurrent operation of the onboard network generators and the shore network or another external network. A brief period of concurrent operation shall be permitted when changing from one system to another without a break in voltage.

4. The connection shall be protected against short circuits and overloads.

5. The main switchboard shall indicate whether the connection is live.

6. Indicator devices shall be installed to allow comparison of polarity in the case of direct current and phase sequence in the case of alternating current between the connection and the onboard network.

7. A panel on the connection shall indicate:

   (a) the measures required to make the connection;

   (b) the kind of current and the nominal voltage and, for alternating current, the frequency.

Article 9.09

Power supply to other vessels

1. When power is applied to other vessel, a separate connection must exist. If outlets rated at more than 16 A are used to supply current to other vessel, steps shall be taken to ensure (for example, by the use of switches or interlocking devices) that connection and disconnection can take place only when the line is dead.

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

3. Article 9.08, paragraphs 3 to 7, shall apply by analogy.

Article 9.10

Generators and motors

1. Generators, motors and their terminal boxes shall be accessible for checks, measurements and repairs. The type of protection shall correspond to their location (see article 9.03).

2. Generators driven by the main power plant, the propeller shaft or by an ancillary set intended for another function shall be designed as a function of the range of rotational speeds which can occur during operation.

Article 9.11

Accumulators

1. Accumulators shall be accessible and so arranged as not to shift with movements of the vessel. They shall not be placed where they will be exposed to excessive heat, extreme cold, spray, steam or vapour.

   They shall not be installed in the wheelhouse, accommodation or holds. This requirement shall not apply to accumulators for portable appliances, or to accumulators requiring a charging power of less than 0.2 kW.

2. Accumulators requiring a charging power of more than 2.0 kW (calculated on the basis of the maximum charging current and the nominal voltage of the accumulator, taking into account the characteristic charging curve of the charging appliance) shall be installed in a special battery room. If placed on deck, they may also be enclosed in a cupboard.

   Accumulators requiring a charging power not exceeding 2.0 kW may also be installed below decks in a cupboard or chest. They may also be installed in a machinery space or any other well-ventilated place provided that they are protected against falling objects and dripping water.

3. The interior surfaces of all rooms, cupboards or boxes, shelving or other built-in features intended for accumulators shall be protected against the harmful effects of the electrolyte.

4. Provision shall be made for effective ventilation when accumulators are installed in a closed compartment, cupboard or chest. Artificial ventilation shall be provided for accumulators requiring a charging power of more than 2 kW for nickel-cadmium accumulators and more than 3 kW for lead accumulators.

   The air shall enter at the bottom and be discharged at the top so that a total evacuation of gases is ensured.

   Ventilation ducts shall not include devices which obstruct the air flow such as stop valves.

5. The required air throughput (Q) shall be calculated by the following formula:

$$Q = 0.11 \cdot I \cdot n \ [m^3/h]$$

   where: I represents one quarter of the maximum current admissible by the charging device, in A,

   n represents the number of cells.

   In the case of buffer accumulators of the onboard network, other methods of calculation taking into account the characteristic charging curve of the charging device may be accepted by the Inspection Commission, provided that these methods are based on the provisions of approved classification societies or on relevant standards.

6. Where natural ventilation is used, the cross-section of the ducts shall be sufficient for the required air throughput on the basis of an air flow velocity of 0.5 m/sec. The cross-section shall have a minimum value of 80 cm^2 for lead accumulators and 120 cm^2 for nickel-cadmium accumulators.

7. Where artificial ventilation is used, a fan shall be provided, preferably with an exhauster device; its motor shall be clear of the gas stream and the air stream.

   Fans shall be of a construction precluding the production of sparks through contact between a blade and the fan casing and shall avoid any electrostatic charges.

8. "No smoking" signs, similar to sketch 64 of Annex 3 to the Police Regulations for Navigation on the Rhine, and of a minimum diameter of 10 cm, shall be placed on the doors or covers of compartments, cupboards and chests containing accumulators.

Article 9.12

Connecting installations

1. Electrical switchboards

   (a) Appliances, switches, protective devices and switchboard instruments shall be arranged visibly and shall be accessible for maintenance and repair.

   Terminals for voltages up to 50 V and for voltages greater than 50 V shall be marked appropriately.

   (b) For all switches and appliances, marker plates indicating the circuit shall be affixed to switchboards.

   The nominal intensity and the circuit shall be indicated for protective devices.

(c) When appliances with an operating voltage greater than 50 V are installed behind doors, the current-carrying components of these appliances shall be protected against accidental contact while the doors are open.

(d) The materials of switchboards shall have suitable mechanical strength, and be durable, non-flammable and self-extinguishing; they shall not be hygroscopic.

(e) If fuses with high breaking capacity are installed in electrical switchboards, accessories and equipment for bodily protection shall be available for installing and removing such fuses.

2. Switches, protective devices

(a) Generator circuits and load circuits shall be protected against short circuits and overcurrent on all non-earthed conductors. Circuit-breakers or fuses may be used for this purpose.

Circuits supplying the steering gear motors (steering installations) and their control circuits shall be protected only against short circuits. When circuits include thermal circuit-breakers, these shall be neutralized or set at not less than twice the nominal intensity.

(b) Outputs from the main switchboard to appliances operating at more than 16 A shall include a load or power switch.

(c) Appliances required for propelling the vessel, for the steering gear, for the rudder position indicator, for navigation or for safety systems and appliances with a nominal intensity greater than 16 A shall be supplied by separate circuits.

(d) The circuits of appliances required for propelling and manoeuvring the vessel shall be supplied directly by the main switchboard.

(e) Circuit-breaking equipment shall be selected on the basis of nominal intensity, thermal or dynamic strength and their breaking capacity. Switches shall simultaneously cut off all live conductors. The switching position shall be identifiable.

(f) Fuses must be of the enclosed-melt type and be made of porcelain or an equivalent material. It shall be possible to change them without any danger of contact.

3. Measuring and monitoring devices

(a) Generator, battery and distribution circuits shall be equipped with measuring and monitoring devices when the safe operation of the installation so requires.

(b) Non-earthed networks where the voltage is higher than 50 V, must include a device for checking insulation equipped with a visual and acoustic alarm. In secondary installations such as control circuits, this device may be dispensed with.

4. Placement of electrical switchboards

(a) Switchboards shall be placed in accessible and well-ventilated spaces and protected against water and mechanical damage.

Piping and air ducts shall be so arranged that in the event of leakage the switchboards cannot be damaged. If they have imperatively to be installed near electrical switchboards, pipes shall not have removable connections in the vicinity.

(b) Cupboards and wall recesses in which unprotected circuit-breaking equipment is installed shall be of a non-flammable material or protected by a metal or other non-flammable sheathing.

(c) When the voltage is greater than 50 V, gratings or insulating mats shall be placed in front of the main switchboard where the operator sits.

Article 9.13

Emergency circuit breakers

Emergency circuit breakers for oil burners, fuel pumps, fuel separators and engine-room ventilators shall be installed outside the premises containing the equipment.

Article 9.14

Installation equipment

Text is not available in English.

Article 9.15

Cables

1. Cables shall be flame-retarding, self-extinguishing and resistant to water and oil.

   In accommodation, other types of cables may be used, provided they are effectively protected, have flame-retarding characteristics and are self-extinguishing.

2. Cables with conducting wires with a minimum cross-section of 1.5 mm^2 shall be used for power and lighting installations.

3. The armouring and metal sheathing of power and lighting installations shall not under normal operating conditions be used as conductor wires or earth wires.

4. The armouring and metal sheathing of power and lighting installations shall be earthed at least at one end.

5. The cross-section of conductor wires shall take account of the final permissible maximum temperature of conductor wires (maximum permissible amperage) and permissible voltage drop. Such a drop between the main switchboard and the least favourable point of the installation shall not be more than 5% of nominal voltage for lighting or more than 7% for power or heating installations.

6. Cables shall be protected against mechanical damage.

7. The means of fixing the cables shall ensure that any pulling load remains within the permissible limits.

8. When cables pass through partitions or decks, the mechanical strength, watertightness and fire resistance of these partitions and decks shall not be affected by the seals.

9. Cables linking mobile wheelhouses shall be sufficiently flexible and be fitted with insulation with sufficient flexibility up to -20°C and resistant to steam and vapour, ultraviolet rays, ozone, etc.

Article 9.16

Lighting installations

1. Lighting appliances shall be so installed that the heat they emit cannot set fire to nearby inflammable objects or components.

2. Lighting appliances on open decks shall be so installed as not to impede the recognition of signal lights.

3. When two or more lighting appliances are installed in an engine room or boiler room, they shall be distributed between at least two circuits. This requirement shall also apply to spaces where cooling machinery, hydraulic machinery or electric motors are installed.

Article 9.17

Signal lights

1. Switchboards for signal lights shall be installed in the wheelhouse. They shall be supplied by a separate feeder from the main switchboard or by two separate secondary networks.

2. Lights shall be individually supplied from the light-control switchboard and individually protected and controlled.

3. Tell-tale lamps or other equivalent devices monitoring the signal lights shall be placed on the switchboard in the wheelhouse unless direct monitoring from the wheelhouse is possible. A fault in the monitoring installation shall not affect the operation of the light which it monitors.

4. Several lights forming a functional unit and installed together at the same point may be jointly supplied, controlled and monitored. The monitoring installation shall be capable of identifying the failure of any of these lights. However, it shall not be possible to use the two light sources of a double light (two lights mounted one above the other or in the same housing) simultaneously.

Article 9.18

Emergency installations

1. Day-excursion vessel having a length L_F of 25 m or more and cabin vessel shall be equipped with emergency installations which can be used to supply power to the electrical installations listed in paragraph 3 below if the main power supply is interrupted.

2. The emergency installation (emergency source and its switchboard) shall be installed outside the main machinery space and the space where the main switchboard is located and shall be separated from those spaces by fire-resistant and watertight bulkheads.

3. Auxiliary power sources shall be capable of supplying simultaneously at least the following electrical installations if they are prescribed and if they have no independent power supply:

(a) Signal lights;

(b) Acoustic appliances;

(c) Emergency lighting of the spaces and stations referred to in article 15.10, paragraph 7;

(d) Radio telephone equipment;

(e) Alarm and loudspeaker systems;

(f) Emergency floodlight;

(g) Fire alarm system;

(h) Other safety installations such as sprinkler fire extinguishers or second fire pump.

4. The emergency source of power may be:

(a) An auxiliary set whose fuel supply system and cooling system are independent of the main machinery and which, in the event of a network failure, is started automatically, or can be started manually if it is installed in the immediate vicinity of the wheelhouse or other station manned continuously by qualified crew members, and can take up the power supply within 30 seconds, or

(b) An accumulator battery which, in the event of a network failure, automatically takes up current-supply duty or can be started manually if it is installed in the immediate vicinity of the wheelhouse or other station manned continuously by qualified crew members and can provide the consumers listed with power for the prescribed time without being recharged and without any unacceptable fall in voltage.

The operating time for emergency equipment shall be determined according to the intended use of the vessel, but shall in any event not be less than 30 minutes.

5. A failure of the main or emergency power installations shall not adversely affect the operational safety of the installations.

Article 9.19

Alarm and safety systems for mechanical installations

Alarm and safety systems for monitoring and protecting mechanical equipment shall meet the following requirements:

(a) Alarm systems

Alarm systems shall be so constructed that a failure in the alarm system cannot result in a failure of the apparatus or equipment being monitored.

Binary transmitters shall be designed on the rest-current principle or on the supervised operating current principle.

Visual alarms shall remain visible until the fault has been remedied; an alarm with acknowledgement shall be distinguishable from an alarm without acknowledgement. Each alarm shall also comprise an acoustic signal. It shall be possible to switch off acoustic alarms. Switching off one alarm signal shall not prevent another signal from being set off by another cause.

Exceptions shall be permitted in the case of alarm systems comprising less than 5 measurement points.

(b) Safety systems

Safety systems shall be designed to halt or slow down the operation of the affected equipment or to signal a permanently manned station to do so before a critical state is reached.

Binary transmitters shall be designed according to the operating current principle.

If safety systems are not designed to be self-monitoring, their operation must be verifiable.

Safety systems must be independent of other systems.

Article 9.20

Electronic equipment

1. General

The test conditions in paragraph 2 shall apply only to electronic and peripheral appliances of the steering gear (rudder installation) and the machinery necessary to propel the vessel.

2. Test conditions

(a) Testing requirements shall not result in damage to or malfunction of electronic appliances. Testing in accordance with relevant international standards, such as IEC 92-504, shall be performed with the appliance working, with the exception of the cold resistance test which involves verifying operation.

(b) Variations in voltage and frequency

	Range of service	Variations	
		Continuous	Short term
In general	Frequency voltage	± 5% ± 10%	± 10% 5 s ± 20% 1.5 s
Battery-operated	Voltage	+ 30%/ - 25%	-

(c) Heat test

The sample is carried to a temperature of 55°C over half an hour; once this temperature has been reached it is maintained for 16 hours. A performance check test is then carried out.

(d) Cold test

A sample in the off position is cooled to -25°C and kept at this temperature for two hours. The temperature is then raised to 0°C and a performance check test is carried out.

(e) Vibration test

Vibration tests shall be carried out at the resonance frequency of the appliances or parts in the three axes, for 90 minutes each time. If no net resonance emerges, the vibration test shall be made at 30 Hz.

The vibration test shall be carried out by sinusoidal oscillation within the following limits:

In general:

f = 2.0 at 13.2 Hz; a = $\pm$ 1 mm
(amplitude a = 1/2 vibration width)

f = 13.2 Hz at 100 Hz; acceleration $\pm$ 0.7 g.

Equipment for mounting on diesel engines or steering gear shall be tested as follows:

f = 2.0 at 25 Hz; a = $\pm$ 1.6 mm
(amplitude a = 1/2 vibration width)

f = 25 Hz at 100 Hz; acceleration $\pm$ 4 g.

Sensors for mounting on diesel engine exhaust pipes may be subjected to considerably higher constraints. Account should be taken of this during tests.

(f) Electromagnetic compatibility tests shall be performed on the basis of IEC-801-2, 801-3, 801-4, 801-5 with test level 3.

(g) The proof that the electronic appliances meet these test conditions shall be provided by the manufacturer. A certificate from a classification society shall also be taken as proof.

Article 9.21

Electromagnetic compatibility

The operation of electrical and electromagnetic installations shall not be impeded by electromagnetic interference. Concomitant general measures shall include:

(a) Disconnecting transmission channels between the source of the interference and the user appliances;

(b) Cutting down causes of interference at source;

(c) Reducing user appliance sensitivity to interference.

CHAPTER 10

HOISTING GEAR, RIGGING AND EQUIPMENT

Article 10.01

Anchors, chains and anchor cables

1. Vessel designed to carry cargo, with the exception of ship's barges having a length L of not more than 40 m, and towing vessel shall be equipped with bow anchors of which the total mass P is calculated as follows:

$$P = k \cdot B \cdot T \text{ [kg]}$$

where k is a coefficient taking account of the relationship between length L and breadth B and of the type of vessel:

$$k = c \sqrt{\frac{L}{8 \cdot B}}$$

In the case of pusher barges, however, k = c;

c is an empirical coefficient as shown in the following table

Deadweight	Coefficient (c)
Up to 400 t inclusive	45
From 400 t to 650 t inclusive	55
From 650 t to 1 000 t inclusive	65
Over 1 000 t	70

For vessel with a deadweight of not more than 400 t which, by virtue of their construction and intended use, are used only for specific short hauls, the Inspection Commission may allow bow anchors to be equivalent to only two-thirds total mass P.

2. Passenger vessel shall be equipped with bow anchors having a total mass P calculated as follows:

$$P = k \cdot B \cdot T \text{ [kg]}$$

In the case of passenger vessel operating downstream of k · p · 885 (Emmerich), the total mass (P) shall be calculated as follows:

$$P = k \cdot B \cdot T + 4\ A_f \text{ [kg]}$$

where k is the coefficient as in 1 above, but where the value of the empirical coefficient (c) is obtained by taking the displacement in m^3 entered on the inspection certificate instead of the deadweight;

A_f is the frontal wind surface in m^2.

3. The vessel described in 1 above shall be equipped with stern anchors with a total mass equal to 25% of the mass P calculated in accordance with 1 above.

Vessel having a maximum length of more than 86 m, however, shall be equipped with stern anchors with a total mass equal to 50% of the mass P calculated in accordance with 1 or 2.

Stern anchors shall not be required for:

(a) Vessel for which the stern anchor mass is less than 150 kg; in the case of vessel referred to in the last subparagraph of 1 above, the reduced anchor mass shall be used;

(b) Pusher barges.

4. Vessel to be used to propel rigid convoys not more than 86 m in length shall be equipped with stern anchors of a total mass equal to 25% of the greatest mass P calculated according to 1 above for the largest permitted formation (considered as a nautical unit) entered on the inspection certificate.

Vessel to be used for the downstream propulsion of rigid convoys of more than 86 m in length shall be equipped with stern anchors having a total mass equal to 50% of the greatest mass P calculated according to 1 above for the largest permitted formation (considered as a nautical unit) entered on the inspection certificate.

5. Anchor masses determined according to paragraphs 1 to 4 may be reduced in the case of some special anchors.

6. The total mass P prescribed for bow anchors may comprise one or two anchors. It may be reduced by 15% where the vessel is equipped with only one bow anchor and the anchor hawse is placed amidships.

In the case of pushers and vessel of a maximum length exceeding 86 m, the total mass prescribed in this article for stern anchors may comprise one or two anchors.

The mass of the lighter anchor may not be less than 45% of the total mass.

7. Cast iron anchors shall not be permitted.

8. Anchors shall be marked permanently with their mass in embossed characters.

9. Anchors having a mass of more than 50 kg shall be fitted with winches.

10. Anchor chains shall each be:

(a) at least 40 m long in the case of vessel up to 30 m in length;

(b) at least 10 m longer than the vessel where the vessel length is between 30 and 50 m;

(c) at least 60 m in the case of vessel more than 50 m in length.

Stern anchor chains shall each be at least 40 m long. However, vessel which must be able to stop when heading downstream shall have stern anchor chains each not less than 60 m long.

11. The minimum tensile strength of anchor chains shall be calculated using the following formulas:

(a) anchors with a mass of up to 500 kg: $R = 0.35 \cdot P'$ [kN];

(b) anchors with a mass of more than 500 kg up to 2,000 kg:

$$R = \left(0.35 - \frac{P' - 500}{15000} \right) P' \left[kN \right]$$

(c) anchors having a mass of more than 2,000 kg: $R = 0.25 \cdot P'$ [kN]

where P' is the theoretical mass of each anchor calculated in accordance with paragraphs 1 to 4 and 6 above.

The tensile strength of anchor chains shall be that given by one of the standards in force in one of the Rhine river States or Belgium.

Where anchors have a mass greater than that prescribed in paragraphs 1 to 6, the tensile strength of anchor chains shall be determined on the basis of that greater anchor mass.

12. If a vessel's gear includes heavier anchors and appropriately stronger anchor chains, the inspection certificate shall nevertheless show only the theoretical masses and tensile strengths arrived at by applying the requirements of paragraphs 1 to 6 and 11.

13. Connectors between anchors and chains shall have a tensile strength 20% greater than the breaking load of the relevant chain.

14. The use of cables instead of anchor chains shall be permitted. Cables shall have the same tensile strength as required for chains but shall be 20% longer.

Article 10.02

Other gear

1. The following equipment specified by the Police Regulations for the Navigation of the Rhine shall be on board:

(a) Radio-telephone equipment;

(b) Appliances and devices necessary for emitting visual and acoustic signals and for marking the vessel;

(c) Emergency lamps independent of the on-board power supply for the required anchorage lights;

(d) a lidded marked fire-resistant receptacle for the collection of special solid wastes and a lidded marked fire-resistant receptacle for the collection of special liquid wastes;

(e) a lidded marked fire-resistant receptacle for the collection of other special liquid and solid wastes and a lidded marked fire-resistant receptacle for the collection of the other special liquid wastes defined in the Police Regulations for the Navigation of the Rhine;

(f) a lidded marked fire-resistant receptacle for the collection of slops.

2. Gear must also include at least:

(a) Mooring cables:

Vessel shall be equipped with three mooring cables, the minimum lengths of which shall be as follows:

First cable: L + 20 m, but not more than 100 m
Second cable: two thirds of the first cable
Third cable: one third of the first cable.

On vessel where L is less than 20 m, the shortest cable shall not be required.

Cables shall have a breaking load R_s calculated as follows:

For L·B·T up to 1,000 m^3: $$R_s = 60 + \frac{L \cdot B \cdot T}{10} \quad in\,[kN];$$

For L·B·T over 1,000m^3: $$R_s = 150 + \frac{L \cdot B \cdot T}{100} \quad in\,[kN];$$

These cables may be replaced by synthetic fibre ropes of the same length and with the same breaking load;

(b) Towing cables:

Towing vessel shall be equipped with the number of cables necessary for their operation.

However, the longest cable shall be at least 100 m in length and have a breaking load, in kN, not less than one third of the total power, in kW, of the propelling engine or engines.

Self-propelled and pusher vessel suitable for towing shall be equipped with at least one towing cable 100 m in length with a breaking load, in kN, not less than one quarter of the total power, in kW, of the propelling engine or engines;

(c) A heaving line;

(d) An embarkation gangway at least 0.4 m wide and 4 m long, the sides of which shall be marked by a light-coloured strip; this gangway shall be fitted with a handrail. For small vessel, the Inspection Commission may permit shorter gangways;

(e) A boathook;

(f) A first aid kit;

(g) A pair of binoculars, at least 7 · 50;

(h) A board displaying instructions for the rescue and revival of drowning persons.

3. Vessel with a side-plating height of more than 1.5 m above the light waterline shall have an accommodation ladder or steps on board.

Article 10.03

Fire-fighting appliances

1. The following at least must be on board:

(a)	In the wheelhouse:	1 portable extinguisher
(b)	Near each access from the deck to the accommodation:	1 portable extinguisher
(c)	Near each access to the service spaces not accessible from the accommodation which contain heating, cooking or refrigerating equipment using solid or liquid fuels:	1 portable extinguisher
(d)	At each entrance to engine rooms and boiler rooms:	1 portable extinguisher
(e)	At a suitable point in the engine rooms, in the part located below deck, when total power is greater than 100 kW:	1 portable extinguisher

2. The portable extinguishers shall meet the following conditions:

   (a) The capacity of the wet portable extinguishers described in paragraph 1 shall be 9 to 13.5 litres. The content of powder type extinguishers shall be not less than 6 kg.

   (b) The extinguishing agent of the portable extinguishers described in paragraph 1 shall be suitable at least for the category of fire most likely in the space or spaces for which the extinguisher is mainly intended. On board vessels where the electrical installations have a service voltage greater than 50 V, the extinguishing agent shall also be appropriate for fighting fires in electrical equipment. The directions for use shall be clearly indicated on each portable extinguisher.

   (c) The extinguishing agent may neither be halon nor contain a product liable to give off toxic gases, such as carbon tetrachloride during use. Carbon dioxide portable extinguishers may only be used on fires in specific installations such as control panels or kitchens; the quantity of CO_2 shall not constitute a danger to health.

   (d) Fire extinguishers sensitive to frost or heat shall be installed or protected in such a way as to guarantee their permanent efficiency.

3. Extinguishers shall be checked at least every two years. A certificate to this effect signed by the person performing the check shall be carried on board.

4. If extinguishers are so installed as to be concealed from view, the wall concealing them shall bear a red F not less than 10 cm high.

5. The use of halon shall not be permitted for fixed fire fighting installations. CO_2 is permitted as the extinguishing agent under the following conditions:

   (a) CO_2 extinguishing equipment may be activated only in engine rooms, boiler rooms and pump rooms. Devices shall be installed whereby all openings which may let air in or let CO_2 out in the spaces to be protected can be closed. Activation devices shall

be so installed that they can be operated even in the event of fire. The automatic release of CO_2 shall not be permitted.

(b) The combustion air required for combustion engines for the propulsion of the vessel shall not be extracted from the engine rooms, boiler rooms or pump rooms.

This requirement is not mandatory when in addition to the main engine room the vessel is equipped with a separate engine room in which a bow thruster is installed capable of ensuring propulsion on its own in the event of fire in the main engine room.

The directions for use referred to in (d) shall mention that prior to the activation of the fire extinguishing equipment the combustion engines installed in the main engine room shall be stopped.

(c) Any fixed CO_2 fire extinguishing equipment shall be fitted with a warning device emitting clearly audible signals, even under operating conditions corresponding to the loudest possible noise, in all spaces to be filled by the CO_2 gas, and clearly distinguishable from all the other acoustic alarm signals on board.

The CO_2 warning signals shall also be clearly audible in the adjoining spaces with the communicating doors closed and in operating conditions equivalent to the loudest possible noise, when such spaces may be evacuated through the area to be filled by the CO_2 gas. The CO_2 warning signal shall function for an appropriate length of time before the CO_2 is released.

