

**GOVERNMENT OF INDIA
MINISTRY OF SHIPPING
DIRECTORATE GENERAL OF SHIPPING
"BETA BUILDING", 9TH FLOOR
I-THINK TECHNO CAMPUS
KANJUR MARG (EAST)
MUMBAI - 400 042.**

No. ENG/MISC-29(4)14

Date: 28/07/2017

DGS Shipping Order No. 05 of 2017

Sub: Notification for Construction, Survey, Certification and Operation of Indian River Sea Passenger Vessels- Type 3 & 4

Whereas the objects of the Merchant Shipping [MS] Act, 1958, as amended, are inter-alia to foster the development of shipping and to ensure safe and efficient Indian Mercantile Marine in a manner best suited to serve the Indian national interests.

Recognizing that seamless integration of River-sea trade using coastal ships will play a major role in the growth of Indian economy and provide an alternative means of transport of passenger by the sea route to various ports along the sea coast;

Considering the reservations expressed by the Coastal Shipping Industry with regard to the prevailing Merchant Shipping legislation applicable to passenger ships which makes coastal shipping uneconomical due to high cost of construction and operation;

Realizing that high construction and operating cost of ships is a major impediment for the expansion of coastal and inland shipping in India;

Recognizing that reduction in the operation and construction cost of coastal vessels by defining a distinct River-Sea Passenger Vessel would encourage coastal shipping, inland water transport and trade as well as ship building and thus the growth of the maritime sector.

Further recognizing that construction and safety standards, which are currently applicable to coastal ships under the M.S. Rules can be moderated without affecting the safety of the ship in order to reduce the cost of ships construction and operation, keeping in view the restricted operation of River- sea vessels;

Further recognizing that scope of River Sea Passenger vessels are to be expanded by covering more vessels in order to address varying needs of transportation of passengers & tourism in Indian coast;

Now the Director General of Shipping, in exercise of the powers vested in her under the provisions of Section 456 of the M.S. Act 1958, read together with S.O.3144 dated 17.12.1960 hereby exempts only Indian passenger vessels, operating along the Indian coast and within the territorial limits of India i.e., within 12 miles from the nearest land from the following provisions of the M.S.Act 1958 as amended, and dispenses with requirements of M.S.Act / Rules contained in the sections specifically listed under column-(2), provided strict compliance is shown to the requirements and stipulations detailed in Annexes 1 to 15 in Column-(4) of the following table.

(The Annexes can be downloaded from the DGS website www.dgshipping.gov.in)

(1)	(2)	(3)	(4)
S/no	Exempted sections of the MS Act/ Rules there under.	Title	Alternate Provisions
1		PREAMBLE AND GENERAL PROVISIONS	Annex-1
2		SAFE MANNING	Annex-2
3	Sections-175, 261 A, 261B, 261 C of M.S. Act	ACCOMMODATION RULES	Annex-3
4	Sections-284 & 311 of M.S.Act	CONSTRUCTION RULES	Annex-4
5	-	PREVENTION OF COLLISIONS	Annex-5
6	Sections-288, 289, & 290 of M.S.Act	LIFE SAVING APPLIANCES	Annex-6
7	Sections-289 & 290 of M.S.Act	FIRE FIGHTING APPLIANCES	Annex-7
8	Sections-291 of M.S.Act	RADIO COMMUNICATION	Annex-8
9	Section-356 of M.S.Act	SAFETY OF NAVIGATION	Annex-9
10	Sections 220, 240, 299, 303 (1), 307 (1), 318 of M.S.Act	SURVEY AND CERTIFICATION	Annex-10
11	Sections-356 (C) &356 (E) of M.S.Act, Merchant Shipping Rules (Prevention of pollution by Sewage) and Merchant Shipping Rules (Control of Anti Fouling System) as amended.	PREVENTION OF POLLUTION	Annex-11
12	M.S. (Management for safe operation of Ships) Rules as amended.	DOMESTIC SAFETY MANAGEMNT (DSM) CODE	Annex-12
13	Sections 344 O, 344 Q and 344 R of M.S.Act	SHIP SECURITY	Annex-13
14	Sections 330, 331, 331A & 332 of M.S.Act	CARRIAGE OF CARGOES	Annex-14
15	Sections 99 & 100 of M.S.Act	CDC AND ARTICLES OF AGREEMENT	Annex-15

Sd/-
Dr. Malini V. Shankar, IAS,
Director General of Shipping &
Ex officio Secretary to the Govt. of India

Enclosures: Annex 1 to 15 (120 Pages)

RIVER-SEA PASSENGER VESSEL(RSPV)
NOTIFICATION 2017



DIRECTORATE GENERAL OF SHIPPING
MUMBAI

RIVER SEA PASSENGER VESSEL NOTIFICATION 2017

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Annex: 1 Preamble and General Provisions

1.1 Application

- 1.1.1 Unless expressly provided otherwise, the Notification for Construction, Survey, Certification and Operation of Indian River-Sea Passenger Vessels applies only to Passenger vessels that are engaged exclusively in operations within Indian territorial waters, and which carry less than 400 Passengers onboard.
- 1.1.2 Nothing in this notification shall apply to any Indian river-sea vessel by reason of its being at a port or place if it would not have been at any such port or place or within territorial waters but for the stress of weather or any other circumstances that neither the master nor the owner nor the charterer if any, of the vessel could have prevented or forestalled.

1.2 Definitions

For the purpose of this Notification for Construction, Survey, Certification and Operation of Indian River-Sea Passenger Vessels (also referred to as RSPVs in this notification), unless expressly provided otherwise:

- I. "accommodation space" means any space used for accommodation purpose and includes-
 - (i) passenger space,
 - (ii) crew space,
 - (iii) offices,
 - (iv) pantries; and
 - (v) spaces on deck;
- II. "Act" means the Merchant Shipping Act, 1958 (44 of 1958)
- III. Administration means the Directorate General of Shipping
- IV. Approved means approved by the Administration.
- V. "breadth of a vessel" means the extreme width of any vessel from outside the frame to side from outside the frame to outside the frame at or below the deepest subdivision load line
- VI. "bulk-head deck" means the uppermost deck upto which the transverse watertight bulk-heads are carried
- VII. BIS means the Bureau of Indian Standards.
- VIII. "cargo spaces" are spaces used for cargo, cargo oil tanks, tanks for other liquid cargo and trunks to such spaces.
- IX. "crew space" means accommodation provided exclusively for the use of the crew;
- X. "Criterion numeral" in relation to any ship means criterion numeral of the ship determined in accordance with the applicable provisions of the Appendix 1 to Annex 4;
- XI. "draught" means the vertical distance from the moulded base-line amidships to a sub-division load water line
- XII. "equivalent material" when used in the expression "steel or other equivalent material" means any material which by itself or by reason of insulation provided possesses structural and integrity properties equivalent to steel and proves such properties when subjected to an appropriate fire test.
- XIII. Existing river-sea passenger vessel means a vessel which is not a new river-sea passenger vessel.
- XIV. Fair weather means wind force and sea state not exceeding that corresponding to Beaufort Scale 4.
- XV. Favourable weather forecast means a weather forecast wherein fair weather is predicted for 24 hours from the commencement of a voyage.
- XVI. "floodable length" in relation to any porting of a ship at any draught means the maximum length of that portion having its centre at a given point in a ship which at that draught and under such assumption of permeability set forth in the Appendix 1 to Annex 4 as are applicable in the circumstances, can be flooded without submerging any part of the ship's margin line when the ship has no list

- XVII. Gross Tonnage (GT) and Net Tonnage (NT) are the tonnages determined in accordance with the MS (Tonnage measurement of Ships) rules, 1987 as amended.
- XVIII. "non-combustible material" is a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750 degree Celsius, this being determined in accordance with the Fire Test Procedures Code.
- XIX. "Independent power pump" means a pump operated by power otherwise than by power generated from vessel's main engine
- XX. "length" in relating to sub-division of river sea passenger vessel means the length measured between perpendiculars taken at the extremities of the deepest sub-division load water line; 'length for any other purpose means the length on the summer load water line measured between the foreside of the stem and after side of the rubber post or to the centre of the rudderstock if there is no rudder post, or 96 percent of the summer load water line, whichever is the greater;
- XXI. "low flame spread" means that the surface thus described will adequately restrict the spread of flame, this being determined in accordance with the Fire Test Procedures Code.
- XXII. "machinery space" means any space extending from the moulded base-line of the vessel to the margin between the extreme transverse watertight bulkheads bounding the space appropriated to the main and auxiliary propelling machinery, boilers, and the permanent coal bunkers, if any
- XXIII. "margin line" means a line drawn at least 76 mm. below the upper surface of the bulkhead deck at the side of a vessel and assumed for the purpose of determining the floodable length of the vessel;
- XXIV. "maximum service speed" means the greatest speed the vessel is designed to maintain at sea at her deepest draught
- XXV. "mile" means a nautical mile of 1852 m
- XXVI. MARPOL means the International Convention for Prevention of Pollution from Ships 1973/78, as amended.
- XXVII. M.S Act means the Merchant Shipping Act, 1958, as amended.
- XXVIII. New river-sea passenger vessel means a river-sea passenger vessel the keel of which is laid or which is at a similar stage of construction on or after the date of this notification.
- XXIX. "navigable speed" means the minimum speed at which the vessel can be effectively steered in the ahead direction;
- XXX. Notification means the Notification for Construction, Survey, Certification and Operation of Indian River Sea Passenger Vessels as issued vide DG Shipping Order No.05 of 2017.
- XXXI. Passenger vessel is a vessel which carries more than 12 Passengers
- XXXII. "passenger space" means space provided for the use of passengers and does not included any space appropriated for baggage, stores, provisions and mail
- XXXIII. Recognised Organization (RO) means any organization duly authorized by the Administration to perform statutory work on behalf of the Administration.
- XXXIV. River-sea Passenger vessel under this Notification means passenger vessels, carrying not more than 400 Passengers, that are registered under Merchant Shipping Act, adopting the provisions of this Notification, and such that the vessel does not operate beyond the territorial waters of India.
- XXXV. "steering gear unit" means:-
 - (a) in the case of electric steering gear the electric motor and its associated electrical equipment;
 - (b) in the case of electro-hydraulic steering gear, the electric motor, its associated electrical equipment and connected pumps; and
 - (c) in the case of steam hydraulic or pneumatic-hydraulic steering gear, the driving engine and connected pump
- XXXVI. Ship shall have the same meaning as river-sea passenger vessel under this Notification.
- XXXVII. SOLAS means the International Convention for the Safety of Life at Sea, 1974, as amended.
- XXXVIII. "suitable" in relation to material means any material approved by the Administration.
- XXXIX. "watertight" in relation to a structure means a structure which is capable of preventing the passage of water through it in any direction under a head of water upto ship's margin line
- XL. "weather tight" in relation to a structure means a structure which is capable of preventing the passage of sea water through it in ordinary sea conditions
- XLI. Vessel shall have the same meaning as river-sea passenger vessel under this Notification.

- XLII. Weather forecast means the weather forecast applicable for the port(s) under consideration, given by the meteorological department of the Government of India or any other competent authority.

1.3 Types of river-sea passenger vessels

For the purposes of this Notification, the following types of vessels operating along the Indian coast are considered:

Type 3: River-Sea Passenger vessels engaged on voyages between Indian ports in which maximum distance does not exceed that can be covered by a fully loaded vessel at its deepest draught with the vessel's optimum speed in 48 hours, provided that such operation is carried out in fair weather and against a favorable forecast. Vessels falling under this Type shall, at all times, operate within 5 miles from the nearest land. These vessels shall not carry more than 400 Passengers.

Type 4: River-Sea Passenger vessels engaged on voyages in the coasting trade of India during the course of which they do not go more than 12 miles from the nearest land. These vessels shall not carry more than 400 Passengers.

1.4 Notification Review

- 1.4.1 The Notification shall come into effect on the date of issuance of the DG shipping Order 05 of 2017.
- 1.4.2 The Notification shall be periodically reviewed for its effectiveness and amendments that may be required from time to time.

1.5 Registration and Classification

- 1.5.1 River-sea passenger vessels under this Notification are required to be registered under Merchant Shipping Act, 1958 (as amended).
- 1.5.2 In addition to the requirements contained in the present notification, all the river sea passenger vessels shall be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a classification society which is recognized by the Administration.

Annex: 2 Safe Manning

2.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions related to Safe Manning levels of the M.S. Act and rules made there under, the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

2.2 Application

This Annex shall apply to all river-sea passenger vessels

2.3 Deck-side minimum safe manning requirements

2.3.1 Type 3 River Sea Passenger Vessels shall be manned by:

	GT < 500		500 ≤ GT < 1600		1600 ≤ GT < 3000		3000 ≤ GT < 6000		GT > 6000	
Capacity	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade
Master	1	Master (NCV < 500 GT) OR NWKO (NCV) with 1 year experience	1	Master (NCV) OR NWKO (NCV) with 1 year experience	1	Master (NCV) OR Mate (NCV) with 1 year experience	1	Master (NCV)	1	Master (FG)
Chief Officer	1	NWKO (NCV)	1	NWKO (NCV)	1	NWKO (NCV)	1	Mate (NCV)	1	Mate (FG)
Second Officer	-		-		-		1	NWKO (NCV)	2	NWKO
AB Seaman	2	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch
OS	2	Basic STCW Courses	3	GP Rating	3	GP Rating	3	GP Rating	3	GP Rating
Cook	1	Basic STCW Courses	1	Basic STCW Courses	1	Basic STCW Courses	1	Basic STCW Courses	1	Basic STCW Courses
Total	7		9		9		10		11	

2.3.2 Type 4 River Sea Passenger Vessels shall be manned by:

	GT < 500		500 ≤ GT < 1600		1600 ≤ GT < 3000		3000 ≤ GT < 6000		GT > 6000	
Capacity	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade
Master	1	Master (NCV < 500 GT) OR Mate (NCV) with six months experience	1	Master (NCV) OR Mate (NCV) with One year experience	1	Master (NCV)	1	Master (NCV)	1	Master (FG)
Chief Officer	1	Mate (NCV) Or NWKO (NCV) with one year experience	1	Mate (NCV) Or NWKO (NCV) with one year experience	1	Mate (NCV) Or NWKO (NCV) with 1 year experience	1	Mate (NCV)	1	Mate (FG)
Second Officer	-	-	1	NWKO (NCV)	1	NWKO (NCV)	1	NWKO (NCV)	2	NWKO
AB Seaman	2	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch	3	Rating forming part of navigation watch
OS	2	Basic STCW Courses	3	GP Rating	3	GP Rating	3	GP Rating	3	GP Rating
Cook	1	Basic STCW Courses MLC certified	1	Basic STCW Courses MLC certified	1	Basic STCW Courses MLC certified	1	Basic STCW Courses MLC certified	1	Basic STCW Courses MLC certified
Total	7		10		10		10		11	

2.4 Engine-side minimum safe manning requirements

2.4.1 Type 3 and Type 4 River Sea Passenger Vessels shall be manned by:

	kW < 750		750 ≤ kW < 1500		1500 ≤ kW < 3000		3000 ≤ kW < 8000		KW >8000	
Capacity	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade	Nos.	Min. Grade
Chief Engineer	1	MEO CV IV (NCV) with 12 months experience	1	MEO CL III (NCV-SEO) With 12 months experience	1	MEO CL III (NCV-CEO)	1	MEO CL III (NCV-CEO) with 12 months experience	1	MEO CLASS I
Second Engineer	1	MEO CL IV (NCV) Part A	1	MEO CL IV (NCV) with 12 months experience	1	MEO CL III (NCV-SEO)	1	MEO CL III (NCV-SEO) with 12 months experience	1	MEO CLASS II
Third Engineer	-	-	1	MEO CI IV (NCV) Part A	1	MEO CI IV (NCV) Part A	1	MEO CL IV (NCV)	2	MEO CL IV
Motorman	-	-	-	-	1	Rating Forming part of E/R watch	1	Rating Forming part of E/R watch	3	Rating Forming part of E/R watch
Oilman	2	Basic STCW Courses	1	GP Rating	1	GP Rating	1	GP Rating	-	-
Total	4		4		5		5		7	

Annex : 3 Accommodation Rules

PART A : Crew Accommodation

3.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 175, 261 A, 261 B & 261 C of the M.S. Act and rules made there under, the regulations contained in this Annex provide an alternative standard acceptable to the Administration.

3.2 Application

This part shall apply to Type 3 and Type 4 River Sea Passenger Vessels of 200 GT and above

3.3 Definitions

For the purpose of this Annex:

- a. Approved means approved by the Administration
- b. Overhead deck means any deck which forms the crown of any part of the crew accommodation

3.4 Construction of bulkheads and paneling

3.4.1 All bulkheads enclosing or within any part of the crew accommodation shall be properly constructed of steel or other suitable material. If the bulkheads are exposed to the weather, they shall be of watertight construction, and means of closure shall be provided for all opening in such bulkheads so as to enable them to be made weather tight.

3.4.2 If the partitions/bulkheads within the accommodation spaces are not constructed of steel then the paneling /ceiling used in the accommodation shall be made of non-combustible material of an approved quality.

3.4.3 Any bulkhead which separates any part of the crew accommodation (other than a recreation deck space from a space used as –

- An oil fuel bunker;
- A cargo or machinery space;
- A lamp room or paint room;
- A store room not forming part of the crew accommodation (other than a dry provision store room);
- A chain locker; or
- A cofferdam;

Shall be gastight, and shall be watertight where necessary to protect the crew accommodation.

3.4.4 Any inside paneling in the crew accommodation shall be constructed of a suitable material with a surface, which can be easily kept clean.

3.4.5 Neither bulk heads nor inside paneling shall be constructed with tongued and grooved boarding or in a manner or with material likely to harbor vermin.

3.5 Overhead decks and flooring

3.5.1 Every overhead deck exposed to the weather shall be constructed of steel or other metal.

3.5.2 Every deck which forms the floor in the crew accommodation shall be properly constructed and shall have a surface which provides a good foothold and is capable of being easily kept clean.

3.5.3 The floor covering shall be impervious to water and, if the deck is situated on the top of oil tank, the covering shall be impervious to oil.

3.6 Protection from Weather

3.6.1 The crew accommodation and the means of access thereto and egress there from shall be so arranged and constructed and situated in such a position as to ensure –

- The protection of the crew against injury to the greatest practicable extent;
- The protection of the crew accommodation against the weather and the sea;
- The insulation of the crew accommodation from heat and cold;
- The protection of the crew accommodation against moisture due to condensation;
- The exclusion from the crew accommodation of effluvia originating in other spaces in the vessel; and
- The exclusion from the crew accommodation, to the greatest practicable extent, of noise originating in other spaces in the vessel.