At the entrances and exits to all spaces which the CO_2 may enter, a sign with the following notice in German, French and Dutch, in red letters on a white background, shall be affixed at a suitable point:

"Bei Ertönen des CO_2_Warnsignals ... (Beschreibung des Signals) den Raum sofort verlassen! Erstickungsgefahr!"

"Quitter immédiatement ce local au signal CO_2 ... (description du signal)! Danger d'asphyxie!"

"Bij het in werking treden von het CO_2_Alarmsignaal_ ... (omschrijving van het signaal) deze ruimte onmiddellijk verlaten! Verstikkingsgevaar!"

("When the CO_2 signal sounds ... (description of the signal) leave this space immediately! Danger of asphyxia!")

(d) Legible and indelible directions for use in German, French and Dutch shall be affixed in the vicinity of any means of activating a CO_2 extinguishing system. The piping to the various spaces likely to be affected by the CO_2 shall be fitted with closing devices. Before the extinguishing system is operated, the warning device referred to in (c) shall first be automatically activated.

(e) The CO_2 tanks shall be placed in a space or cupboard with a gas-tight separation from other spaces. The doors of the spaces or cupboards shall open outwards, shall be capable of being locked and shall be marked "CO_2" in red on a white background.

Spaces below deck shall only be directly accessible from the outside. Direct links with other spaces shall not be permitted.

Spaces located below deck must have adequate independent ventilation, completely separate from the other ventilation systems on board. The ventilation ducts shall be so adjusted that in the event of a leak from the CO_2 tank, the gas cannot enter the interior of the vessel.

The temperature of these spaces shall not exceed 50°C.

Cupboards or spaces located on deck shall only be permitted if they are firmly secured and if they are located outside the accommodation area. In the event of a leak from a CO_2 tank, the gas shall not be able to enter the interior of the vessel.

The cupboards or spaces shall protect the tanks against heat, cold and humidity. The temperature in these spaces shall not exceed 50°C.

Spaces protected by CO_2 shall be equipped with appropriate devices for extracting the extinguishing agent. It shall not be possible to operate the extraction devices during extinguishing.

(f) For engine rooms, the installed system of piping shall enable 85 per cent of the gas, the quantity of which is determined in accordance with the second paragraph, to be piped into the engine room within two minutes.

The minimum quantity of CO_2 required for the spaces to be protected shall be not less than 40 per cent of the gross volume of the space. The quantity for the volume of depressurized CO_2 shall be taken to be 0.56 m^3/kg. If the quantity of CO_2 is intended to protect more than one space, the total quantity of available CO_2 required for the protection of a single space is adequate.

The degree of filling of the CO_2 tanks shall not exceed 0.75 kg/1.

The tanks shall be placed upright and shall be protected against falling.

Pressurized tanks, frames and piping for CO_2 shall meet the requirements of one of the Rhine river States or Belgium.

(g) The warning devices referred to in (c) and the extinguishing equipment shall be checked at least once every two years by a recognized expert.

The certificates of verification, with the date of the check, signed by the person who performed it, shall be carried on board.

(h) The existence of one or more fixed CO_2 extinguishing installations shall be recorded in the inspection certificate.

Other extinguishing agents are permitted only on the basis of recommendations by the Central Commission for the Navigation of the Rhine.

Article 10.04

Lifeboats

1. The following vessel shall be equipped with a lifeboat:

   (a) Self-propelled barges and lighters of more than 150 tonnes dead weight;

   (b) Tugs and pushers of more than 150 m^3 displacement;

   (c) Floating equipment;

   (d) Passenger vessel which are permitted to carry more than 250 passengers or which are equipped with more than 50 beds.

2. It shall be possible for a single person to launch the lifeboats rapidly and safely. If a power-driven unit is used for launching, it shall be ensured that a failure of the power supply will not jeopardize rapid and safe launching.

3. Lifeboats shall meet the following conditions:

   (a) They shall be easy to steer and handle; they shall keep a straight course and shall not be significantly put off course by wind, current or waves;

   (b) They shall have seats for not fewer than three persons;

   (c) They shall be sufficiently resistant;

   (d) Their volume shall be not less than 1.5 m^3 or the product $L_C \cdot B_C \cdot H_C$ shall be not less than 2.7 m^3;

   (e) Their freeboard shall be not less than 25 cm with three persons of approximately 75 kg;

   (f) Their stability shall be adequate. It shall be considered to be adequate if, with two persons of approximately 75 kg on one side as close as possible to the gunwale, at least 10 cm of freeboard remains;

   (g) Their buoyancy in N with no one on board but completely filled with water shall be at least equal to $300 \cdot L_C \cdot B_C \cdot H_C$;

   (h) A minimum of the following equipment shall be on board:

   1 set of oars;

   1 mooring rope;

   1 bailer.

   Inflatable lifeboats are permitted provided that the conditions set out in paragraphs 2 and 3 are met, that they are permanently operational and that they have several compartments.

4. If the lifeboat is taken to be collective lifesaving equipment for passenger vessel (article 15.08, paragraph 5), it must at least meet the conditions of paragraph 3. However,

   (a) Seat width shall be not less than 0.45 m per person on each bench, while the permitted maximum number of persons shall not exceed the product $3 \cdot L_C \cdot B_C \cdot C_C$;

(b) Stability is considered to be adequate if, when half of the permissible maximum number of persons are positioned on one side of the lifeboat, the remaining freeboard is not less than 10 cm.

5. In paragraphs 3 and 4,

L_C indicates the length L of the lifeboat, in m,

B_C indicates the width B of the lifeboat, in m,

H_C indicates the lateral height of the lifeboat, in m.

Article 10.05

Lifebuoys and lifejackets

1. There shall be at least three lifebuoys on board all vessels. They shall be ready for use and placed on the deck at suitable points but shall not be fastened in their brackets. At least one lifebuoy shall be in the immediate proximity of the wheelhouse.

Lifebuoys shall:

(a) have a buoyancy of at least 100 N in fresh water;

(b) be manufactured in a suitable material and be resistant to oil and oil products and to temperatures of 50°C or below;

(c) be of a colour clearly visible in the water;

(d) have a mass of not less than 2.5 kg;

(e) have an internal diameter of 45 cm $\pm$ 10%;

(f) be surrounded by ropes enabling them to be grasped.

2. On board vessel a lifejacket shall be to hand for every person habitually on board.

Lifejackets shall meet the conditions set out in paragraph 1 (a) to (c), or the European standard EN 395 (buoyancy of 100 N).

Inflatable lifejackets shall inflate automatically or manually or may be inflated by blowing into them. They shall be checked in accordance with the manufacturer's instructions.

CHAPTER 11

SAFETY IN WORKING SPACES

Article 11.01

General

1. Vessel shall be constructed, arranged and equipped to enable the crew to work and move about in complete safety.

2. On-board installations needed for working and permanent fixtures shall be fitted, laid out and protected so to allow for safe and easy movement on board and maintenance. If necessary, moving parts or parts which operate at high temperatures shall be fitted with safety devices.

Article 11.02

Protection against falling

1. Decks and gunwales shall be flat and have no places likely to cause tripping or where water can collect.

2. Decks, gunwales, engine-room floors, landings, stairways and the tops of gunwale bollards shall be designed to prevent slipping.

3. The tops of gunwale bollards and obstacles in passageways, such as the edges of steps, shall be painted in a colour contrasting with the surrounding deck.

4. The outer edges of decks and gunwales, as well as working spaces where persons might fall more than 1 meter, shall be fitted with rails or coamings at least 0.70 m high or with a guard rail conforming to European Standard EN 711, which shall comprise a hand-rail, a rail at knee height and a foot-rail. Gunwales shall be fitted with a foot-rail and a continuous hand-rail secured to the coaming. Coaming hand-rails shall not be required where gunwales are fitted with non-retractable shipside guard rails.

5. *The text of this paragraph in English is not available.*

Article 11.03

Dimensions of working spaces

Working spaces shall be large enough to afford every person working in them adequate freedom of movement.

Article 11.04

Gunwale

1. The clear width of the gunwale shall be at least 0.60 m. This measurement may be reduced to 0.50 m in places fitted to provide for safety of operation, such as taps for swabbing the deck. At bollard emplacements it may be reduced to 0.40 m.

2. Up to a clear height of 0.90 m above the gunwale, the clear width of the gunwale may be reduced to 0.54 m provided that the clear width above, between the outer edge of the hull and the inner edge of the hold is not less than 0.65 m. In this case, the clear width of the gunwale may be reduced to 0.50 m if the outer edge of the gunwale is fitted with a guard rail conforming to European Standard EN 711 to prevent falling. On vessel 55 m or less in length without aft accommodation, the guard rail may be dispensed with.

3. The requirements of 1 and 2 above shall apply up to a height of 2.00 m above the gunwale.

Article 11.05

Access to working spaces

1. Points of access and passageways for the movement of persons and objects shall be of sufficient size and so arranged that:

   (a) in front of the access opening, there is sufficient room not to impede movement;

   (b) the clear width of the passageway shall be appropriate for the intended use of the working space and shall be not less than 0.60 m, except in the case of vessel less than 8 m wide, where it may be reduced to 0.50 m;

   (c) the combined height of the passageway and the coaming is not less than 1.90 m.

2. Doors shall be so arranged that they can be opened and closed safely from either side. They shall be protected against accidental opening or closing.

3. Stairs, ladders or steps shall be installed in accesses, exits and passageways where there is more than a 0.50 m difference in floor level.

4. Working spaces which are manned continuously shall be fitted with stairs if there is a difference in floor level of more than 1 m. This requirement shall not apply to emergency exits.

5. Vessel equipped with holds shall have at least two movable hold ladders which can be used to enter and leave the hold in complete safety. This requirement shall not apply where an equivalent ladder is fixed permanently in each hold.

Article 11.06

Exits and emergency exits

1. The number, arrangement and dimensions of exits, including emergency exits, shall be in keeping with the use and dimensions of the relevant space. Where one of the exits is an emergency exit, it shall be clearly marked as such.

2. Emergency exits or windows or the covers of skylights to be used as emergency exits shall have a clear opening of not less than 0.36 m^2, and the smallest dimension shall be not less than 0.50 m.

Article 11.07

Ladders, steps and similar devices

1. Stairs and ladders shall be securely fixed. Stairs shall be not less than 0.60 wide and the usable width between handrails shall be not less than 0.60 m; steps shall be not less than 0.15 m high; steps shall have nonslip surfaces and stairs with more than four steps shall be fitted with handrails.

2. Ladders and steps shall have a usable width of not less than 0.30 m; steps shall be not more than 0.30 m high and the steps of structures shall be not less than 0.15 m high.

3. Ladders and steps shall be clearly identifiable as such from above and shall be equipped with safety handles above exit openings.

4. Movable ladders shall be at least 0.40 m wide, and at least 0.50 m wide at the base; it shall be possible to ensure that they will not topple or skid; the rungs shall be securely fixed into the uprights.

5. Movable ladders used as hold ladders shall, with a 60° incline, extend at least 1 m above the upper edge of the hatchway, and in any event above the bottom.

Article 11.08

Inside spaces

1. The dimensions, arrangement and layout of inside working spaces shall be in keeping with the work to be carried out and shall conform to health and safety requirements. They shall be equipped with adequate non-dazzle lighting and with ventilation arrangements; if necessary, they shall be fitted with heating appliances capable of maintaining an adequate temperature.

2. The floors of inside working spaces shall be solid and durable, shall be designed not to cause tripping or slipping. Openings in decks and floors shall, when open, be equipped with guards, and windows and skylights shall be arranged and fitted so that they can be operated and cleaned safely.

Article 11.09

Protection against noise and vibration

1. Working spaces shall be so situated, equipped and designed that crew members are not exposed to harmful vibrations.

2. Permanent working spaces shall, in addition, be so constructed and sound proofed that the health and safety of crew members are not affected by noise.

3. Persons who are continuously exposed to noise levels likely to exceed 85 dB(A) should be provided with individual acoustic protection devices. A reminder that the wearing of such devices is mandatory shall be displayed in working spaces where noise levels exceed 90 dB(A) in the form of sign “Use Ear Protectors” similar to Sketch 7 of Annex I.

Article 11.10

Hatch covers

1. Hatch covers shall be easily accessible and safe to handle. Hatch-cover components weighing more than 40 kg must be designed to slide or pivot or be fitted with mechanical opening devices. Hatch covers operated using lifting gear shall be fitted with easily accessible attachment devices. Non-interchangeable hatch covers and upper sills shall be clearly marked to show the hatches to which they belong and their correct position on those hatches.

2. Hatch covers shall be secured against being lifted by the wind or by loading gear. Sliding covers shall be fitted with catches to prevent accidental horizontal movement of more than 0.40 m; they shall be capable of being locked in their final position. Appropriate devices shall be fitted to hold stacked hatch covers in position.

3. In the case of mechanically operated hatch covers, the power supply must be cut off automatically when the control switch is released.

4. Hatch covers must be capable of bearing the loads to which they are likely to be subjected, at least 75 kg of concentrated load in the case of practicable hatch covers. Non-practicable hatch covers shall be marked as such. Hatch covers designed to receive deck cargo must have the permissible load in t/m^2 marked on them. Where braces are needed to support the maximum permissible load, this shall be indicated in an appropriate place, in which case the relevant plans shall be kept on board.

Article 11.11

Winches

1. Winches shall be so designed as to permit work to be carried out in complete safety. They shall be fitted with devices to prevent the accidental return of the load. Winches which are not self-locking shall be fitted with a brake in proportion to their tensile strength.

2. Hand-operated winches shall be fitted with devices to prevent the return of the starting crank. Winches which may be power-operated or hand-operated shall be so designed that the power control cannot activate the manual control.

Article 11.12

Derricks

1. Derricks shall be constructed according to good engineering practice. The forces generated during use shall be transmitted safely to the frame of the vessel and shall not jeopardize stability.

2. Derricks shall bear a manufacturer's plate showing the following:

   (a) The manufacturer's name and address;
   (b) The EC seal indicating the year of construction;
   (c) The series or type;
   (d) The serial number, if any.

3. Maximum permissible loads shall be displayed permanently on derricks and shall be easily legible.

   Derricks with a useful load not exceeding 2,000 kg may simply be marked permanently and legibly with the useful load for the longest loading arm.

4. Anti-buckling and anti-scissoring devices shall be fitted. There shall be a safety distance of 0.5 m between the extremities of the derrick and any objects above, below or beside it. The safety distance at the sides of the derrick shall not be required outside working areas or passageways.

5. Mechanical derricks shall be protected against unauthorized use. They shall be operable only from their own control stations. Controls shall be of the automatic return type (buttons without stops); their operating direction shall be clearly indicated.

   In the event of a failure of the power supply, it shall not be possible for the load to drop accidentally. Unintentional movements of the derrick shall be prevented.

   An appropriate restraining device shall be fitted to stop upward movement of the hoisting gear and prevent overloading. Downward movement of the hoisting gear shall be stopped when there are less than two turns of cable around the drum. After actuation of the automatic restraining device, movement in the opposite direction shall still be possible.

   The tensile strength of mobile load cables shall be five times the permissible load of the cable. The structure of the cable shall be without defect and suitable for use on derricks.

6. Before the derrick is first brought into operation or before it is recommissioned after major alterations, evidence of adequate strength and stability based on calculations and on a load test shall be provided.

   In the case of derricks with a useful load not exceeding 2,000 kg, an expert may decide that evidence based on calculation may be replaced by a test with a load 1.25 times the useful load performed at the longest loading arm over the whole pivot sector.

   The approval referred to in the first and second paragraphs above shall be accorded by an expert approved by the Inspection Commission.

7. Derricks shall be inspected regularly, and in any case at least every 12 months, by a competent person. The inspection shall comprise at least a visual inspection and an operating test.

8. Not more than every 10 years after approval, derricks shall again be subject to approval by an expert approved by the Inspection Commission.

9. Derricks with a useful load exceeding 2,000 kg used for transshipment of cargo or installed on hoisting equipment, pontoons or other floating equipment must also conform to the requirements of one of the Rhine River States or Belgium.

10. At least the following documents for derricks shall be kept on board:

(a) Manufacturer's operating instructions. These shall provide at least the following information:

Use and functions of controls;
Maximum permissible load in relation to the loading arm;
Maximum list and trim;
Installation and maintenance instructions;
Instructions for regular inspections;
General technical data.

(b) Certificates showing that the checks described in 6 to 8 or 9 above have been properly carried out.

Article 11.13

Stocking of inflammable liquids

Text is not available in English.

CHAPTER 12

ACCOMMODATION

Article 12.01

General

1. Vessels shall be provided with accommodation for persons normally living on board, or at least for the minimum crew.

2. The accommodation shall be constructed, fitted and equipped so as to meet the requirements of the safety, health and well-being of the persons on board. It shall be easily and safely accessible and insulated against cold and heat.

3. The Inspection Commission may authorize exceptions to the requirements of this chapter if the safety and health of the persons on board are guaranteed in some other form.

4. The Inspection Commission shall include in the inspection certificate any restrictions on the mode of operation or the bringing into service of the vessel resulting from the exceptions referred to in paragraph 3.

Article 12.02

Special construction requirements for accommodation

1. It shall be possible to ventilate the accommodation appropriately even with the doors closed; furthermore, the living quarters shall receive adequate daylight and as far as possible look outwards.

2. When access to the accommodation is not on the level and the difference in level is at least 0.30 m, the premises shall be accessible by stairs.

3. Forward of the vessel, floors shall not be more than 1.20 m below the maximum draught level.

4. Living and sleeping quarters shall be fitted with emergency exits (escape routes) as far as possible from normal entrances and exits. An emergency exit may constitute a normal exit. This requirement is not mandatory for premises with an exit directly to the deck or a corridor counted as an escape route provided that it has two exits at a distance from each other and opening to port and starboard. The emergency exits, which may include skylights and windows, shall have a clear opening of not less than 0.36 m^2, and the smallest dimension shall be not less than 0.50 m and permit rapid evacuation in emergencies. The insulation and lagging of escape routes shall be in a not easily flammable material and use of the escape routes shall be ensured at all times by appropriate means such as ladders or steps.

5. The accommodation shall be protected from noise and vibrations. Maximum sound pressure levels shall be:

   (a) In the living quarters: 70 dB(A);

   (b) In the sleeping cabins: 60 dB(A). This provision shall not apply to vessel used exclusively under operating mode A_1. The restriction concerning the operating mode shall appear in the inspection certificate.

6. Headroom in the accommodation shall not be less than 2.00 m.

7. As a general rule, vessel shall have at least one living area separate from the sleeping cabin.

8. The available floor space in the living quarters shall not be less than 2 m^2 per person, but overall it must be not less than 8 m^2 (excluding furniture except for tables and chairs).

9. The volume of each living area or sleeping cabin shall be not less than 7 m^3.

10. The minimum volume of air in the accommodation area shall be 3.5 m^3 per person. The sleeping cabin shall have a volume of air of 5 m^3 for the first occupant and 3 m^3 for each additional occupant (the volume of the furniture to be deducted). Sleeping cabins shall as far as possible be intended for a maximum of two persons. The beds shall be placed at a height of not less than 0.30 m from the ground. If the beds are placed bunk style, a clear height of not less than 0.60 m shall be ensured above each bed.

11. The clear height of the doors, coaming included, shall be not less than 1.90 m and their clear width not less than 0.60 m. The prescribed height may be achieved by sliding or folding covers or flaps. It shall be possible to open the doors from both sides. Coamings shall not be more than 0.40 m in height; the provisions of other safety requirements shall, however, be complied with.

12. The stairs shall be permanently fixed and safe to use. This requirement is considered to have been complied with when

   (a) they are not less than 0.60 m wide;
   (b) they are not less than 0.15 m high;
   (c) they have non-slip surfaces;
   (d) stairs with more than three steps are fitted with hand-rails or handgrips.

13. Pipes for dangerous gases and dangerous liquids, particularly those under high pressure such that the slightest leakage could constitute a risk to persons shall not be placed in the accommodation or in the corridors leading to the accommodation. Exceptions to this rule are steam pipes and hydraulic system pipes provided that they are contained in a metal sleeve and piping for liquefied gas installations for domestic use.

Article 12.03

Sanitary installations

1. Vessels with accommodation shall provide at least the following sanitary installations:

   (a) One toilet per accommodation unit or per six crew members. It shall be possible to ventilate it with fresh air;

(b) One washbasin with drainage, linked to the hot and cold drinking water system per unit of accommodation or per four crew members;

(c) One bath or shower connected to the hot and cold drinking water system per unit or accommodation or per six crew members.

2. The sanitary installations shall be in close proximity to the living quarters. The toilets shall not be directly connected to the galleys, mess rooms or day rooms with cooking facilities.

3. The toilets shall have a surface area of not less than 1 m^2, a width of not less than 0.75 m and a length of not less than 1.10 m. Toilet spaces in cabins for a maximum of two persons may be smaller. If a toilet contains a washbasin or a shower, the surface area shall be increased by at least the surfaces taken up by the washbasin and shower (or where relevant by the bath).

Article 12.04

Galleys

1. The galleys may be combined with the day rooms.

2. Galleys shall contain:

(a) Cooking stove;
(b) Sink with drainage;
(c) Drinking water supply;
(d) Refrigerator;
(e) Sufficient space for storage, work and provisions.

3. The mess area of galleys combined with a day room shall be sufficient to accommodate the number of crew members who generally use it at the same time. The width of the seats shall not be less than 0.60 m.

Article 12.05

Drinking water

1. Vessels with cabin accommodation shall be equipped with one or more drinking water tanks. The filling apertures of the drinking water tanks and drinking water pipes shall be labelled as exclusively intended for drinking water. The filling sleeves for drinking water shall be installed above deck.

2. Drinking water tanks shall:

(a) Be protected against excessive heating;

(b) Have a capacity of not less than 150 l per person normally living on board but at least per member of the minimum crew;

(c) Be made of corrosion-resistant material which does not constitute a physiological danger;

(d) Be fitted with an appropriate lockable opening for internal cleaning;

(e) Be equipped with a water-level indicator;

(f) Be fitted with ventilation sleeves to the open air or be equipped with suitable filters.

3. Drinking water tanks shall not have a common wall with other tanks. Drinking water pipes shall not pass through tanks containing other liquids. Connections between the drinking water supply and piping systems for gas or liquids other than drinking water shall not pass through drinking water tanks.

4. Pressurized water systems for drinking water shall operate only on compressed air of natural composition. If the compressed air is obtained by means of compressors, suitable air filters and oil separators shall be installed directly upstream of the pressurized water system, unless water and air are separated by a diaphragm.

Article 12.06

Heating and ventilation

1. It shall be possible to heat the accommodation according to the purpose for which it is intended. Heating installations shall be suited to any weather conditions which may occur.

2. It shall be possible to ventilate day rooms and sleeping cabins adequately even when the doors are closed. The air inlets and outlets shall ensure an adequate circulation of air under all climatic conditions.

3. The accommodation shall be designed and equipped as far as possible so as to prevent any intake of bad air from other areas of the vessel such as the engine rooms or the holds; in the event of artificial ventilation the air intake openings shall be equipped so as to meet the above requirements.

Article 12.07

Other accommodation installations

1. Each crew member living on board shall have his own berth and a personal lockable clothes cupboard. The minimum internal dimensions of the berth shall be 2.00 by 0.90 m.

2. Suitable points for storing and drying working garments shall be provided away from sleeping cabins.

3. It shall be possible to light all spaces by electricity. Additional lamps using gas or liquid fuel shall only be permitted in day rooms. Lighting installations using liquid fuel shall be made of metal and may only operate with fuels having a flashpoint higher than 55°C or commercial paraffin. They shall be so placed or fixed so that they do not constitute a fire hazard.

CHAPTER 13

FUEL-FIRED HEATING, COOKING AND REFRIGERATING EQUIPMENT

Article 13.01

General

1. Liquefied gas-burning heating, cooking and refrigerating equipment shall meet the requirements of chapter 14 of these Regulations.

2. Heating, cooking and refrigerating equipment and its accessories shall be so designed and placed as not to constitute a danger, even when overheated; it shall be installed so that it cannot overturn or be shifted accidentally.

3. The equipment referred to in 2 shall not be installed in spaces where substances having a flashpoint below 55°C are stored or used. No flue pipe from this equipment shall pass through these spaces.

4. The air intake necessary for combustion shall be ensured.

5. Heating equipment shall be securely connected to the flues. The flue pipes shall be fitted with suitable caps or devices affording protection from wind. They shall be so arranged as to allow for cleaning.

Article 13.02

Use of liquid fuels, oil-fired equipment

1. When equipment runs on liquid fuel, only fuels having a flashpoint higher than 55°C may be used.

2. Notwithstanding 1, kitchen equipment and appliances with wick burners used for heating and refrigeration which burn paraffin may be used in the accommodation and wheelhouses, provided that the capacity of their supply tank does not exceed 12 litres.