3.7 Lighting

3.7.1 Every part of the crew accommodation, other than pantries, laundries drying rooms, lockers, storerooms sanitary accommodation, passageways, offices, shall be properly lighted by natural light.

3.7.2 Provided that if in any space in the vessel it is impracticable to provide proper natural lighting, such lighting shall not be required if adequate electric lighting is always available in that space.

3.8 Ventilation and Air Conditioning

3.8.1 In every new river-sea passenger vessel the enclosed parts of the crew accommodation shall be ventilated by a system, which will maintain the air therein in a state of purity adequate for the health and comfort of the crew. Such system shall be capable of being so controlled as to ensure a sufficiency of air movement under all conditions of weather and climate to which the vessel is likely to be subjected during the voyages on which she is intended to be engaged and shall be additional to any side scuttles, skylights, companions, doors or other apertures not intended solely for ventilation.

3.8.2 In every river-sea passenger vessel, as a minimum, adequate fans shall be provided in the enclosed spaces of the crew accommodation.

3.8.3 For all River Sea Passenger Vessels above 200 GT, the crew accommodation spaces shall be air-conditioned in accordance with MS (Seafarer Accommodation) Rules, 2016.

The air conditioning system, whether of a centralized type or individual unit type shall be so designed as to—

- (i) maintain the air at a satisfactory temperature of 28° with 50 per cent relative humidity when ambient temp is 35°C with 70 per cent relative humidity;
- (ii) ensure eight air changes per hour in any mess room or recreation room and six air changes in any other room, the amount of re-circulated air not exceeding 50 per cent at any stage, while at sea;
- (iii) take into account particular characteristics of operations at sea so as to avoid producing objectionable noises or vibrations; and
- (iv) facilitate easy cleaning and disinfection to prevent and control of spread of disease.

No of air changes :

- eight air changes per hour in any mess room or recreation room and
- six air changes in any other room,

3.9 Painting

3.9.1 The interior sides and ceilings of the crew accommodation shall be covered with enamel paint or other suitable material of an approved quality.

3.9.2 All paints, varnish, polish and other finishes in the crew accommodation shall be capable of being easily kept clean and shall be maintained in good condition.

3.10 Sleeping rooms

3.10.1 Unless the circumstances are such that no members of the crew are required to sleep on board, sleeping rooms shall be provided for the crew in accordance with the following provisions:

3.10.2 The maximum number of persons accommodated in sleeping rooms shall be as follows:

- Master and Chief Engineer – 1 person per room
- Other Officers – 2 persons per room
- Apprentices/Ratings – Not more than 4 persons per room on river-sea vessels

3.10.3 In every river-sea vessel, the minimum floor area provided for each person in a sleeping room forming part of crew accommodation shall be 2.75 sq.m. Administration may exempt any ship from the requirement of this rule to the extent that it is satisfied to do so by reason of the intended service of the ship.

3.11 Beds

3.11.1 Every sleeping room in the crew accommodation of a river-sea vessel under this Notification shall be fitted with bed for each person accommodated in the room.

3.12 Mess Rooms

3.12.1 Unless the circumstances are such as to require no member of crew to mess on board, at least one common mess room for officers and crew shall be provided. The floor area of the mess room shall not be less than 7.5 sq.m.

3.12.2 Every mess room forming part of the crew accommodation shall be provided with sufficient tables and chairs for accommodating at least 75% of the crew at any given time.

3.12.3 All tables, lockers, dress and un-upholstered parts of chairs and settees in the mess room shall be made of hardwood, rustproof metal or other smooth and impervious material not likely to crack warp or become corroded.

3.12.4 All furniture provided in the mess room shall be so made as not to be likely to harbor vermin.

3.13 Supply of fresh water and drinking water

3.13.1 There shall be available a supply of fresh water sufficient for the wash-basins, baths and showers fitted in compliance with this Notification.

3.13.2 The supply shall be provided from tanks of a capacity of at least 100 litres for each member of the crew for each day likely to elapse between successive replenishments of the water or by other equally efficient means.

3.13.3 If service tanks are fitted for that purpose they shall be directly connected with the vessel's main washing water or drinking water storage tanks.

3.13.4 There shall be a supply of drinking water provided in the crew accommodation from tanks of an adequate capacity for the purpose having regard to the number of persons in the crew and the time likely to elapse between successive replenishments of the water or by other equally efficient means.

3.13.5 If service tanks are fitted for the purpose they shall be directly connected with the vessel's main drinking water storage tanks.

3.14 Water closets and baths

3.14.1 At a minimum, each of the following classes of persons shall be provided with water closets and baths separate from those provided for the other classes:

- a) Master/Chief Engineer– attached toilet with water closets and baths
- b) Officers – 1 for every 6 persons or part thereof
- c) Apprentices/Ratings – 1 for every 6 persons or part thereof

3.15 Galley and provisions/cold store rooms

3.15.1 There shall be provided a galley for the preparation of food for the crew.

3.15.2 One or more storerooms shall be provided for the storage of dry provisions for the crew. Such rooms shall be fitted with sufficient shelves, cupboards and bins having regard to the maximum period likely to elapse between successive replenishments of stores and to the maximum number of persons for whom food is to be served.

3.15.3 Means shall be provided to store perishable provisions and box freezers/cold rooms of adequate capacity shall be provided for this purpose.

3.15.4 Galley shall be provided with an electric cooking range of adequate capacity by with combined electrical load of not less than 0.5 KW for each member of the crew

3.15.5 Galley shall be provided with a ventilation system with an inlet having 20 air changes and exhaust having 40 air changes.

3.15.6 No oil fired cooking ranges or open flame appliances are permitted in galley.

3.16 Medical Cabinet

3.16.1 A medical cabinet shall be provided in a suitable position suitable for storing the medicines, medical stores and book of instructions provided in the vessel for the benefit of the crew on board.

3.16.2 Every River Sea Passenger Vessels shall, as a minimum carry the following medical appliances for the use of crew:

- 1 no. first aid box not less than that prescribed for a life boat;
- 1 no. stretcher of approved type for easy evacuation of casualties.

3.17 Protection from Mosquitoes

3.17.1 The crew accommodation, other than galleys, storerooms and recreation spaces on the open deck shall be provided with protection against the admission of mosquitoes.

3.17.2 Such protection shall be provided by means of screens of rust proof wire or other suitable material which shall be fitted to all side scuttles, natural ventilators, skylights and doors leading to the open deck.

PART B: Carriage of Passengers

(This part shall apply to Type 3 and Type 4 River Sea Passenger Vessels)

GENERAL

3.18 Position of Passenger Accommodation

3.18.1 The decks on which passengers are accommodated shall form part of the permanent structure of the vessel and shall be of adequate strength. If any deck is constructed of wood, it shall be properly laid and caulked and shall be continuous from side to side of the space in which the passengers are carried. If the deck is not constructed of wood, it shall be fitted with sheathing made of wood of an approved non-conduction composition.

3.18.2 Lamp rooms, paint rooms and spaces used for the storage of inflammable oils shall not have a direct access to passenger accommodation by doors or passenger ways or be so situated as to constitute a danger of passengers. Passenger shall not be accommodated in a space adjoining an oil fuel bunker unless the space is separated from the bunker by an additional steel vapour proof bulkhead so arranged that the space between the two bulkheads is well ventilated and accessible. Passenger accommodation may be situated on a deck forming the crown of an oil fuel space if-

- (i) the deck is oil-tight.
- (ii) passenger space is well ventilated;
- (iii) no manhole or other opening to oil fuel space exists in passenger spaces; and
- (iv) flooring of passenger space is of a material and of a thickness approved by the Central Government for the purpose.

3.18.3 Passenger accommodation shall be separated from cargo spaces, coal bunkers, store rooms, lamp rooms and paint rooms and other space used for storage of inflammable oils by means of gas-tight steel bulkheads and decks.

3.19 Lighting and Ventilation-All passenger accommodation spaces shall be efficiently ventilated and lighted during both day and night.

13.19.1 Every part of the crew accommodation, other than pantries, laundries drying rooms, lockers, storerooms sanitary accommodation, passageways, offices, shall be properly lighted by natural light.

13.19.2 Wherever possible, natural lighting shall be provided. Provided that if in any space in the vessel it is impracticable to provide proper natural lighting, such lighting shall not be required if adequate electric lighting is always available in that space.

3.19.3 In every new river-sea passenger vessel the enclosed parts of the Passenger accommodation shall be ventilated by a system, which will maintain the air therein in a state of purity adequate for the health and comfort of the crew. Such system shall be capable of being so controlled as to ensure a sufficiency of air movement under all conditions of weather and climate to which the vessel is likely to be subjected during the voyages on which she is intended to be engaged and shall be additional to any side scuttles, skylights, companions, doors or other apertures not intended solely for ventilation.

3.19.4 In every river-sea passenger vessel, as a minimum, adequate fans shall be provided in the enclosed spaces of the crew accommodation.

3.19.5 For all River Sea Passenger Vessels above 200 GT, the passenger accommodation spaces shall be air-conditioned in accordance with MS (Seafarer Accommodation) Rules, 2016.

The air conditioning system, whether of a centralised type or individual unit type shall be so designed as to—

- (i) maintain the air at a satisfactory temperature of 28° with 50 per cent relative humidity when ambient temp is 35°C with 70 per cent relative humidity;
- (ii) ensure eight air changes per hour in any mess room or recreation room and six air changes in any other room, the amount of re-circulated air not exceeding 50 per cent at any stage, while at sea;

- (iii) take into account particular characteristics of operations at sea so as to avoid producing objectionable noises or vibrations; and
- (iv) facilitate easy cleaning and disinfection to prevent and control of spread of disease.

No of air changes :

- eight air changes per hour in any mess room or recreation room and
- six air changes in any other room,

3.20 Sheathing of steel or other metal decks-Steel or other metal decks forming the floors or crowns of enclosed spaces in which passengers are accommodated shall be sheathed with wood or other composition of an approved type. Crowns of passenger spaces which are exposed to weather shall be sheathed with wood 57 millimeters thick or with an equivalent composition.

3.21 Provision of Cabin Berths

3.21.1 Where the duration of voyage is more than 24 hours, sleeping berths shall be provided in accordance with para 3.23.

3.21.2 The number of fixed berths properly constructed and fitted shall determine the number of passengers that may be allowed to be carried in cabin class accommodation provided in any vessel.

3.21.3 No cabin accommodating cabin class passengers shall contain more than eight such berths.

3.21.4 There shall not be more than two tiers of berths in any cabin and there shall be provided not less than 3.35 square metres of clear space for each cabin class passenger. Where small berths are fitted for children, the total space allocated shall be 3.5 square metre for every pair of such berths.

3.21.5 Where the voyage is of less than 24 hours duration, passengers may be accommodated in spaces where only sitting accommodation is provided. Sets or chairs of not less than 460 mm in length shall be provided for all such passengers.

3.22 Spaces unfit for passenger accommodation

3.22.1 In vessels to which this chapter applies, accommodation for passengers shall not be provided in any of the following spaces, namely-

- (a) any deck lower than the one immediately below the deepest sub-division load line;
- (b) any part of the between deck where the clear headroom is less than 1.90 metres;
- (c) forward of the collision bulkhead or the upward extension thereof;
- (d) on lower between decks within 10 per cent of the length of the vessel from the forward perpendicular; or

3.22.2 During seasons of foul weather, no space on the weather deck shall be measured as being available for passenger accommodation except that it may be measured as airing space.

3.23 Provision of bunks

3.23.1 Where bunks are provided for passengers, such bunks shall comply with the following requirements, namely :-

- (a) the size of a bunk shall not be less than 1.90 meters long and 0.70 meters wide;
- (b) every bunk shall give direct access to a passage-way and the passage-ways shall be so arranged as to give ready access to an escape route;
- (c) the width of passage-ways shall be not less than 0.70 meter;
- (d) bunks may be fitted in single or double tiers; the following requirements shall be complied with, namely:-
 - (i) the distance between the deck and the base of the lower bunk shall not be less than 0.45 meter;

- (ii) the distance between the base of the lower bunk and the base of the upper bunk shall not be less than 0.90 meter;
- (iii) the distance between the base of the upper bunk and the underside of any overhead obstruction shall not be less than 0.90 meter; and
- (iv) suitable means shall be provided for access to upper bunks.

- (e) bunks shall be fitted with leeboards or lee rails and where bunks are fitted side by side suitable means of separation shall be provided;
- (f) bunks and their fittings shall be constructed of metal and shall be of type approved by the Administration or the recognized organization on behalf of the Administration;
- (g) no bunk shall be fitted within 0.90 metre of any hatch opening except where such opening are trunked or otherwise protected to the satisfaction of the Administration.
- (h) no bunk shall be fitted within 0.60 metre of the face of the frames, sparring or linings at a vessel's side;
- (i) no bunk shall be fitted within 0.75 metre of the entrance of any stairway or ladder way, wash place, lavatory or battery or latrines or of any water tap or fire hydrant; and
- (j) no bunk shall be fitted in space or part thereof which in the opinion of the Administration, is unsuitable for accommodation of bunk class passengers.

3.23.2 Total number of bunks provided in any vessel shall be such as to ensure that the number of passengers carried in space does not exceed the gross volume of that space in cubic metres divided by 3.06 cubic metres.

3.24 Vessels not fitted with bunks

3.24.1 Where a vessel does not have bunks for passengers, the following provisions shall be complied with;

3.24.2 Accommodation space in any river sea passenger vessel of voyage duration less than 24 hours shall be not less than 1.12 m² per passenger.

3.24.3 Where means of egress from a between deck or other enclosed space is through another passenger space, the space in the between deck shall be measured in accordance with scale laid down for lower between deck.

3.24.4 In calculating spaces for accommodation of passengers, the following deductions shall be made, namely:-

- (a) an overall deduction of 5 percent of the gross area of the space to allow for the accommodation of accompanied baggage ;
- (b) an area extending to a distance of 0.75 metre from the entrance to any stairway or ladder way, wash place, lavatory or battery or latrines or from any water tap or fire hydrant;
- (c) areas required for working the lifeboats, life rafts and buoyant apparatus. Provided that these areas may be included in airing space;
- (d) the area of any hatchway; and
- (e) any area which, in the opinion of the Administration is unsuitable for accommodation of passengers.

3.25 Airing space

3.25.1 Airing space shall be provided on the weather deck for all passengers at the scale of 0.37 sq. m per passenger. Such airing space shall be marked conspicuously.

3.26 Marking of spaces

3.26.1 Any space intended for the accommodation of passengers shall be conspicuously marked at or near the entrance to that space indicating the number of such passengers the space is certified to accommodate.

3.27 Hospital

3.27.1 Every river sea passenger vessel carrying more than 100 passengers and engaged on voyages the duration of which exceeds 48 hours in ordinary circumstances, shall be provided with permanent hospital arrangements, Such arrangements shall comply with the following provisions, namely :-

- (i) There shall be fitted on deck or decks above the between decks hospital accommodation for passengers which shall be clearly demarcated.
- (ii) The area of the deck space provided for this purpose shall be not less than 9.3sq. metres.
- (iii) There shall be separate hospital for the exclusive use of members of each sex when passengers of both sexes are carried.
- (iv) Every such hospital shall be at least two beds and a floor areas of not less than 4.5 sq. metres.
- (v) Every hospital shall be sufficiently ventilated and lighted and shall be provided with proper beds, bedding and necessary appliances.
- (vi) Metal decks and over-head decks shall be sheathed with wood or other approved composition.
- (vii) Every hospital shall have its own latrine and bathroom situated immediately adjacent to the hospital either in one compartment or separately.
- (viii) Beds shall be of metal and shall be of a type approved for use in the hospital of a passenger vessel. Every hospital shall remain open at all time for the admission and treatment of passenger suffering from any ailment.
- (ix) There shall be at least four hospital beds provided for every vessel whose voyage exceeds 48 hours

3.27.2 In the case of river sea passenger vessels certified to carry more than one hundred passengers and performing voyage the duration of which in ordinary circumstance does not exceed 48 hours there shall be carried material for the erection of a temporary hospital. The area reserved for such hospital shall be not less than 7.4 sq. metres,

3.27.3 The portion of the upper deck on which such temporary hospital may be erected shall be measured off and demarcated to the satisfaction of the Administration.

3.28 Provision of Medical Stores

3.28.1 Every river sea passenger vessel carrying more than 100 passengers shall carry medicine, medical stores disinfectants, and surgical appliances prescribed by the Merchant shipping (Medicines, Medical Stores and Appliances) Rules, 1966.

3.28.2 The medical stores and surgical appliances shall be inspected once a year by the Port Health Officer, who if satisfied that they are as prescribed and in good condition, shall issue a certificate to that effect to the Master of the vessel.

3.29 Latrines

3.29.1 Every river sea passenger vessel shall be provided with latrines for exclusive use of passengers in accordance with the following scale, namely:-

- (i) In the case of river sea passenger vessels performing voyages the duration of which in ordinary circumstances exceeds 24 hours, not less than five latrines shall be provided for every one hundred passengers or part thereof up to four hundred passengers
- (ii) In the case of river sea passenger vessels performing voyages the duration of which in ordinary circumstances does not exceed 24 hours, there shall be provided four latrines for the first hundred passengers and two latrines for every hundred passengers or part thereof upto 400 passengers

3.29.2 Latrines shall be situated above the between decks, forward and aft, at convenient and easily accessible places in all weathers. Latrines shall not be provided in between decks unless an efficient systems of trunked mechanical ventilation and exhaust ventilation is provided in such spaces.

3.29.3 Separate latrines shall be set part for the exclusive use for male and female passengers and fitted with entirely separate entrances. All latrines shall be clearly marked and lighted to indicate whether they are intended for use of male for as the case may be female passengers.

3.29.4 Latrines provided for passengers shall not be used by the crew when passengers are on board.

3.29.5 The compartment containing latrine shall be enclosed by steel bulkheads and shall be provided with exhaust ventilation to the open air. Access to the latrines shall be from passage ways or open spaces. Wherever possible, a lobby shall be provided at the entrance. Where such arrangement is not practicable, a self-closing door shall be provided except where the entrance is from an open deck. The entrance shall be adequately screened to secure privacy.

3.30 Wash places and baths

3.30.1 In river sea passenger vessels performing voyages the duration of which exceeds 48 hours there shall be provided for the exclusive use of passengers washing facilities at the following scales, namely :-

- (i) One wash basin or sink with running cold fresh water for every 25 passengers; and
- (ii) One water rap or shower for bathing for every 25 passengers or part thereof. At least one tap or shower shall also be fitted to supply running hot water and so regulated as to prevent scalding.

3.30.2 Every river sea passenger vessel performing a voyage the duration of which is ordinary circumstances is less than 48 hours but not less than 24 hours shall be provided with wash basins, taps or showers at half the prescribed rate.

3.30.3 Every river sea passenger vessel performing a voyage the duration of which does into exceed 24 hours shall be provided wash place for male passengers and one for female passengers. Each such wash basins or sinks with running cold fresh water. Where the voyages exceed 12 hours duration, showers or taps with fresh running water shall be provided in each wash place.

3.30.4 Every wash place provided in accordance with this notification shall be provided with direct access from the passenger accommodation and shall be adequately screened from public view. There shall be an adequate supply of water and taps and valves shall be marked indicating whether the water is fresh water or salt water and whether it is hot or cold. There shall be an adequate means of ventilation for each wash place.

3.30.5 At least one wash place shall be set apart for the exclusive use of female passengers.

3.31 Dressing rooms

3.31.1 In every river sea passenger vessel performing a voyage the duration of which in ordinary circumstance exceeds 48 hours there shall be provided two dressing room, one for male passengers and the other for female passengers, fitted with mirrors and seats.

3.31.2 The dressing rooms shall be adjacent to the wash places and shall be provided with an inter-communicating door or passage between the wash place and the dressing room.

3.31.3 The superficial area of each dressing room shall be not less than 2.22 sq. metres. Where the dressing room is not immediately adjacent to the wash place, one wash basin shall be provided with a tap and an adequate supply of fresh water in the dressing room.

3.32 Supply of food, fuel and water

3.32.1 Every passenger on voyages exceeding 24 hours shall have provisions for food, beverages and drinking water to the passengers.

3.32.2 In no case a passenger shall be permitted to cook food on board.

3.32.3 There shall be fresh water of not less than 22.5 litres per day supplied to passengers for all purposes inclusive of the quantity necessary for drinking.

3.32.4 Fresh water may be carried in double bottom tanks or in other tanks fitted above double bottoms or any other tanks fitted for this purpose.

3.32.5 All fresh water tanks shall be cleaned, cement washed (or, if coated with bituminous plastic or other proprietary composition, re-coated where necessary) and aired and disinfected at intervals not exceeding 12 months. In addition, the tanks shall be thoroughly pumped out, hosed and disinfected prior to refilling at six months intervals. The disinfection shall, wherever possible, be carried out under the supervision of the Port health Officer.

3.32.6 There shall be provided on every deck used by passengers, efficient means for the regular supply of cold, fresh and portable drinking water suitably distributed in the passenger spaces. The minimum number of such supply station shall be as follows :-

Length of vessel	Minimum number of supply station
Less than 30 metres	2
30 metres and above but less than 60 metres	3
60 metres and above but less than 100 metres	4
100 metres and above but less than 150 metres	8
150 metres and above	10

3.33 Dining spaces

3.33.1 Every river sea passenger vessels engaged on voyages more than 48 hrs shall be provided with a dining space or spaces equipped with sufficient number of tables with chairs or benches.

3.33.2 Suitable wash basins for the exclusive use of passengers screened off from dining spaces shall be provided.

3.34 Guard rails and stanchions

3.34.1 All river sea passenger vessels carrying passengers shall be provided with bulwarks or guard rails on every deck to which the passengers have access.

3.34.2 Such bulwarks or guard rails shall be not less than 107 centimeters high, measured from the top of the deck to the top of the uppermost rail. The rails shall be not more than 230 millimeters apart unless strong netting is provided.

3.34.3 Where bulwarks are fitted, the freeing ports shall be fitted with suitable grids for protection of passengers.

3.35 Galley:

3.35.1 If galley is provided, same shall be provided with an electric cooking range of adequate capacity.

3.35.2 Galley shall be provided with a ventilation system with an inlet having 20 air changes and exhaust having 40 air changes.

3.35.3 No oil fired cooking ranges or open flame appliances are permitted in galley.

Annex: 4 Construction Rules

(Stipulations in exemption of Section 284 and 311 of M.S. Act and rules made there under)

PART A : Construction - Structure, Loadline, Subdivision and Stability, Machinery, Bilge Systems, and Electrical Installations

GENERAL

4.1 Applicability

4.1.1 These requirements are applicable to both Type 3 & Type 4 river-sea passenger vessels under this Notification with respect to Structure, Strength, Freeboard, Subdivision and Stability, Machinery, Bilge Systems, and Electrical Installations.

STRUCTURAL ARRANGEMENT

4.2 Strength and structural arrangement

4.2.1 The structural strength of every river sea passenger vessel shall be sufficient for the service for which the vessel is intended.

4.2.2 All river-sea passenger vessels shall be constructed and maintained in compliance with the structural requirements of a recognized organization (RO) for the intended operation. River-sea passenger vessels shall be classed with a RO recognized by the Administration for the purposes of undertaking the operation envisaged under this notification.

4.3 Watertight sub-division and Damage Stability

4.3.1 All River-sea passenger vessels shall be sub-divided into compartments and such compartments shall be water-tight up to the bulkhead deck. The maximum length of such watertight compartments shall be calculated in accordance with such of the provisions of the Appendix 1 to this Annex, as are applicable to the ship. Every other portion of the internal structure of the ship which affects the efficiency of its sub-divisions shall be water-tight and shall be of such design as is capable of maintaining the integrity of the sub-division.

Damage stability of Type 3 and Type 4 River-Sea Passenger Vessels shall be assessed as prescribed in Appendix 1.

For assessment of Damage stability and watertight integrity of ro-ro Passenger ships, the relevant provisions of SOLAS, as applicable on the date of construction, shall apply.

4.3.2 Damage stability information shall provide the Master with a simple and easily understandable way of assessing the vessel's survivability in all damage cases involving a compartment or group of compartments. In every river sea passenger vessel there shall be permanently exhibited for the information of the officer in charge of the vessel plans showing clearly for each deck and hold the boundaries of the watertight compartments, the openings therein, the means of closing such openings, the position of the controls and the arrangements for the correction of any list due to flooding.

4.3.3 All river-sea passenger vessels shall be provided with Damage control Plan and Booklet prepared according to MSC.1/Circ.1245.

4.3.4 All vessels shall be provided with a collision bulkhead which shall be fitted between the following limits of distance X_c from the forward perpendicular:

$X_{c,min}$ = $0.05LL - XR$ [m] for $L < 200$ [m].
 = $10 - XR$ [m] for $L \geq 200$ [m].

$$X_{c,max} = 0.05 LL - XR + 3 \text{ [m] for } L < 100 \text{ [m].}$$

$$= 0.08 LL - XR \text{ [m] for } L \geq 100 \text{ [m].}$$

For vessels with ordinary bow shape;
 $XR = 0$

For vessels having any part of the underwater body extending forward of the forward perpendicular e.g., a bulbous bow;

XR = the least of :
 - $G/2$;
 - $0.015 LL$ and
 - 3.0 [m] .

where,

G = the distance from forward perpendicular to the forward end of the protruded part [m]

LL = the load line length of the vessel [m], as per International Load Line Convention.

4.3.5 In a river sea passenger vessel which has long forward superstructure, the fore peak bulkhead shall be extended weather-tight to the deck next above the bulkhead deck. Such extension may not be fitted directly over the bulkhead below, if its length is at least 5 per cent of the length of the vessel from the forward perpendicular and that part of the bulkhead deck which forms the step has been made effectively watertight. The plating and stiffeners of such extension shall be constructed as if the extension formed a part of the bulkhead immediately below the bulkhead deck. The extension shall be so arranged as to preclude the possibility of the bow door causing damage to it in the case of damage to, or detachment of, a bow door.

4.3.6 Where bow doors are fitted and a sloping loading ramp forms part of the extension of the collision bulkhead above the bulkhead deck the ramp shall be weather tight over its complete length. Ramps not meeting the above requirements shall be disregarded as an extension of the collision bulkhead.

4.3.7 Bulkheads shall be fitted separating the machinery space from cargo and accommodation spaces forward and aft and made watertight up to the bulkhead deck. An after peak bulkhead shall also be fitted and made watertight up to the bulkhead deck. The after peak bulkhead may, however, be stepped below the bulkhead deck, provided the degree of safety of the vessel as regards subdivision is not thereby diminished.

4.3.8 Cofferdams shall be provided between certain tanks, so as to separate the compartments for carrying fuel or lubricating oil from each other and for separating all such oil tanks from tanks carrying fresh water. Construction and arrangement of these cofferdams shall be as per the rules of a Classification Society.

4.3.9 All vessels are to have an after peak bulkhead generally enclosing the stern tube and rudder trunk in a watertight compartment. In twin screw vessels where the bossing ends forward of the after peak bulkhead, the stern tubes are to be enclosed in suitable watertight spaces inside or aft of the shaft tunnels. In all cases, the stern gland is to be situated in a watertight shaft tunnel or other watertight space separate from the stern tube compartment and of such volume that if flooded by leakage through the stern gland, the bulkhead deck will not be immersed.

4.4 Double bottoms

4.4.1 All vessels shall be fitted with watertight double bottoms which shall be atleast of the following extent:

- (a) In vessels of 50 metres or more but below 61 metres in length, the double bottom shall be fitted at least from the machinery space to the fore-peak bulkhead or as near thereto as practicable.

- (b) In vessels of 61 metres or more but below 76 metres in length, a double bottom shall be fitted at least outside the machinery space and it shall extend to the forepeak and after-peak bulkheads or as near thereto as practicable.
- (c) In vessels of 76 metres or more in length the double bottom shall be fitted amidships and shall extend to the forepeak and after-peak bulkheads or as near thereto as practicable.

4.4.2 Where a double bottom is required by to be fitted the inner bottom shall be continued out to the ship's sides in such a manner as to protect the bottom to the turn of the bilge. Such protection will be deemed satisfactory if the inner bottom is not lower at any part than a plane parallel with the keel line and which is located not less than a vertical distance h measured from the keel line, as calculated by the formula:

$$h = B/20$$

However, in no case is the value of h to be less than 760 mm, and need not to be taken as more than 2,000 mm.

4.4.3 Small wells constructed in the double bottom in connection with drainage arrangements of holds, etc., shall not extend downward more than necessary. A well extending to the outer bottom is, however, permitted at the after end of the shaft tunnel. Other wells (e.g., for lubricating oil under main engines) may be permitted by the Administration if satisfied that the arrangements give protection equivalent to that afforded by a double bottom complying with this regulation. In no case shall the vertical distance from the bottom of such a well to a plane coinciding with the keel line be less than 500 mm.

4.4.4 No well shall be constructed in the double bottom for any purpose other than drainage. Provided that the Administration may exempt any vessel from the requirement of the well if it is satisfied that such well will not diminish the protection given by the double bottom.

4.4.5 Nothing in this notification shall require a double bottom to be fitted in way of watertight compartments of moderate size used exclusively for the carriage of liquids if the safety of the vessel is not likely to be impaired by reason of the absence of a double bottom in that position in the event of bottom or side damage.

4.5 Manholes and lightening holes in double bottoms

4.5.1 Manholes and lightening holes shall be provided in all non-watertight members of the double bottom tank to ensure ventilation and easy access to the various parts of the double bottom. The number of manholes in tank tops shall be reduced to the minimum compatible with securing free ventilation and ready access. Care shall be taken in locating manholes so to avoid the possibility of inter connection of main sub-division compartments to the double bottom.

4.5.2 Manholes shall be constructed as per National/International standards and tested for structural integrity and water tightness.

4.6 Watertight recesses and trunk ways

4.6.1 Every recess and trunk way required by this notification to be watertight shall be so constructed as to provided strength and stiffness to all the parts not less than that required for watertight bulkheads at corresponding level.

4.7 Watertight tunnels

4.7.1 Every tunnel required by this notification to be watertight shall be constructed with plating and stiffeners of adequate strength in compliance with the requirements of the rules of a classification Society.

4.7.2 Every inner skin required by these rules to be watertight be of such strength and construction as required by the rules of the Recognized Organization and should in general be able to withstand a head of water up to the margin line.

4.8 Testing of watertight bulkheads, etc-

4.8.1 Testing watertight spaces not intended to hold liquids and cargo holds intended to hold ballast by filling them with water is not compulsory. When testing by filling with water is not carried out, a hose test shall be carried out where practicable. This test shall be carried out in the most advanced stage of the fitting out of the vessel. Where a hose test is not practicable because of possible damage to machinery, electrical equipment insulation or outfitting items, it may be replaced by a careful visual examination of welded connections, supported where deemed necessary by means such as a dye penetrant test or an ultrasonic leak test or an equivalent test. In any case a thorough inspection of the watertight bulkheads shall be carried out.

4.8.2 All watertight bulkheads, decks and tunnels shall be hose tested at a pressure of not less than 2.2kg/cm².

4.8.3 The forepeak, double bottom (including duct keels) and inner skins shall be tested with a head of water at least up to the bulkhead deck.

4.8.4 Tanks which are intended to hold liquids, and which form part of the watertight subdivision of the vessel, shall be tested for tightness and structural strength with water to a head corresponding to its design pressure. The water head is in no case to be less than the top of the air pipes or to a level of 2.4 m above the top of the tank, whichever is the greater.

4.8.5 The tests referred to in the paragraphs above are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required depending on the height to which the liquid has access in the tank or its connections.

4.9 Openings in watertight bulkheads

4.9.1 The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the design and proper working of the vessel, satisfactory means shall be provided for closing these openings.

4.9.2 Where pipes, scuppers, electric cables, etc., are carried through watertight bulkheads, arrangements shall be made to ensure the watertight integrity of the bulkheads.

4.9.3 Valves not forming part of a piping system shall not be permitted in watertight bulkheads.

4.9.4 Lead or other heat-sensitive materials shall not be used in systems which penetrate watertight bulkheads, where deterioration of such systems in the event of fire would impair the watertight integrity of the bulkheads.

4.9.5 In any such vessel, trunks installed in connection with ventilation, forced draft or refrigerating system shall not pierce such bulkheads or structures as far as practicable.

4.9.6 In any such vessels doorways, manholes or access openings shall not be fitted in the collision bulkhead below the margin line or in any other bulkhead which is required by these rules to be Watertight and which divides a cargo space from another cargo space, or from a permanent or reserve bunker, except as provided in para 4.9.27

4.9.7 Except as provided in para 4.9.8, the collision bulkhead may be pierced below the margin line by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screw down valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead. The Administration may, however, authorize the fitting of this valve on the after side of the collision bulkhead provided that the valve is

readily accessible under all service conditions and the space in which it is located is not a cargo space.

4.9.8 If the forepeak is divided to hold two different kinds of liquids the Administration may allow the collision bulkhead to be pierced below the margin line by two pipes, provided the Administration is satisfied that there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the vessel is maintained.

4.9.9 Watertight doors fitted in bulkheads between permanent and reserve bulkheads shall always be accessible, except for between-deck bunker doors.

4.9.10 Subject to paragraph 4.9.29, Not more than one door, apart from the doors to bunkers and shaft tunnels, may be fitted in each main transverse bulkhead within spaces containing the main and auxiliary propulsion machinery including boilers serving the needs of propulsion and all permanent bunkers.

Where two or more shafts are fitted the tunnels shall be connected by an intercommunicating passage. There shall be only one door between the machinery space and the tunnel spaces where two shafts are fitted and only two doors where there are more than two shafts. All these doors shall be of the sliding type and shall be so located as to have their sills as high as practicable. The hand gear for operating these doors from above the bulkhead deck shall be situated outside the spaces containing the machinery.

4.9.11 Watertight doors, except as provided in para 4.9.27, shall be power-operated sliding doors complying with the requirements of para 4.9.15 capable of being closed simultaneously from the central operating console at the navigation bridge in not more than 60 s with the vessel in the upright position.

4.9.12 The means of operation whether by power or by hand of any power operated sliding door shall be capable of closing the door with the vessel listed to 15 degrees either way. Consideration shall also be given to the forces which may act on their side of the door as may be experienced when water is flowing through the opening applying a static head equivalent to the water height of at least 1 m above the sill on the centreline of the door.

4.9.13 Watertight door controls, including hydraulic piping and electric cables, shall be kept as close as practicable to the bulkhead in which the doors are fitted, in order to minimize the likelihood of them being involved in any damage which the vessel may sustain. The positioning of watertight doors and their controls shall be such that if the vessel sustains damage within one fifth of the breadth of the vessel, such distance being measured at right angles to the centreline at the level of the deepest subdivision draught, the operation of the watertight doors clear of the damaged portion of the vessel is not impaired.

4.9.14 All power-operated sliding watertight doors shall be provided with means of indication which will show at all remote operating positions whether the doors are open or closed. Remote operating positions shall only be at the navigation bridge as required by para 4.9.15.5 and at the location where hand operation above the bulkhead deck is required by para 4.9.15.4.

4.9.15 Each power-operated sliding watertight door:

- .1 shall have a vertical or horizontal motion;
- .2 shall be normally limited to a maximum clear opening width of 1.2 m. The Administration may permit larger doors only to the extent considered necessary for the effective operation of the vessel provided that other safety measures, including the following, are taken into consideration:
 - .2.1 special consideration shall be given to the strength of the door and its closing appliances in order to prevent leakages; and
 - .2.2 the door shall be located inboard the damage zone B/5;
- .3 shall be fitted with the necessary equipment to open and close the door using electric power, hydraulic power, or any other form of power that is acceptable to the Administration;

.4 shall be provided with an individual hand-operated mechanism. It shall be possible to open and close the door by hand at the door itself from either side, and in addition, close the door from an accessible position above the bulkhead deck with an all round crank motion or some other movement providing the same degree of safety acceptable to the Administration. Direction of rotation or other movement is to be clearly indicated at all operating positions. The time necessary for the complete closure of the door, when operating by hand gear, shall not exceed 90 s with the vessel in the upright position;

.5 shall be provided with controls for opening and closing the door by power from both sides of the door and also for closing the door by power from the central operating console at the navigation bridge;

.6 shall be provided with an audible alarm, distinct from any other alarm in the area, which will sound whenever the door is closed remotely by power and which shall sound for at least 5 s but no more than 10 s before the door begins to move and shall continue sounding until the door is completely closed. In the case of remote hand operation it is sufficient for the audible alarm to sound only when the door is moving. Additionally, in passenger areas and areas of high ambient noise the Administration may require the audible alarm to be supplemented by an intermittent visual signal at the door; and

.7 shall have an approximately uniform rate of closure under power. The closure time, from the time the door begins to move to the time it reaches the completely closed position shall in no case be less than 20 s or more than 40 s with the vessel in the upright position.

4.9.16 The electrical power required for power-operated sliding watertight doors shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck. The associated control, indication and alarm circuits shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck and be capable of being automatically supplied by the transitional source of emergency electrical power in the event of failure of either the main or emergency source of electrical power.