3. Appliances with wick burners shall:

   (a) Be equipped with a metal fuel tank whose filling aperture can be closed and with no soft soldering below the maximum filling level, and shall be so designed and installed that the fuel tank cannot open or empty accidentally;

   (b) Be capable of being lit without using another liquid fuel;

   (c) Be installed in such a way as to ensure the evacuation of combustion gases.

Article 13.03

Vaporizing oil burner stoves and vaporizing oil burner heating appliances

1. Vaporizing oil burner stoves and vaporizing oil burner heating appliances shall be constructed according to the rules.

2. If a vaporizing oil burner stove or a vaporizing oil burner heating appliance is installed in the engine room, the air intake and the engines shall be so arranged that the heating appliance and the engines can operate simultaneously and safely independently of each other. If necessary, a separate air intake shall exist. The engine room shall be installed in such a way that a flame from the stove cannot reach other parts of the installations in the engine room.

Article 13.04

Vaporizing oil burner stoves

1. It shall be possible to light vaporizing oil burner stoves without the assistance of another combustible liquid. They shall be installed over a metal drip pan covering all the fuel carrying parts, which has a height of not less than 20 mm and a capacity of not less than 2 litres.

2. For vaporizing oil burner stoves installed in an engine room, the metal drip pan prescribed in 1 shall have a depth of not less than 200 mm. The lower edge of the vaporizing oil burner shall be placed over the edge of the drip pan. In addition, the drip pan shall be placed not less than 100 mm above the floor.

3. Vaporizing oil-burner stoves shall be fitted with a suitable regulator which, for each selected position, shall ensure a practically constant flow of fuel to the burner and shall prevent any leak of fuel in the event of the accidental extinction of the flame. Regulators are considered to be appropriate when they operate even when subjected to shocks and in the event of a tilt of up to 12° and which, in addition to a level-regulating float:

   (a) Comprise a watertight closing device which functions safely and reliably in the event that the permissible level is exceeded or

   (b) Are fitted with an overflow pipe if the drip pan has sufficient capacity to collect the contents of the fuel tank.

4. If the fuel tank of a vaporizing oil-burner stove is installed separately:

   (a) The height at which it is placed shall not exceed that established in the requirements for use drawn up by the manufacturer of the appliance;

   (b) It must be placed so as to ensure protection from unacceptable heating;

   (c) It shall be possible to cut off the fuel feed from the deck.

5. The flues of vaporizing oil-burner stoves shall comprise a draught damper.

Article 13.05

Vaporizing oil burner appliances

Vaporizing oil-burner appliances shall meet the following conditions:

(a) An adequate ventilation of the combustion chamber shall be ensured before fuel is fed in;

(b) The fuel feed shall be regulated by a thermostat;

(c) The lighting of the fuel shall be effected by means of an electrical device or a pilot light;

(d) Flame monitoring equipment shall cut off the fuel feed when the flame goes out;

(e) The main switch shall be placed outside the installation space in an easily accessible place.

Article 13.06

Forced-air heating appliances

Forced-air heating appliances comprising a combustion chamber around which the heating air is carried under pressure to a distribution system or to an enclosed space shall meet the following conditions:

(a) If the fuel is vaporized under pressure, the supply of combustion air shall be ensured by a fan;

(b) The combustion chamber shall be well ventilated before the burner is lit. This ventilation may be considered to have been carried out when the combustion air fan continues to operate after the flame has been extinguished;

(c) The fuel feed shall be cut off automatically:

if the fire goes out;
if the combustion air supply is not adequate;
if the heated air exceeds a preset temperature, or
if the safety equipment ceases to receive power.

In such cases the fuel feed shall not be automatically restored after the cut.

(d) It shall be possible to switch off the combustion air and heating air fans from outside the spaces to be heated;

(e) If the heating air is drawn in from the outside, the intake louvres shall be located at a reasonable height above deck. They shall be so designed that rain and spray cannot blow in;

(f) The heating air pipes shall be made of metal;

(g) It shall not be possible to close the heating air outlets completely;

(h) It shall not be possible for any fuel leaks to reach the heating air pipes;

(i) It shall not be possible for the forced air from the heating appliances to be sucked into an engine room.

Article 13.07

Solid fuel heating

1. Solid fuel heating appliances shall be placed on a rimmed metal sheet, so placed that burning fuel or hot ashes will not fall outside this sheet.

This requirement does not apply to appliances installed in compartments constructed of fire-resistant materials and intended exclusively for boilers.

2. Solid fuel boilers shall be fitted with thermostatic regulators operating on the air required for combustion.

3. A means of extinguishing the ashes easily shall be placed near each heating appliance.

CHAPTER 14

LIQUEFIED GAS INSTALLATIONS FOR DOMESTIC PURPOSES

Article 14.01

General

1. Liquefied gas installations generally comprise a distribution unit of one or more gas receptacles, one or more pressure reducers, a distribution network and gas-consuming appliances.

   Spare and empty receptacles not contained in the distribution unit are not considered to be part of the installation. They must, however, be stored. Article 14.05 applies by analogy.

2. The installations may only be supplied with commercial propane.

Article 14.02

Installations

1. Liquefied gas installations shall in all respects be appropriate for the use of propane and shall be set up and installed according to the rules.

2. A liquefied gas installation may only be used for domestic purposes in the accommodation and in the wheelhouse and for corresponding uses on passenger vessel.

3. There may be several separate liquefied gas installations on board. A single liquefied gas installation may not serve accommodation separated by a hold or a fixed tank.

4. No part of the liquefied gas installation shall be located in the engine room.

Article 14.03

Receptacles

1. Only receptacles with a permitted weight of load of between 5 and 35 kg are authorized. For passenger vessel the Inspection Commission may permit the use of receptacles with a greater weight of load.

2. The receptacles shall comply with the requirements in force in one of the Rhine States or in Belgium.

   They shall bear an official stamp certifying that they have passed the prescribed tests.

Article 14.04

Location and arrangement of supply units

1. The supply units shall be installed on deck in a special locker (or cabinet) external to the accommodation such that movement on board is not obstructed. They shall not, however, be installed against the planking of the forward or rear bulwarks. The locker may be a cabinet built into the superstructures provided that it is gastight and only opens outwards. It shall be so situated that the distribution pipes leading to the points of use are as short as possible.

Only as many receptacles as are required for the operation of the installation shall be under pressure simultaneously. Several receptacles may only be under pressure if an automatic gas connector is used. Up to four receptacles may be under pressure per installation. Including spares, not more than six receptacles per installation shall be on board.

On passenger vessel with galleys or canteens for the passengers up to six receptacles may be under pressure. Including spares, not more than nine receptacles per installation shall be on board.

The pressure reducer, or in the case of two-stage pressure reduction, the first pressure reducer, shall be in the same locker as the receptacles and shall be attached to a wall.

2. The supply units shall be so installed that gas escaping in the event of a leak can be discharged from the locker with no risk of penetrating the interior of the vessel or coming in contact with a source of ignition.

3. The lockers shall be constructed of materials which are not easily flammable and have sufficient ventilation in the form of openings at top and bottom. The receptacles shall be placed upright in the lockers in such a way that they cannot be overturned.

4. Lockers shall be so constructed and situated that the temperature of the receptacles cannot exceed 50°C.

5. The notice "Liquefied gas" and a "No smoking" symbol corresponding to sketch 2 of annex I of the Police Regulations for the Navigation of the Rhine, with a minimum diameter of 10 cm, shall be affixed to the outer wall of the lockers.

Article 14.05

Spare and empty receptacles

Spare and empty receptacles not contained in the supply unit shall be stored outside the accommodation and the wheelhouse in a locker constructed in accordance with article 14.04.

Article 14.06

Pressure reducers

1. Gas-consuming appliances may only be connected to receptacles by means of a distribution network equipped with one or more pressure reducers to lower the pressure of the gas to user pressure. This process may take place in one or two stages. All pressure reducers shall be permanently set to a specific pressure in accordance with article 14.07.

2. Final pressure-reducers shall be fitted with or monitored by a device which automatically protects the piping against excess pressure should the pressure reducer malfunction. In the event of an impermeability defect in the protection device, it shall be ensured that escaping gas is discharged into the open air with no risk of penetrating the interior of the vessel or coming in contact with a source of ignition; if necessary, special piping shall be fitted for the purpose.

3. Protection devices and vents shall be protected against water infiltration.

Article 14.07

Pressure

1. In the case of two-stage pressure reduction, maximum average pressure shall be not more than 2.5 bar above atmospheric pressure.

2. Pressure on leaving the last pressure reducer shall not exceed 0.05 bar above atmospheric pressure, with a tolerance of 10%.

Article 14.08

Piping and hoses

1. The piping shall be permanent steel or copper tubes.

   However, connecting piping for receptacles shall be high pressure hoses or spiral tubes suitable for propane. Gas-consuming appliances which are not permanently installed may be connected by means of suitable hoses of not more than 1 metre in length.

2. The piping shall be resistant to all stresses which may occur on board under normal operating conditions in terms of corrosion and resistance, while their characteristics and their arrangement shall ensure a satisfactory flow and pressure to supply the gas-consuming appliances.

3. The piping shall comprise the smallest number of connections possible. The piping and connections shall be gastight and shall remain gastight despite the vibrations and dilations to which they may be subjected.

4. The piping shall be accessible, appropriately fixed and protected at all points where there is a risk of impact or rubbing, particularly where they pass through steel partitions or metal walls.

   Steel piping shall be corrosion-treated over its entire external surface.

5. Hoses and their connections shall be resistant to all the stresses which may occur on board under normal operating conditions. They shall be so disposed as not to be constricted or become over-heated and so they can be monitored over their whole length.

Article 14.09

Distribution network

1. It shall be possible to disconnect the entire distribution network by means of an easily and rapidly accessible stop valve.

2. Each gas-consuming appliance shall be installed in parallel, with each parallel installation controlled by an individual closing device.

3. The stop valve installation shall be protected from bad weather and impacts.

4. A monitoring connection shall be installed after each pressure reducer. A closing device shall guarantee that during pressure tests the pressure reducer will not be subjected to the test pressure.

Article 14.10

Gas-consuming appliances and their installation

1. Only gas-consuming appliances which are permitted to operate with propane in one of the Rhine River States or in Belgium and are fitted with devices for the effective prevention of gas leaks if the flame or the pilot light are extinguished, may be installed.

2. The appliances shall be so arranged and connected that they cannot overturn nor be accidentally displaced and so that there will be no risk of the connecting hoses being accidentally disconnected.

3. Heating appliances, water-heaters and refrigerators shall be connected to a pipe in order to evacuate combustion gases to the outside.

4. The installation of gas-consuming appliances in the wheelhouse shall only be permitted if the latter is constructed to ensure that accidentally-leaking gases cannot escape towards parts of the vessel situated at a lower level, particularly through gaps in the control to the engine room.

5. Gas-consuming appliances may not be installed in the sleeping cabins unless their combustion is independent of the air in the cabin.

6. When the combustion of gas-consuming appliances depends on the ambient air, they shall be installed in sufficiently large premises.

Article 14.11

Ventilation and evacuation of combustion gases

1. In premises where gas-consuming appliances using the ambient air for their combustion are installed, the entry of fresh air and the evacuation of combustion gases shall be ensured by means of sufficiently large air ducts with a cross-section of at least 150 cm^2 per opening.

2. The air ducts shall not have closures and shall not open into a sleeping cabin.

3. Ventilation devices shall be so constructed that combustion gases are safely evacuated. They shall be safe to operate and be made of non-combustible materials. Ventilators in the premises shall not affect their operation.

Article 14.12

Instructions for use and safety

A notice with instructions on the use of the installation shall be affixed at a suitable point on board. This notice shall read as follows:

> "The stop valves of receptacles which are not connected to the distribution network shall be closed, even if the receptacles are presumed to be empty."
>
> "Hoses shall be changed as soon as their state requires."
>
> "All gas-consuming appliances shall remain connected unless the corresponding connections are sealed off."

Article 14.13

Acceptance

Before a liquefied gas installation is used, following any modification or repair and on each renewal of the certificate referred to in article 14.15, the entire installation shall be submitted to an expert approved by the Inspection Commission for acceptance. In the course of acceptance, he shall verify whether the installation conforms to the requirements of this chapter. He shall submit an acceptance report on this subject to the Inspection Commission.

Article 14.14

Tests

The installation test shall be carried out under the following conditions:

1. Piping subject to average pressure located between the closing device referred to in article 14.09, paragraph 4, of the first pressure reducer and the valves before the final pressure reducers:

   (a) resistance test, carried out in air, in an inert gas or in a liquid, at a pressure of 20 bar above atmospheric pressure,

   (b) leakproofness test, carried out in air or in an inert gas, at a pressure of 3.5 bar above atmospheric pressure.

2. Piping at working pressure located between the closing device, referred to in article 14.09, paragraph 4, of the single pressure reducer or the final pressure reducer and the valves located before the gas-consuming appliances:

   leakproofness test, carried out in air or in an inert gas at a pressure of 1 bar above atmospheric pressure.

3. Piping located between the closing device, referred to in article 14.09, paragraph 4, of the single pressure reducer or the final pressure reducer and the controls of the gas-consuming appliances:

   leakproofness test at a pressure of 0.15 bar above atmospheric pressure.

4. During the tests referred to in paragraphs 1 (b), 2 and 3, pipes are considered to be leakproof if, after sufficient waiting time to ensure thermal equilibrium, no drop in the test pressure is observed during the next 10 minutes.

5. Connections to receptacles, couplings and reinforcements which are subject to the pressure of the receptacles and the connections of the pressure reducer to the distribution piping:

   leakproofness test, using a foaming product, at service pressure.

6. All gas-consuming appliances shall be put into operation and checked at rated pressure for appropriate combustion at the various settings of the control buttons.

   The correction operation of safety devices shall be checked.

7. Following the test referred to in paragraph 6, a check shall be made for each gas-consuming appliance connected to an exhaust pipe after five minutes' operation at rated pressure, with

the windows and doors closed and the ventilators in operation, as to whether the combustion gases escape through the draught limiter.

If this is the case, and unless it is temporary, the cause must immediately be identified and eliminated. The appliance shall not be accepted for use until all defects have been remedied.

Article 14.15

Certification

1. The inspection certificate shall certify that every liquefied gas installation conforms to the requirements of this chapter.

2. This certificate shall be issued by the Inspection Commission following the acceptance referred to in article 14.13.

3. The period of validity of the certificate shall be not more than three years. It may only be renewed following a new acceptance in conformity with article 14.13.

   In exceptional cases, if the owner of the vessel or his representative submits a justified request, the Inspection Commission may extend the validity of this certificate for a maximum of three months without the acceptance referred to in article 14.13. This extension shall be entered in the inspection certificate.

CHAPTER 15

SPECIAL PROVISIONS FOR PASSENGER VESSELS

Article 15.01

General

1. Articles 4.01 to 4.04 and 8.06, paragraph 7, shall not apply.

2. Vessel not having their own means of propulsion shall not be authorized to carry passengers.

3. In the case of vessel having a length L_F of 25 m or more, buoyancy in the event of a leak shall be demonstrated in accordance with article 15.02 for all possible loading situations.

4. On all decks, passenger spaces shall be situated aft of the collision bulkhead.

5. Spaces intended for the accommodation of crewmembers shall by analogy satisfy the requirements of articles 15.07 and 15.09.

6. (a) Notwithstanding article 3.02, paragraph 1(b), the minimum thickness t_{min} of bottom, bilge and side plating of passenger vessel shall be the greater of the values obtained as follows:

$$t_{1\,min} = 0.006 \cdot a \cdot \sqrt{T} \quad [mm]$$

$$t_{2\,min} = f \cdot 0.55 \cdot \sqrt{L_F} \quad [mm]$$

Where: f = $1 + 0.0013 \cdot (a - 500)$, with a being 400 mm or more,

a = distance between longitudinal or transverse ribs in [mm]; when the distance between ribs is less than 400 mm, the value a = 400 mm will be used.

The greater value produced by the formulas shall be taken as the minimum thickness. Plates must be replaced when the thickness of bottom or side plating no longer attains the minimum value determined according to the above requirement.

(b) The minimum value produced by the plate thickness formulas may be reduced where the permissible value has been determined on the basis of calculated evidence of sufficient hull strength which has been certified.

(c) However, the minimum thickness shall not be less than 3 mm at any point on the hull.

Article 15.02

Basic requirements for subdivision of vessels

1. The distribution of bulkheads shall be such that, if any watertight compartment becomes flooded, the hull does not sink below the margin line and the requirements of article 15.04, paragraph 7, are met.

2. Watertight windows may be installed below the margin line provided that they cannot be opened, that they are sufficiently strong and that they meet the requirements of article 15.07, paragraph 7.

3. In calculating stability in the event of a leak, structural specifications must be taken into account.

   In general, calculations should be based on a compartment permeability factor of 95%.

   If it is established by calculation that the average permeability of any compartment is less than 95%, the calculated permeability may be used instead. In such calculations, the following minimum values must, however, be observed:

Passenger areas and areas reserved for the crew	95%
Engine rooms (including boiler rooms)	85%
Cargo, luggage and provisions rooms	75%
Double bottoms, fuel bunkers and other rooms depending on whether, according to their intended use, they are to be full or empty, with the line of flotation being that given by the maximum subdivision loadline	0 or 95%

4. Between the collision bulkhead and the stern bulkhead, only those compartments having a length of at least 0.10 L_F, but not less than 4 m, shall be considered as watertight compartments for the purposes of paragraph 1 above. The Inspection Commission may allow minor exceptions to this rule.

   Where a watertight compartment is longer than required by the foregoing provisions and is subdivided so as to form watertight spaces which also meet the minimum length requirement, those spaces may be taken into account in calculating stability in the event of a leak.

   The length of the first compartment aft of the collision bulkhead may be less than 0.10 L_F or 4 m. In such cases, the fore peak and the adjacent compartment shall be taken as jointly floodable in the stability calculation. The distance between the forward perpendicular and the aft transverse bulkhead bounding this compartment may not, however, be less than 0.10 L_F or 4 m.

   The distance between the collision bulkhead and the forward perpendicular must be at least 0.04 L_F and not more than 0.04 L_F + 2 m.

5. In the case of passenger vessel with longitudinal watertight subdivisions, asymmetries between the collision bulkhead and the rear bulkhead shall be taken into account as follows:

   (a) provided that the longitudinal bulkheads are at least 1/5 B_F from the skin plating at the maximum loaded draft line and at least 1/6 B_F, but not less than 1.50 m, from each other, the stability calculation shall allow for the individual flooding of compartments A, B and C and the simultaneous flooding of compartments A + B and B + C (see figure 1);

   (b) If midcompartment B has a watertight deck more than 0.50 m from the bottom of the vessel, it is not necessary to allow for flooding of compartment D situated above that

deck (see figure 2). The conditions set out above regarding longitudinal bulkheads shall apply.

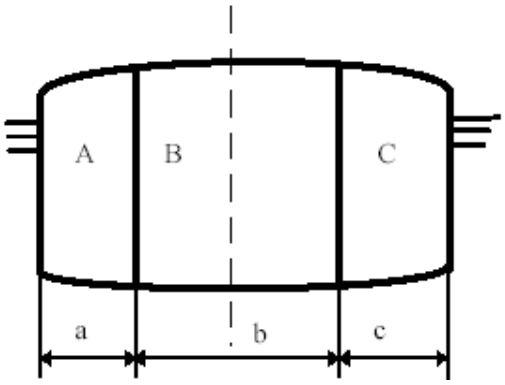


Figure 1

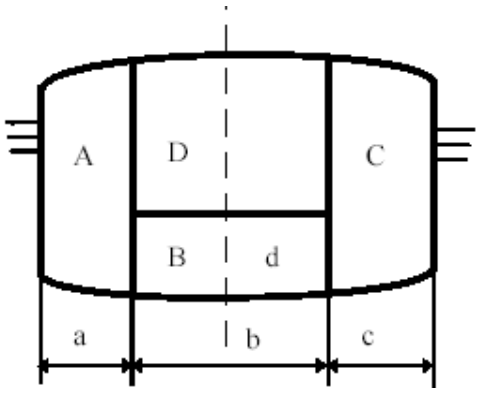


Figure 2

(a) = at least 1/5 B_F

(b) = at least 1/6 B_F, but not less than 1.50 m

(c) = at least 1/5 B_F

(d) = at least 0.50 m.

Article 15.03

Transverse bulkheads

1. In addition to the bulkheads prescribed in article 3.03, paragraph 1, the transverse bulkheads deriving from the subdivision calculation shall be required.

   The prescribed transverse bulkheads shall be watertight and be carried up to the bulkhead deck. Where there is no bulkhead deck, these bulkheads shall extend to a height at least 20 cm above the margin line. The requirements of article 15.04, paragraph 8, shall be met.

   Passenger spaces and crew's quarters shall be separated from machinery spaces and boiler rooms by gastight bulkheads.

2. The number of openings in watertight transverse bulkheads as defined in 1 above shall be as small as the type of construction and normal operation of the vessel permit. Openings and passageways shall not adversely affect the watertightness of bulkheads.

   Collision bulkheads shall have neither openings nor doors.

   The bulkheads separating machinery spaces from passenger spaces or crew's quarters shall have no doors.

3. Doors in watertight bulkheads which are manually operated and not remote controlled shall be authorized only in areas not accessible to passengers. They shall remain closed at all times and may be opened only temporarily to allow access. Rapid and safe locking shall be ensured by appropriate devices. The words “Close door immediately after use” shall appear on both sides of such doors.

   Notwithstanding the first sentence above, manually operated watertight bulkhead doors shall be permitted in passenger areas if:

(a) The length L_F of the vessel does not exceed 40 m;

(b) The number of passengers does not exceed L_F;

(c) The vessel has only one deck;

(d) The doors are accessible directly from the deck and are not more than 10 m away from access to the deck;

(e) The lower edge of the door is at least 30 cm above the floor of the passenger area;

(f) Each compartment is equipped with an alarm system for the water level.

4. It shall be possible to close bulkhead doors which remain open for prolonged periods on the spot from either side and from an easily accessible place above the bulkhead deck. Once a door has been remotely closed, it shall be possible to reopen and close it safely on the spot. Closure shall not be impeded by carpeting, foot rails or other obstructions.

   The duration of the remote closing operation shall be not less than 30 seconds and not more than 60 seconds. During the operation, an automatic alarm signal shall sound close to the door. At the point where the remote control operation is carried out, there shall be a device to indicate whether the door is open or closed.

5. Bulkhead doors and their opening and closing devices shall be located in an area bounded on the outside by a vertical plane at a distance of 1/5 of the breadth B_F parallel to the side plating at the maximum loaded draft line. The wheelhouse shall be equipped with a visual alarm system which acts as a monitoring device and is turned on whenever the bulkhead door is open.

6. Open-ended piping and ventilation ducts shall be so installed that, in the event of a leak, they do not result in other spaces or tanks being flooded. If several compartments are connected by piping or ventilation ducts, such piping and ducts shall open into an appropriate place above the waterline corresponding to the worst possible flooding. Where this is not the case, transverse bulkheads shall be fitted with remote closing devices operated from above the bulkhead deck.

   Piping which has no open orifice in a compartment shall be considered as intact in the event of any damage to that compartment, provided that it is within the safety area defined in 5 above and is more than 0.50 m from the bottom.

7. Where openings and doors such as those referred to in 2 to 6 above are authorized, the following operating instructions shall be entered on the inspection certificate:

   "The crew shall be instructed that, in the event of any danger, all openings and doors in watertight bulkheads shall be hermetically closed without delay."

8. Transverse bulkheads may be recessed provided that all recess points are within the safety area defined in 5 above.

Article 15.04

Intact stability and stability in the event of a leak

1. The applicant shall show that the intact stability of the vessel is adequate by calculation based on the results of a lateral stability test and, if the Inspection Commission so requests, of a turning test.

2. Proof of adequate intact stability by calculation shall be deemed to be furnished if, when fully rigged, with fuel bunkers and water tanks half filled, while maintaining a residual freeboard and residual safety distance conforming to 7 below, and under the simultaneous effects of:

   (a) a lateral displacement of passengers under the conditions set out in 4 below;

   (b) a wind pressure as defined in 5 below;

   (c) the centrifugal force resulting from the turning of the vessel under the conditions set out in 6 below,

   the heel of the vessel does not exceed 12°. Under the sole effect of lateral displacement of passengers, this angle shall not exceed 10°.

   The Inspection Commission may require the calculation also to be made for other degrees of filling of fuel bunkers and tanks.

3. For vessel having a length L_F of less than 25 m, the proof of adequate intact stability by calculation required in 2 above may be replaced by a load test with the weight of half the authorized maximum number of passengers and the most unfavourable loading of fuel bunkers and water tanks. This weight shall be distributed from the side plating over the free deck area for the use of passengers at a ratio of 3¾ passengers per m^2. During this test, the angle of heel shall not exceed 7° and the remaining freeboard and safety distance shall not be less than 0.05B + 0.20 m and 0.05B + 0.10 m respectively.