4.9.17 Power-operated sliding watertight doors shall have either:

.1 a centralized hydraulic system with two independent power sources each consisting of a motor and pump capable of simultaneously closing all doors. In addition, there shall be for the whole installation hydraulic accumulators of sufficient capacity to operate all the doors at least three times, i.e. closed-open-closed, against an adverse list of 15 degree. This operating cycle shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. The power operating system shall be designed to minimize the possibility of having a single failure in the hydraulic piping adversely affect the operation of more than one door. The hydraulic system shall be provided with a low-level alarm for hydraulic fluid reservoirs serving the power-operated system and a low gas pressure alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators. These alarms are to be audible and visual and shall be situated on the central operating console at the navigation bridge; or

.2 an independent hydraulic system for each door with each power source consisting of a motor and pump capable of opening and closing the door. In addition, there shall be a hydraulic accumulator of sufficient capacity to operate the door at least three times, i.e. closed-open-closed, against an adverse list of 15 degree. This operating cycle shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. A low gas pressure group alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators shall be provided at the central operating console on the navigation bridge. Loss of stored energy indication at each local operating position shall also be provided; or

.3 an independent electrical system and motor for each door with each power source consisting of a motor capable of opening and closing the door. The power source shall be capable of being automatically supplied by the transitional source of emergency electrical power - in the event of failure of either the main or emergency source of electrical power and

with sufficient capacity to operate the door at least three times, i.e. closed-open-closed, against an adverse list of 15 degree.

For the systems specified in paras 4.9.17.1, 4.9.17.2 and 4.9.17.3, provision should be made as follows:

Power systems for power-operated watertight sliding doors shall be separate from any other power system. A single failure in the electric or hydraulic power-operated systems excluding the hydraulic actuator shall not prevent the hand operation of any door.

4.9.18 Control handles shall be provided at each side of the bulkhead at a minimum height of 1.6m above the floor and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the power closing mechanism in operation accidentally. The direction of movement of the handles in opening and closing the door shall be in the direction of door movement and shall be clearly indicated.

4.9.19 As far as practicable, electrical equipment and components for watertight doors shall be situated above the bulkhead deck and outside hazardous areas and spaces.

4.9.20 The enclosures of electrical components necessarily situated below the bulkhead deck shall provide suitable protection against the ingress of water.

4.9.21 Electric power, control, indication and alarm circuits shall be protected against fault in such a way that a failure in one door circuit will not cause a failure in any other door circuit. Short circuits or other faults in the alarm or indicator circuits of a door shall not result in a loss of power operation of that door. Arrangements shall be such that leakage of water into the electrical equipment located below the bulkhead deck will not cause the door to open.

4.9.22 A single electrical failure in the power operating or control system of a power-operated sliding watertight door shall not result in a closed door opening. Availability of the power supply should be continuously monitored at a point in the electrical circuit as near as practicable to each of the motors required by para 4.9.17. Loss of any such power supply should activate an audible and visual alarm at the central operating console at the navigation bridge.

4.9.23 The central operating console at the navigation bridge shall have a "master mode" switch with two modes of control: a "local control" mode which shall allow any door to be locally opened and locally closed after use without automatic closure, and a "doors closed" mode which shall automatically close any door that is open. The "doors closed" mode shall automatically close any door that is open. The "doors closed" mode shall permit doors to be opened locally and shall automatically re-close the doors upon release of the local control mechanism. The "master mode" switch shall normally be in the "local control" mode. The "doors closed" mode shall only be used in an emergency or for testing purposes. Special consideration shall be given to the reliability of the "master mode" switch.

4.9.24 The central operating console at the navigation bridge shall be provided with a diagram showing the location of each door, with visual indicators to show whether each door is open or closed. A red light shall indicate a door is fully open and a green light shall indicate a door is fully closed. When the door is closed remotely the red light shall indicate the intermediate position by flashing. The indicating circuit shall be independent of the control circuit for each door.

4.9.25 It shall not be possible to remotely open any door from the central operating console.

4.9.26 If the Administration is satisfied that such doors are essential, watertight doors of satisfactory construction may be fitted in watertight bulkheads dividing cargo between deck spaces. Such doors may be hinged, rolling or sliding doors but shall not be remotely controlled. They shall be fitted at the highest level and as far from the shell plating as practicable, but in no case shall the outboard vertical edges be situated at a distance from the shell plating which is less than one fifth of the breadth of the

vessel, such distance being measured at right angles to the centreline at the level of the deepest subdivision draught.

4.9.27 If the Administration is satisfied that such doors are essential, watertight doors of satisfactory construction may be fitted in watertight bulkheads dividing cargo between deck spaces. Such doors may be hinged, rolling or sliding doors but shall not be remotely controlled. They shall be fitted at the highest level and as far from the shell plating as practicable, but in no case shall the outboard vertical edges be situated at a distance from the shell plating which is less than one fifth of the breadth of the vessel, such distance being measured at right angles to the centreline at the level of the deepest subdivision draught.

4.9.28 Should any such door be accessible during the voyage, it shall be fitted with a device which prevents unauthorized opening. When it is proposed to fit such doors, the number and arrangements shall receive the special consideration of the Administration.

4.9.29 Portable plates on bulkheads shall not be permitted except in machinery spaces. The Administration may permit not more than one power-operated sliding watertight door in each watertight bulkhead larger than those specified in para4.9.15.2 to be substituted for these portable plates, provided these doors are intended to remain closed during navigation except in case of urgent necessity at the discretion of the master. These doors need not meet the requirements of para4.9.15.4 regarding complete closure by hand-operated gear in 90 s.

4.9.30.1 Where trunkways or tunnels for access from crew accommodation to the stokehold, for piping, or for any other purpose are carried through watertight bulkheads, they shall be watertight. The access to at least one end of each such tunnel or trunkway, if used as a passage at sea, shall be through a trunk extending watertight to a height sufficient to permit access above the bulkhead deck. The access to the other end of the trunkway or tunnel may be through a watertight door of the type required by its location in the vessel. Such trunkways or tunnels shall not extend through the first subdivision bulkhead abaft the collision bulkhead.

4.9.30.2 Where it is proposed to fit tunnels piercing watertight bulkheads, these shall receive the special consideration of the Administration.

4.9.30.3 Where trunk ways in connection with refrigerated cargo and ventilation or forced draught trunks are carried through more than one watertight bulkhead, the means of closure at such openings shall be operated by power and be capable of being closed from a central position situated above the bulkhead deck.

4.10 Opening in shell-plating below the margin line of river sea passenger vessels (Side Scuttles)

4.10.1 The number of side scuttles, scuppers, sanitary discharges and other opening in the shell-plating below the margin line shall be the minimum compatible with the design and proper working of the vessel.

4.10.2 The arrangement for closing any opening in the shell-plating shall be consistent with the intended purposes, and shall be such as to ensure water tightness.

4.10.3 (a) In any such river sea passenger vessel, if in between deck spaces the sills of any side scuttles are below the line drawn parallel to the bulkhead deck at side with its lowest point 2-1/2 per cent of the breadth of the vessel above the deepest sub-division load line, every side scuttle in such between deck shall be of a non-opening type. If the sills of all the side scuttles are above the aforesaid line every side scuttle in such between decks shall either be of a non-opening type or incapable of being opened except by a person authorized to do so by the master of the vessel. No side scuttle shall be so fitted that its sill is below the deepest sub-division load line.

(b) Where, in a between deck, the sills of any of the side scuttles are below a line drawn parallel to the bulkhead deck at side and having its lowest point 1.37 metres plus 2-1/2 per cent of the breadth of the vessel above the water when the vessel departs from a port, all the side scuttles in that tween deck shall be closed watertight and locked before the vessel leaves port and shall not be opened before the vessel arrives at the next port. The time of opening and closing such side scuttles shall be entered in the log-book.

4.10.4 Side scuttles below the margin line shall be of a non-opening type.

4.10.5 Every scuttle below the margin line shall be fitted with an efficient hinged dead light permanently attached so that it can be readily and effectively closed and secured watertight.

4.10.6 (a) Side scuttle shall not be fitted below the margin line in any space which is appropriate solely for the carriage of cargo or coal.

(b) Side scuttles may be fitted in spaces appropriated alternatively to the carriage of cargo or passengers. Any such side scuttle shall be of such construction as will effectively prevent any person opening it or its dead light without the consent of the Master. If cargo is carried in such spaces the side scuttles and the dead lights shall be closed and locked before the cargo is shipped and such and such closing and locking shall be recorded in the Official Log Book.

4.10.7 Automatic ventilating side scuttles shall not be fitted below the margin line in the shell plating of any vessel.

4.10.8 Side scuttle fitted above the margin line and in the superstructures fitted with efficient and permanently attached doors shall have hinged dead lights.

4.10.9 Side scuttle fitted in the first tier of deck houses or round houses having access to spaces below the margin line fitted with efficient and permanently attached doors shall have hinged inside deadlights.

4.10.10 In order enclosed spaces side scuttles and window may be provided with portable dead lights plugs or shutters of efficient construction.

4.11 Openings in shell plating below the margin line of River-Sea Passenger Vessels (Scuppers, sanitary discharges and similar openings)

4.11.1 Inlets and discharges led through the shell-plating below the margin line shall be fitted with efficient and readily accessible means for preventing the accidental admission of water into the vessel.

4.11.2 The number of such discharges shall be reduced to a minimum either by making each discharge serve for as many as possible of the sanitary and other pipes or in any other satisfactory manner. Lead or other heat sensitive material shall not be used for pipes fitted outboard of shell valves in inlets or discharges or in any other place where the deterioration of such pipes in the event fire would give rise to danger of flooding.

4.11.3 Each discharge led through the shell-plating from spaces below the margin line not being a discharge in connection with machinery shall be provided with either-

(a) One automatic non-return valve fitted with a positive means by which it can always be closed from a readily accessible position above the bulkhead deck and with an indicator at the position from which the valve may be closed to show whether the valve is open or closed; or

(b) two automatic non-return valves, the upper of which is so situated above the vessel's deepest sub-division load water line as to be always accessible for examination under service conditions and is of a horizontal balanced type which is normally closed.

4.11.4 Discharges pipes led through the shell-plating from within superstructure and deck houses fitted with hinged steel doors and gaskets and permanently attached to the bulkhead shall be fitted with an automatic non-return valve with a positive means of closing it from above the free board deck. Where the inboard end of the discharge pipe is more than 0.0 L distance from the Summer Load Water Line the Administration may exempt any vessel from provision of the positive means of closing.

4.11.5 Scuppers and discharges originating at any below the freeboard deck or less than 600 mm above the Summer Load Line shall be provided with a non-return valve at the shell. Such valve unless required by para 4.11.3 and 4.11.4 may not be provided if the piping is of substantial thickness.

4.11.6 Any valve fitted in compliance with the requirements of this notification, if it is a geared valve or the lower of two non-geared valves, shall be secured to the vessel's shell-plating.

4.11.7 All cocks and valves fitted below the margin line, the failure of which may affect the sub-division of the vessel, shall be made of steel, bronze or other equally efficient material. Ordinary cast iron shall not be used for such fittings.

4.11.8 Main and auxiliary inlets and discharges connected with machinery shall be fitted with readily accessible cocks or valves between the pipes and vessel's shell-plating or between the pipes and a fabricated box attached to the shell-plating. All such cocks or valves attached to such inlets or discharges and all fittings out-board thereof shall be made of steel, bronze or other suitable ductile material. If made of steel, such cocks and valves shall be protected against corrosion.

4.11.9 Discharges pipes led through the shell-plating below the margin line of any vessel shall not be fitted in direct line between the outboard opening and the connection.

4.11.10 All discharges pipes led through the shell-plating below the margin line and valve relating thereto shall be protected from damage.

4.11.11 Valves, cocks, discharge pipes and other similar fitting connected to the shell plating below the margin line shall be fitted on the doublers, welded on the inside of the shell plating. Studs for securing these fittings shall be screwed through the doubler but not through the shell plating.

4.11.12 Efficient means shall be provided for the drainage of all watertight decks below the margin line and any drainage pipe shall be so fitted with valves or arranged otherwise as to avoid the danger of water passing from a damaged to an undamaged compartment.

4.11.13 The inboard opening of every ash-shoot rubbish-shoot and other similar shoots shall be fitted with an efficient watertight cover and if such opening is situated below the margin line, it shall also be fitted with an automatic non-return valve in the shoot in a readily accessible position above the deepest sub-division load water line. The valve shall be of a horizontal balanced type normally closed and provided with a local means for securing it in a closed position. The requirements of this para shall not apply to ash ejectors and expellers, the inboard openings of which are in the vessels stokehold and necessarily below the deepest sub-division load water line. Such ejectors and expellers shall be fitted with means shall be capable for preventing water entering the vessel.

4.11.14 Gangways, cargo and coaling ports fitted below the margin line shall be of sufficient strength and its lowest point shall not below the vessel's deepest sub-division load water line. They shall be effectively kept closed and secured watertight before the vessel leaves port, and shall be kept closed during navigation.

4.12 Side and other openings above the margin line

4.12.1 Side scuttles, windows, gangway ports, cargo ports and other opening in the shell-plating above the margin line and their means of closing shall be of efficient design and construction and if sufficient strength, having regard to the spaces in which they are and their positions relative to the

deepest sub-division load water line. Construction and arrangement of such openings shall be as per the requirements of a Classification Society's Rules.

4.12.2 Efficient hinged inside deadlights which can be easily and secured watertight shall be provided for all side scuttles to spaces below the first deck above the bulkhead deck.

4.13 Construction and initial tests of watertight doors, side scuttles, etc.

4.13.1 In all vessels:

- .1 the design, materials and construction of all watertight doors, sidescuttles, gangway and cargo ports, valves, pipes, ash-chutes and rubbish-chutes referred to in these regulations shall be to the satisfaction of the Administration;
- .2 such valves, doors and mechanisms shall be suitably marked to ensure that they may be properly used to provide maximum safety; and
- .3 the frames of vertical watertight doors shall have no groove at the bottom in which dirt might lodge and prevent the door closing properly.

4.13.2 Watertight doors shall be tested by water pressure to a head of water up to the bulkhead deck. Where testing of individual doors is not carried out because of possible damage to insulation or outfitting items, testing of individual door may be replaced by a prototype pressure test of each type and size of door with a test pressure corresponding at least to the head required for the intended location. The prototype test shall be carried out before the door is fitted. The installation method and procedure for fitting the door on board shall correspond to that of the prototype test. When fitted on board, each door shall be checked for proper seating between the bulkhead, the frame and the door.

4.14 Construction and initial tests of watertight decks, trunks, etc.

4.14.1 Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels, and shall be constructed in compliance with the requirements the Rules of a Classification Society. The means used for making them watertight, and the arrangements adopted for closing openings in them, shall be to the satisfaction of the Administration. Watertight ventilators and trunks shall be carried at least up to the bulkhead deck in river sea passenger vessels and up to the freeboard deck in cargo vessels.

4.14.2 Where a ventilation trunk passing through a structure penetrates the bulkhead deck, the trunk shall be capable of withstanding the water pressure that may be present within the trunk.

4.13.3 Where all or part of the penetration of the bulkhead deck is on the main ro-ro deck, the trunk shall be capable of withstanding impact pressure due to internal water motions (sloshing) of water trapped on the ro-ro deck.

4.14.3 After completion, a hose or flooding test shall be applied to watertight decks and a hose test to watertight trunks, tunnels and ventilators.

4.15 Weather tight integrity and internal watertight integrity of river sea passenger vessels above the bulkhead deck

4.15.1 The Administration may require that all reasonable and practicable measures shall be taken to limit the entry and spread of water above the bulkhead deck. Such measures may include partial bulkheads or webs. When partial watertight bulkheads and webs are fitted on the bulkhead deck, above or in the immediate vicinity of watertight bulkheads, they shall have watertight shell and bulkhead deck connections so as to restrict the flow of water along the deck when the vessel is in a heeled damaged condition. Where the partial watertight bulkhead does not line up with the bulkhead below, the bulkhead deck between shall be made effectively watertight. Where openings, pipes, scuppers, electric cables etc. are carried through the partial watertight bulkheads or decks within the immersed part of the bulkhead deck, arrangements shall be made to ensure the watertight integrity of the structure above the bulkhead deck.

4.15.2 All openings in the exposed weather deck shall have coamings of ample height and strength and shall be provided with efficient means for expeditiously closing them weather tight. Weather tightness of exposed weather deck shall be provided as per the requirements specified in International Convention on Load Lines, 1966, as amended. Freeing ports, open rails and scuppers shall be fitted as necessary for rapidly clearing the weather deck of water under all weather conditions.

4.15.3 The open end of air pipes terminating within a superstructure shall be at least 1 m above the waterline when the vessel heels to an angle of 15 degree, or the maximum angle of heel during intermediate stages of flooding, as determined by direct calculation, whichever is the greater. Alternatively, air pipes from tanks other than oil tanks may discharge through the side of the superstructure. The provisions of this para are without prejudice to the provisions of the International Convention on Load Lines in force.

4.15.4 Side scuttles, gangway, cargo and fuelling ports and other means for closing openings in the shell plating above the bulkhead deck shall be of efficient design and construction and of sufficient strength having regard to the spaces in which they are fitted and their positions relative to the deepest subdivision draught.

4.15.5 Efficient inside deadlights, so arranged that they can be easily and effectively closed and secured watertight, shall be provided for all side scuttles to spaces below the first deck above the bulkhead deck.

4.15.6 For cargo loading doors, the relevant provisions of regulation SOLAS, as applicable on the date of construction of the ship, shall apply.

4.15.6 For ro-ro Passenger Ships, the relevant provisions of SOLAS, as applicable on the date of construction of the ship, shall apply.

4.16 Load Line, Freeboard and Conditions of Assignment.

4.16.1 Assignment of Load Line, and conditions of Assignment, for Type 3 and Type 4 river sea passenger vessels shall be in accordance with International Convention on Load Lines, 1966, as amended.

4.17 Sub-division Load lines

4.17.1 Every river sea passenger vessel shall be marked on its amidships with the sub-division load lines assigned to it by the Administration. The mark shall consist of horizontal lines 25 millimeters in breadth and 230 millimeters in length. The marks shall be painted in white or yellow on a dark ground or in black on a light ground and shall also be cut in or centre punched or indicated by welded bend on iron or steel vessels and cut into the planking on wood ships.

4.17.2 The sub-division load line shall be identified by the letter 'D'. If there is more than one sub-division load line indicating alternative conditions for carriages of passengers and cargo, the principal sub-division load line shall be identified by the letter 'D1' and the notations 'D2', 'D3', etc. for the alternative conditions of service.

4.17.3 The freeboard corresponding to each sub-division load line shall be measured at the same position and from the same deck lines as the freeboard determined by the International Convention on Load Lines 1966, as amended.

4.17.4 In no case may any sub-divisional Load Line be assigned and marked on the vessel's side above the deepest load line in salt water determined by the International Convention on Load Lines 1966, as amended.

4.17.5 A river sea passenger vessel shall not be so loaded as to submerge in salt water, when the vessel has no list, a sub-division load line mark appropriate to the particular voyage and condition of service.

4.18 Intact Stability

4.18.1, All river-sea passenger vessels shall comply with the intact stability requirements specified in the Intact Stability Code 2008 (2008 IS Code), as amended.

For Type 3 river sea passenger vessels, the value of steady wind pressure shall be taken as 168 Pa.

4.18.2 Every River-Sea Passenger Vessel shall be inclined upon its completion and the elements of stability determined. The inclining experiment shall be carried out in the presence of a surveyor of the Administration. The surveyor shall satisfy himself that the experiment is carried out in such a manner and under such conditions as will give reliable information and shall also take such steps as are necessary to satisfy himself as to the accuracy of the stability information derived there from.

4.18.3 Where extensive alternations and modifications are made to an existing vessel an inclining experiment shall be carried out and the elements of stability re-determined. The revised stability information shall be approved by the Administration.

4.18.4 At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found or anticipated.

4.19 Stability Data

4.19.1 The owner of every river sea passenger vessel shall provide for the guidance of the Master of the vessel information relating to the stability, loading and ballasting of the vessel.

4.19.2 The information shall be in the form of a booklet and shall be prepared in line with the guidance provided in Part B, Chapter 3 of the Intact Stability Code 2008, as amended. The stability information shall be approved by the Administration.

4.19.3 Where alterations affecting stability are made, revised stability calculations are to be prepared and submitted for approval. The revised stability information shall be re-approved by the Administration.

BILGE PUMPING ARRANGEMENTS

4.20 General

4.20.1 Every vessel shall be provided with an efficient pumping plant capable of pumping and draining out water from any watertight compartment, other than a space permanently appropriated for the carriage of fresh water, water ballast or oil for which other efficient means of pumping or drainage is provided. Such pumping arrangements shall be adequate under all practicable conditions after a casualty, whether the vessel remains upright or not. For this purpose, wing suction shall be provided except in narrow compartments at the ends of the vessel where a single suction may be sufficient. Efficient arrangement shall also be provided whereby water in any watertight compartment may find its way to the suction pipes.

4.20.2 Where the inner bottom plate extends to the vessels side, the bilge suction shall be led to wells placed at the wings. Such wells shall be not less than 0.17 m³ capacity and shall be constructed of steel plates.

4.20.3 Suitable scupper pipes shall be fitted for draining 'tween deck spaces'. Care shall be taken to ensure that between a deck of any watertight compartment does not drain into an adjacent watertight compartment.

4.20.4 Scupper pipes shall not be led into the machinery spaces or tunnel from adjacent compartments. Such scupper pipes may be led to a well constructed drain tank in the tunnel or machinery space but closed to these spaces. A bilge suction pipe with a non-return valve shall be provided from this tank to the bilge main. The air and sounding pipe to the tank shall be led above the bulkhead deck. Where one tank is used for the drainage of a number of compartments, the scupper pipes shall be fitted with screw down non-return valves.

4.20.5 Drains led from refrigerated spaces shall be fitted with liquid sealed traps. Where such drains are situated in the lower hold of a vessel, the drains shall be fitted with non-return valves. All scupper pipes passing through refrigerated compartments shall be suitably insulated. Liquid sealed traps shall be of adequate depth and provided with suitable access for cleaning and refilling with brine.

4.20.6 Where the Administration considers that provision of drainage would be undesirable, it may dispense with such arrangements, if satisfied that the safety of the vessel will not thereby be impaired.

4.21 Vessels of length 92 m and upwards

4.21.1 Every vessel of length 92 m and above shall have at least three power pumps connected to the bilge main, one of which may be driven by the main engine. Where the criterion numeral for the vessel is 30 or more, one independent power pump shall be provided in addition.

4.21.2 Sanitary, ballast and general service pumps may be acceptable as individual power bilge pumps if such pumps fitted with necessary connections to the bilge pumping system.

4.21.3 Where practicable, power bilge pumps shall be placed in separate watertight compartments and so arranged or situated that these different compartments may not simultaneously be flooded by damage to the same part of the vessel. If the engines and boilers are in two or more watertight compartments, the pumps available for bilge service shall be distributed throughout these compartments as far as possible.

4.21.4 The arrangements of pumps shall be such that at least one power pump is available for use in all ordinary circumstances in which a vessel may be flooded at sea. This requirement will be met if -

- (i) one of the required pumps is an efficient emergency pump of a submersible type having its source of power and the necessary controls situated above the bulkhead deck. Such pump and its source of power shall not be installed forward of the collision bulkhead or nearer to the side of the vessel than one-fifth of the breadth of the vessel measured at right angles to the centre line of the vessel at the level of the deepest sub-division load line; or
- (ii) the pumps and their sources of power are so disposed throughout the length of the vessel that under any condition of flooding which the vessel is required to withstand at least one pump in an undamaged compartment will be available.

4.22 Vessels of length less than 92 m.

4.22.1 Every river sea passenger vessel of length less than 92.0 metres shall be provided with pumps connected to the bilge main in accordance with the following table :-

Number of pumps

Length of vessel	Main Engine Driven Pump* Pump	Independent Power	Hand pumps†
Under 15 metres	1	-	One of the level type for each watertight compartment or one of the crank type.
15 metres and under 30 metres	1	1	One of the level type for each watertight compartment or one of the crank type.
30 metres and under 75 metres	1	1	One of the crank type.
75 metres and above	1	2	-

† The hand pump may be replaced by an independent power pump.

* The main engine driven pump may be replaced by an independent power pump.

4.23 Requirements for bilge pumps and bilge suction

4.23.1 Every bilge pump shall be self-priming unless efficient means of priming are provided. For the is purposes a central priming system of a vacuum crating apparatus may be acceptable subject to the condition that details of any such system shall be submitted to the Administration for prior approval. Every such pump other than a hand pump of the lever type and any pump provided for the fore or after peak compartments shall, whether operated by hand by power, be so arranged as to be capable of drawing water from any space required to be drained by this notification.

4.23.2 Every power bilge pump shall be capable of giving a speed of water of not less than 122 metres per minute through the vessel's main bilge pipe. Every power bilge pump shall have a direct suction from the space in which it is situated provided that not more than two direct suction shall be required in any one space where two or more direct suction are provided there shall be at least one on the port side and one on the starboard side. Every direct suction in the machinery space shall be of a diameter not less than that of the vessel's main bilge line.

4.23.3 In addition to the direct bilge suction or suction required by this notification, there shall be provided in the machinery space a direct suction from the main circulating pump leading to the lowest drainage level of the machinery space and fitted with non-return valve. The diameter of this direct suction pipe shall be at least two-thirds the diameter of the pump inlet in the case of steam vessels and of the same diameter as the pump inlet in the case of motor vessels. Where the main circulating pump is not suitable for this purpose, the Administration may in its place permit the provision of the direct emergency bilge suction led from the larges available independent power driven pump to the lowest drainage level of the machinery space. The capacity of the pump so connected shall exceed that of a required bilge pump by an amount as considered satisfactory by the Administration. The open end of such suction or strainers, if any, attached thereto shall be accessible for cleaning. If there is no watertight bulk head separating the boiler room from the engine room, a direct discharge overboard shall be fitted from one of the aforesaid pumps. Alternatively, a bypass may be fitted to the circulating pump discharges.

4.23.4 Hand bilge pumps shall be workable from above the bulkhead deck and shall be so arranged that the bucket and the valves can be withdrawn for examination and overhauling under flooding conditions.

4.24 Arrangement of bilge pipes

4.24.1 All pipes from bilge pumps for draining cargo or machinery spaces shall be entirely distinct from pipes which may be used for filling or emptying spaces where water is carried.

4.24.2 All bilge pipes used in or under coal bunkers or fuel storage tanks on in boiler or machinery spaces including spaces in which oil settling tanks or oil fuel pumping units are situated shall be of steel or other approved material.

4.24.3 Bilge suction pipes shall not be led through oil tanks unless the pipes are enclosed in an oil-tight trunk way. Such pipes shall not be led through double bottom tanks.

4.24.4 Bilge pipes shall be made with flanged joint and shall be thoroughly secured in position and protected, where necessary against risk of damage. Efficient expansion joints or bends shall be provided in each line of pipe.

4.25 Diameter of bilge suction pipes

4.1.25.1 (a) The diameter of the bilge main shall be calculated according to the following formulae, namely :-

$$dm = 1.68\sqrt{L(B + D)} + 25 \text{ [mm]}$$

where, dm = the internal diameter of the bilge main in millimeters.

L = the length of the vessel in meters.

b = the breadth of the vessel in meters.

D = the moulded depth of the vessel to the bulk head deck in meters.

(b) The diameters of a branch bilge pipe shall be obtained from the following formulae, namely :-

$$db = 2.15\sqrt{C(B + D)} + 25 \text{ [mm]}$$

where, db = the internal diameters of the branch bilge suction pipe in millimeters.

L = the length of the compartment in meters.

4.1.25.2 No main bilge suction pipe shall be less than 62.5 millimeters in bore and no branch suction pipe shall be less than 50 millimeters or more than 100 millimeters in bore.

The capacity of the each bilge pump may be found by the following formula :

$$Q = 5.75 \times 10^{-3} \times dm^2 \text{ [m}^3\text{/hour]}$$

where,

Q = Capacity of pump [m³/hour];

dm = rule diameter of bilge main [mm].

4.26 Precautions against flooding through bilge pipes

4.26.1 In every river sea passenger vessel, the bilge and ballast pumping system shall be arranged as to prevent the possibility of water passing from the sea and from water ballast spaces into cargo and machinery spaces or from one watertight compartment to another. The bilge connection to any pump which is provided with suction from the sea or from water ballast spaces shall be made by means of either a non-return valve or a cock which cannot be open at the same time to the bilges and

to the sea or to the bilges and water ballast spaces. Valves in bilge distribution boxes shall be of a non-return type. A system of lock-up valves or blank flanges shall be provided for the purposes of preventing any deep tank in a vessel having bilge and ballast connections being inadvertently run up from the sea where it contains cargo or pumped out through the bilge pipe when it contains water ballast. Instructions for working of such arrangement shall be conspicuously displayed near the valves.

4.26.2 In every river sea passenger vessel, provision shall be made to prevent the flooding of any watertight compartment served by a bilge suction pipe in the event of the pipe being served or otherwise damaged by collision or grounding in any other watertight compartments.

4.26.3 The main bilge line on all vessels shall not be situated nearer to the ship's side than one-fifth of the breadth of ship measured at right angles to the center line of the ship at level of the deepest sub-division load water line, Where any bilge pump or its pipe connecting it to the bilge main is not so situated the arrangements shall be such that any damage to it will not put the other bilge pumping arrangements out of action. For this purpose, a non-return valve shall be provided in the pipe connection a non-return leading to the pump at its junction with the main bilge line.

4.27 Bilge, valves, cocks, etc.

4.27.1 All bilge distribution boxes, valves and cocks shall be in positions which are accessible at all times in ordinary circumstances and shall be so arranged that in the event of flooding, one of the bilge pumps may operate on any watertight compartment in the ship. If there is only one system of pipes common to all bilge pumps, the necessary cocks or valves for controlling the bilge suctions shall be capable of being operated from above the bulkhead deck. Where, in addition to the main bilge pumping system, an emergency bilge pumping system is installed it shall be independent of the main system and shall be so arranged that the pump is capable of being operated on any compartment under flooding conditions. In that case, only the cocks and valves necessary for the operation of the emergency system shall be capable of being operated from above the bulkhead deck.

4.27.2 In vessels of under 30 meters in length which are provided with a lever type meters in length which are provided with a lever type hand pump for each water-tight compartment the valves and cocks on the bilge main for controlling the bilge suctions need not be provided with arrangements for operating them from above the bulkhead deck.

4.27.3 The operating rod for bilge suction valves or cocks shall be led as directly as possible. Every such rod passing through a cargo or coal bunker space shall be protected against damage in such spaces.

4.27.4 Every valve or cock which is required by this rule to be operated from above the bulkhead deck shall have its control at its places of operation clearly marked to show the purpose it serve and how it may be opened or closed and means to indicate when it is open or when it is close.

4.28 Bilge mud boxes and strum boxes

4.28.1 Bilge suctions in the machinery space shall be led from readily accessible mud boxes places wherever practicable above the level of the working floor of such space. The boxes shall have straight tail pipes to the bilges and the covers secured in such a manner as will permit them to be readily opened and closed. The suction ends in hold spaces and tunnel wells shall be enclosed in strum boxes having perforations approximately 8 millimeters in diameter and the combined area of such perforations shall not be less than twice the area of the suction pipe end. Strum boxes shall be so constructed and arranged that they can be cleaned without breaking any joint of the suction pipe. The distance between the open end of the rail pipe and the bottom shall be adequate to allow a full flow of water and to facilitate cleaning.

4.29 Sounding pipes

4.29.1 In every vessel to which these rules apply, all tanks forming part of the structure of the vessel and all watertight space shall be provided with efficient arrangement for sounding which shall be protected where necessary against damage. Where such arrangement consist of sounding pipes, a thick steel doubling plate shall be securely fixed below each sounding plate shall be securely fixed below each sounding pipe for the sounding rod to strike upon. All sounding pipes shall extend to positions above the vessel's bulkhead deck which shall at all times be readily accessible. Sounding pipes for bilges, cofferdams and double bottoms tanks situated in the machinery spaces shall extend to the bulkhead deck unless the upper ends of the pipes are accessible in the machinery space in ordinary circumstances and are furnished with cocks having parallel plugs and permanently secured handles, so loaded that on being released the cock is automatically closed. The sounding pipes for bilges of insulated holds shall be insulated and be not less than 62.5 millimeters in diameter.

ELECTRICAL EQUIPMENT AND INSTALLATIONS

4.30 General

4.30.1 Electrical installations in river sea passenger vessel shall be such that the services essential for safety could be maintained under various emergency conditions and the safety of passengers, crew and vessel could be maintained from electrical hazards. The electrical installations including power generation, distribution, arrangement, protection and emergency source of power are to comply with the construction and classification rules of a Classification Society.

4.30.2 In all River-sea passenger vessels, a self-contained emergency source of electrical power complying with SOLAS requirements shall be provided. The emergency source of electrical power shall be capable of supplying power simultaneously to the services that are essential for the safety in an emergency for the period of not less than 12 hours.

4.31 Navigation lights-

4.31.1 Navigation lights shall be connected separately to a distribution board exclusively, provided for this purpose, and connected directly, or through transformers, to the main or emergency switchboard. The distribution board shall be accessible to the officer on watch.

4.31.2 Each navigation light shall be controlled and protected in each insulated pole by a switch and fuse or circuit breaker mounted on the distribution board. Each navigation light shall be provided with an automatic indicator giving audio and/or visual indication of failure of the light. If an alarm device alone is fitted it shall be connected to a primary or secondary battery. If a visual signal is used, and such signal is connected in service with the navigation light, means shall be provided to prevent extinction of navigation light due to failure of the signal.

4.31.3 Provision shall be made on the bridge for navigation lights to be transferred to an alternative circuit.

4.32 Batteries

4.32.1 Alkaline batteries and lead-acid batteries shall not be installed in the same compartment. Batteries intended for starting engines, etc. shall be located as close as possible to the engines. The compartments in which batteries are located shall be well ventilated without any means of closing ventilators. Any light fitted in such compartments shall be of an inherently safe type. Where acid is used as an electrolyte, the battery trays & boxes shall be lined with lead. Alternately, the deck below the battery cells may be protected with lead or other acid resisting material.

MACHINERY, BOILERS AND PRESSURE VESSELS

4.33 The machinery, boilers and other pressure vessels shall be of a design and construction adequate for the service for which they are intended, and shall be so installed and protected as to minimize the danger to persons on board. Means shall be provided to prevent over pressure in any part of such machinery, boilers and other pressure vessels. Design, construction, installation, arrangement including safety provisions for machinery and pressure vessels are to comply with the construction and classification rules of a classification society.

OIL FUEL INSTALLATIONS AND ARRANGEMENTS

4.34 The arrangements for the storage, distribution and utilization of the oil fuel shall be such as to ensure the safety of the vessel and persons on board and shall at least comply with the following provisions.

- 4.34.1 As far as practicable, parts of the oil fuel system containing heated oil under pressure exceeding 0.18 N/mm² shall not be placed in a concealed position such that defects and leakage cannot readily be observed. The machinery spaces in way of such parts of the oil fuel system shall be adequately illuminated.
- 4.34.2 As far as practicable, oil fuel tanks shall be part of the ship's structure and shall be located outside machinery spaces of category A. Where oil fuel tanks, other than double bottom tanks, are necessarily located adjacent to or within machinery spaces of category A, at least one of their vertical sides shall be contiguous to the machinery space boundaries, and shall preferably have a common boundary with the double bottom tanks, and the area of the tank boundary common with the machinery spaces shall be kept to a minimum. Where such tanks are situated within the boundaries of machinery spaces of category A they shall not contain oil fuel having a flashpoint of less than 60°C. In general, the use of free-standing oil fuel tanks shall be avoided. When such tanks are employed their use shall be prohibited in category A machinery spaces on passenger ships. Where permitted, they shall be placed in an oil-tight spill tray of ample size having a suitable drain pipe leading to a suitably sized spill oil tank.
- 4.34.3 Oil fuel pipes, which, if damaged, would allow oil to escape from a storage, settling or daily service tank having a capacity of 500 l and above situated above the double bottom, shall be fitted with a cock or valve directly on the tank capable of being closed from a safe position outside the space concerned in the event of a fire occurring in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tank shall be fitted, but control in the event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space. If such an additional valve is fitted in the machinery space it shall be operated from a position outside this space. The controls for remote operation of the valve for the emergency generator fuel tank shall be in a separate location from the controls for remote operation of other valves for tanks located in machinery spaces.
- 4.34.4 Safe and efficient means of ascertaining the amount of oil fuel contained in any oil fuel tank shall be provided. Where sounding pipes are used, they shall not terminate in any space where the risk of ignition of spillage from the sounding pipe might arise. In particular, they shall not terminate in passenger or crew spaces. Sounding pipes shall not terminate in any space where the risk of ignition of spillage from the sounding pipe might arise. In particular, they shall not terminate in accommodation spaces. Other means of ascertaining the amount of oil fuel contained in any fuel tank may be permitted, provided that the failure of such means or overfilling of the tanks will not permit release of fuel. The Administration may permit the use of oil level gauges with flat glasses and self-closing valves between the gauge glasses and the oil tanks. Cylindrical gauge glasses may also be permitted in freestanding oil fuel tanks provided that they are suitably protected and fitted with self-closing valves to the satisfaction of the Administration.