4. The moment resulting from the lateral displacement of passengers (M_p) shall be the sum of the moments for each deck accessible to passengers. It shall be calculated as follows:

   (a) For free decks: $Mp_n = c_p \cdot b \cdot p \ \ [kNm]$

   Where c_p = coefficient ($c_p = 1.5$) [m/s^2];
   b = the greatest usable width of the deck measured at a height of 0.50 m;
   p = the total mass of passengers permitted on the deck in question, in t.

   (b) For deck space occupied by fixed installations:

   In calculating the lateral displacement of passengers on decks partly occupied by fixed installations, such as benches, tables, lifeboats or small shelters, a load of 3¾ passengers per m^2 of free deck area shall be used; for benches, an area 0.50 m wide and 0.75 m long shall be allowed per passenger.

   The calculation shall be made for displacement to starboard and to port.

   For vessel with more than one deck, the distribution of the total weight of passengers shall be the most unfavourable from the point of view of stability. Cabins, if any, shall be

assumed to be unoccupied for the calculation of lateral displacement of passengers.

The centre of gravity of a passenger shall be assumed to be at a height of 1 m above the lowest point of the deck at ½ L_F, without allowing for the sheer or curvature of the deck and assuming a mass of 75 kg per passenger.

5. The moment resulting from the pressure of the wind shall be calculated as follows:

$$M_V = P_V \cdot S\,(l_v + T/2) \quad [kNm]$$

Where p_v = specific wind pressure of 0.1 kN/m^2 ;

S = lateral area of the vessel above the maximum loaded draught line, in m^2;

l_v = distance between the centre of gravity of the lateral area S and the maximum draught line, in m.

6. The moment resulting from the centrifugal force exerted by the turning of the vessel shall be calculated as follows:

$$M_{gi} = C_{gi}\,\frac{D}{L_F}\left(\overline{KG} - \frac{T}{2}\right)\,[kNm]$$

Where C_{gi} = a coefficient (C_{gi} = 5) [m^2/s^2];

$\overline{KG}$ = distance between the centre of gravity and the upper side of the keel, in m.

Where the angle of heel during turning is verified by a test, the value so determined may be used in the calculation. The test shall be performed with the vessel at half maximum speed, fully loaded and on the smallest turning radius possible under these conditions.

7. With the vessel at the angle of heel resulting from the forces referred to in paragraph 2 (a) to (c), the remaining freeboard must be not less than 0.20 m.

For vessel whose side windows can be opened or whose sides contain other openings not guaranteed to be watertight, a safety distance of at least 0.10 m must be maintained.

8. Proof by calculation of adequate stability in the event of a leak shall be deemed to have been furnished if, at all intermediate stages and the final stage of flooding, the righting moment M_R defined by:

$$M_R = C_R \cdot \overline{MG}_{res} \cdot \sin\varphi \cdot D \;\; [kNm]$$

is greater than the heeling moment M_g = 0.2 Mp [kNm].

Where C_R = coefficient (C_R = 10) [m/s^2];

$\overline{MG}_{res}$ = reduced metacentric height in the flooded state, in m;

φ = the smaller of the following two angles: angle at which the main opening of a non-flooded compartment begins to be flooded or the angle at which the bulkhead deck begins to be flooded;

M_p = moment resulting from the lateral displacement of passengers referred to in paragraph 4.

Article 15.05

Calculation of the number of passengers on the basis of free deck area

1. If articles 15.04 and 15.06 are complied with, the Inspection Commission shall determine the maximum permitted number of passengers as follows:

   (a) The total area of free deck normally reserved for passengers shall be taken as the basis of the calculation.

   However, deck space occupied by cabins and lavatories and spaces used permanently or temporarily for operating the vessel shall not be included in the calculation even if passengers have access to them. The spaces situated below the main deck shall not be taken into consideration. However, spaces below the main deck having large windows above deck may be included in the calculation.

   (b) The following shall be deducted from the total area calculated according to (a):

   areas of corridors, stairways and other passageways;

   areas under stairways;

   areas currently occupied by gear or furniture;

   areas under lifeboats and life rafts even if they are placed at a height such that passengers can stand upright underneath them;

   small areas, particularly between seats or tables of which effective use cannot be made.

   (c) The load of passengers shall be calculated as 2.5 passengers per m^2 of free deck area as specified in (a) and (b); however, this load shall be 2.8 passengers for vessels of a length L_F of less than 25 m.

2. The maximum permitted number of passengers shall be indicated on clearly legible notices posted on board in clearly visible places. For vessels with cabins which are also used for day excursions, the number of passengers shall be calculated as for a day excursion vessel and as a vessel with cabins and entered in the inspection certificate.

   For each of these numbers of passengers, articles 15.02 and 15.04 shall be complied with.

   For vessels with cabin accommodation which are exclusively used for voyages which include nights, the number of passenger berths shall be the determining factor.

Article 15.06

Safety distance, freeboard and draught marks

1. The safety distance shall be at least equal to the sum:

   (a) of the additional lateral draught, measured at the shell plating, resulting from the permitted angle of list and

   (b) the residual safety distance prescribed in article 15.04, paragraphs 2 and 7.

   For vessels without a bulkhead deck, the safety distance shall be not less than 0.50 m.

2. The freeboard shall be at least equal to the sum:

   (a) of the additional lateral draught, measured at the shell plating, resulting from the list calculated in accordance with article 15.04, paragraph 2 and

   (b) the residual freeboard prescribed in article 15.04, paragraphs 2 and 7.

   The freeboard shall be at least 0.30 m.

3. The maximum authorized draught level shall be determined so as to comply with the safety distance prescribed in 1, the freeboard prescribed in 2 and articles 15.02 to 15.04. For safety reasons, however, the Inspection Commission may allocate a larger freeboard or a greater safety distance.

4. A draught mark shall be placed on each side of the vessel in accordance with article 4.04. Additional pairs of draught marks or continuous marking shall be permitted. The position of these draught marks shall be clearly specified in the inspection certificate.

Article 15.07

Passenger installations

1. Non-enclosed areas of deck intended for passengers shall be surrounded by a bulwark or a railing not less than 1 m high. The railing shall be installed in such a way 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.

   Disembarkation gangways shall not be less than 0.60 m wide and shall be fitted with a handrail on both sides.

2. (a) Communicating corridors, stairways, doors and exits intended for passengers' use shall have a clear width of not less than 0.80 m. For the doors of passenger cabins and of other small spaces this width may be reduced to 0.70 m.

   Where access to part of the vessel or to a space intended for passengers is limited to a single communicating corridor or stairway, their clear width shall not be less than 1 m. On vessels of a length L_F of less than 25 m, the Inspection Commission may permit a width of 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 passenger exits which should be used by them in case of need shall be at least 0.01 m per passenger.

   (b) Spaces or groups of spaces designed or equipped for 30 or more passengers or including berths for 12 or more passengers shall have at least two exits. A watertight door in a bulkhead in accordance with article 15.03, paragraphs 2, 4 or 5, giving access to a neighbouring compartment from which the upper deck may be reached, shall be considered as an exit.

   These exits shall be appropriately laid out. If the total width of the exits referred to in (a) is determined by the number of passengers, the width of each exit shall be not less than 0.005 m per passenger. Except in vessels with cabins, one of these two exits may be replaced by two emergency exits.

If spaces are situated below the main deck, they shall be provided with at least one exit or, where necessary, an emergency exit giving access directly to the deck or to the open air. This requirement shall not apply to the cabins.

Emergency exits shall have a clear opening of not less than 0.36 m^2 and the length of the smallest side shall be not less than 0.50 m.

(c) Stairways below the main deck shall be situated within two vertical planes on each side at a distance of not less than 1/5 of B_F from the shell plating. This distance shall not be compulsory if there is at least one stairway at each side of the vessel in the same space. The stairway shall be fitted with handrails on both sides; for stairways with a width of less than 0.90 m, a single handrail shall be sufficient.

3. It shall be possible for the doors of public rooms, with the exception of doors opening on to corridors, to open outwards or to be built as sliding doors; it shall not be possible for unauthorized persons to lock or bolt them when the vessel is in service.

Cabin doors shall be so constructed that they can also be unbolted from the outside at any time.

4. Escape routes and emergency exits shall be clearly marked and the signs lighted by the emergency lighting.

5. On vessels licensed to carry up to 300 passengers, there shall be at least one water closet per 150 passengers. On vessels licensed to carry more than 300 passengers, there shall be separate water closets for each sex, with at least 1 per 200 passengers.

6. 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 and machine and engine rooms. In addition, the entrances to those parts of the vessel shall carry, in a clearly visible place, a notice reading “No admittance” or a corresponding symbol.

7. Only toughened or laminated glass or a synthetic material authorized for fire protection may be used as glass for windows located in the area accessible to passengers.

Article 15.08

Special requirements for lifesaving appliances

1. Passenger vessel shall carry the number of lifebuoys set out in the table below:

L_F in m	Permitted maximum number of passengers	Number of lifebuoys
up to 25	up to 200	3
between 25 and 35	between 200 and 300	4
between 35 and 60	between 300 and 600	6
more than 50	between 600 and 900	8
more than 50	between 900 and 1 200	10
more than 50	more than 1 200	12

The number of lifebuoys is determined by the highest value in the first or second column. Half of the prescribed lifebuoys shall be fitted with a sea line not less than 30 m long.

2. On board vessel of a length L_F less than 25 m, in addition to the lifebuoys prescribed in paragraph 1, there shall be individual or collective safety equipment for all of the maximum number of passengers permitted for the vessel's mode of operation and for the crew. If floatability in the event of a leak has been verified, the requirements of paragraph 3 shall be applied.

3. The safety equipment shall be stowed on board in such a way that in case of need it can be easily and safely reached. Concealed stowage points shall be clearly indicated.

4. Individual safety equipment is constituted by lifebuoys and lifejackets as well as lifesaving blocks and the appropriate equipment referred to in article 10.05, capable of supporting a person in the water.

   The lifesaving blocks and appropriate equipment shall:

   (a) have a buoyancy of not less than 100 N in fresh water;
   (b) be manufactured in a suitable material and be resistant to oil and oil products and to temperatures of 50°C or below;
   (c) be fitted with appropriate devices enabling them to be grasped; and
   (d) be fluorescent orange in colour or have permanent fluorescent surfaces of 100 cm^2.

   Individual inflatable safety equipment shall be checked in accordance with the manufacturer's instructions.

5. Collective safety equipment is constituted by lifeboats, life-rafts and appropriate equipment capable of supporting several persons in the water; it shall

   (a) carry an indication of the use and the number of passengers for which it has been approved;
   (b) have a buoyancy in fresh water of not less than 100 N per person;
   (c) have and maintain a stable trim, and for this purpose be fitted with appropriate devices which can be grasped by the number of persons indicated;
   (d) be manufactured in a suitable material and be resistant to oil and oil products, and to temperatures of 50°C or below;
   (e) be fluorescent orange in colour or have permanent fluorescent surfaces of 100 cm^2;
   (f) be capable of being launched rapidly and safely by a single person from its place of stowage.

6. Inflatable safety equipment shall also

   (a) have at least two separate air compartments;
   (b) inflate automatically or manually in the water;
   (c) have and maintain a stable trim whatever the weight to be borne, even with only half of the air compartments inflated;
   (d) be checked in accordance with the manufacturer's instructions.

Article 15.09

Fire protection and fire-fighting in passenger spaces

1. The decks separating passenger quarters from each other or passenger quarters from the engine room and the wheelhouse, the partitions and walls between passenger quarters and engine rooms and between passenger quarters and galleys shall be fireproof.

   Partitions and doors between corridors and cabins and between cabins shall be fireproof.

   Separating partitions between corridors and cabins shall extend from deck to deck or shall extend up to a fire-resistant ceiling.

   If appropriate water sprinkler systems have been installed, the requirements of paragraphs 2 and 3 above are not mandatory.

   The empty spaces above ceilings, under floors and behind lagging shall be subdivided at intervals of a maximum of 10 m by fire-resistant components.

2. The arrangement of the stairs, exits and safety exits shall be such that in the event of fire in any of the premises, the other premises may be safely evacuated.

   Stairs and their steps shall have a framework of steel or any other equivalent non-combustible material. The steps shall not be easily flammable.

   In vessel with cabins, they shall be contained in a stairwell with fireproof walls and automatically-closing fireproof doors.

   A stair connecting two decks only does not require to be contained in a stairwell if one of the decks is surrounded by fireproof partitions with automatically-closing fireproof doors or if appropriate water sprinklers have been installed.

   Stairwells shall be directly linked to the outer corridors and decks.

3. Account should be taken of the additional risk of fire in the galleys, hairdresser's shop and perfume shops in accordance with the requirements of the competent authorities.

4. Paints, varnishes and other surface treatment products used indoors, and materials used for lagging and insulation shall be not easily flammable. In the event of fire, they shall not give off dangerous amounts of smoke or toxic gases.

   The door opening system shall be capable of operating for a sufficient length of time in the event of fire.

5. Corridors more than 40 m long shall be subdivided by fireproof walls with automatically-closing doors, at intervals of not more than 40 m.

6. Automatically-closing fireproof doors open during normal service shall be capable of being closed from a point permanently occupied by the crew and of being closed on the spot.

7. Continuous pipes shall be subdivided, at intervals of not more than 40 m, by fire dampers.

   If air supply or ventilation pipes pass through the partitions of stairwells or engine rooms, they shall be fitted with fire dampers where they pass through these partitions.

   It shall be possible to turn off built-in ventilators from a central unit located outside the engine room.

8. On vessel with cabins, all cabins and living quarters for passengers and crew members as well as the galleys and engine rooms shall be linked to an efficient fire alarm system. The existence of a fire and its location shall be automatically indicated at a point permanently occupied by the crew.

9. Passenger vessel shall be equipped with a fire-fighting system comprising:

   (a) A permanent motor-driven fire pump;

   (b) Fire-extinguisher piping with an adequate number of water intakes;

   (c) An adequate number of fire hoses.

   Fire-fighting installations shall be so designed and be of dimensions such that any point of the vessel can be reached from at least two different water intakes, each using a single fire hose of not more than 20 m in length. The pressure of the water intake shall be not less than 3 bar. On the highest deck, it shall be possible to ensure a water jet of at least 6 m in length.

   The fire pumps shall not be installed in front of the collision bulkhead. If the fire pump is installed in the main engine room, there shall be a second power-driven fire pump installed outside the engine room which may be used independently of the engine room installations. This pump may be portable.

   Normal service and deck washing pumps and hoses may be included in the fire-fighting installation if they are appropriate.

   In vessels with cabins of a length L_F less than 25 m and day excursion vessels of a length L_F less than 40 m, the following derogations are permitted:

   (a) The fire pump does not require to be permanently fixed;

   (b) If the fire pump is installed in the main engine room, a second pump is not required;

   (c) It must be possible to reach all points on the vessel from a water intake using a single fire hose of not more than 20 m.

10. In addition to the extinguishers prescribed in article 10.03, paragraph 1, a minimum of the following extinguishers shall be on board:

    (a) An extinguisher per 120 m^2 floor surface of saloons, dining rooms and similar living quarters;

    (b) An extinguisher for each group of 10 cabins, whether the group is complete or not.

    These additional extinguishers shall be so located and distributed on the vessel that at any time, if a fire breaks out at any point in the vessel, an extinguisher may be reached directly.

Article 15.10

Supplementary requirements

1. Only electric lighting shall be used.

2. There shall be an emergency source of power within the meaning of article 9.18, paragraph 2.

3. If direct communication is not possible between the wheelhouse and the crew's quarters, the service areas, the bow and stern of the vessel and areas to which passengers are admitted, facilities shall be provided for rapid and reliable two-way communication.

4. Vessels of a length L_F of 40 m or more or licensed to carry more than 75 passengers shall be equipped with a public address system.

5. On vessels with cabin accommodation, an alarm system shall be installed comprising:

   (a) an alarm system for the vessel command and crew.

   This alarm shall only be given in the premises assigned to the vessel command and crew and may be switched off by the vessel command. It shall be possible to trigger the alarm at least in the following places:

   In each cabin;

   In the corridors, lifts and stairwells, such that the distance to the nearest alarm switch is not more than 10 m, with at least one alarm switch per watertight compartment;

   In the saloons, mess rooms and similar public rooms;

   In the engine rooms, galleys and other similar spaces subject to fire danger.

   (b) an alarm installation for passengers.

   This alarm shall be clearly and unequivocally identifiable in all spaces accessible to passengers. It shall be possible to trigger it from the wheelhouse and from a permanently manned point.

   Alarm switches shall be protected against improper use.

6. Vessels with cabin accommodation shall be equipped with a radio-telephone installation making it possible to communicate with the public telephone network.

7. The following spaces and points shall be provided with adequate lighting:

   (a) Places where collective lifesaving appliances are kept and where they are normally prepared for use;

   (b) Escape routes, passenger accesses, corridors, lifts and stairways in the cabins and accommodation area;

   (c) Signs for escape routes and emergency exits;

   (d) Engine rooms and their exits;

   (e) Wheelhouse;

   (f) Space containing the emergency source of energy supply;

   (g) Points where fire extinguishers and pumps can be found;

   (h) Assembly areas for passengers and crew in the event of danger.

8. On vessels with cabin accommodation, the safety plan specifying the tasks of the crew and personnel prescribed by the Police Regulations for the Navigation of the Rhine must be on board. Tasks shall be assigned for the following cases:

(a) Leak;

(b) Fire on board;

(c) Evacuation of passengers;

(d) Man overboard.

The safety plan shall include a plan of the vessel on which the following are clearly and accurately marked:

(a) Lifesaving and safety equipment;

(b) Watertight doors located under the deck and the location of their controls, and openings such as those referred to in article 15.03, 2 and 6;

(c) Fire-resistant doors;

(d) Fire dampers;

(e) Alarm installations;

(f) Fire alarm system;

(g) Fire extinguisher installations and fire extinguishers;

(h) Escape routes and safety exits;

(i) Emergency source of energy supply;

(j) Control elements of the ventilation systems;

(k) Link to the shore network;

(l) Closing devices for the fuel feed pipes;

(m) Liquefied gas installations;

(n) Loudspeaker installations;

(o) Radiotelephone installations.

The safety plan and the plan of the vessel in question shall carry the stamp of the Inspection Commission and be posted at appropriate points where they are clearly visible.

9. On vessels with cabin accommodation a general evacuation plan shall be posted for passengers in appropriate places. This plan may, however, be combined with the safety plan described in 8.

Instructions as to how passengers should proceed in the event of an alarm, fire, damage and evacuation and on where the lifesaving appliances are kept shall be placed in each cabin.

These instructions shall be drafted in German, English, French and Dutch.

10. In vessels where the hull is made of wood, aluminium or synthetic material, the engine rooms shall be constructed of materials referred to in article 3.04, 3 and 5, or shall be fitted with a fixed fire-fighting installation within the meaning of article 10.03, 5.

Article 15.11

Waste collection and disposal facilities

1. Passenger vessels with more than 50 berths for passengers shall be equipped either with waste-water collection tanks or with on-board sewage plants.

2. Waste-water collection tanks shall be of sufficient volume. The tanks shall be fitted with a device enabling their contents to be measured. The vessel shall have its own pumps and pipes for emptying the waste-water from the tanks into berthing facilities situated on either side of the vessel. The pipes shall be fitted with waste-water evacuation connections conforming to European standard EN 1306.

3. On-board sewage plants shall be such that their output conforms, continuously and without prior dilution, to the limit value specified in the Police Regulations for the Navigation of the Rhine; such plants shall be equipped with a sampling device.

CHAPTER 16

SPECIAL PROVISIONS FOR VESSELS TO BE MADE UP INTO PUSHED CONVOYS, TOWED CONVOYS OR SIDE-BY-SIDE FORMATIONS

Article 16.01

Pushers

1. Vessels which are to be used for pushing must be fitted with a suitable pushing device. They shall be so constructed and equipped as to

   (a) allow the crew to cross easily and safely to the pushed vessel with the means of coupling;

   (b) allow them to take up a specified position after coupling in relation to coupled vessels; and

   (c) prevent any lateral displacement of the vessels.

2. If the couplings are effected by means of cables, pusher vessels shall be equipped with at least two special winches or equivalent coupling devices.

3. The coupling devices shall ensure the rigid coupling of the pushed vessel or vessels.

   For pushed convoys comprising a pusher vessel and a single pushed vessel, the coupling devices shall allow for controlled articulation. The control systems required for this purpose shall have no difficulty in absorbing the forces to be transmitted and shall be easy and safe to control. Articles 6.02 to 6.04 are applicable by analogy to these control systems.

4. For pushers the collision bulkhead referred to in article 3.03, paragraph 1 (a) is not required.

Article 16.02

Pushed vessels

1. The following do not apply to barges without steering gear, accommodation, engine rooms or boilers:

   (a) chapters 5 to 7 and 12;
   (b) articles 8.06, paragraphs 2 to 8; 10.02 and 10.05, paragraph 1.

   If steering gear, accommodation, engine rooms or boilers exist, the corresponding requirements of these Regulations shall apply to them.

2. Ships' barges having a length L of 40 m or less shall also meet the following structural requirements:

   (a) The watertight transverse bulkheads referred to in article 3.03, paragraph 1, shall not be required if the forward side is capable of bearing a load equal to or at least 2.5 times that stipulated for the collision bulkhead of an inland waterway vessel with the same draught, built to the requirements of a classification society approved by all the Rhine river States and Belgium;

(b) Notwithstanding article 8.06, paragraph 1, compartments with inaccessible double bottoms need be balable only if their volume exceeds 5% of the displacement of the barge at maximum loaded draught.

3. Other vessels which need to be pushed shall be fitted with coupling devices permitting a safe connection to be made with other vessels.

Article 16.03

Vessels to propel side-by-side formations

Vessels for propelling side-by-side formations shall be equipped with bollards or similar devices the number and arrangement of which permit the formation to be securely linked.

Article 16.04

Vessels to form part of convoys

Vessels to form part of convoys shall be equipped with coupling devices, bollards or equivalent devices the number and arrangement of which permit a secure link with the other vessel or vessels of the convoy.

Article 16.05

Towing vessels

1. Vessels to be used for towing operations shall meet the following requirements:

(a) Towing equipment shall be so arranged that its use does not impair the safety of the vessel, the crew or the cargo;

(b) Vessels to be used for towing shall be equipped with tow hooks that can be safely disengaged from the wheelhouse;

(c) Towing devices shall consist of winches or tow hooks which can be disengaged from the wheelhouse. Such towing devices shall be installed forward of the propeller plane. This requirement shall not apply to vessels steered by propulsion units such as cycloidal or rudder propellers;

(d) Notwithstanding the requirements of (c) above, in the case of vessels to be used only for auxilliary towing duties, a towing device such as a bollard, to be installed forward of the propeller plane, may be used;

(e) Where cables may become caught on the stern of the vessel, guide-rings shall be fitted.

2. Vessels with a length L of more than 86 m shall not be authorized for downstream towing.

Article 16.06

Tests for convoys

1. For the purpose of the issue of the certificate of serviceability of the pusher or self-propelled barge for ensuring the propulsion of a rigid convoy and the insertion of the relevant particulars in the inspection certificate, the Inspection Commission shall decide whether convoys are to be presented to it for inspection and which convoys, and shall carry out the

navigation tests described in article 5.02 with the convoy in the requested formation or formations which it considers to be least favourable. The convoy must meet the requirements set out in articles 5.02 to 5.10.

The Inspection Commission shall verify that the rigid coupling of all the vessels in the convoy is assured during the manoeuvres prescribed in chapter 5.

2. If in the course of the tests referred to in paragraph 1 special equipment installed on vessels pushed or steered in side-by-side formation is used, such as steering gear, propelling or manoeuvring installations or articulated couplings, to meet the requirements of articles 5.02 to 5.10, the inspection certificate of the vessel ensuring the propulsion of the convoy must specify: the formation, its position, and the name and official number of the permitted vessels used which are fitted with special equipment.

Article 16.07

Entries on the inspection certificate

1. If a vessel is intended to push a convoy or to be pushed in a convoy, the inspection certificate shall state that it conforms to the applicable requirements of articles 16.01 to 16.06.

2. The following particulars shall be included in the inspection certificate of the vessel intended to ensure propulsion:

   (a) The convoys and formations permitted;

   (b) Types of coupling;

   (c) Maximum coupling forces transmitted and,

   (d) Where relevant, minimum breaking strength of the coupling cables of the longitudinal connection and the number of turns of the cables.

CHAPTER 17

SPECIAL PROVISIONS FOR FLOATING EQUIPMENT

Article 17.01

General

Text is not available in English.

Article 17.02

Derogations

Text is not available in English.

Article 17.03

Supplementary requirements

Text is not available in English.

Article 17.04

Residual safety distance

Text is not available in English.

Article 17.05

Residual freeboard

Text is not available in English.

Article 17.06

Lateral stability test

1. The proof of stability referred to in articles 17.07 and 17.08 shall be established by a lateral stability test conducted in good and due form.

2. If sufficient heel cannot be attained in the course of a lateral stability test, or if the performance of the lateral stability test gives rise to unreasonable technical difficulties, a calculation of weight and centre of gravity may be carried out instead. The result of the weight calculation shall be verified by draft measurements and the difference shall not exceed ± 5%.

Article 17.07

Proof of stability

1. It shall be demonstrated that the residual freeboard and residual safety distance are adequate, allowing for the loads involved in the use and operation of installations. In this respect, the sum of the heel and trim angles shall not exceed 10° and the bottom of the hull shall not emerge.

2. The following data and documents shall be required for proof of stability:

(a) Scale drawings of the floating equipment and working equipment, together with the relevant detailed data needed for proof of stability, such as content of tanks and opening giving access to the interior of the vessel;

(b) Hydrostatic data or curves;

(c) Static stability heeling arm curves as necessary, according to 5 below or article 17.08;

(d) Description of operating conditions with the corresponding data for weight and centre of gravity, including the light displacement and condition of the equipment for transport;

(e) Calculation of the heeling, trim and righting moments, indicating the heel and trim angles and the relevant residual safety distances and freeboards;

(f) Results of all calculations, indicating use and load limits.

3. Verification of stability shall be based on the following load conditions:

(a) Specific mass of dredging elements for dredgers:

Sand and gravel:	1.5 t/m^3,
Very wet sand:	2.0 t/m^3,
Earth, average:	1.8 t/m^3,
Mixture of sand and water in pipes:	1.3 t/m^3;

(b) For grab dredgers, the figures given in (a) above shall be increased by 15%;

(c) For hydraulic dredgers, the maximum lifting power must be taken into account.

4.1 In verifying stability, account must be taken of the moments resulting from:

(a) The load;
(b) Asymmetrical structure;
(c) Wind pressure;
(d) Turning while under way for self-propelled equipment;
(e) Crosscurrent, as necessary;
(f) Ballast and provisions;
(g) Deck loads and cargo, if any;
(h) Free areas occupied by liquids;
(i) Inertia forces;
(k) Other mechanical installations.

Moments which may act simultaneously shall be added together.

4.2 The moment resulting from wind pressure shall be calculated as follows:

$$M_v = c \cdot p_v \cdot S\,(l_v + \frac{T}{2})\ \ [kNm]$$

where, c = resistance coefficient depending on shape

c = 1.2 shall be used for framing and

c = 1.6 for stiffened web beams, with both values allowing for wind gusts.

The skin area shall be taken as the area exposed to the wind.

p_v = specific wind pressure; it shall be taken uniformly as 0.25 kN/m^2;

S = lateral surface of the floating equipment, in m^2;

l_v = distance between the centre of gravity and the lateral surface S of the equipment at the maximum loaded draft line, in m;

4.3 In determining the moment due to turning when under way referred to in 4.1 (d) above for self-propelled equipment navigating independently, the formula in article 15.04, paragraph 6, shall be used.

4.4 The moment resulting from the crosscurrent referred to in 4.1 (e) shall be taken into account only for floating equipment which is anchored or moored across the current during operations.

4.5 In calculating the moments resulting from liquid ballast and liquid provisions referred to in 4.1 (f), the level of filling of tanks which most adversely affects stability shall be determined and the relevant moment included in the calculation.

4.6 The moment resulting from the inertia forces referred to in 4.1 (i) shall be allowed for, as appropriate, if the movements of the load and installations of the equipment are likely to affect stability.

5. For floating material with vertical side walls, the righting moment may be calculated as follows:

$$M_R = 10 \cdot D \cdot \overline{MG} \cdot \sin\varphi \ \ [kNm]$$

where, $\overline{MG}$ = metacentric height, in m;

φ = angle of heel in °.

This formula shall apply to angles of heel of up to 10° or up to an angle of heel corresponding to the immersion of the edge of the deck or the emergence of the edge of the bottom. For this purpose, the smallest angle shall be taken. For sloping side walls, the formula shall apply up to angles of heel of 5°; in other cases, the limits specified in 3 and 4 shall apply.

If the special shape of the assembly or assemblies of floating material does not allow this simplification, the heeling arm curves referred to in 2 (c) shall be required.

Article 17.08

Proof of stability in the event of reduced residual freeboard

If reduced residual freeboard is taken into account according to article 17.05, 3, it should be determined for all operating conditions that:

(a) After correction for liquid-free areas, the metacentric height is not less than 15 cm;

(b) For angles of heel of 0° to 30° there is a righting arm of at least

$$0.30 - 0.28 \cdot \varphi_n \ \ [m]$$

Where, φ_n is the angle of heel from which the heeling arm curve attains negative values (stability limit); it may not be less than 20° or 0.35 rad and shall

not be included in the formula for more than 30° or 0.52 rad, taking the radiant (rad) (1° = 0.01745 rad) as the unit of φ_n;

(c) The sum of the angles of heel and trim does not exceed 10°;

(d) There is a residual safety distance as defined in article 17.06;

(e) There is a residual freeboard of at least 0.05 m;

(f) or angles of heel of 0° to 30°, there is a residual heeling arm of at least

$$0.20 - 0.23 \cdot \varphi_n \quad [m]$$

Where, φ_n is the angle of heel from which the heeling arm curve attains negative values; it shall not be included in the formula for more than 30° or 0.52 rad.

Residual heeling arm means the maximum difference, from 0° to 30° of heel, between the righting arm curve and the inclination arm curve. If water enters an opening into the vessel at an angle of heel less than that corresponding to the maximum difference between the heeling arm curves, the heeling arm corresponding to that angle of heel shall be taken into account.

Article 17.09

Draught marks and draught scales

Text is not available in English.

Article 17.10

Floating equipment without proof of stability

1. The following floating equipment may be exempted from the requirements of articles 17.04 to 17.08:

   (a) Those whose installations can in no way modify the heel or trim and

   (b) Those for which displacement of the centre of gravity is absolutely precluded.

2. However,

   (a) For maximum load, the safety distance must be at least 300 mm and the freeboard at least 150 mm;

   (b) For openings which cannot be made sprayproof or weathertight, the safety distance must be at least 500 mm.

CHAPTER 18

SPECIAL PROVISIONS FOR WORKSIDE VESSELS

Article 18.01

Operating conditions

Text is not available in English.

Article 18.02

Application of Part II

Text is not available in English.

Article 18.03

Derogations

Text is not available in English.

Article 18.04

Safety distance and freeboard

Text is not available in English.

Article 18.05

Boats

Text is not available in English.

CHAPTER 19

SPECIAL PROVISIONS FOR CANAL BARGES

Article 19.01

General

Text is not available in English.

Article 19.02

Application of Part II

Text is not available in English.

Article 19.03

Application of Part III

Text is not available in English.

CHAPTER 20

SPECIAL PROVISIONS FOR SEAGOING VESSELS

Article 20.01

Application of Part II

Seagoing vessels in possession of valid international documents in accordance with SOLAS 1974/78 and the International Convention for the Prevention of Pollution from Ships (MARPOL I and II) shall comply with the following provisions:

1. chapter 5;

2. article 6.01, paragraph 1;

3. articles 7.01, paragraph 2, 7.02, paragraph 1 and paragraph 3, subparagraphs 1 and 3, 7.05, paragraph 2 and 7.13 for seagoing vessels approved for radar steering by one person;

4. articles 8.05, paragraph 11, 8.06, paragraph 10, 8.07, paragraph 1 and 8.08;

5. article 9.17;

6. articles 10.01 and 10.02, paragraph 1 (a) to (c).

Article 20.02

Application of the other provisions

1. Seagoing vessels approved as part of a convoy must comply with the provisions of chapter 16.

2. An oil discharge monitoring and control system in accordance with Regulation 16 of MARPOL 73/78 shall be considered to be equivalent to the sealing of closing devices prescribed in article 8.06, paragraph 10. An international certificate concerning the prevention of oil pollution in accordance with MARPOL 73/78 shall provide evidence of the presence of the monitoring and control system.

3. For seagoing vessels, chapter 22 shall be considered to have been complied with when stability is in conformity with the Resolutions of the International Maritime Organization (IMO) in force, when the relevant documents have been stamped by the competent authority and when the containers are immobilized in the manner usual in shipping.

Article 20.03

Minimum crew

1. Chapter 23 shall apply in determining the minimum crew for seagoing vessels.

2. As an exception to paragraph 1, seagoing vessels may continue to sail with the crew arrangements set out in the provisions of IMO Resolution A.481 (XII) and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers of 1978, provided that the number of the crew is not less than the minimum crew detailed in chapter 23 for operating mode B, and particularly articles 23.09 and 23.13.

The relevant documents, which set out the qualifications of crew members and their number, shall be kept on board. A person in possession of the Rhine boatmaster's licence for the section travelled shall also be on board. He shall be replaced by another licence-holder after a maximum of 14 hours' navigation in any 24-hour period.

The following particulars shall be entered in the ship's log:

(a) name of the licence-holders on board and the start and finish of their watch;

(b) start and interruption, resumption and end of the voyage with the following particulars: date, time and place and kilometre post.

CHAPTER 21

SPECIAL PROVISIONS FOR SPORTS VESSELS

Article 21.01

General

Text is not available in English.

Article 21.02

Application of Part II

Text is not available in English.

Article 21.03

Application of Part III

Text is not available in English.

CHAPTER 22

STABILITY OF VESSELS CARRYING CONTAINERS

Article 22.01

General

1. The provisions of this chapter are applicable to vessels carrying containers when the Police Regulations for the Navigation of the Rhine require the documents concerning stability.

   The documents concerning stability shall be verified and stamped by an Inspection Commission.

2. The documents concerning stability shall provide information comprehensible to the steersman on the stability of the vessel for each container load.

   The documents concerning stability shall include at least:

   (a) tables of permissible stability coefficients, the permissible $\overline{KG}$ values or permissible heights of the cargo's centre of gravity;
   (b) data on the spaces which may be filled with ballast water;
   (c) the formulae for ascertaining stability;
   (d) a sample calculation or instructions for the steersman.

3. In the case of vessels which may alternatively carry fixed or non-fixed containers, separate documents concerning stability shall be required for the carriage of fixed containers and for the carriage of non-fixed containers.

4. A cargo of containers is considered to be fixed when each individual container is firmly secured to the vessel hull by guides or tensioners and when its position cannot be altered during navigation.

Article 22.02

Minimum and maximum values and calculation method for establishing the stability of vessels carrying non-fixed containers

1. In the case of non-fixed containers, any calculation method used to determine the vessel's stability shall conform to the following requirements:

   (a) The metacentric height $\overline{MG}$ shall not be less than 1.00 m;
   (b) Under the combined action of the centrifugal force produced by the turning of the vessel, the thrust of the wind and the flooded free surfaces, the heel shall not be more than 5° and the deck side shall not be submerged;
   (c) The heeling arm resulting from the centrifugal force due to the turning of the vessel shall be determined by the following formula:

$$h_{KZ} = c_{KZ} \cdot \frac{v^2}{L_F} \cdot \left(\overline{KG} - \frac{T'}{2} \right) \; [m]$$

where c_{KZ} = parameter: (c_{KZ} = 0.04) [s²/m],

v = maximum speed of vessel (m/sec),

$\overline{KG}$ = height of centre of gravity of loaded vessel above the baseline (m),

T' = average draught of loaded vessel (m).

(d) The heeling arm resulting from the thrust of the wind shall be determined according to the following formula:

$$h_{KW} = c_{KW} \cdot \frac{A'}{D'} \cdot \left(l_w + \frac{T'}{2} \right) \ [m]$$

where c_{KW} = parameter: (c_{KW} = 0.025) [t/m²],

A' = lateral surface above the water when vessel is loaded (m²),

D' = displacement of loaded vessel (t),

l_w = height of centre of gravity of lateral surface A′ above the water in relation to the water-line (m),

T' = average draught of loaded vessel (m).

(e) The heeling arm resulting from the free surfaces exposed to rainwater and residual water inside the hold or double bottom shall be determined according to the following formula:

$$h_{KfO} = \frac{C_{KfO}}{D'} \cdot \sum \left(b \cdot l \cdot \left(b - 0.55\sqrt{b} \right) \right) \ [m]$$

where c_{KfO} = parameter: (c_{KfO} = 0.015) [t/m²],

b = breadth of hold or section of hold concerned [m],*/

l = length of hold or section of hold concerned [m],*/

D' = displacement of loaded vessel [t].

(f) For each load, half the fuel and freshwater supply must be taken into account.

2. The stability of a vessel loaded with non-fixed containers shall be considered adequate when the actual $\overline{KG}$ is not more than the $\overline{KG}_{zul}$ produced by the formula. The $\overline{KG}_{zul}$ must be calculated for various displacements covering the whole range of possible draughts.

(a) $$\overline{KG}_{zul} = \frac{\overline{KM} \cdot \frac{B_F}{2F} \left(Z \cdot \frac{T_m}{2} - h_{KW} - h_{KfO} \right)}{\frac{B_F}{2F} \cdot Z + 1} \ [m]$$

For $\frac{B_F}{2F}$, no value below 11.5 shall be used (11.5 = 1/tan 5°).

*/ Sections of hold of free surfaces open to water result from separation by water-tight lengthwise or transverse partitions, forming separate sections.

(b) $\overline{KG}_{zul} = \overline{KM} - 1.00 \ [m]$.

The smaller value for $\overline{KG}_{zul}$ produced by (a) or (b) shall apply,

Where $\overline{KG}_{zul}$ = maximum permissible height of the centre of gravity of the loaded vessel above the baseline [m],

$\overline{KM}$ = metacentric height above the baseline [m] according to the approximation formula in 3,

F = actual freeboard at 1/2 L [m],

Z = parameter for centrifugal force produced by turning,

$$Z = \frac{(0.7 \cdot v)^2}{9.81 \cdot 1.25 \cdot L_F} = 0.04 \cdot \frac{v^2}{L_F} \ [-]$$

v = maximum speed of vessel in relation to the water [m/s],

T_m = average draught [m],

h_{KW} = heeling arm produced by lateral wind thrust (see 1 (d)) [m],

h_{KfO} = sum of heeling arms produced by flooded free surfaces (see 1 (e)) [m],

3. Approximation formula for $\overline{KM}$

Were there is no curve plan available, the value of $\overline{KM}$ for the calculation, according to 2 and article 22.03, paragraph 2, can be determined, for example, by the following approximation formulae:

(a) pontoon vessels $$\overline{KM} = \frac{B^2{}_F}{(12.5 - \frac{T_m}{H}) \cdot T_m} + \frac{T_m}{2} \ [m]$$

(b) other vessels $$\overline{KM} = \frac{B^2{}_F}{(12.7 - 1.2 \cdot \frac{T_m}{H}) \cdot T_m} + \frac{T_m}{2} \ [m]$$

Article 22.03

Minimum and maximum values and calculation method for establishing the stability of vessels carrying fixed containers

1. In the case of fixed containers, any calculation method used to determine the stability of the vessel shall conform to the following requirements:

(a) the metacentric height $\overline{MG}$ shall not be less than 0.50 m;

(b) under the combined action of the centrifugal force produced by the turning of the vessel, the thrust of the wind and the flooded free surfaces, no hull opening shall be submerged;

(c) the heeling arm resulting from the centrifugal force produced by the turning of the vessel, the thrust of the wind and the flooded free surfaces shall be determined by the formulae referred to under article 22.02, 1 (c) to (e);

(d) for each load, half the fuel and fresh water supply must be taken into account.

2. The stability of a vessel loaded with fixed containers shall be considered adequate when actual $\overline{KG}$ is less than or equal to the $\overline{KG}_{zul}$ calculated using the following formula for the various displacements resulting from the possible variation in height.

(a) $$\overline{KG}_{zul} = \frac{\overline{KM} - \frac{I-i}{2\forall}(1-1.5\frac{F}{F'}) + 0.75\,\frac{B_F}{F'}\,(Z \cdot \frac{T_m}{2} - h_{KW} - h_{KfO})}{0.75 \cdot \frac{B_F}{F'} \cdot Z + 1} \quad (m)$$

For $\frac{B_F}{F'}$ no value less than 6.6 shall be used and

for $\frac{I-i}{2\forall} \cdot (1-1.5\frac{F}{F'})$ no value less than zero.

(b) $$\overline{KG}_{zul} = \overline{KM} - 0.50 \quad (m)$$

The smaller value for $\overline{KG}_{zul}$ produced by (a) or (b) shall apply.

In addition to the terms defined above, in these formulae:

I = moment of lateral inertia at the water-line at T_m[m^4] (for the approximation formula see 3)

i = moment of lateral inertia at the water-line parallel to the baseline, at the height

$$\frac{T_m + \frac{2}{3}F' \qquad [m^4]}{}$$

$\forall$ = displacement of vessel at T_m [m^3]

F' = ideal freeboard $F' = H' - T_m \quad [m]$ or $F' = \frac{a \cdot B_F}{2 \cdot b} \quad [m]$, whichever is the smaller

a = vertical distance between the lower edge of the submerged opening in the event of heeling and the water-line, with the vessel in normal position [m]

b = distance of the same opening from amidships [m]

H' = ideal depth $H' = H + \frac{q}{0.9 \cdot L \cdot B_F} \quad [m]$

q = sum of the volumes of deckhouses, hatchways, trunk hatches, etc. up to a maximum height of 1.0 m above H or up to the lowest opening of the space in question, whichever is the

lower. Parts of spaces situated within 0.05 L of the ends of the vessel shall not be taken into consideration [m^3].

3. Approximation formula for I

Where there is no curve plan available, the value necessary for calculation of the moment of lateral inertia I at the water-line can be obtained from the following approximation formulae:

(a) pontoon vessels $$I = \frac{B^2{}_F \cdot \forall}{(12.5 - \frac{T_m}{H}) \cdot T_m} \left[m^4\right]$$

(b) other vessels $$I = \frac{B^2{}_F \cdot \forall}{(12.7 - 1.2 \cdot \frac{T_m}{H}) \cdot T_m} \left[m^4\right].$$

Article 22.04

On-board stability check procedure

The stability check procedure may be determined from the documents referred to in article 22.01, paragraph 2.

CHAPTER 22 bis

SPECIAL PROVISIONS FOR VESSELS OF MORE THAN 110 M IN LENGTH

Article 22 bis.01

Application of Part I

In addition to the requirements set out in article 2.03, section 3, concerning vessel longer than 110 m, apart from sea-going ships, the Inspection Commission which is subsequently to issue the certificate shall be informed by the owner or his representative before building begins (new building or increase in the length of a vessel already in operation). The Inspection Commission shall conduct inspections during the building stage. It may opt not to conduct inspections during the building stage if a certificate is produced before building begins to show that a recognized classification society certifies that it is to supervise that building.

Article 22 bis.02

Application of Part II

In addition to Part II, articles 22 bis.03 to 22 bis.05 shall apply to vessel that are longer than 110 m.

Article 22 bis.03

Durability

Proof of sufficient hull strength within the meaning of article 3.02 (1) (a) (longitudinal, lateral and local strength) shall be furnished by means of a certificate issued by a recognized classification society.

Article 22 bis.04

Floatability and stability

1. For vessels longer than 110 m, except for passenger vessels, paragraphs 2 to 9 shall apply.

2. Sufficient stability in the event of damage shall be proved for the most unfavourable loading situation.

   The basic values for the stability calculation - the vessel's lightweight and the location of the centre of gravity - shall be determined either by means of

   - An inclining experiment, or
   - By detailed mass calculation. In the latter case the lightweight shall be checked by means of a lightweight test with a resulting difference of not more than $\pm$5 % between the mass determined by the calculation and the vessel's lightweight determined by the draught readings.

3. Floatability after damage shall be proved for the maximum loaded state of the vessel.

   For this purpose calculated proof of sufficient stability shall be established for critical intermediate stages of flooding and for the final stage of flooding. Negative values of

stability in intermediate stages may be accepted by the competent authority only if sufficient stability is established for the following critical intermediate stages.

4. The following assumptions shall be taken into consideration in the event of damage:

(a) The extent of side damage is as follows:

longitudinal extent: at least 0.10 L,
transverse extent: 0.59 m,
vertical extent: from the baseline upwards without limit.

(b) The extent of bottom damage is as follows:

longitudinal extent: at least 0.10 L,
transverse extent: 3.00 m,
vertical extent: from the base 0.39 m upwards, the sump excepted.

(c) Any bulkheads within the damaged area shall be assumed damaged, which means that the location of bulkheads shall be chosen so as to ensure that the vessel remains afloat after the flooding of two or more adjacent compartments in the longitudinal direction. For the main engine room a single compartment will be taken into account, i.e. the end bulkheads of the engine room shall be assumed to be intact.

For bottom damage also two adjacent athwartships compartments shall be assumed as flooded.

(d) Permeability

Permeability shall be considered as reaching 95 per cent.

As an exception to this assumption, the following permeability values may be taken into account:

– Engine room and service premises	85 %
– Double bottoms, fuel bunkers, ballast tanks, etc. according to whether these spaces are, depending on their intended use, to be assumed to be full or empty for the vessel floating at the maximum permissible draught	0 or 95 %
When an average permeability of less than this is calculated for any compartment, this calculated value may be used.	

(e) The lower edge of any openings that cannot be closed watertight (e.g. doors, windows, access hatchways) shall be not less than 100 mm above the waterline after the damage.

5. Stability in the event of damage is adequate on the basis of the assumptions referred to in paragraph 4,

(a) When, in the final stage of flooding, there is a residual safety clearance of not less than 100 mm and when the vessel's angle of heel does not exceed 5°, or

(b) When the calculations made in accordance with the calculation procedure for stability in the event of damage prescribed in Part 9 of the Regulations for the Carriage of Dangerous Goods on the Rhine (ADNR) give a positive result.

6. Where cross- or down-flooding openings are provided for reduction of unsymmetrical flooding, the time for equalization shall not exceed 15 minutes if during the intermediate stages of flooding sufficient stability has been proved.

7. If openings through which undamaged compartments may become additionally flooded are capable of being closed watertight, the closing devices shall be appropriately marked.

8. The proof via calculation shall be considered to have been provided if the positive-result calculations of stability in the event of damage referred to in Part 9 of the Regulations for the Carriage of Dangerous Goods on the Rhine (ADNR) are presented.

9. If necessary in order to comply with paragraphs 2 or 3, the maximum draught level shall be redetermined.

Article 22 bis.05

Additional requirements

1. Vessels longer than 110 m shall :

(a) Be fitted with multiple screw propelling machinery with at least two independent drives of the same power and an active bow rudder that can be controlled from the wheelhouse and is also effective when the vessel is in an unladen state; or

Be fitted with single-screw propelling machinery and an active bow rudder steering system that can be controlled from the wheelhouse, with an independent power supply, and can by itself ensure propulsion if the main propelling machinery fails and is also effective when the vessel is in an unladen state;

(b) Be equipped with a radar navigation system with a turn indicator in accordance with article 7.06, paragraph 1;

(c) Have a permanently fixed stripping system in accordance with article 8.06;

(d) Comply with the conditions of article 23.09, paragraph 1.1.

2. Vessels, excepting passenger vessels, longer than 110 m wishing to sail upstream from Mannheim shall also:

(a) In the event of damage, be capable of separation in the central third of the vessel without recourse to heavy salvage equipment. The floatability of the different parts of the vessel after the damage shall be ensured;

(b) Hold a certificate from a recognized classification society for the floatability, list and stability of the parts of the vessel following separation, also indicating the level of load as from which the floatability of the two parts is no longer ensured. This certificate shall be kept on board;

(c) Have a double hull in accordance with the Regulations for the Carriage of Dangerous Goods on the Rhine (ADNR). Self-propelled vessels shall conform to 9.1.0.91 to 9.1.0.95 and tankers to 9.3.2.11.7 and 9.3.2.13 to 9.3.2.15 of Part 9 of ADNR;

(d) Be fitted with multiple-screw propelling machinery in accordance with the first phrase of paragraph 1 (a);

(e) Provide proof in paragraph 52 of the inspection certificate of an entry certifying compliance with the requirements of (a) to (d) above.

3. In addition to the provisions of paragraph 1 above, passenger vessels longer than 110 m wishing to sail upstream from Mannheim shall meet the following requirements:

(a) Be built or converted under the supervision of a recognized classification society for its first class. This shall be certified by means of a certificate established by the classification society. Maintenance of class is not required;

(b) Have a double bottom of a minimum height of 600 mm and bulkheads so distributed as to ensure that in the event of the flooding of any two watertight adjacent compartments the vessel does not drop below the margin line and that a residual safety distance of 100 mm exists, or

Have a double bottom of a minimum height of 600 mm and a double hull with an 800 mm space between the side wall of the vessel and the longitudinal bulkhead;

(c) Be fitted with multiple screw propelling machinery with at least two independent drives of the same power and an active bow rudder that can be controlled from the wheelhouse and is also effective in both the longitudinal and transverse directions;

(d) Have stern anchors that can be controlled from the wheelhouse.