4.34.5 Provisions shall be made to prevent overpressure in any oil tank or in any part of the oil fuel system, including the filling pipes served by pumps on board. Air and overflow pipes and relief valves shall discharge to a position where there is no risk of fire or explosion from the emergence of oils and vapour and shall not lead into crew spaces, passenger spaces nor into special category spaces, closed ro-ro cargo spaces, machinery spaces or similar spaces.

4.34.6 The ventilation of machinery spaces shall be sufficient under normal conditions to prevent accumulation of oil vapour.

4.35 Arrangements for lubricating oil

4.35.1 The arrangements for the storage, distribution and utilization of oil used in pressure lubrication systems shall be such as to ensure the safety of the ship and persons on board. Such arrangements in machinery spaces shall at least comply with the provisions of 4.34.1, 4.34.3, 4.34.4 and 4.34.5, except that this does not preclude the use of sight flow glasses in lubricating systems.

4.36 Arrangements for other flammable oils

4.36.1 The arrangements for storage, distribution and utilization of other flammable oils employed under pressure in power transmission systems, control and activation systems and heating systems shall be such as to ensure the safety of the river-sea vessel and persons on board. In locations where means of ignition are present, such arrangements shall at least comply with the provisions of 4.34.1.

4.36.2 No oil fuel tank or lubricating oil tank or any other flammable oil tank shall be situated where spillage or leakage there from can constitute a hazard by falling on heating surfaces. Precautions shall be taken to prevent any oil that may escape under pressure or oil leakage from any pump, filter, piping system or heat exchanger from coming into contact with heated surfaces or enter into machinery air intakes. Where necessary, a suitable spill tray or gutter screen or other suitable arrangement shall be provided to allow oil to drain to a safe place in the event of spillage or leakage of oil from such an oil tank, machinery, equipment or system. The number of joints in piping systems shall be kept to a minimum practicable.

4.36.3 Pipes, fittings and valves handling fuel oil, lubricating oil and other flammable oils shall be of the steel or other approved material, except that restricted use of flexible pipes shall be permissible in positions where the Administration is satisfied that they are necessary. Such flexible pipes and end attachments shall be of approved fire-resisting materials of adequate strength and shall be constructed to the satisfaction of the Administration.

4.36.4 Oil fuel, lubricating oil or other liquid substances flammable or harmful to the marine environment shall not be carried in forepeak tanks.

4.36.5 Any oil or other substances flammable or harmful to the marine environment shall not be carried in other tanks or spaces, which are not specially approved by the Administration for such purposes.

4.37 Carriage of oxygen and acetylene cylinders

Carriage of oxygen and acetylene cylinders of use on board while sailing shall not be permitted unless an approved "work permit" system is in place.

MISCELLANEOUS

4.38 Stores, spare Gear and Tools

4.38.1 Every river sea passenger vessel shall be provided with such stores spare gear and tools as are considered sufficient for the intended service of the ship and for the purpose of carrying out running to the ship, its boilers and machinery while the ship is at sea.

4.39 Means of Communication

4.39.2 Every river sea passenger vessel shall be provided with two means of communicating orders from the navigating bridge to the engine room. One of such means shall be the engine room telegraph.

EQUIPMENT OF SHIPS

4.40 Anchors, Chain cables, mooring equipment and associated deck machinery

4.40.1 Every river sea passenger vessel shall be provided with such number of anchors and chain cables as are sufficient in number and strength having regard to the size and intended service of the vessel.

4.40.2 The provision and testing of Anchors, Chain Cables, Chain lockers,, mooring equipment, all associated deck fittings, and all associated deck machinery shall be as per the requirements of the rules of a Classification Society.

PART B: STRUCTURAL FIRE PROTECTION AND ESCAPE

4.41 General

4.41.1 This Chapter applies to all river-sea passenger vessels.

4.42 Fire Safety Objectives

4.42.1 The fire safety objectives of this part are to:

- .1 prevent the occurrence of fire and explosion;
- .2 reduce the risk to life caused by fire;
- .3 reduce the risk of damage caused by fire to the ship, its cargo and the environment;
- .4 contain, control and suppress fire and explosion in the compartment of origin; and
- .5 provide adequate and readily accessible means of escape for passengers and crew.

4.43 Alterations and Modifications

4.43.1 All river sea passenger vessel which undergo repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to these ships.

Repairs, alterations and modifications which substantially alter the dimensions of a ship or the passenger accommodation spaces, or substantially increase a ship's service life and outfitting related thereto shall meet the latest requirements for new ships in so far as the Administration of the flag State deems reasonable and practicable.

4.44 Definitions

4.44.1 Non-combustible material is a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750 °C, this being determined in accordance with the Fire Test Procedures Code. Any other material is a combustible material.

4.44.2. A standard fire test is one in which the specimens of the relevant bulkheads and decks are exposed in a test furnace to temperatures corresponding approximately to the standard temperature curve. The test methods shall be in accordance with the Fire Test Procedures Code.

4.44.3 'A' class divisions are those divisions formed by bulkheads and decks which comply with the following:

- .1 they shall be constructed of steel or other equivalent material;
- .2 they shall be suitably stiffened;
- .3 they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test;
- .4 they shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 140 °C above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180 °C above the original temperature, within the time listed below:

Class 'A-60'	60 minutes
Class 'A-30'	30 minutes
Class 'A-15'	15 minutes
Class 'A-0'	0 minutes

4.44.4 'B' class divisions are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

- .1 they shall be so constructed as to be capable of preventing the passage of flame to the end of the first half hour of the standard fire test;
- .2 they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 140 °C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225 °C above the original temperature within the time listed below:

Class 'B-15'	15 min
Class 'B-0'	0 min

- .3 they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of 'B' class divisions shall be non-combustible, with the exception that combustible veneers may be permitted provided they meet other requirements of this chapter;

4.44.5 'C' class divisions are divisions constructed of approved non-combustible materials. They need meet neither requirements relative to the passage of smoke and flame nor limitations relative to the temperature rise. Combustible veneers are permitted provided they meet other requirements of this chapter.

4.44.6 Continuous 'B' class ceilings or linings are those 'B' class ceilings or linings which terminate only at an 'A' or 'B' class division.

4.44.7 Steel or other equivalent material. Where the words 'steel or other equivalent material' occur, 'equivalent material' means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation).

4.44.8 Low flame spread means that the surface thus described will adequately restrict the spread of flame, this being determined in accordance with the Fire Test Procedures Code.

4.44.9 Main vertical zones are those sections into which the hull, superstructure, and deckhouses are divided by 'A' class divisions, the mean length and width of which on any deck does not in general exceed 40 metres.

4.44.10 Accommodation spaces are those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, barber shops, pantries containing no cooking appliances and similar spaces.

4.44.11 Public spaces are those portions of the accommodation which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

4.44.12 Service spaces are those spaces used for galleys, pantries containing cooking appliances, lockers, mail and specie rooms, storerooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces.

4.44.13 Cargo spaces are all spaces used for cargo (including cargo oil tanks) and trunks to such spaces.

4.44.14 Special category spaces are those enclosed vehicle spaces above or below the bulkhead deck into and from which such vehicles can be driven and to which passengers have access. Special category spaces may be accommodated on more than one deck provided that the total overall clear height for vehicles does not exceed 10 metres.

4.44.15.1 Machinery spaces of category A are those spaces and trunks to such spaces which contain:

- .1 internal combustion machinery used for main propulsion; or
- .2 internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or
- .3 any oil-fired boiler or oil fuel unit.

4.44.15.2 Machinery spaces are all machinery spaces of category A and all other spaces containing propelling machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces.

4.44.16 Oil fuel unit is the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure of more than 0,18 N/mm².

4.44.17 Control stations are those spaces in which the ship's radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment is centralised.

4.44.18.1 Central control station is a control station in which the following control and indicator functions are centralised:

- .1 fixed fire detection and alarm systems;
- .2 automatic sprinklers, fire detection and alarm systems;
- .3 fire door indicator panels;
- .4 fire doors closures;
- .5 watertight door indicator panels;
- .6 watertight door closures;
- .7 ventilation fans;
- .8 general/fire alarms;
- .9 communication systems including telephones; and
- .10 microphones to public address systems.

4.44.18.2 Continuously manned central control station is a central control station which is continuously manned by a responsible member of the crew.

4.44.19 Rooms containing furniture and furnishings of restricted fire risk are those rooms containing furniture and furnishings of restricted fire risk (whether cabins, public spaces, offices and other types of accommodation) in which:

- .1 all case furniture such as desks, wardrobes, dressing tables, bureaux, dressers, is constructed entirely of approved non-combustible materials, except that a combustible veneer not exceeding 2 mm may be used on the working surface of such articles;
- .2 all free-standing furniture such as chairs, sofas, tables, is constructed with frames of non-combustible materials;
- .3 all draperies, curtains and other suspended textile materials have qualities of resistance to the propagation of flame not inferior to those of wool of mass 0,8 kg/m², in accordance with IMO Resolution A.471 (XII) and its amendments adopted by Resolution A.563 (14).
- .4 all floor coverings have low flame spread characteristics.
- .5 all exposed surfaces of bulkheads, linings and ceilings have low flame-spread characteristics; and
- .6 all upholstered furniture has qualities of resistance to the ignition and propagation of flame in accordance with the Fire Test Procedures of Upholstered Furniture of IMO Resolution A.652 (16).
- .7 all bedding components have qualities of resistance to the ignition and propagation of flame, this being determined in accordance with the Fire Test Procedures Code.

4.44.20 Fire Test Procedures Code means the International Code for Application of Fire Test Procedures, as adopted by the Maritime Safety Committee of the IMO by Resolution MSC 61 (67), as amended by the IMO.

4.44.21 Fire Safety Systems Code means the International Code for Fire Safety Systems as adopted by the Maritime Safety Committee of the IMO by Resolution MSC98 (73), as may be amended by IMO, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of Article VIII of the 1974 SOLAS Convention, as amended, concerning the amendment procedures applicable to the Annex other than Chapter I thereof.

4.44.22 Flashpoint is the temperature in degrees Celsius (closed cup test) at which a product will give off enough flammable vapour to be ignited, as determined by an approved flashpoint apparatus.

4.44.23 Prescriptive requirements mean the constructive characteristics, limiting dimensions or fire safety systems specified in this chapter.

4.45 Structure

4.45.1 The hull, superstructures, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

4.45.2 However, in cases where any part of the structure is of aluminium alloy, the following shall apply:

.1 The insulation of aluminium alloy components of 'A' or 'B' class divisions, except structure which is non-load-bearing, shall be such that the temperature of the structural core does not rise more than 200 °C above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

.2 Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and life-raft stowage, launching and embarkation areas, and 'A' and 'B' class divisions to ensure:

.1 that for such members supporting lifeboat and life-raft areas and 'A' class divisions, the temperature rise limitation specified in para .2.1 shall apply at the end of one hour; and

.2 that for such members required to support 'B' class divisions, the temperature rise limitation specified in para .2.1 shall apply at the end of half an hour.

4.45.3 Crowns and casings of machinery spaces shall be of steel construction adequately insulated and openings therein, if any, shall be suitably arranged and protected to prevent the spread of fire.

4.46 Main vertical zones and horizontal zones

4.46.1 For all river-sea passenger vessels, the hull, superstructure and deckhouses in way of accommodation and service spaces shall be subdivided into main vertical zones by 'A-60' class divisions. Steps and recesses shall be kept to a minimum, but where they are necessary they shall also be "A-60" class divisions. Where a category (10) space defined in paragraph 4.48.2 is on one side or where fuel oil tanks are on both sides of the division the standard may be reduced to "A-0".

4.46.2 As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight subdivision bulkheads situated immediately below the bulkhead deck. The length and width of main vertical zones may be extended to a maximum of 48 metres in order to bring the ends of main vertical zones to coincide with subdivision watertight bulkheads or in order to accommodate a large public space extending for the whole length of the main vertical zone provided that the total area of the main vertical zone is not greater than 1600 sq.m. on any deck. The length or width of a main vertical zone is the maximum distance between the furthestmost points of the bulkheads bounding it.

4.46.3 Such bulkheads shall extend from deck to deck and to the shell or other boundaries.

4.46.4 Where a main vertical zone is subdivided by horizontal 'A' class divisions into horizontal zones for the purpose of providing an appropriate barrier between sprinkled and non-sprinklered zones of the ship, the divisions shall extend between adjacent main vertical zone bulkheads and to the shell or exterior boundaries of the ship and shall be insulated in accordance with the fire insulation and integrity values given in table II of the Appendix 2 to Annex 4

4.47 Bulkheads within a main vertical zone

4.47.1 For all river-sea passenger vessels, all bulkheads within accommodation and service spaces which are not required to be 'A' class divisions shall be at least 'B' class or 'C' class divisions as prescribed in the tables in Appendix 2 to Annex 4.

Such divisions may be faced with combustible materials in accordance with the provisions of Regulation 4.55.

4.47.2 All corridor bulkheads where not required to be 'A' class shall be 'B' class divisions which shall extend from deck to deck.

All doors and frames in such bulkheads shall be of non-combustible materials and shall be so constructed and erected as to provide substantial fire resistance.

All bulkheads required to be 'B' class division, except corridor bulkheads prescribed in para 4.47.2, shall extend from deck to deck and to the shell or other boundaries unless the continuous 'B' class ceilings or linings fitted on both sides of the bulkheads are at least of the same fire resistance as the bulkhead, in which case the bulkhead may terminate at the continuous ceiling or lining.

4.48 Fire integrity of bulkheads and decks in river-sea passenger vessels

4.48.1 In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in this part, the minimum fire integrity of bulkheads and decks shall be as prescribed in tables I and II, provided in the Appendix 2 to Annex 4.

Where the contents and use of a space are such that there is a doubt as to its classification for the purpose of this regulation, or where it is possible to assign two or more classifications to a space, it is to be treated as a space within the relevant category having the most stringent boundary requirements.

In approval of structural precautions for fire protection in new ships, account shall be taken of the risk of heat transfer between heat bridges at intersection points, and where the thermal barring devices terminate.

4.48.2 The following requirements shall govern application of the tables:

.1 they shall apply respectively to the bulkheads and decks separating adjacent spaces.

.2 For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (11) below. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) Control stations:

- spaces containing emergency sources of power and lighting,
- wheelhouse and chartroom,
- spaces containing the ship's radio equipment,
- fire-extinguishing rooms, fire control rooms and fire-recording stations,
- control room for propulsion machinery when located outside the propulsion machinery space,
- spaces containing centralised fire alarm equipment.

(2) Corridors:

- passenger and crew corridors and lobbies.

(3) Accommodation spaces:

- spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobbies rooms, barber shops, pantries containing no cooking appliances and similar spaces

(4) Stairways:

- interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto,

— in this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service spaces (low risk):

— lockers and storerooms not having provisions for the storage of flammable liquids and having areas less than 4 m² and drying rooms and laundries.

(6) Machinery spaces of category A:

— those spaces and trunks to such spaces which contain:

- a) internal combustion machinery used for main propulsion; or
- b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 [kW]; or
- c) any oil-fired boiler or oil fuel unit, or any oil-fired equipment other than boilers, such as inert gas generators, incinerators, etc.

(7) Other machinery spaces:

— Electrical equipment rooms (auto-telephone exchange, air-conditioning duct spaces).
— all machinery spaces and other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces, except machinery spaces of Category A

(8) Cargo spaces:

— all spaces used for cargo (including cargo oil tanks) and trunk ways and hatchways to such spaces, other than special category spaces.

(9) Service spaces (high risk):

— galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 4 square meters or more, spaces for the storage of flammable liquids, and workshops other than those forming part of the machinery spaces.

(10) Open decks:

— open deck spaces and enclosed promenades having no fire risk. Air spaces (the space outside superstructures and deckhouses).

(11) Special category spaces:

— spaces as defined in 4.44.14

.3 In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler system or between such zones neither of which is so protected, the higher of the two values given in the tables shall apply.

.4 In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler system or between such zones both of which are so protected, the lesser of the two values given in the tables shall apply. Where a sprinkled zone and a non-sprinkled zone meet within accommodation and service spaces, the higher of the two values given in the tables shall apply to the division between the zones.

4.48.3 External boundaries which are required to be of steel or other equivalent material may be pierced for the fitting of windows and side scuttles provided that there is no requirement for such boundaries to have 'A' class integrity elsewhere in this part. Similarly, in such boundaries which are not required to have 'A' class integrity, doors may be of materials to the satisfaction of the Administration.

4.49 Means of escape

4.49.1 Stairways and ladders, corridors and doors shall be arranged to provide ready means of escape to the lifeboat and life-raft embarkation deck from all passenger and crew spaces and from spaces in which the crew is normally employed, other than machinery spaces. In particular, the following provisions shall be complied with:

.1 Below the bulkhead deck two means of escape, at least one of which shall be independent of watertight doors, shall be provided from each watertight compartment or similarly restricted space or group of spaces. Exceptionally one of the means of escape may be dispensed with, for crew spaces that are entered only occasionally, in which case the required escape route shall be independent of watertight doors

.2 Above the bulkhead deck there shall be at least two means of escape from each main vertical zone or similarly restricted space or group of spaces at least one of which shall give access to a stairway forming a vertical escape.

.3 A corridor, or part of a corridor from which there is only one route of escape shall not exceed 5 metres in length.

Dead-end corridors used in service areas which are necessary for the practical utility of the ship, such as fuel oil stations and athwartship supply corridors, shall be permitted, provided such dead-end corridors are separated from crew accommodation areas and inaccessible from passenger accommodation areas. A part of a corridor that has a depth not exceeding its width is considered a recess or local extension and is permitted.

.4 At least one of the means of escape required by paras 4.49.1.1 and 4.49.1.2 shall consist of a readily accessible enclosed stairway, which shall provide continuous fire shelter from the level of its origin to the appropriate Life saving appliance embarkation decks, or to the uppermost deck if the embarkation deck does not extend to the main vertical zone being considered.

In the latter case, direct access to the embarkation deck by way of external open stairways and passageways shall be provided and shall have emergency lighting and slip-free surfaces underfoot. Boundaries facing external open stairways and passageways forming part of an escape route shall be so protected that a fire in any enclosed space behind such boundaries would not impede escape to the embarkation stations. The widths, number and continuity of escapes shall be as follows:

.1 Stairways shall not be less than 900 mm in clear width, if reasonable and practicable to the satisfaction of the Administration. Stairways shall be fitted with handrails on each side. The minimum clear width of stairways shall be increased by 10 mm for every one person provided for in excess of 90 persons. The maximum clear width between handrails where stairways are wider than 900 mm shall be 1800 mm. The total number of persons to be evacuated by such stairways shall be assumed to be two thirds of the crew and the total number of passengers in the areas served by such stairways. The width of the stairways shall at least conform to the standard as given in IMO Resolution A.757 (18).