Article 22 bis.06

Implementation of Part IV in the event of conversion

The Inspection Commission may only apply Chapter 24 to converted vessel that are longer than 110 m on the basis of specific recommendations of the Central Commission for the Navigation of the Rhine.

CHAPTER 22 ter

SPECIAL PROVISIONS APPLICABLE TO HIGH-SPEED VESSEL

Article 22 ter.01

General

1. High-speed vessel shall not be built like cabin vessel.

2. The following installations are prohibited on board high-speed vessel:
   (a) appliances with wick burners referred to in article 13.02;
   (b) vaporizing oil-burner stoves referred to in articles 13.03 and 13.04;
   (c) solid fuel heating appliances referred to in article 13.07;
   (d) liquefied gas installations referred to in Chapter 14.

Article 22 ter.02

Application of Part I

1. In addition to the provisions of article 2.03, high-speed vessel shall be built according to class and under the supervision of a recognized classification society with special rules intended for high-speed vessel in accordance with its classification requirements. The class shall be maintained.

2. By way of exception to article 2.06, the inspection certificates established in accordance with the provisions of this chapter shall be valid for a maximum of five years.

Article 22 ter.03

Application of Part II

1. Without prejudice to paragraph 2 and article 22 ter.02, paragraph 2, chapters 3 to 15 apply to high-speed vessel, with the exception of the following provisions:

   (a) Article 3.04, paragraph 6.2;
   (b) Article 8.06, paragraph 2, second sentence;
   (c) Article 11.02, paragraph 4, second and third sentences;
   (d) Article 12.02, paragraph 4, second sentence;
   (e) Article 15.07, paragraph 2 (b)2, third sentence;

2. By way of exception to article 15.03, paragraph 3, all bulkhead doors shall be capable of being remotely controlled.

3. In addition to the requirements of Part II, high-speed vessel shall meet the requirements of articles 22 ter.04 to 22 ter.12.

Article 22 ter.04

Seats and seat belts

Seats shall be available for the permitted maximum number of persons on board. Seats shall always be fitted with seat belts. Seat belts are optional if appropriate protection against impacts exists or where they are not required by the HSC 2000 Code, Chapter 4, part 6.

Article 22 ter.05

Freeboard

By way of exception to articles 4.02 and 4.03, the freeboard shall be not less than 500 mm.

Article 22 ter.06

Lift, stability and compartmentation

For high-speed vessel, sufficient proof shall be provided in respect of

(a) the characteristics of lift and stability ensuring the safety of the vessel during navigation when operating in displacement mode, both when intact and in the event of a leak;

(b) the characteristics of stability and stabilization systems ensuring the safety of the vessel when operating during the dynamic lift phase and the transition phase;

(c) the characteristics of stability when operating in dynamic lift phase and in transition phase, enabling the vessel to move safely into displacement mode if the system does not function correctly.

Article 22 ter.07

Wheelhouse

1. Layout

(a) By way of exception to article 7.01, paragraph 1, the wheelhouse shall be so equipped that the steersman and a second crew member can at all times perform their tasks while the vessel is under way.

(b) The wheelhouse shall be equipped in such a way as to provide the persons referred to in (a) above with a work station. The equipment for navigation, manoeuvring, supervision and data transmission and other appliances with an important role in the operation of the vessel shall be placed sufficiently close together to enable a second crew member while seated to have access to the necessary data and to make use as the need arises of control equipment and installations. The following requirements shall apply in all cases:

(aa) the steersman’s position shall be so designed as to permit radar steering by a single person;

(bb) the second crew member shall have his own radar image (slave) at his work station and shall be in a position to take action on the transmission of data and the propulsion of the vessel.

(c) The persons referred to in (a) shall be able to control the equipment referred to in (b) without hindrance, also when the seat belts are correctly fastened.

2. Unobstructed view

(a) By way of exception to article 7.02, paragraph 2, from a seated position and whatever the laden state, the dead area of vision forward of the bow shall not be greater than the length of the vessel.

(b) By way of exception to article 7.02, paragraph 3, the sum of the areas of lateral non-visibility from bow to stern up to 22.5° shall not be greater than 20° on each side. No area of non-visibility shall be greater than 5°. The visible area between two areas of non-visibility shall not be less than 10°.

3. Instruments

The instrument panels for the control and supervision of the equipment referred to in article 22b.11 shall be placed individually in the wheelhouse at a clearly marked location. This shall also apply, where necessary, to installations for the launching of collective rescue equipment.

4. Lighting

Areas or parts of equipment which require to be lighted during operation shall be provided with red lighting.

5. Windows

Reflections shall be avoided. Installations to prevent dazzling by the sun shall be provided.

6. Surface materials

Reflections on the surface materials used in the wheelhouse shall be avoided.

Article 22 ter.08

Additional equipment

High-speed vessel shall carry the following equipment:

(a) radar equipment and a rate-of-turn indicator in accordance with article 7.06, paragraph 1;

(b) individual rescue equipment in accordance with the European standard EN 395:1998 for the permitted maximum number of persons on board.

Article 22 ter.09

Closed sectors

1. General

Spaces and accommodation accessible to the public and their equipment shall be so designed as to ensure that persons making normal use of them cannot be injured during a

normal start or stop, an emergency start or stop or during manoeuvres and under normal sailing conditions, particularly in the event of a breakdown or the erroneous activation of a control.

2. Communication

(a) for the purposes of information on safety measures, all passenger vessels shall be equipped with acoustic and visual installations, audible and visible to all passengers.

(b) the installations referred to in (a) shall enable the master to give instructions to the passengers.

(c) each passenger shall have near his seat instructions concerning emergency situations, including in particular an overall sketch of the vessel on which are marked all the exits, evacuation routes, emergency and rescue equipment and containing instructions on the use of life-jackets.

Article 22 ter.10

Exits and evacuation routes

The evacuation and rescue routes shall meet the following requirements:

(a) An easy, safe and rapid access shall be ensured from the wheelhouse to the spaces and accommodation accessible to the public;

(b) The evacuation routes leading to the safety exits shall be indicated clearly and permanently;

(c) All concealed exits shall be adequately indicated. The means of operating the opening mechanism shall be clearly visible from the outside and from the inside;

(d) The evacuation routes and safety exits shall be equipped with a suitable safety guidance system;

(e) An adequate space shall be provided beside the exits for a crew member.

Article 22 ter.11

Fire protection and fire-fighting

1. Corridors, spaces and accommodation accessible to the public and galleys and engine rooms shall be connected to an efficient fire alarm system. Any outbreak of fire and its location shall be automatically communicated to a point permanently occupied by members of the crew.

2. Engine rooms shall be equipped with a permanently fixed fire-extinguishing system in accordance with article 10.03 ter.

3. Spaces and accommodation and their evacuation routes shall be equipped with a pressurized water-spray system in accordance with article 10.03 bis. It shall be possible to discharge the water used for extinguishing fires to the outside rapidly and directly.

Article 22 ter.12

Transitional requirements

High-speed vessel within the meaning of article 1.01, paragraph 20 bis, which hold a valid certificate of inspection at 1 April 2003 shall fully meet the following requirements of this chapter:

(a) in the event of the renewal of the validity of the inspection certificate
articles 22 ter.01; 22 ter.04; 22 ter.08; 22 ter.09; 22 ter.10; 22 ter.11, paragraph 1;

(b) on 1 April 2013
article 22 ter.07, paragraphs 1, 3, 4, 5 and 6;

(d) on 1 January 2023
the other requirements.

PART III

CHAPTER 23

REQUIREMENTS CONCERNING CREWS

Article 23.01

General

1. Crews on board vessels navigating on the Rhine, under the Police Regulations for Navigation on the Rhine, shall conform to the requirements of this chapter for all operating modes.

   The crew prescribed for the operating mode and the sailing time taken shall be on board the vessel at all times when it is under way. No departure shall be permitted without the prescribed crew.

   If for unforeseen reasons (e.g., illness, accident, order by an authority) a maximum of one member of the prescribed crew is not on board during the voyage, vessels may nevertheless continue to the first appropriate stopping place in the direction of navigation - passenger vessels to the day's terminus - if a holder of the licence required under the Rhine Licensing Regulations, valid for the journey to be undertaken, and another member of the prescribed crew are on board.

   The person responsible for supervising and caring for children under six years of age on board may not be a member of the minimum crew unless measures are taken to ensure the safety of the children without permanent supervision.

2. Each river State or Belgium may require its provisions concerning the protection of workers to be applied on Rhine vessels registered in that State. Unregistered vessels are subject to the provisions of the State, be it a river State or Belgium, in which the company or the owner have their headquarters or legal domicile.

   Notwithstanding the above provision, the competent authorities of the river State or Belgium may agree bilaterally that certain vessels registered in one State are subject to the requirements of the other State.

   Pregnant and recently delivered women may not be members of the crew for at least 14 weeks, of which not less than six weeks shall be prior to and seven weeks subsequent to the delivery.

3. For the purposes of articles 23.05, 23.06 and 23.08, account shall also be taken of sailing time and rest time outside the scope of these Regulations.

4. One hundred and eighty days of effective sailing time inland navigation are counted as one year of sailing time. A maximum of 180 days of effective sailing time may be taken into consideration in a period of 365 consecutive days. Two hundred and fifty days of sailing time at sea, in coastal navigation or in fishing are counted as one year of sailing time.

Article 23.02

Crew members - Qualifications

1. Crew members may be deck-hands, apprentices (ship's boy), ordinary crewmen, engine-minders, able crewmen, helmsmen, boatmasters, engineers.

2. The qualifications for crew members are as follows:

2.1 deck-hand: must be not less than 16 years of age;

2.2 apprentice (ship's boy): must be not less than 15 years of age and have an apprentice's contract which provides for attendance at a professional boatmasters' school or for a correspondence course approved by the competent authority to be taken in preparation of an equivalent diploma;

2.3 ordinary crewman:

(a) must be not less than 17 years of age and

- have passed an examination on completion of the training referred to in 2.2, or
- have passed an examination on completion of training in a professional boatmasters' school, or
- have passed any other examination for able crewman recognized by the competent authority,

or

(b) must be not less than 19 years of age and have had not less than three years' experience as a deck-hand, including not less than one year in inland navigation and two years either in inland navigation or at sea in coastal navigation or fishing;

2.4 engine-minder:

(a) must be either an ordinary crewman and

- have passed an engine-minder's examination recognized by the competent authority,

or

(b) must have had not less than one year's experience on board a motorized inland navigation vessel and have a basic knowledge of engines;

2.5 able crewman:

(a) must have had not less than one year's experience in inland navigation as an ordinary crewman and

- have successfully completed the training referred to in 2.2, or
- have passed the final examination of a professional boatmasters' school, or
- have passed any other examination for ordinary crewman recognized by the competent authority,

or

(b) must have successfully completed training referred to in 2.2 of a duration of not less than three years or have passed a final examination following training of not less than three years in a professional boatmasters' school provided the training includes not less than one year's experience in inland navigation,

or

(c) must have had not less than one year's experience in inland navigation as an ordinary crewman within the meaning of 2.3 (b), and have passed a practical examination in accordance with annex C, paragraph 3.1, of the Rhine Licensing Regulations in application of the Directive on examination procedures adopted under article 1.05 of the Rhine Licensing Regulations,

or

(d) must have had not less than two years' experience in inland navigation as an ordinary crewman within the meaning of 2.3 (b);

2.6 helmsman:

(a) must have had not less than one year's experience in inland navigation as an able crewman or not less than three years' experience as an ordinary crewman within the meaning of 2.3 (b),

or

(b) must hold a boatmaster's certificate established under Directive 96/50/EC or a boatmaster's certificate in accordance with appendix I to Directive 91/672/EEC,

or

(c) must have had not less than four years' experience in inland navigation and hold a certificate of proficiency equivalent to the Principal Licence, permitting him to act as helmsman of a vessel on the inland waterways of a member State of the Central Commission for the Navigation of the Rhine,

or

(d) must have had not less than four years' experience in inland navigation and hold a certificate of proficiency recognized by the Central Commission for the Navigation of the Rhine as equivalent to the Principal Licence in accordance with article 3.05, 3, of the Rhine Licensing Regulations, permitting him to act as helmsman on vessels on other inland waterways;

2.7 boatmaster:

must hold the licence required under the Rhine Licensing Regulations;

2.8 engineer:

(a) must be at least 18 years of age and have passed an examination on completion of a full training course in the engine and mechanics sectors,

or

(b) must be at least 19 years of age and have worked for not less than two years as an engine-minder on a motorized inland navigation vessel.

Article 23.03

Crew members - Physical fitness

1. Physical fitness for the job shall be certified by a medical certificate in accordance with annexes B1 and B2 of the Rhine Licensing Regulations, issued on first enlistment as a crew member by a doctor designated by the competent authority. The certificate shall not date back more than three months.

2. Requirements relating to eyesight and hearing as set out in annex B1 to the Rhine Licensing Regulations are not, however, mandatory for an engineer's duties.

3. Certification of fitness in accordance with 1 and 2 shall be renewed within the three months following the crew member's sixty-fifth birthday and each year thereafter.

4. Where a competent authority has doubts as to the physical fitness of a crew member, it may ask for a new medical certificate to be presented. The crew member is liable for the resulting costs only if the doubts are justified.

Article 23.04

Proof of qualifications - Service record

1. The service record contains general information such as medical certificates and the holder's qualifications under article 23.02, as well as specific information concerning voyages made. The competent local authority is responsible for the general information and for certification. It has the right to request the presentation of ship's logs, in full or in the form of extracts, or other appropriate documentary evidence. It may only certify the record for voyages effected not more than 15 months previously.

2. Every member of the crew shall have a personal service record conforming to the model in annex F or another valid service record recognized by the Central Commission for the Navigation of the Rhine as equivalent. The person in whose name the service record is established is considered to be the holder of the service record.

The holder of the service record shall

(a) hand over the service record to the boatmaster on first taking up his duties; and

(b) present the service record to the competent local authority not less than once every 12 months as from the date on which it was established, for the purpose of recording the certification referred to in paragraph 1 above.

The helmsman is dispensed from the obligation to present the service record referred to in (b) above if he does not wish to obtain the Principal Licence to which the Rhine Licensing Regulations refer. If a helmsman nevertheless wishes to obtain this licence at a later date, only the voyages recorded in the service record and certified as prescribed in paragraph 1 above may be taken into account.

3. The boatmaster shall

   (a) enter regularly in the service record all the particulars to which the indications and guidelines contained in annex F concerning the keeping of the service record refer,

   (b) keep the service record in a safe place in the wheelhouse until the end of the period of service or until the end of the contract or any other arrangement,

   (c) return the service record to the holder on request at any time and without delay.

4. For crew members holding a Principal Licence in accordance with annex A1 or a provisional Principal Licence in accordance with annex A2 of the Rhine Licensing Regulations, such licence shall stand in lieu of the service record.

5. It must be possible to provide proof of qualification for employment on board at any time:

   (a) for the boatmaster, in the form of the licence required under the Rhine Licensing Regulations,

   (b) for other crew members, in the form of the service record or the licence referred to in (a) above.

Article 23.05

Operating modes

1. A distinction shall be made between the following operating modes:

   A1 navigation for not more than 14 hours,
   A2 navigation for not more than 18 hours,
   B navigation for not more than 24 hours,

   per 24-hour period.

2. In operating mode A1, navigation may be extended to not more than 16 hours once per calendar week as a maximum if the time of navigation is attested by recordings from a tachograph in good working order in accordance with annex H, if it has undergone a type approval test and is approved by the competent authority of a Rhine river State or Belgium and when the prescribed minimum crew, in addition to the boatmaster, includes another crew member with a helmsman's qualification.

3. A vessel navigating in operating mode A1 shall cease navigation for eight continuous hours or for six continuous hours in operating mode A2, i.e.:

   (a) in operating mode A1, between 10 p.m. and 6 a.m. and
   (b) in operating mode A2, between 11 p.m. and 5 a.m.

These timetables may be dispensed with if the vessel is equipped with a tachograph in good working order in accordance with annex H, if it has undergone a type approval and is approved by the competent authority of a Rhine river State or Belgium. The tachograph shall be in operation at least from the start of the last period of uninterrupted rest of eight or six hours, and shall be accessible at all times to the inspection bodies.

Article 23.06

Mandatory rest period

1. In operating mode A1, all crew members shall have eight hours rest, including six hours uninterrupted rest time outside sailing time, for each 24-hour period calculated from the end of each eight-hour rest period.

2. In operating mode A2, all crew members shall have eight hours rest, including six hours uninterrupted rest time outside sailing time, for each 24-hour period calculated from the end of each six-hour rest period. All crew members under 18 years of age shall have eight hours of uninterrupted rest time including six hours of rest outside sailing time.

3. In operating mode B, all crew members shall have 24 hours rest time per 48-hour period including at least two six-hour periods of uninterrupted rest.

4. During the mandatory rest time, a crew member may not be called on to perform any duty, including supervision or standby; the watch and supervision duties provided for in the police regulations for stationary vessels shall not be considered as an obligation under this paragraph.

5. The provisions of labour regulations and in collective agreements concerning longer rest periods shall remain valid.

Article 23.07

Change or repetition of the operating mode

1. By derogation from article 23.05, 1, a change or repetition of the operating mode may take place only if the requirements of 2 to 6 below are complied with.

2. The change-over from operating mode A1 to operating mode A2 may take place only if:

   (a) the crew has been entirely replaced or

   (b) the crew members required for operating mode A2 can prove that they have completed, immediately prior to the change, an eight-hour rest period, including six hours outside sailing time, and the extra crew required for operating mode A2 are on board.

3. The change-over from operating mode A2 to operating mode A1 may take place only if:

   (a) the crew has been entirely replaced or

   (b) the crew members required for operating mode A1 can prove that they have completed, immediately prior to the change, an eight-hour rest period outside sailing time.

4. The change-over from operating mode B to operating mode A1 or A2 may take place only if:

   (a) the crew has been entirely replaced or

   (b) the crew members required for operating mode A1 or A2 can prove that they have completed eight hours (A1) or six hours (A2) of uninterrupted rest immediately prior to the change.

5. The change-over from operating mode A1 or A2 to operating mode B may take place only if:

   (a) the crew has been entirely replaced or

   (b) the crew members required for operating mode B can prove that they have completed 8 hours (A1) or six hours (A2) of uninterrupted rest immediately prior to the change outside sailing time and the extra crew required for operating mode B are on board.

6. A vessel may be brought into service directly after a voyage in operating mode A1 or A2 for another voyage in operating mode A1 or A2 if the crew has been entirely replaced and the new crew members can prove that they have completed an uninterrupted rest period of eight hours (A1) or six hours (A2) outside sailing time immediately prior to the start of the new voyage in operating mode A1 or A2.

7. Proof of the six- or eight-hour period of rest time shall be provided by a certificate in accordance with annex K or by a copy of the page of the ship's log containing the information concerning the sailing and rest times observed on the vessel on which the crew member has made his latest voyage.

Article 23.08

Ship's log - Tachograph

1. A ship's log conforming to the model in annex E shall be kept in the wheelhouse of each vessel, except for port tugs and pushers, unmanned barges, vessels belonging to the authorities and sports vessel. The ship's log shall be kept in accordance with the instructions it contains. The responsibility for keeping the ship's log and making the necessary entries in it shall devolve on the boatmaster. The first ship's log, which shall bear the number 1, the name of the vessel and its official number, shall be issued by the authority which issued the vessel's inspection certificate.

   The possibility mentioned in paragraph 2 of the instructions concerning the keeping of the log of only indicating rest periods in a single chart once for each voyage shall be valid only for crew members in operating mode B. In operating modes A1 and A2, the beginning and end of rest periods shall be entered each day during the voyage for each crew member.

   The particulars required following a change of operating mode shall be entered on a fresh page of the ship's log.

2. Subsequent ship's logs may be issued by a competent local authority which shall affix to them their serial number; however, they may be issued only on production of the preceding log. The preceding log shall be marked indelibly "cancelled" and returned to the boatmaster.

A new ship's log may be issued on presentation of the certificate referred to in 4 below. In this case the owner of the vessel shall ensure that the preceding log has been presented to the same competent local authority as entered the new ship's log in the certificate referred to in 4, in order to be marked "cancelled" within 30 days following the date of issue of the new ship's log. The boatmaster shall further ensure that the ship's log has been brought back on board.

3. The cancelled log shall be kept on board for six months following the last entry.

4. On issue of the first ship's log in accordance with 1, the authority issuing it shall certify that it has done so by means of a certificate indicating the name of the vessel, its official number, the number of the ship's log and the date of issue. This certificate shall be kept on board and be produced on request. The issue of subsequent ship's logs in accordance with 2 shall be entered by the competent authority on the certificate.

5. Tachograph recordings shall be kept on board for six months following the last entry.

6. In the event of the replacement of the crew or additions to it under article 23.07, a certificate in accordance with annex K or a copy of the page of the ship's log containing the information concerning the sailing and rest times observed on the vessel on which the crew member has made his latest voyage shall be included for each new crew member.

Article 23.09

Equipment of vessels

1. Notwithstanding the other provisions of these Regulations, self-propelled vessels, pushers, pushed convoys and passenger vessels operated with a minimum crew shall meet one of the following standards for equipment:

1.1 Standard S1

(a) The propulsion equipment shall be so arranged as to enable the speed to be changed and the direction of propulsion reversed from the wheelhouse.

It must be possible to start and stop the auxiliary engines required to operate the vessel from the wheelhouse, unless they function automatically or continuously during each voyage.

(b) The critical levels of the temperature of the water for cooling the main engines, the oil pressure of the main engines and transmission gear, the oil and air pressure of the devices for reversing the main engines, the reversible transmission gear or the propellers, and the filling level of the main engine room hold shall be indicated by devices which set off sound and visual alarms in the wheelhouse. The sound alarms may be contained in a single sound apparatus and can be stopped once the breakdown has been noted. The visual alarms shall be extinguished only when the relevant problems they indicate have been eliminated.

(c) The fuel feed and the cooling of the main engines shall be automatic.

(d) It must be possible for one person to man the helm without special effort even at the maximum authorized draught.

(e) It must be possible to initiate the visual and sound signals prescribed by the Police Regulations for the Navigation of the Rhine for vessels under way from the wheelhouse.

(f) If direct communication between the wheelhouse and the bow of the vessel, the stern of the vessel, the living quarters and the engine room is not possible, a sound link shall be provided. For the engine room, the sound link may be replaced by visual and sound signals.

(g) It must be possible for a single crew member on his own to launch the required lifeboat with due dispatch.

(h) A spotlight, which can be manipulated from the wheelhouse, shall be installed on board.

(i) The effort required to manipulate cranks and similar pivoting devices for lifting equipment shall not be more than 160 N.

(j) The towing winches mentioned in the inspection certificate shall be motorized.

(k) The stripping-pumps and the deck swabbing pumps shall be motorized.

(l) The main control devices and monitoring instruments shall be arranged ergonomically.

(m) It shall be possible to control the equipment referred to in article 6.01, 1, from the wheelhouse.

1.2 Standard S2

(a) for self-propelled vessels navigating alone:

standard S1 with the addition of a bow rudder which can be controlled from the wheelhouse;

(b) for self-propelled vessels ensuring the propulsion of an abreast formation:

standard S1 with the addition of a bow rudder which can be controlled from the wheelhouse;

(c) for self-propelled vessels ensuring the propulsion of a pushed convoy comprising the self-propelled vessel and a vessel in tandem:

standard S1 with the addition of equipment consisting of hydraulically or electrically-operated coupling winches. This equipment is not required, however, when the vessel at the front of the pushed convoy is equipped with a bow rudder which can be controlled from the wheelhouse of the self-propelled vessel propelling the convoy;

(d) for pushers ensuring the propulsion of a pushed convoy:

standard S1 with the addition of equipment consisting of hydraulically or electrically-operated coupling winches. This equipment is not required, however, when the vessel at the front of the pushed convoy is equipped with a bow rudder which can be controlled from the wheelhouse of the pusher;

(e) for passenger vessels:

standard S1 with the addition of a bow rudder which can be controlled from the wheelhouse. This equipment is not required, however, when the propelling and steering mechanisms of the passenger vessel permit of an equivalent manoeuvrability.

2. The conformity or non-conformity of the vessel with the requirements of 1.1 or 1.2 shall be certified by the Inspection Commission by an entry in No. 47 of the inspection certificate.

Article 23.10

Minimum crew for self-propelled vessels and pushers

1. The minimum crew for self-propelled vessels and pushers comprises:

Group		Crew members	Number of crew members for operating mode A1, A2 or B and for equipment standard S1 or S2					
			A1		A2		B	
			S1	S2	S1	S2	S1	S2
1	L ≤ 70 m	boatmaster	1		2		2	2
		helmsman	-		-		-	-
		able crewman	-		-		-	-
		ordinary crewman	1		-		1	-
		apprentice	-		-		1[1]	2[1][3]
2	70 m ≤ L ≤ 86 m	boatmaster	1 or 1	1	2		2	2
		helmsman	- -	-	-		-	-
		able crewman	1 -	-	-		-	-
		ordinary crewman	- 1	1	-		2	1
		apprentice	- 1	1	1[1]		-	1
3	L > 86 m	boatmaster	1 or 1	1	2	2	2 or 2	2
		helmsman	1 1	1	-	-	1 1[2]	1
		able crewman	-	-	-	-	- -	-
		ordinary crewman	1 -	-	1	-	2 1	1
		apprentice	- 2	1	1[1]	2[1]	- -	1

[1] The apprentice or one of the apprentices may be replaced by a deck-hand.

[2] The helmsman shall hold the licence prescribed in the Rhine Licensing Regulations.

[3] One of the apprentices shall be more than 18 years of age.

2. The ordinary crewmen required in the table in 1 above may be replaced by apprentices who have reached the minimum age of 17, who are at least in their third year of training and can provide evidence of one year's sailing time in inland navigation.

3. The minimum crew required in the table in 1 above,

(a) for Group 2, operating mode A1, standard S2 and

(b) for Group 3, operating mode A1, standard S1,

may be reduced by one apprentice during an uninterrupted period of not more than three months per calendar year when the apprentice in question is training in a professional boatmasters' school. A period of not less than one month shall separate the periods of reduction of crews. Training in a professional boatmasters' school shall be certified by a

certificate issued by the school, recording the periods of attendance. These provisions are not valid for the apprentice referred to in 2 above.

Article 23.11

Minimum crew for rigid convoys and other rigid assemblies

1. The minimum crew for rigid convoys and other rigid assemblies comprises :

Group		Crew members	Number of crew members for operating mode A1, A2 or B and for equipment standard S1 or S2					
			A1		A2		B	
			S1	S2	S1	S2	S1	S2
1	Abreast formation with the dimensions L ≤ 37 m B ≤ 15 m	boatmaster	1		2		2	2
		helmsman	-		-		-	-
		able crewman	-		-		-	-
		ordinary crewman	1		-		1	-
		apprentice	-		-		1[1]	2[1 3]
		engineer or engine-minder	-		-		1	-
2	Abreast formation with the dimensions 37 m < L ≤ 86 m B ≤ 15 m	boatmaster	1 or 1	1	2		2	2
		helmsman	- -	-	-		-	-
		able crewman	1 -	-	-		-	-
		ordinary crewman	- 1	1	-		2	1
		apprentice	- 1	1	11		-	1
		engineer or engine-minder	- -	-	-		-	-
3	Pusher + 1 barge of L > 86 m or abreast formation with the dimensions 86 m < L ≤ 116.5 m B ≤ 15 m	boatmaster	1 or 1	1	2	2	2 or 2	2
		helmsman	1 1	1	-	-	1 1[2]	1
		able crewman	- -	-	-	-	- -	-
		ordinary crewman	1 -	-	1	-	2 1	1
		apprentice	- 2	1	1[1]	2[1]	- -	1
		engineer or engine-minder	- -	-	-	-	- -	-
4	Pusher + 2 barges* Self-propelled vessel + 1 barge*	boatmaster	1	1	2	2	2 or 2	2 or 2
		helmsman	1	1	-	-	1 1[2]	1 1[2]
		able crewman	-	-	-	1	- -	1 1
		ordinary crewman	1	-	2	-	2 2	- -
		apprentice	1[1]	2[1]	1[1]	2[1]	- -	1 1
		engineer or engine-minder	-	-	-	-	1 -	1 -
5	Pusher + 3 or 4 barges* Self-propelled vessel + 2 or 3 barges*	boatmaster	1 or 1	1	2	2	2 or 2	2 or 2
		helmsman	1 1	1	-	-	1 1[2]	1 1[2]
		able crewman	- -	-	-	1	- -	1 1
		ordinary crewman	2 1	1	2	-	2 2	- -
		apprentice	- 2	1	11	21	11 -	2 1
		engineer or engine-minder	1 1	1	1	1	1 1	1 1

* Within the meaning of this article, “barge” shall also mean self-propelled vessels which do not use their propelling machinery and lighters. The following equivalents are applied:
1 barge = several barges of a total length not exceeding 76.50 m and a total width not exceeding 15 m.

1 The apprentice or one of the apprentices may be replaced by a deck-hand.

2 The helmsman shall hold the licence prescribed in the Rhine Licensing Regulations.

3 One of the apprentices shall be over 18 years of age.

2. The apprentice required in the table in 1 above may be replaced by apprentices who have reached the minimum age of 17, who are at least in their third year of training and can provide evidence of one year's sailing time in inland navigation.

3. The minimum crew required in the table in 1 above,

   (a) for Group 2, operating mode A1, standard S2 and

   (b) for Groups 3, 5 and 6, operating mode A1, standard S1,

   may be reduced by one apprentice during an uninterrupted period of not more than three months per calendar year when the apprentice in question is training in a professional boatmasters' school. A period of not less than one month shall separate the periods of reduction of crews. Training in a professional boatmasters' school shall be certified by a certificate issued by the school, recording the periods of attendance. These provisions are not valid for the apprentice referred to in 2 above.

Article 23.12

Minimum crew for passenger vessels

1. The minimum crew for passenger vessels for day excursions comprises:

Group		Crew members	Number of crew members for operating mode A1, A2 or B and for equipment standard S1 or S2					
			A1		A2		B	
			S1	S2	S1	S2	S1	S2
1	Permitted number of passengers: up to 75 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	1 - - 1 - -		2 - - 1 - -		2 - - 2 - -	2 - 1 - 1 -
2	Permitted number of passengers: between 76 and 250 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	1 or 1 - - - - 1 - 1 - - 1	1 - - 1 1 -	2 - - - 1[1] 1		2 - - 1 1[1] 1	
3	Permitted number of passengers: between 251 and 600 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	1 or 1 - - 1 1 - - - 2 1 -	1 - 1 - 1 -	2 - - 1 - 1	2 - - - 1 1	3 - - 1 - 1	3 - - - 1 1
4	Permitted number of passengers: between 601 and 1 000 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	1 1 - 1 1[1] 1	1 1 - - 2[1] 1	2 - - 2 - 1	2 - 1 - 1 1	3 - - 2 - 1	3 - 1 - 1 1
5	Permitted number of passengers: between 1 001 and 2 000 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	2 or 2 - - - - 3 2 - 2 1 1	2 - 1 1 1 1	2 - - 3 1[1] 1	2 - 1 1 2[1] 1	3 - - 3 1[1] 1	3 - 1 1 2[1] 1
6	Permitted number of passengers: more than 2 000 persons	boatmaster helmsman able crewman ordinary crewman apprentice engineer or engine-minder	2 - - 3 1[1] 1	2 - 1 1 2[1] 1	2 - - 4 - 1	2 - 1 2 1 1	3 - - 4 1[1] 1	3 - 1 2 2[1] 1

[1] An apprentice or one of the apprentices may be replaced by a deck-hand.

2. The minimum crew for steamboats for day excursions comprises:

Group		Crew members	Number of crew members in operating mode A1, A2 or B and for equipment standard S1 or S2					
			A1		A2		B	
			S1	S2	S1	S2	S1	S2
1	Permitted number of passengers: between 501 and 1 000 persons	boatmaster	1	1	2	2	3	3
		helmsman	1	1	-	-	-	-
		able crewman	1	1	1	1	1	1
		ordinary crewman	1	-	1	-	1	-
		apprentice	-	1	-	1	-	1
		engineer or engine-minder[2]	2	2	2	2	3	3
2	Permitted number of passengers: between 1 001 and 2 000 persons	boatmaster	2 or 2	2	2	2	3	3
		helmsman	- -	-	-	-	-	-
		able crewman	- -	1	-	1	-	1
		ordinary crewman	3 2	1	3	1	3	1
		apprentice	- 2	1	1[1]	2[1]	1[1]	2[1]
		engineer or engine-minder[2]	3 3	3	3	3	3	3

[1] The ordinary crewman or one of the ordinary crewmen may be replaced by a deck-hand.

[2] The need for engineers or engine-minders is determined by the Inspection Commission which shall enter it in No. 52 of the inspection certificate.

3. The minimum crew for passenger cabin vessels comprises:

Group		Crew members	Number of crew members in operating mode A1, A2 or B and for equipment standard S1 or S2					
			A1		A2		B	
			S1	S2	S1	S2	S1	S2
1	Permitted number of berths: up to 50 berths	boatmaster	1	1	2	2	3	3
		helmsman	-	-	-	-	-	-
		able crewman	1	-	-	-	-	-
		ordinary crewman	-	-	1	-	1	-
		apprentice	-	2	-	1	-	1
		engineer or engine-minder	1	1	1	1	1	1
2	Permitted number of berths: between 51 and 100 berths	boatmaster	1	1	2	2	3	3
		helmsman	1	1	-	-	-	-
		able crewman	-	-	-	-	-	-
		ordinary crewman	1	-	1	-	1	-
		apprentice	-	1	-	1	-	1
		engineer or engine-minder	1	1	1	1	1	1
3	Permitted number of berths: more than 100 berths	boatmaster	1 or 1	1	2	2	3	3
		helmsman	1 1	1	-	-	-	-
		able crewman	- -	-	-	1	-	1
		ordinary crewman	2 1	1	3	1	3	1
		apprentice	- 2	1	-	1	-	1
		engineer or engine-minder	1 1	1	1	1	1	1

4. For the passenger vessels referred to in 1 and 3 above sailing without passengers on board, the minimum crew shall be determined in accordance with article 23.10.

5. The apprentice prescribed in the tables in 1 and 2 above may be replaced by apprentices who have reached the minimum age of 17, are at least in their third year of training and can provide evidence of one year's sailing time in inland navigation.

6. The minimum crew prescribed in the table in 1 (passenger vessels for day excursions),

   (a) for group 2, operating mode A1, standard S2 and

   (b) for groups 3 and 5, operating mode A1, standard S1,

   may be reduced by one apprentice during an uninterrupted period of not more than three months per calendar year when the apprentice in question is training in a professional boatmasters' school. A period of not less than one month shall separate the periods of reduction of crews. Training in a professional boatmasters' school shall be certified by a certificate issued by the school, recording the periods of attendance. These provisions are not valid for the apprentice referred to in 5 above.

7. The minimum crew prescribed in the table in 2 (steamboats for day excursions), for group 2, operating mode A1, standard S1, may be reduced by one apprentice during an uninterrupted period of not more than three months per calendar year when the apprentice in question is training in a professional boatmasters' school. A period of not less than one month shall separate the periods of reduction of crews. Training in a professional boatmasters' school shall be certified by a certificate issued by the school, recording the periods of attendance. These provisions are not valid for the apprentice referred to in 5 above.

8. The minimum crew prescribed in the table in 3 (passenger cabin vessels), for group 3, operating mode A1, standard S1, may be reduced by one apprentice during an uninterrupted period of not more than three months per calendar year when the apprentice in question is training in a professional boatmasters' school. A period of not less than one month shall separate the periods of reduction of crews. Training in a professional boatmasters' school shall be certified by a certificate issued by the school, recording the periods of attendance.

Article 23.13

Cases in which the minimum equipment referred to in article 23.09 is incomplete

1. When the equipment of a self-propelled vessel, pusher, rigid convoy, or other rigid assembly or passenger vessel does not correspond to the standard S1 required in article 23.09, 1.1, the minimum crew prescribed in article 23.10, 23.11 or 23.12 shall be increased by:

   (a) one ordinary crewman in operating modes A1 and A2 and

   (b) two ordinary crewmen in operating mode B. When, however, the requirements of standard S1, (i) and (l) only, or of one of these letters prescribed in article 23.09, 1.1, are not met, the crew shall be increased in operating mode B by one ordinary crewman instead of two.

2. In addition, when one or more of the requirements of article 23.09, 1.1, (a) to (c), are not met,

   (a) the ordinary crewman prescribed in 1 (a) shall be replaced by an engine-minder in operating modes A1 and A2 and

   (b) the ordinary crewmen prescribed in 1 (b) shall be replaced by two engine-minders in operating mode B.

Article 23.14

Minimum crews for other vessels

The Inspection Commission shall determine for vessels not covered by articles 23.10 to 23.12 (e.g. tugs, lighters, floating equipment) according to their dimensions, form of construction, equipment and intended use, what crews shall be on board during navigation.

For supply vessels which can be operated over short sectors only, the Inspection Commission may establish a minimum crew which does not conform to article 23.10.

Article 23.15

Exonerations and reductions

For navigation downstream from the Spijk ferry (k.p. 857.40), and provided that the German-Netherlands border is not crossed in either direction, the application of the Netherlands act “Wet vaartijden en bemanningssterkte binnenvaart” (Staatsblad 1993, No. 368) is sufficient.

PART IV

CHAPTER 24

TRANSITIONAL AND FINAL PROVISIONS

Article 24.01

Validity of previous inspection certificates

Text in English is not available

Article 24.02

Derogations for vessels already in use

1. Text in English is not available.

2. In article 24.02, paragraph 2, the transitional requirements relating to Chapter 8 bis are drafted as follows:

	CHAPTER 8 bis	The requirements do not apply (a) to engines installed on board prior to 1 January 2003, nor (b) to remanufactured engines [3/] installed prior to 31 December 2011, including engines installed on board vessels in service at 1 January 2002.
8 bis.02, para. 2	Limit values	For engines installed on board prior to 1 July 2007, the limit values contained in the following table apply:

P_N [kW]	CO [g/k/Wh]	HC [g/k/Wh]	NO_X [g/k/Wh]	PT [g/k/Wh]
$37 \leq P_N < 75$	6.5	1.3	9.2	0.85
$75 \leq P_N < 130$	5.0	1.3	9.2	0.70
$P_N \geq 130$	5.0	1.3	$n \geq 2800$ min^{-1} = 9.2 $500 \leq n \leq 2800$ min^{-1} = $45 \cdot n^{(-0.2)}$	0.54

The rest of the article is not available in English.

Article 24.03

Derogations for vessels whose keels were laid not later than 1 April 1976

Text in English is not available

Article 24.04

Other derogations

Text in English is not available

[3/] A remanufactured engine is a revised second-hand engine, similar to the engine replaced in terms of power, rating and conditions of installation.

Article 24.05

Transitional provisions concerning Chapter 23 – Crews

Notwithstanding the provisions of article 23.03 concerning physical fitness, the following transitional provision is applicable to Chapter 23:

1. A deck-hand in service in inland navigation at 31 December 2001 may qualify as an able crewman when he is not less than 19 years of age and has not less than three years' experience as a deck-hand, including at least one year in inland navigation and two years either in inland navigation or at sea in coastal navigation or fishing. As an able crewman he may qualify as:

   (a) a leading crewman when he has not less than one year's experience as an able crewman in Rhine navigation,

   (b) a helmsman when he has not less than two years' experience as an able crewman in Rhine navigation.

2. An able crewman in service in inland navigation at 31 December 2001 may qualify as a leading crewman when he has not less than one year's experience as an able crewman in Rhine navigation.

3. An able crewman in service in inland navigation at 31 December 2001 may qualify as a helmsman when he has not less than two years' experience as an able crewman in Rhine navigation.

4. A leading crewman in service in inland navigation at 31 December 2001 may qualify as a helmsman when he has not less than one year's experience as a leading crewman in Rhine navigation.

Article 24.06

Derogations for vessels not mentioned in article 24.01

5. The transitional requirements relating to Chapter 8 bis are as follows:

	CHAPTER 8 bis	The requirements do not apply (a) to engines installed on board prior to 1 January 2003, nor (b) to remanufactured engines[1/] installed on board vessels in service at 1 January 2002.	1.1.2002
8 bis.02, para. 2	Limit values	For engines installed on board prior to 1 July 2007, the limit values contained in the following table apply:	1.7.2007

P_N [kW]	CO [g/k/Wh]	HC [g/k/Wh]	NO_X [g/k/Wh]	PT [g/k/Wh]
$37 \leq P_N < 75$	6.5	1.3	9.2	0.85
$75 \leq P_N < 130$	5.0	1.3	9.2	0.70
$P_N \geq 130$	5.0	1.3	$n \geq 2800\ min^{-1} = 9.2$ $500 \leq n \leq 2800\ min^{-1} = 45 \cdot n^{(-0.2)}$	0.54

"

The rest of the article is not available in English.

Annex A

Application for inspection

The Inspection Commission of is requested to perform:

A first inspection - special inspection - additional inspection - voluntary inspection of the vessel described below

1. Name and address of owner:

2. Name of vessel:

3. Place of registration and registration number:

4. Home port:

5. Official number:

6. Type of vessel:

7.*) Special capabilities:

8. Name and place of building yard:

9. Year of construction:

10. Deadweight or displacement: t *) –m^3*)

11. Number of main engines:

12. Total main propulsion power: kW

13. Number of main propellers:

14. Route for which the certificate is requested:

- on the Rhine*)
- between and *)

15. The vessel:

- has never been inspected*)
- was last inspected*)
- on at

16.*) The vessel holds a certificate from the recognized Classification Society referred to in article 2.12, paragraph 2:

Issued on

Valid until

17. *) The vessel holds a certificate of approval issued under the Regulations for the Carriage of Dangerous Goods on the Rhine (ADNR),

on

by

valid until

*) Delete as appropriate.

18. Proposed place, date and time of the inspection:

.....

.....

.....

19. Address to which any communications should be sent:

.....

.....

20. The following annexes are attached to this application:

a) *) Registration certificate,
b) *) Document assigning the official number,
c) *) Measurement certificate,
d) *) Documents concerning boilers and other pressure tanks,
e) *) Certificate of approval for the carriage of dangerous goods on the Rhine,
f) *) Certificate of previous inspection,
g) *) Certificate issued by the recognized Classification Society referred to in article 2.12, _____ ,
h) *) Plan of electrical installations and controls,
i) *) Certificate of fire-extinguishing arrangements,
k) *) Certificate for liquefied gas installations,
l) *) Plans and design memoranda for passenger vessels,
m) *) Other design memoranda and supporting documents.

.....

.....

At , on

.....

.....

(Signature of the owner or his representative)

21. Name and address to which the invoice should be sent:

.....

.....

Notes

Re:

6. For vessels, particulars:

tug, pusher, self-propelled vessel, self-propelled tanker, ordinary barge, tank barge, pushed barge, pushed tank barge, shipborne barge, passenger vessel, sea-going vessel or other type to be described.

For floating equipment: precise indication of the type of equipment.

For vessels: indication of the main construction material.

7. Indicate whether the vessel is to be used for purposes other than those corresponding to its type, such as use as a tug, pusher, coupled vessel, pushed barge, barge, passenger vessel.

10. If the vessel has not been measured, estimated value.

20 l) For passenger vessels, the plans (plans of decks, longitudinal section, cross-section on prevailing torque) provide information on the dimensions and type of vessel; they are accompanied by diagrams of the surfaces to be measured on a required scale for registering the dimensions.

_____

*) Delete as appropriate.

Annex B

Model inspection certificate

NAME OF STATE / STATE STAMP

INSPECTION CERTIFICATE

No. .....

Place, date

.....

Inspection Commission

.....

Stamp

.....
(Signature)

Remarks:

The vessel may be used for navigation in accordance with this certificate only when in the state described therein.

In the event of large-scale modification or repair, the vessel shall undergo a special inspection before undertaking a new voyage.

The vessel's owner or his representative shall make known any change of name or ownership of the vessel, any new measurement or any change of the official number, the registration number or the home port to an Inspection Commission and shall transmit the inspection certificate to it for amendment.

Inspection certificate ..... issued by Inspection Commission .....

1. Name of vessel	2. Type of vessel	3. Official number

4. Name and address of owner	
5. Place and number of registration	6. Home port

7. Year of construction	8. Name and place of building yard

9. This certificate replaces inspection certificate No. ..... issued on ..... by the Inspection Commission of: .....

10. The vessel referred to above,

following the inspection performed on*) .....

in view of the certificate issued on*) .....

by recognized Classification Society .....

is hereby certified fit

to operate on the Rhine*)

between ..... and ..... *)

at the permitted maximum draught and with the equipment and crew specified below.

11. This certificate expires on .....

*) Amendment(s) under number(s): .....

New wording: .....

.....

.....

.....

*) This page has been replaced.

Place, date .....

Stamp

Inspection Commission

.....

.....

(Signature)

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission.....

12. Inspection certificate No. (1), official No. (2), registration No. (3) and measurement No. (4) are affixed with the corresponding signs at the following points on the vessel

1 .....

2 .....

3 .....

4 .....

13. The permitted maximum draught is indicated on each side of the vessel

- by two - ..... - draught markings*).
- by the upper measurement markings*).

Two draught scales are affixed*).

The stern measurement markings serve as draught scales: they are supplemented by figures to indicate the draughts*).

14. Notwithstanding the restrictions*) mentioned under points 15 and 52, the vessel is fit:

1. to push*)
1.1 in rigid formation*)
1.2 with controlled articulation*)
2. to be pushed*)
2.1 in rigid formation*)
2.2 at the head of a rigid formation*)
2.3 with controlled articulation*)
3. to propel in side-by-side formation*)
4. to be propelled in side-by-side formation*)
5. to tow*)
5.1 vessels not provided with means of propulsion*)
5.2 motorized vessels*)
5.3 upstream only*)
6. to be towed*)
6.1 as a motorized vessel*)
6.2 as a vessel not provided with means of propulsion*)

*) Amendment(s) under number(s): .....
New wording: .....
.....
.....
.....

*) This page has been replaced.

Place, date .....

Inspection Commission

.....

Stamp

.....

(Signature)

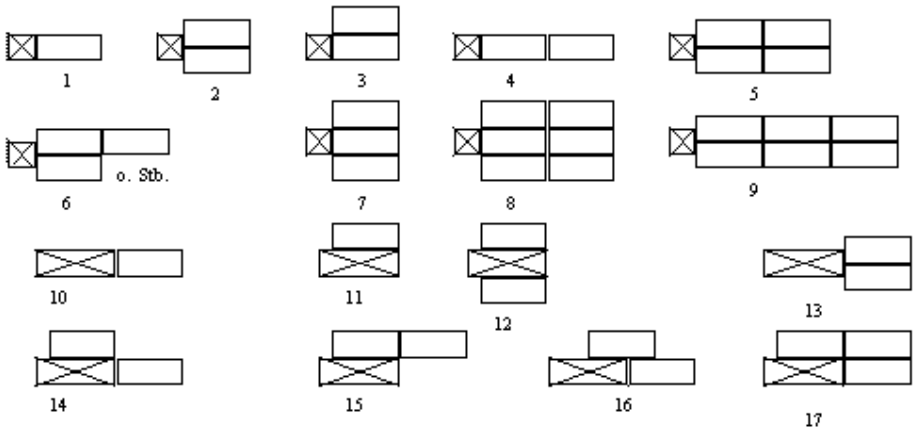
*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission .....

15. Formations permitted

1. The vessel is permitted to propel the following formations:

Sketch of formation No.	Restrictions resulting from chapters 5 and 16								
	Max. dimensions m		Direction of navigation and loading status UPSTREAM		DOWNSTREAM		Maximum wetted area in m^2		Remarks
	length	breadth	loaded t	empty	loaded t	empty	upstream	downstream	



Other formations:

Key to symbols

pusher — self-propelled vessel — pushed barge

2. Coupling:

Type of coupling: ..... Number of couplings per side: .....

Number of coupling cables: ..... Length of each coupling cable: .....

Breaking load per longitudinal connection: ..... KN

Breaking load per coupling cable: ..... KN

Number of turns of the cable: ..... KN

*) Amendment(s) under number(s): .....

New wording: .....

.....

.....

.....

*) This page has been replaced.

Place, date ..... Inspection Commission

.....

Stamp

.....

(Signature)

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission .....

16. Measurement certificate No. ..... issued by Measurement Office ..... of			
17a. Max. length ..... m 17b. Length L ..... m	18a. Max. breadth ..... m 18b. Breadth B ..... m	19. Maximum draught ..... m	20. Freeboard ..... cm
21. Deadweight/Displacement*) t/m^3*)	22. Number of passengers:	23. Number of passenger bunks:	
24. Number of watertight compartments	25. Number of holds	26. Type of hatch covers	
27. Number of main engines	28. Total main propulsion power kW	29. Number of main propellers	
30. Number of bow windlasses	of which ..... power-driven	31. Number of stern windlasses	of which ..... power-driven
32. Number of towing hooks	33. Number of towing winches	of which .....……..... power-driven	

34. Steering gear

Number of main rudder blades	Main rudder control	- hand-operated*) - electric*)	- electric/hydraulic*) - hydraulic*)
Other gears: yes/no*)	Type:		
Flanking rudder: yes/no*)	Flanking rudder control:		
		- hand-operated*) - electric*)	- electric/hydraulic*) - hydraulic*)
Bow rudder gear yes/no*)	- bow rudder*) - active bow rudder*) - other gear*)	- Remote control yes/no*)	Put into service by remote control yes/no*)

35. Stripping gear

Estimated total capacity ..... l/min	Number of power-driven stripping pumps	Delivery ..... l/min	Number of hand-operated stripping pumps .....