.2 All stairways sized for more than 90 persons shall be aligned before and after.

.3 Doorways and corridors and intermediate landings included in means of escape shall be sized in the same manner as stairways.

.4 Stairways shall not exceed 3,5 metres in vertical rise without the provision of a landing and shall not have an angle of inclination greater than 45 °.

.5 Landings at each deck level shall not be less than 2 square meter in area and shall increase by 1 square meter for every 10 persons provided for in excess of 20 persons but need not exceed 16 m², except for those landings servicing public spaces having direct access onto the stairway enclosure. If the calculation for required landing area yields a value in excess of 8 square meters, a minimum of 8 square meters of dedicated landing area shall be provided, and the additionally required area can be accounted for by taking into account the available area of staircase treads.

.6 Satisfactory protection of access from the stairway enclosures to the lifeboat and life-raft embarkation areas shall be provided.

.7 In addition to the emergency lighting required by this notification, the means of escape including stairways and exits, shall be marked by lighting or photo luminescent strip indicators placed not more than 0,3 metres above the deck at all points of the escape route including angles and intersections. The marking must enable passengers to identify all the routes of escape and readily identify the escape exits. If electric illumination is used, it shall be supplied by the emergency source of power and it shall be so arranged that the failure of any single light or cut in a lighting strip will not result in the marking being ineffective. Additionally, all escape route signs and fire equipment location markings shall be of photo luminescent material or marked by lighting.

.8 For normally locked doors that form part of an escape route.

.1 Cabin and stateroom doors shall not require keys to unlock them from inside the room.

Neither shall there be any doors along any designated escape route which require keys to unlock them when moving in the direction of escape.

.2 Escape doors from public spaces that are normally latched shall be fitted with a means of quick release. Such means shall consist of a door-latching mechanism incorporating a device that releases the latch upon the application of a force in the direction of escape flow.

4.49.2.1 One of the escape routes from the machinery spaces where the crew is normally employed shall avoid direct access to any special category space.

4.49.2.2 Hoistable drive-up/down ramps to platform decks must not be capable of blocking the approved escape routes when in lowered position.

4.49.3.1 Two means of escape shall be provided from each machinery space. In particular, the following provisions shall be complied with:

.1 Where the space is below the bulkhead deck the two means of escape shall consist of either:

.1 two sets of steel ladders as widely separated as possible, leading to doors in the upper part of the space similarly separated and from which there is access to the appropriate lifeboat and life-raft embarkation decks. One of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. Such a ladder shall be located within a protected enclosure that satisfies or Regulation 4.48, category (4), from the lower part of the space it serves to a safe position outside the space. Self-closing fire doors of the same fire integrity standards shall be fitted in the enclosure. The ladder shall be fixed in such a way that heat is not transferred into the enclosure through non-insulated fixing points. The protected enclosure shall have minimum internal dimensions of at least 800 mm x 800 mm, and shall have emergency lighting provisions; or

.2 one steel ladder leading to a door from which access is provided to the embarkation deck and additionally, in the lower part of the space and in a position well separated

from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the embarkation deck.

.2 Where the space is above the bulkhead deck, the two means of escape shall be as widely separated as possible and the doors leading from such means of escape shall be a position from which access is provided to the appropriate lifeboat and life-raft embarkation decks. Where such means of escape require the use of ladders, these shall be of steel.

.3 The underside of stairs in machinery spaces shall be shielded.

4.49.3.2 In a ship of less than 24 metres in length, the Administration may dispense with one of the means of escape in machinery spaces, due regard being paid to the width and disposition of the upper part of the space.

In a ship of 24 metres in length and above, the Administration may dispense with one means of escape from any such space so long as either a door or a steel ladder provides a safe escape route to the embarkation deck, due regard being paid to the nature and location of the space and whether persons are normally employed in that space. A second means of escape shall be provided in the steering gear space when the emergency steering position is located in that space unless there is a direct access to the open deck.

4.49.3.3 Two means of escape shall be provided from a machinery control room located within a machinery space, at least one of which will provide continuous fire shelter to a safe position outside the machinery space.

4.49.4 In no case shall lifts be considered as forming one of the required means of escape.

4.49.5 SHIPS OF 40 METRES IN LENGTH AND ABOVE:

.1 Emergency escape breathing devices shall be carried, complying with the Fire Safety Systems Code.

.2 At least two emergency escape breathing devices shall be carried in each main vertical zone.

.3 Within the machinery spaces, emergency escape breathing devices shall be situated ready for use at easily visible places, which can be reached quickly and easily at any time in the event of fire. The location of emergency escape breathing devices shall take into account the layout of the machinery space and the number of persons normally working in the space.

.4 The number and location of these devices shall be indicated in the fire control plan.

4.50 Escape routes on ro-ro passenger ships

4.50.1 Escape routes shall be provided from every normally occupied space on the ship to an assembly station. These escape routes shall be arranged so as to provide the most direct route possible to the assembly station*, and shall be marked with symbols based on the guidelines developed by the Organization.

4.50.2 The escape route from cabins to stairway enclosures shall be as direct as possible, with a minimum number of changes in direction. It shall not be necessary to cross from one side of the ship to the other to reach an escape route. It shall not be necessary to climb more than two decks up or down in order to reach an assembly station or open deck from any passenger space.

4.50.3 External routes shall be provided from open decks, as referred to in paragraph 4.50.2, to the survival craft embarkation stations.

4.50.4 Where enclosed spaces adjoin an open deck, openings from the enclosed space to the open deck shall, where practicable, be capable of being used as an emergency exit.

4.50.5 Escape routes shall not be obstructed by furniture and other obstructions. With the exception of tables and chairs which may be cleared to provide open space, cabinets and other heavy furnishings in public spaces and along escape routes shall be secured in place to prevent shifting if the ship rolls or lists. Floor coverings shall also be secured in place. When the ship is underway, escape routes shall be kept clear of obstructions such as cleaning carts, bedding, luggage and boxes of goods.

Instruction for safe escape

4.50.6 Decks shall be sequentially numbered, starting with "1" at the tank top or lowest deck. The numbers shall be prominently displayed at stair landings and lift lobbies. Decks may also be named, but the deck number shall always be displayed with the name.

4.50.7 Simple "mimic" plans showing the "you are here" position and escape routes marked by arrows, shall be prominently displayed on the inside of each cabin door and in public spaces. The plan shall show the directions of escape and shall be properly oriented in relation to its position on the ship.

Strength of handrails and corridors

4.50.8 Handrails or other handholds shall be provided in corridors along the entire escape route so that a firm handhold is available at every step of the way, where possible, to the assembly stations and embarkation stations. Such handrails shall be provided on both sides of longitudinal corridors more than 1.8 m in width and transverse corridors more than 1 m in width. Particular attention shall be paid to the need to be able to cross lobbies, atriums and other large open spaces along escape routes. Handrails and other handholds shall be of such strength as to withstand a distributed horizontal load of 750 N/m applied in the direction of the centre of the corridor or space, and a distributed vertical load of 750 N/m applied in the downward direction. The two loads need not be applied simultaneously.

4.50.9 The lowest 0.5 m of bulkheads and other partitions forming vertical divisions along escape routes shall be able to sustain a load of 750 N/m to allow them to be used as walking surfaces from the side of the escape route with the ship at large angles of heel.

Evacuation Analysis *

4.50.9 Escape routes shall be evaluated by an evacuation analysis early in the design process. The analysis shall be used to identify and eliminate, as far as practicable, congestion which may develop during an abandonment, due to normal movement of passengers and crew along escape routes, including the possibility that crew may need to move along these routes in a direction opposite the movement of passengers. In addition, the analysis shall be used to demonstrate that escape arrangements are sufficiently flexible to provide for the possibility that certain escape routes, assembly stations, embarkation stations or survival craft may not be available as a result of a casualty.

*Refer to the Guidelines for a evacuation analysis for new and existing passenger ships (MSC.1/Circ.1238).

4.51 Penetrations and openings in 'A' and 'B' class divisions

4.51.1 All openings in 'A' class divisions shall be provided with permanently attached means of closing which shall be as effective for resisting fires as the divisions in which they are fitted.

4.51.2 The construction of all doors and door frames in 'A' class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame, as far as practicable, equivalent to that of the bulkheads in which the doors are situated. Such doors and

doorframes shall be constructed of steel or other equivalent material. Watertight doors need not be insulated.

4.51.3 It shall be possible for each door to be opened and closed from each side of the bulkhead by one person only.

4.51.4 Fire doors in main vertical zone bulkheads, galley boundaries and stairway enclosures other than power-operated watertight doors and those which are normally locked, shall satisfy the following requirements:

- .1 the doors shall be self-closing and be capable of closing against an angle of inclination of up to 3,5 ° opposing closure;
- .2 the approximate time of closure for hinged fire doors shall be no more than 40 seconds and no less than 10 seconds from the beginning of their movement with the ship in upright position. The approximate uniform rate of closure for sliding fire doors shall be of no more than 0,2 m/s and no less than 0,1 m/s with the ship in the upright position;
- .3 the doors shall be capable of remote release from the continuously manned central control station, either simultaneously or in groups and shall be capable of release also individually from a position at both sides of the door. Release switches shall have an on-off function to prevent automatic resetting of the system;
- .4 hold-back hooks not subject to central control station release are prohibited;
- .5 a door closed remotely from the central control station shall be capable of being reopened at both sides of the door by local control. After such local opening the door shall automatically close again;
- .6 indication shall be provided at the fire door indicator panel in the continuously manned central control station whether each of the remote-released doors are closed;
- .7 the release mechanism shall be so designed that the door will automatically close in the event of disruption of the control system or main source of electric power;
- .8 local power accumulators for power-operated doors shall be provided in the immediate vicinity of the doors to enable the doors to be operated after disruption of the control system or main source of electric power at least 10 times (fully opened or closed) using the local controls;
- .9 disruption of the control system or main source of electric power at one door shall not impair the safe functioning of the other doors;
- .10 remote-released sliding or power-operated doors shall be equipped with an alarm that sounds for at least 5 seconds but no more than 10 seconds after the door is released from the central control station and before the door begins to move and continue sounding until the door is completely closed;
- .11 a door designed to re-open upon contacting an object in its path shall re-open not more than one metre from the point of contact;
- .12 double-leaf doors equipped with latch necessary to their fire integrity shall have a latch that is automatically activated by the operation of the doors when released by the control system;
- .13 doors giving direct access to special category spaces which are power-operated and automatically closed need not be equipped with the alarms and remote-release mechanisms required in para .3 and .10;
- .14 the components of the local control system shall be accessible for maintenance and adjusting; and
- .15 power-operated doors shall be provided with a control system of an approved type which shall be able to operate in case of fire, this being determined in accordance with the Fire Test Procedure Code. This system shall satisfy the following requirements:
 - .15.1 the control system shall be able to operate the door at a temperature of at least 200 °C for at least 60 minutes, served by the power supply;
 - .15.2 the power supply for all other doors not subject to fire shall not be impaired, and;

.15.3 at temperatures exceeding 200 °C the control system shall be automatically isolated from the power supply and shall be capable of keeping the door closed up to at least 945 °C.

4.51.5. The requirements for 'A' class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and side scuttles, provided that there is no requirement for such boundaries to have a 'A' class integrity in para 4.54.

The requirements for 'A' class integrity of the outer boundaries of the ship shall not apply to exterior doors, except for those in superstructures and deckhouses facing life-saving appliances. embarkation and external assembly station areas, external stairs and open decks used for escape routes. Stairway enclosure doors need not meet this requirement.

4.51.6 Except for watertight doors, weather tight doors (semi-watertight doors), doors leading to the open deck and doors which need to be reasonably gastight all 'A' class doors located in stairways, public spaces and main vertical zone bulkheads in escape routes shall be equipped with a self-closing hose port of material, construction and fire resistance which is equivalent to the door into which it is fitted, and shall be a 150 mm square clear opening with the door closed and shall be inset into the lower edge of the door, opposite to the door hinges, or in the case of sliding doors, nearest the opening.

4.51.7 Doors and door frames in 'B' class divisions and means of securing them shall provide a method of closure which shall have resistance to fire equivalent to that of the divisions except that ventilation openings may be permitted in the lower portion of such doors. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0,05 square meters . Alternatively, a non-combustible air balance duct routed between the cabin and the corridor and located below the sanitary unit is permitted where the cross-sectional area of the duct does not exceed 0,05 square meters . All ventilation openings shall be fitted with a grill made of non-combustible material. Doors shall be non combustible.

4.51.8 Cabin doors in 'B' class divisions shall be of a self-closing type. Hold-backs are not permitted.

4.51.9 Use of combustible materials is acceptable in doors separating cabins from the individual interior sanitary spaces such as showers.

4.51.10 Where "A" class divisions are penetrated by pipes or ducts, such penetrations are to be tested in accordance with the Fire Test Procedures Code. Where a pipe penetration is made of steel or equivalent material having a thickness of 3 [mm] or greater and a length of not less than 900 [mm] (preferably 450 [mm] on each side of the division), and no openings, testing is not required. Such penetrations are to be suitably insulated by extension of the insulation at the same degree of fire integrity of the division.

4.51.11 Where "B" class divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, etc., or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements are to be made to ensure that the fire resistance is not impaired.

4.51.12 Un insulated metallic pipes penetrating "A" or "B" class divisions are to be of materials having a melting temperature which exceeds 950°C for "A-0" and 850°C for "B-0" class divisions.

4.52 Protection of stairways and lifts in accommodation and service spaces

4.52.1 All stairways shall be of steel frame construction and shall be within enclosures formed of 'A' class divisions, with positive means of closure of all openings except that:

.1 a stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads or doors in one between-deck space. When a stairway is closed in one between-deck space, the stairway enclosure shall be protected in accordance with the tables for decks in Appendix 2 to Annex 4;

.2 stairways may be fitted in the open in a public space, provided they lie wholly within such public space.

4.52.2 Stairway enclosures shall have direct access with the corridors and be of a sufficient area to prevent congestion, having in view the number of persons likely to use them in an emergency.

Within the perimeter of such stairway enclosures only public toilets, lockers of non-combustible material providing storage for safety equipment and open information counters are permitted.

Only public spaces, corridors, public toilets, other escape stairways and external areas are permitted to have direct access to these stairway enclosures.

4.52.3 Lift trunks shall be so fitted as to prevent the passage of smoke and flame from one between-deck to another and shall be provided with means of closing so as to permit the control of draught and smoke.

4.53 Ventilation systems

4.53.1 For all river-sea passenger vessels.

.1 Ventilation ducts shall be of non-combustible material. Short ducts, however, not generally exceeding two metres in length and with a cross-section not exceeding 0,02 sq.m. need not be non-combustible, subject to the following conditions:

.1 these ducts shall be of a material which has low flame spread characteristics;

.2 they may only be used at the end of the ventilation device;

.3 they shall not be situated less than 600 mm, measured along the duct, from an opening in an 'A' or 'B' class division, including continuous 'B' class ceilings.

.2 Where a thin plated duct with a free cross-sectional area equal to or less than 0,02 m² passes through 'A' class bulkheads or decks, the opening shall be lined with a steel sleeve having a thickness of at least 3 mm and a length of at least 200 mm, divided preferably into 100 mm on each side of the bulkhead or, in the case of the deck, wholly laid on the lower side of the decks pierced.

.3 Ducts provided for the ventilation of machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces shall not pass through accommodation spaces, service spaces or control stations unless they comply with the conditions specified in para 4.53.1.3.1.1 to 4.53.1.3.1.4 or 4.53.1.3.2.1 and 4.53.1.3.2.2:

.1.1 the ducts are constructed of steel having a thickness of at least 3 mm and 5 mm for ducts the widths or diameters of which are up to and including 300 mm and 760 mm and over respectively and, in the case of such ducts, the widths or diameters of which are between 300 mm and 760 mm having a thickness to be obtained by interpolation;

.1.2 the ducts are suitably supported and stiffened;

.1.3 the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and

.1.4 the ducts are insulated to 'A-60' standard from the machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces to a point at least 5 metres beyond each fire damper;

or

.2.1 the ducts are constructed of steel in accordance with para 4.53.1.3.1.1 and 4.53.1.3.1.2; and

.2.2 the ducts are insulated to 'A-60' standard throughout the accommodation spaces, service spaces or control stations;
except that penetrations of main zone divisions shall also comply with the requirements of para 4.53.1.8.

The ventilation systems for machinery spaces of category A, vehicle spaces, ro-ro spaces, galleys, special category spaces and cargo spaces shall, in general, be separated from each other and from the ventilation systems serving other spaces. However, the galley ventilation need not be completely separated from other ventilation systems, but may be served by separate ducts from a ventilation unit serving other spaces. In such a case, an automatic fire damper shall be fitted in the galley ventilation duct near the ventilation unit.

.4 Ducts provided for ventilation to accommodation spaces, service spaces or control stations shall not pass through machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces unless they comply with the conditions specified in para 4.53.1.4.1.1 to 4.53.1.4.1.3 or 4.53.1.4.2.1 and 4.53.1.4.2.2:

.1.1 the ducts where they pass through a machinery space, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with para 4.53.1.3.1.1 and 4.53.1.3.1.2;

.1.2 automatic fire dampers are fitted close to the boundaries penetrated; and

.1.3 the integrity of the machinery space, galley, car deck space, ro-ro cargo space or special category space boundaries is maintained at the penetrations;

or

.2.1 the ducts where they pass through a machinery space, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with para 4.53.1.3.1.1 and 4.53.1.3.1.2; and

.2.2 the ducts are insulated to 'A-60' standard throughout the machinery space, galley, car deck space, ro-ro cargo space or special category space;

except that penetrations of main zone divisions shall also comply with the requirements of para 4.53.1.8.

.5 Ventilation ducts with a free-sectional area exceeding 0,02 square meters passing through class 'B' bulkheads shall be lined with steel sheet sleeves of 900 mm in length divided preferably into 450 mm on each side of the bulkheads unless the duct is of steel for this length.

.6 Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively. Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimised. Such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements would be equally effective.

.7 Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of 'A' class divisions. Each exhaust duct shall be fitted with:

.1 a grease trap readily removable for cleaning;

.2 a fire damper located in the lower end of the duct;

.3 arrangements, operable from within the galley, for shutting off the exhaust fans; and

.4 fixed means for extinguishing a fire within the duct.