*) Amendment(s) under number(s): .....
New wording: .....
.....
.....
.....

*) This page has been replaced.

Place, date .....

Stamp

Inspection Commission

.....

.....

(Signature)

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission .....

36.[4/] Number and location of the closing devices referred to in article 8.06, paragraphs 10 and 11

37. Anchors

Number of bow anchors	Total mass of bow anchors	Number of stern anchors	Total mass of stern anchors
.....	..... kg	.....	..... kg

38. Anchor chains

Number of bow anchor chains	Length of each chain	Breaking load of each chain	
.....	..... m	..... kN	
Number of stern anchor chains	Length of each chain	Breaking load of each chain	
.....	..... m	..... kN	

39. Mooring cables

1st cable with a length of ..... m and a breaking load of ..... kN

2nd cable with a length of..... m and a breaking load of ..... kN

3rd cable with a length of ..... m and a breaking load of ..... kN

40. Towing cables

..... with a length of ..... m and a breaking load of ..... kN

..... with a length of ..... m and a breaking load of ..... kN

41. Visual and auditory signals
The lights, flags, balls, floats and audible alarms for the vessel's signals and marking system and for the visual and auditory signals prescribed in the Police Regulations for the Navigation of the Rhine are on board the vessel, as are the emergency lights independent of the on-board system for the lights prescribed by the Police Regulations for the Navigation of the Rhine.

*) Amendment(s) under number(s): .....

New wording: .....

.....

.....

.....

*)
This page has been replaced.

Place, date .....

Stamp

Inspection Commission

.....

.....

(Signature)

*) Delete as appropriate.

[4/] No. 36 is in force from 1.4.2001 to 31.3.2004 (Resolution 2000-III-20).

Inspection certificate ..... issued by Inspection Commission .....

42. Other equipment

hose pipes	Voice link	- two-way, alternate*)
gangway with hand-rail		- two-way, simultaneous/telephone*)
boathook		- internal link operated by radiotelephony*)
box of dressings		
pair of binoculars	Radiotelephone	- vessel-to-vessel network
board with instructions for rescuing	equipment	- shipping information network
drowning persons		- vessel-port authority network
fire-resistant receptacles		
boarding stair-ladder*)	Cranes	- in accordance with article 11.12, paragraph 9*)
		- other cranes with a payload of up to 2,000 kg*)

43. Fire-fighting arrangements	Number of portable extinguishers	Fixed equipment: sprinkler	No	Number*).....
		Other fixed fire-fighting equipment	No	Number*).....

Number of fire-fighting pumps	Number of hydrants	Number of hoses

Does the power-driven stripping pump replace a fire-fighting pump Yes/No*)

44. Life-saving equipment

Number of lifebuoys

A life jacket for each person normally on board.

Other life-saving equipment on passenger vessels*) .....

.....

.....

.....

A lifeboat with a set of oars, a mooring rope, a bailer*)

Collective life-saving equipment on passenger vessels*) .....

.....

.....

.....

45. Wheelhouse specially arranged to enable steering by radar by one person:

Approved for steering by radar by one person*).

*) Amendment(s) under number(s): .....

New wording: .....

.....

.....

.....

*) This page has been replaced.

Place, date ..... Inspection Commission

.....

Stamp

.....

(Signature)

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission .....

46. The vessel is authorized for operating modes A1*), A2*), B*).

47. Vessel's equipment in accordance with article 23.09.
The vessel complies*) / does not comply*) with article 23.09, paragraph 1.1*) / with article 23.09, paragraph 1.2*).
In accordance with article 23.13, the minimum crew should be increased as follows*) / should not be increased*):

	Operating mode		
	A_1	A_2	B
Ordinary crewman	.....	.....	.....
Replacement of the able crewman by an engine-minder	.....	.....	.....

Observations and special conditions:
.....
.....
.....

48. Minimum crew in accordance with article 23.14

	Operating mode		
	A_1	A_2	B
Boatmaster	.....	.....	.....
Helmsman	.....	.....	.....
Able crewman	.....	.....	.....
Ordinary crewman	.....	.....	.....
Apprentice	.....	.....	.....
Engine-minder	.....	.....	.....
Engineer	.....	.....	.....
.....	.....	.....	.....

Observations and special conditions:
.....
.....
.....
.....
.....

*) Amendment(s) under number(s): .....
New wording: .....
.....
.....
.....

*) This page has been replaced.
Place, date .....

Inspection Commission
.....
.....
(Signature)

Stamp

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission .....

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

...., ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

...., ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

Inspection certificate ..... issued by Inspection Commission .....

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

.... , ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

.... , ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

Inspection certificate ..... issued by Inspection Commission .....

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

.... , ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

49. **Extension/confirmation*) of the validity of the certificate*)** **Certificate of additional - special*) inspection**

The Inspection Commission inspected the vessel on .....*).

A certificate dated ..... issued by recognized Classification Society .....

.....

was submitted to the Inspection Commission*).

The reason for the inspection/certificate*) was:

.....

.....

In view of - the result of the inspection - the certificate*), the validity of the inspection certificate is maintained - extended - *) until ..... .

.... , ...

(Place) (date)

.....

Stamp Inspection Commission

_____ .....

*) Delete as appropriate. (Signature)

Inspection certificate ..... issued by Inspection Commission.....

50. **Certificate for liquefied gas installation(s)**

The liquefied gas installation(s) on board the vessel has/have*) been inspected by the expert*) .....

.....

and in view of the receiving report of .....*) complies/comply with the conditions required.

The installation(s) include(s)*) the following appliances:

Installation	Serial No.	Kind	Make	Type	Location

This certificate is valid until .....

..... , ...

(Place) (Date)

.....

Inspection Commission

.....

Expert*)

Stamp .....

(Signature)

*) Amendment(s) under number(s): .....

New wording: .....

.....

.....

.....

*) This page has been replaced.

Place, date ..... Inspection Commission

.....

Stamp

.....

(Signature)

*) Delete as appropriate.

Inspection certificate ..... issued by Inspection Commission.....

51. **Extension of the certificate for liquefied gas installations**

The validity of the certificate for the liquefied gas installation(s)

of ..... is extended until .....

- on the basis of the inspection carried out by the expert .....
- In view of the receiving report of .....

..... , ...

(Place) (Date)

.....

Inspection Commission

Stamp

.....

(Signature)

51. **Extension of the certificate for liquefied gas installations**

The validity of the certificate for the liquefied gas installation(s)

of ..... is extended until .....

- on the basis of the inspection carried out by the expert .....
- In view of the receiving report of .....

..... , ...

(Place) (Date)

.....

Inspection Commission

Stamp

.....

(Signature)

51. **Extension of the certificate for liquefied gas installations**

The validity of the certificate for the liquefied gas installation(s)

of ..... is extended until .....

- on the basis of the inspection carried out by the expert .....
- In view of the receiving report of .....

..... , ...

(Place) (Date)

.....

Inspection Commission

Stamp

.....

(Signature)

Inspection certificate ..... issued by Inspection Commission.....

52. Annex to inspection certificate No. .....

.....

.....

.....

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.....

.....

*) Amendment(s) under number(s): .....
New wording: .....

.....

.....

*) This page has been replaced.

Place, date .....

Inspection Commission

.....

Stamp

.....

(Signature)

*) Delete as appropriate.

Continued on page*) .....
End of inspection certificate*)

Annex C

Register of inspection certificates

Text in English in not available.

Annex D

Provisional inspection certificate/provisional approval certificate

Text in English in not available.

Annex E

Ship's log

Text in English in not available.

Annex F

Service record

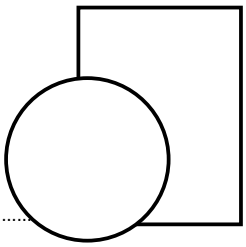
issued by:

Holder: .....

Name: .....

First name(s): .....

Born on: .....



Photograph of holder

Born at: .....

Nationality: .....

The holder of this Service Record has given the following proof of identity:

□ passport

□ national identity card

□ the document referred to below, with its official translation:

Description of the document: .....

No. of the document: .....

Document issued by: .....

Place, date, stamp and signature of the authority issuing the service record

Previous Service Records and address of holder:

The first Service Record bearing the

No.: .....

was issued by:

.....

on (date): .....

Address of the holder of this Service Record

(insert changes of address here):

.....

.....

.....

.....

The previous Service Record bearing the

No.: .....

Remarks by the authority (for example,

details of a replacement record):

.....

.....

Date: .....

Holder's qualifications under article 23.02 of the Rhine Vessel Inspection Regulations

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

as from (date)

Stamp, date and signature of the authority:

Holder's qualifications in accordance with provisions in force other than on the Rhine

Qualification: .....

In accordance with the provisions of:

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

In accordance with the provisions of:

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

In accordance with the provisions of:

as from (date)

Stamp, date and signature of the authority:

Qualification: .....

In accordance with the provisions of:

as from (date)

Stamp, date and signature of the authority:

Certificate of fitness in accordance with the provisions

of the Rhine Regulations on Licences

The holder of this Service Record qualifies on the basis of the medical certificate referred to in Annex B.2 of the Rhine Regulations on Licences

issued by: .....

issued on: .....

□ fit

□ limited fitness

subject to the following condition(s): .....

.....

.....

.....

Period of validity: .....

.....

Certificate of fitness in accordance with provisions

in force other than on the Rhine

The holder of this Service Record qualifies on the basis of the medical certificate issued under the provisions of:

Name of Regulations: .....

issued by: .....

issued on: .....

□ fit

□ limited fitness

subject to the following condition(s): .....

.....

.....

.....

.....

Period:

.....

Place, date, stamp and signature of the issuing authority

Sailing time on board, name of vessel:

Official number of vessel: .....

Type of vessel: .....

Flag: .....

Length of vessel in m*, number of passengers: .....

Owner (name, address): .....

Entry on duty of holder with the position of: .....

Entry on duty on (date): .....

Until (date): .....

Boatmaster (name, address): .....

Place, date and signature of boatmaster: .....

.....

Sailing time on board, name of vessel: .....

Official number of vessel: .....

Type of vessel: .....

Flag: .....

Length of vessel in m*, number of passengers: .....

Owner (name, address): .....

.....

Entry on duty of holder with the position of: .....

Entry on duty on (date): .....

Until (date): .....

Boatmaster (name, address): .....

.....

Place, date and signature of boatmaster: .....

---

* Delete as appropriate

Sailing times and sectors covered during the year

Sailing times must correspond to the entries in the log!

Name of vessel or registration number of vessel	Voyage from (k.p.) via to (k.p.)	Start of voyage (Date)	Days interrupted	End of voyage (Date)	Number of days of voyage on the Rhine	Number of days of voyage other than on the Rhine	Total days of voyage	Signature of boatmaster
A	B	C	D	E	F	G	H	I
1								
2								
3								
Entry by the authority: total days of voyage taken into account on this page								

Control stamp

Presented on (date) .....

Signature and stamp of the authority

Document complete □ yes □ no □ doubts arising from the presentation of the log (extracts)

□ doubts in line(s) □ doubts arising from the presentation of any other appropriate documentary evidence

The headings of columns A to I are not repeated on the next 30 pages.

Sailing times and sectors covered during the year: 1995/96

Sailing times must correspond to the entries in the log!

A		B			C	D	E	F	G	H	I
1	7000281	Rotterdam	Mainz	Vienna	22.11.95	11	17.12.95	5	10	15	Signature: Huber
2	7000281	Vienna	Mainz	Bale	20.12.95	4	04.01.96	2	10	12	Signature: Huber
3	7000281	Bale		Rotterdam	06.01.96	0	10.01.96	5	0	5	Signature: Huber
4	7000281	Rotterdam	Antwerp	Bale	13.01.96	1	23.01.96	9	1	10	Signature: Huber
5	7000281	Basel		Antwerp	25.01.96	0	29.01.96	5	0	5	Signature: Huber
6	7000281	Antwerp		Bale	01.02.96	0	07.02.96	6	1	7	Signature: Huber
7	7000281	Bale	Mainz	Bratislava	09.02.96	5	22.02.96	3	6	9	Signature: Huber
8	7000281	Bratislava		Regensburg	27.02.96	0	02.03.96	0	5	5	Signature: Huber
9	7000281	Regensburg	Mainz	Rotterdam	03.03.96	0	09.03.96	3	4	7	Signature: Huber
10	7000281	Rotterdam		Bale	12.03.96	0	17.03.96	6	0	6	Signature: Huber
Entry by the authority: total days of voyage taken into account on this page								44	37	81	

Control stamp

Presented on (date) 15.12.1996

Signature and stamp of the authority

Document complete □ yes □ no □ doubts arising from the presentation of the log (extracts)

□ doubts in line(s) □ doubts arising from the presentation of any other appropriate documentary evidence

Sailing times and sectors covered during the year

Sailing times must correspond to the entries in the log!

A	B	C	D	E	F	G	H	I
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Entry by the authority: total days of voyage taken into account on this page								

Control stamp

Presented on (date) .....

Signature and stamp of the authority

Document complete □ yes □ no □ doubts arising from the presentation of the log (extracts)

□ doubts in line(s) □ doubts in line(s) of any other appropriate documentary evidence

A-00735

Particulars and guidelines concerning the keeping of the Service Record

A. Particulars

With the new Rhine Regulations on Licences of 1 January 1998 it has been necessary to update the Service Record. The method for calculating the sailing times taken into account has been modified. These times are entered in the "sailing times and sectors covered" pages. Like the previous version, the Service Record contains particulars of a general nature, such as medical certificates and the holder's qualifications in accordance with article 23.02 of the Rhine Vessel Inspection Regulations or other requirements and also specific particulars relating to the voyages made.

The Service Record is an official document within the meaning of article 1.10 of the Police Regulations for the Navigation of the Rhine. The entry of incorrect or non-standard particulars may be sanctioned; in any case it is an offence. The competent authority is responsible for the particulars of a general nature (pages 3 to 8). The Service Record is valid only when it contains the official entries on page 3. It is not valid if these official entries are missing.

Who needs a Service Record?

Every crew member must be able to provide proof of his qualifications and fitness by means of a Service Record made out in his name. It is also required by persons wishing to obtain a licence so that they can provide proof of their sailing times and coverage of sectors on the Rhine and other waterways. Crew members who hold a Rhine licence are not required to continue to keep a Service Record. The holder of a licence or any other certificate of proficiency requires a Service Record only for the purpose of recording the sectors covered when his licence or certificate is not valid on those sectors and when he wishes to obtain the relevant document.

What obligations does a Service Record holder have?

The Service Record holder is the person in whose name the Service Record has been made out.

The Service Record should be given to the boatmaster on the first entry on service and should be presented to the competent authority at least once every 12 months as from the date on which it was established for the control stamp.

It is in the holder's interest to ensure that the particulars entered in the Service Record by the boatmaster are correct and complete.

It is also in his interest to enable the competent authority to check his Service Record more easily by presenting the appropriate documents. If the competent authority observes that for certain voyages the particulars entered in the Service Record are incomplete or give rise to doubts which persist once the check has been completed, the voyages in question cannot be taken into account in calculating sailing time or as providing proof of the sectors covered.

What are the boatmaster's obligations?

He is required to enter particulars concerning himself in the Service Record and note on a regular basis sailing times and sectors covered; he must keep the Service Record in a safe place until the end of the service or the term of the labour contract or any other arrangement. At the holder's request, the Service Record must be given back to him immediately at any time.

Details of how the Service Record should be kept are given in the instructions below.

What obligations does the competent authority have?

It is required, but also has the right to check Service Records presented to it and to stamp them in accordance with its conclusions. It also has the right to request the presentation of logs, in full or extracts from them, or other appropriate documentary evidence.

B. Instructions concerning the keeping of the Service Record

1. General

1.1 The boatmaster is required to make regular entries in the Service Record.

1.2 Entries concerning the previous voyage shall be made in the Service Record before the start of the next voyage.

1.3 Entries made in the Service Record shall correspond to those of the log.

1.4 180 days of actual inland waterway voyage are counted as one year's navigation. Over a period of 365 consecutive days, a maximum of 180 days may be taken into account.

2. "Sailing time on board" (page 9 and following)

2.1 A new "Sailing time on board, name of vessel" section should be completed when the holder of the Service Record:

- begins his duties on board

or

- changes his duties on board the same vessel.

2.2 "Entry on duty" indicates the day on which the holder of the Service Record begins his activity on board. "Conclusion of duty" indicates the day on which the holder of the Service Record ceases his activity on board.

3. "Sailing times and sectors covered during the year ..." (page 27 and following)

Do not use page ... Begin on page ...

3.1 The different voyages shall be entered in order to be taken into account for calculating sailing times and to provide proof of the sectors covered. The place of departure shall be entered under B, "Voyage from ..." and the place of destination furthest downstream or furthest upstream (final destination) shall be entered under "to ...". The k.p. may be given for greater accuracy. An entry under "via ..." is not required unless the vessel takes another waterway or returns from another waterway.

3.2 By derogation from 1.3 and 3.1, a monthly entry for the sectors covered, the number of voyages made (from the place of departure) and the total sailing period is sufficient in the case of regular duty on board a vessel over a short distance (e.g. 10 identical successive

voyages) or in the case of shuttle services (e.g. day excursions for the carriage of passengers in local navigation, worksite traffic).

3.3 Under:

C = "Start of voyage", the day of departure from the place of departure should be entered;

D = "Days interrupted", the number of days during which the voyage has not continued should be recorded. In the event of a voyage without interruption, enter "0 (zero)";

E = "End of voyage", the day of arrival at the place of destination should be entered;

F = "Number of days of voyage on the Rhine", the number of days of voyage actually on the Rhine should be entered;

G = "Number of days of voyage other than on the Rhine", the number of days of voyage other than on the Rhine should be entered;

H = "Total days of voyage", the number of days between "Start of voyage" (C) and "End of voyage" (E), after deducting "Days interrupted" (D), should be entered.

3.4 A new line should be begun at each change of vessel.

3.5 Correspondence with the particulars entered in the log (see 1.3) exists if the particulars for the whole of the voyage from the day and place of departure to the day and place of arrival match and if the entry "Days interrupted" contains the total number of days on which the voyage is interrupted (e.g. loading, unloading, waiting) entered in the log.

3.6 On the page "Sailing times and sectors covered", the competent authority shall complete the line "Entry by the authority: total days of voyage taken into account on this page".

Annex G

Certificate for seagoing vessel navigating on the Rhine

Text in English in not available.

Annex H

Requirements to be met for tachographs and conditions for their installation on board

A. Requirements to be met for tachographs

1. Determination of the vessel's sailing time

   In order to determine the vessel's sailing time using an on/off criterion, propeller rotation must be recorded at an appropriate location. If propulsion is other than by propeller, the movement of the vessel must be recorded in an equivalent form at an appropriate location. Where there are two or more propeller shafts, recording must be ensured as soon as any of the shafts turn.

2. Identification of the vessel

   The official number of the vessel must be indelibly and legibly entered on the recording medium.

3. Recording on the recording medium

   The following must be recorded in a tamper-proof and legible form on the recording medium: the operating mode of the vessel, the date and time of the operation and interruption of operation of the tachograph, the installation and removal of the recording medium and other operations on the apparatus. The tachograph must automatically record the time, the installation and removal of the recording medium, the turning on or off of the apparatus and the interruption of the energy supply.

4. Daily recording period

   The date and the time when the propeller shaft begins and ends rotation must be recorded continuously every day from midnight to midnight.

5. Reading the recording

   The recording must be unambiguous, easy to read and easy to understand. It must be possible to read the recording at any time without special alternative means of assistance.

6. Printing out the recording

   It must be possible to make the recordings available at any time in the form of an easily checked printout.

7. Reliability of the recording

   It must be possible to record the rotation of the propeller in a tamper-proof form.

8. Accuracy of the recording

   The rotation of the propeller must be recorded accurately in time. It must be possible to read the recording to the nearest five minutes.

9. Operating voltage

Voltage fluctuations of up to ± of the rated value must not obstruct the working of the apparatus. The installation must also be able to withstand a 25 per cent increase in voltage over rated voltage without any deterioration of its operating capabilities.

10. Conditions of service

The apparatuses or their parts must be guaranteed to operate correctly under the following conditions:

- ambient temperature: 0°C to +40°C
- humidity: up to 85 per cent relative air humidity
- type of electrical protection: IP 54 in accordance with IEC Recommendation 529
- oil resistance: where they are intended to be installed in the engine room, the apparatuses or their parts must be oil-resistant
- permissible limits of errors in time-logging: ± 2 minutes per 24 hours.

B. Requirements for installing tachographs on board

The following conditions must be met when tachographs are installed on board:

1. The installation of tachographs on board may only be carried out by specialized firms approved by the competent authority.

2. The tachograph must be installed in the wheelhouse or at any other readily accessible point.

3. It must be visually possible to check whether the apparatus is in operation. It must have a permanent electricity supply from an electrical circuit protected from power failures, fitted with its own fuse protection and directly connected to the energy source.

4. Data concerning the movement of the vessel, i.e. as to whether the vessel is “under way” or has “ceased to be under way” is derived from the propelling machinery. The signal must come from the rotation of the propeller, the propeller shaft or the running of the propelling engine. In the event of other systems of propulsion, an equivalent solution needs to be adopted.

5. The installation of the technical appliances involved in logging the movement of the vessel must ensure maximum operating reliability and be protected against untimely manipulation. The signal transmitting circuit (including the signal switch and access to the apparatus) from the propelling machinery to the apparatus must be appropriately protected and the breaking of the circuit kept under supervision. Seals or stamps with specific markings can be used, for example, and conduits fitted so as to be visible or monitoring circuits.

6. The specialized firm carrying out or supervising the installation must conduct a performance test once the installation has been completed. It must issue a certificate with the characteristics of the installation (in particular, location and type of seals or stamps and their

markings, location and type of monitoring devices) and confirming that it is in working order; the certificate must also include data on the type of apparatus approved. A new performance test is required after any replacement, modification or repair; an entry must be made in the certificate for this test.

The certificate must contain at least the following data:

- name, address and symbol of the approved firm which carried out or supervised the installation;
- name, address and telephone number of the competent authority which approved the firm;
- official number of the vessel;
- tachograph type and series number;
- date of the performance test.

The certificate is valid for five years.

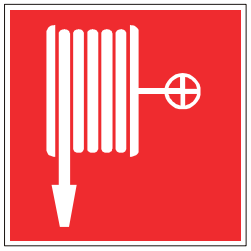
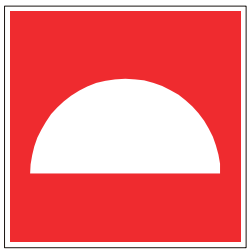
The purpose of the certificate is to provide evidence that the apparatus is approved, has been installed by an approved firm and has undergone a test confirming that it is in working order.

7. The steersmen must be instructed by the approved firm in the use of the apparatus and instructions for use must be issued and kept on board. This must be entered in the certificate of installation on board.

Annex I

Safety signs and signals

Sketch 1 No access for unauthorized persons		Colours: red/white/black
Sketch 2 No naked lights or fires and no smoking		Colours: red/white/black
Sketch 3 Fire-extinguisher panel		Colours: red/white
Sketch 4 General danger		Colours: black/yellow

Sketch 5 Fire hose		Colours: red/white
Sketch 6 Fire extinguishing equipment		Colours: red/white
Sketch 7 Use ear protectors		Colours: blue/white

The pictograms used may differ slightly from or be more detailed than those given in this annex, provided that their meaning is not modified and that the differences and adaptations do not render them incomprehensible."

Annex J

Exhaust and pollutant particle emissions – additional provisions and model certifications

Summary

Annex K

Certificate justifying the rest time required in accordance with article 23.07, 2 to 6

(valid only in connection with the service record, or the principal licence in accordance with annex 1 or the provisional principal licence in accordance with annex 2 of the Rhine Licensing Regulations

Name: .....

Number of service record or licence: .....

Name or official number of vessel	End of voyage date	End of voyage time	Operating mode preceding end of voyage	Last rest period preceding end of voyage		Boatmaster's signature
				Start	Finish	
	E	E1	E2	E3	E4	
1	2	3	4	5	6	7

This certificate is part of the ship's log of the vessel on which the crew member begins his new voyage and is a document referred to in article 1.10 of the Police Regulations for the Navigation of the Rhine.

Incorrect or faulty particulars may lead to sanctions; at best they constitute a violation.

The boatmaster of the vessel on which the crew member made his previous voyage is responsible for the particulars furnished in the certificate.

Particulars relating to the content of the certificate

1. The certificate shall be completed on each change of vessel by the boatmaster of the vessel on which the crew member made his last voyage.

2. The certificate shall be presented to the boatmaster of the vessel on which the new voyage commences.

The particulars contained in the certificate shall conform to those contained in the service record and in the ship's log of the vessel on which the crew member made his previous voyage."

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