.8 Where it is necessary that a ventilation duct passes through a main vertical zone division, a fail-safe automatic closing fire damper shall be fitted adjacent to the division. The damper shall also be capable of being manually closed from each side of the division. The operating

position shall be readily accessible and be marked in red light-reflecting colour. The duct between the division and the damper shall be of steel or other equivalent material and, if necessary, insulated appropriately. The damper shall be fitted on at least one side of the division with a visible indicator showing whether the damper is in the open position.

.9 The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

.10 Power ventilation of accommodation spaces, service spaces, cargo spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position should not be readily cut off in the event of a fire in the spaces served. The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

4.53.2 The following arrangements shall be tested in accordance with the IMO Fire Test Procedures Code:

- .1 fire dampers including relevant means of operation; and
- .2 duct penetrations through 'A' class divisions. Where steel sleeves are directly joined to ventilation ducts by means of riveted or screwed flanges or by welding, the test is not required.

4.54 Windows and sides scuttles

4.54.1 All windows and sides scuttles in bulkheads within accommodation and service spaces and control stations other than those to which the provisions of 4.51.5 apply, shall be so constructed as to preserve the integrity requirements of the type of bulkheads in which they are fitted.

4.54.2 Notwithstanding the requirements of the tables in Appendix 2 to Annex 4, all windows and side scuttles in bulkheads separating accommodation and service spaces and control stations from weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bed or angle.

4.54.3 Notwithstanding the requirements of the tables in Appendix 2 to Annex 4, special attention shall be given to the fire integrity of windows facing open or enclosed lifeboat and life-raft embarkation areas and to the fire integrity of windows situated below such areas in such a position that their failure during a fire would impeded the launching of, or embarkation into, lifeboats or life-rafts. In general, such windows shall be at least of A-0 Standard.

4.55 Restricted use of combustible material

4.55.1 Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, draught stops, ceilings, and insulations shall be of non-combustible materials. Partial bulkheads or decks used to subdivide a space for utility or artistic treatment shall also be of non-combustible material.

4.55.2 Vapour barriers and adhesives used in conjunction with insulation, as well as insulation of pipe fittings for cold service systems need not be non-combustible, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have low flame spread characteristics.

4.55.3 The following surfaces shall have low flame-spread characteristics:

- .1 exposed surfaces in corridors and stairway enclosures, and of bulkheads, wall and ceiling linings in all accommodation and service spaces and control stations;
- .2 concealed or inaccessible spaces in accommodation, service spaces and control stations.

4.55.4 The total volume of combustible facings, mouldings, decorations and veneers in any accommodation and service space shall not exceed a volume equivalent to 2,5 mm veneer on the combined area of the walls and ceilings. Furniture fixed to linings, bulkheads or decks need not be included in the calculation of the total volume of combustible materials.

In the case of ships fitted with an automatic sprinkler system complying with the provisions of this notification, the above volume may include some combustible material used for erection of 'C' class divisions.

4.55.5 Veneers used on surfaces and linings shall meet the FTP Code requirements..

4.55.6 Furniture in stairway enclosures shall be limited to seating. It shall be fixed, limited to six seats on each deck in each stairway enclosure, be of restricted fire risk, and shall not restrict the passenger escape route. The Administration may permit additional seating in the main reception area within a stairway enclosure if it is fixed, non-combustible and does not restrict the passenger escape route. Furniture shall not be permitted in passenger and crew corridors forming escape routes in cabin areas. In addition to the above, lockers of non-combustible material, providing storage for safety equipment required by regulations, may be permitted. Drinking water dispensers and ice cube machines may be permitted in corridors provided they are fixed and do not restrict the width of the escape routes. This applies as well to decorative flower or plant arrangements, statues or other objects of art such as paintings and tapestries in corridors and stairways.

4.55.7. Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products, this being determined in accordance with the IMO Fire Test Procedures Code.

4.55.8 Primary deck coverings, if applied within accommodation and service spaces and control stations, shall be of an approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures, this being determined in accordance with the IMO Fire Test Procedures Code.

4.56 Details of construction

In accommodation and service spaces, control stations, corridors and stairways:

- .1 air spaces enclosed behind ceilings, panelling or linings shall be suitably divided by close-fitting draught stops not more than 14 metres apart;
- .2 in the vertical direction, such enclosed air spaces, including those behind linings of stairways, trunks, etc. shall be closed at each deck.

Appendix 1 (to Annex 4)

CALCULATION OF MAXIMUM LENGTH OF WATERTIGHT COMPARTMENTS

PART I

1 General

(1) For the purpose of this Appendix, save as otherwise specified.

- (a) all linear measurements shall be in metres; and
- (b) all volumes shall be in cubic metres and shall be calculated from measurements taken to moulded lines.

(2) In this Schedule-

- (i) the symbol "L" denoted the length of the ship;
- (ii) the expression "passenger spaces" includes galleys, laundries and other similar space provided for the service of passengers in addition to spaces provided for the use of passengers.

2 Floodable length

(1) The floodable length at any point of the length of a ship shall be determined by a method of calculation which takes into consideration the form, draught and other characteristics of the ship.

(2) In a ship with a continuous bulkhead deck, the floodable length of a given point shall be the maximum portion of the length of the ship having its centre at that point which can be flooded.

(3) In the case of a ship not having a continuous bulkhead deck, the floodable length at any point may be determined to an assumed continuous margin line which at no point is less than 76 millimeter below the top of the deck at side to which the bulkhead and the shell are carried watertight.

3 Permissible length

(1) Ships shall be as efficiently sub-divided as is possible having regard to the nature of the service for which they are intended.

(2) The maximum permissible length of compartments at any point in the ship's length shall be obtained by multiplying the floodable length by a factor called the factor of sub-division.

(3) The factor of sub-division shall depend on the length of a ship and shall vary according to the nature of the service for which she is intended. It shall decrease in a regular and continuous manner as the length of the ship increases and from a factor "A" applicable to ships engaged primarily in the carriage of cargo to a factor "B" applicable to ships primarily engaged in the carriage of passengers.

PART 2

4. This Part applies to Type 4 River-Sea Passenger Vessels.

5. Assumptions of permeability

(1) In determining the floodable length, a uniform average permeability shall be used throughout each of the following positions of the ship below the margin line:

- (a) the machinery space;
- (b) the position forward of the machinery space; and

- (c) the position abaft the machinery space.
- (2) the permeability which shall be taken into account in determining the floodable length at any point in ships to which this Part applies shall be as follow :

(a) Machinery space-

- (i) the average permeability throughout the machinery space hall be determined by the following formula:

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

Where, a = volume of the passenger spaces and crew spaces below the margin within the limits of the machinery space ;

c = volume of the between deck spaces below the margin within the limits of the machinery space which are appropriated for cargo coal or stores; and

v = volume of the machinery space below the margin line.

- (ii) In any case where the average permeability throughout the machinery space, as determined by detailed calculation, is less than that given by the aforesaid formula the calculated value may be substituted for the purpose of such calculation, the permeability of passenger spaces and crew spaces shall be taken to be 95, that of all spaces appropriated for cargo, coal or stores shall be taken to be 60, and that of double bottom, oil fuel and other tanks forming part of the structure of the ship shall be taken to be 95, or such lesser figure as the Administration may approve in the case of that ship.

(b) Portions before and abaft the machinery space-

- (i) the assumed average permeability throughout the portions of the ship before and abaft the machinery space shall be determined by the following formula :

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

Where a = volume of the passenger spaces and crew spaces which are situated below the margin line before or as the case may be abaft the machinery space; and

v = volume of the portion of the ship below the margin line before or as the case may be abaft machinery space :

Provided that the Central Government may require such assumed average permeability to be determined in the case of any ship by detailed calculation. In any such case, for the purpose of detailed calculation the permeability of spaces shall be assumed to be as follows:

Passenger spaces	.....	95
Crew spaces	.....	95
Spaces appropriated for machinery	.....	85
Spaces appropriated for cargo, coal, stores or baggage rooms	.....	60
Tanks forming part of the structure of the ship and double bottom	.....	95

or such lesser figures as the Central Government may permit in the case of the ship.

(ii) for the purpose of this paragraph, a space within a passenger space or crew space shall be deemed to be a part thereof unless it is appropriated for other purpose and is enclosed by permanent steel bulkheads.

6. **Factor of sub-division**

(1) Subject to the provision of sub-paragraph (4) of this paragraph in the case of ships of 131 metres in length or over, the factor of sub-division F shall be determined by the following formula :

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

Where - A and B respectively determined in accordance with the provision of sub-paragraph (5) of this paragraph and Cs is the criterion numeral determined in accordance with the provisions of paragraph 7 of this Schedule.

Provided that :

(a) Where the criterion numeral is equal to 45 or more and simultaneously the computed factor of sub-division as given by the preceding formula is 0.65 or less, but more than 0.50, the sub-division abaft the forepeak shall be governed by the factor 0.50.

(b) where in the case of any ship the factor F is less than 4 and the Central Government is satisfied that it is impracticable to apply the factor F in determining the permissible length of a compartment appropriated for machinery, it may allow an increased factor not exceeding 4 to be applied to that compartment.

(2) Subject to the provision of sub-paragraph (4) of this paragraph, in the case of ships the length of which is less than 131 metres but not that 79 metres having a criterion numeral of not less than-

$$S = \frac{3574 - 25L}{13}$$

(hereinafter in this paragraph referred to as S), the factor of sub-division F shall be determined by the following formula :

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

where B is the factor determined in accordance with the provisions of sub-paragraph (5) of this paragraph and Cs is the criterion numeral determined in accordance with the provision of paragraph 7 of this Appendix.

(3) In the case of ships the length of which is less than 131 metres but not less than 79 metres and having a criterion numeral less than S or in the case of ships the length of which is less than 79 metres the factor of sub-division shall be unity.

(4) In the case of a ship of any length which is intended to carry a number of passengers exceeding 12 but not exceeding :

$L^2/650$, or 50, whichever is less

the factor of sub-division shall be determined in the manner provided in sub-paragraph (3) of this paragraph.

(5) For the purposes of this paragraph the factors A and B shall be determined by the following formula :

$$A = \frac{58.2}{L - 60} + 0.18 \quad (\text{Where } L = 131 \text{ m and above})$$

$$B = \frac{30.3}{L - 42} + 0.18 \quad (\text{Where } L = 79 \text{ m and above})$$

7 **Criterion of service**

The criterion numeral for ships to which this part applies shall be determined by the following formula :

(a) where P1 is greater than P

$$Cs = 72 \frac{M + 2P1}{V + P1 - P}$$

(b) and in all other cases

$$Cs = 72 \frac{M + 2P}{V}$$

Where Cs = the criterion numeral ;

P= the whole volume (in cubic meters) of the passengers spaces and crew spaces below the margin line ;

V= the whole volume (in cubic meters) of the ship below the margin line

M= the volume (in cubic meters) of the machinery space, with the addition thereto the volume of any oil fuel bunkers which may be situated above the inner bottom and before or abaft the machinery space;

N= number of passengers which the ship is intended to carry; and

P= K N,

where K= 0,056L

Provided that :

(a) where the value of KN is greater than the sum of P and the whole volume of the passenger spaces above the margin line, the figure to be taken as P shall be the sum or 2/3 KN whichever is the greater ;

(b) values of Cs less than 23 shall be taken as 23; and

(c) values of Cs greater than 123 shall be taken as 123,

8 **Special conditions for sub-division**

(1) Compartments exceeding the permissible length :

(a) A compartment may exceed its permissible length provided that the combined length of each pair of adjacent compartment to which the compartment in question is common does not exceed either the floodable length or twice permissible length, whichever is the less.

(b) If one compartment of either of such pairs of adjacent compartment is situated inside the machinery space, and the other compartment thereof is situated outside the machinery space the combined length of the two compartments shall be adjusted in accordance with the mean average permeability of the two portions of the ship in which the compartments are situated.

(c) Where the lengths of two adjacent compartments are governed by different factors of sub-division the combined length of the two compartments shall be determined proportionately.

(d) Wherein any portion of a ship's bulkheads required by these rules to be watertight, are carried to a higher deck than in the remainder of the ship, separate margin lines may be used for calculation the floodable length of that portion of the ship.

(i) the two compartments adjacent to the resulting step in the bulkhead deck are each within the permissible length corresponding to their respective margin lines and, in addition their combined length does not exceed twice the permissible length determined by reference to the lower margin line of such compartments.

(ii) the sides of the ship are extended throughout the ships length to the deck corresponding to the uppermost margin line and all openings in the shell plating below that deck throughout the length of the ship comply with the requirements of these rules as if they were openings below the margin line.

(2) **Additional sub-division at forward end** - In ships 100 metres in length or over, the watertight bulkhead next abaft the collision bulkhead shall be fitted at a distance from the forward perpendicular which is not greater than the permissible length appropriate to a compartment bounded by the forward perpendicular and such bulkhead.

(3) **steps in bulkheads**- If a bulkhead required by these rules to be watertight is stepped, it shall comply with one of the following conditions :

(a) In ships having a factor of sub-division not greater than 0.9, the combined length of the two compartments separated by such bulkhead shall be not exceed 90 per cent of the floodable length or twice the permissible length whichever is the less. In ships having a factor of sub-division greater than 0.9 the combined length of the two compartments shall not exceed the permissible length; or

(b) Additional sub-division is provided in way of the step to maintain the same measure for safety as that secured by a plane bulkhead; or

(c) The compartment over which the step extends does not exceed the permissible length corresponding to a margin line taken 76 millimeters below the step.

(4) **Recesses in bulkheads**- If any part of a recess lies outside vertical surfaces on either side of the ship situated at a distance from the shell plating equal to one-fifth of the breadth of the ship and measured at right angles to the centre line at the level of the deepest sub-division load water line, the whole of such recess shall be deemed to a step in a bulkhead for the purpose of sub-paragraph (3) of this paragraph.

(5) **Equivalent plane bulkheads**- Where a bulkhead required by these rules to be watertight is recessed or stepped, an equivalent plane bulkhead shall be assumed in determining the sub-division.

(6) **Minimum spacing of bulkhead**- If the distance between two adjacent bulkhead required by these rules to be watertight or their equivalent plane bulkheads, or the distance between transverse plane passing through the nearest stepped portions of the bulkheads, is less than $0.03L+3.05$ metres, or 10.67 metres or $0.1L$ whichever is the least, only one of those bulkheads shall be regarded as forming part of the sub-division of the ship.

(7) **Allowance for local sub-division**-where in any ship a main transverse watertight compartment contains local subdivision and the Central Government is satisfied that, after any assumed side damage extending over a length of $0.03L+3.05$ metres or 10.67 metres, or $1L$ whichever is the least the whole volume of the main compartment will not be flooded, a proportionate allowance may be made in the permissible length otherwise required for such compartment. Allowance under this sub-paragraph will be made only if the Central Government is satisfied that such allowance is not likely to prevent compliance with the requirements relating to the range of stability.

(8) where in any ship the required factor of sub-division is 0.50 or less the combined length of any two adjacent compartments shall not exceed the floodable length or twice the permissible length whichever is the less.

PART 3

- 9 This Part applies to ships of Type 3 River-sea Passenger Vessel.
- 10 For the purposes of determining the maximum length of compartments in ships of Type 3, the provisions for Part 2 shall apply in the like manner as they apply to ships of Type 4 , subject to modifications set out in this Part.
- 11 Permeability- In ships to which this Part applies the assumed average permeability shall be as follows :-
- (a) Of the machinery space-
 - (i) In ships propelled by internal combustion engines..... 85
 - (ii) In all other ships 80
 - (b) All spaces other than machinery space 95

12 **Factor of sub-division**

The factor of sub-division of ships to which this part applies shall be accordance with the following Table, namely:-

Lengths of ship in metre	Factor of sub-division
Over 106.5 metres	0.5
Over 91.5 metres but not over 106.5 metres	0.5 for compartments in the machinery space and forward thereof, and unity for all other compartments
Over 61 metres but not Over 91.5 metres	0.5 for compartments forward of the machinery Space unity for all other compartments
61 metres and under	Unity.

- 13 The sub-division load lines assigned and marked shall be recorded in the River-sea passenger vessel safety certificate and shall be distinguished by the notation D2, D3 etc. for the alternative conditions.
- 14 The freeboard corresponding to each approved sub-division load line and the conditions of service for which it is approved shall be indicated on the Certificate.

PART 4

STABILITY OF SHIPS IN DAMAGED CONDITION

- 15 (1) Sufficient intact stability shall be provided in all service conditions so as to enable the ship to withstand the final stage of flooding of any one main compartment which is required to be within the floodable length.
- (2) Where two adjacent main compartments are separated by a bulkhead which is stepped under the condition of sub-paragraph (3) (a) of paragraph 8 of this Appendix, of intact stability shall be adequate to withstand the flooding of those two adjacent main compartments.
- (3) Where the required factor of subdivision is 0.50 or less but more than 0.33 intact stability shall be adequate to withstand the flooding of any two adjacent main compartments.
- (4) Where the required factor of subdivision is 0.33 or less, the intact stability shall be adequate to withstand the flooding of any three adjacent main compartments.
- 16 (1) For the purpose of determining requirements of paragraph 15 of this Part applicable to any ship, calculation shall be made in accordance with the provision of paragraph 17, 18 and 20 of this part. Such calculations shall take into consideration the proportions and design characteristics of the ship and the arrangement and configuration of the damaged compartments. In making these calculations the ship shall be assumed in the worst anticipated service condition as regards stability.
- (2) Where it is proposed to fit decks, inner skins or longitudinal bulkheads of sufficient tightness to seriously restrict the flow of water, it shall be proved to the satisfaction of the Central Government that proper consideration is given to such restrictions in the calculations.
- (3) The stability required in the final condition after damage, and after equalization where provided, shall be determined as follows:
- .1 The positive residual righting lever curve shall have a minimum range of 15 beyond the angle of equilibrium. This range may be reduced to a minimum of 10 degrees, in the case where the area under the righting lever curve is that specified in paragraph 16 (3).2, increased by the ratio:
- $$\frac{15}{\text{range}}$$
- .2 The area under the righting lever curve shall be at least 0.015 m-rad, measured from the angle of equilibrium to the lesser of:
- .1 the angle at which progressive flooding occurs;
- .2 22° (measured from the upright) in the case of one-compartment flooding, or 27° (measured from the upright) in the case of the simultaneous flooding of two or more adjacent compartments.
- .3 A residual righting lever is to be obtained within the range of positive stability, taking into account the greatest of the following heeling moments;
- .1 the crowding of all passengers towards one side;
- .2 the launching of all fully loaded davit-launched survival craft on one side;
- .3 due to wind pressure;
- as calculated by the formula:
- $$GZ(\text{in metres}) = \frac{(\text{heeling moment})}{\text{displacement}} + 0.04$$
- However, in no case is this righting lever to be less than 0.10 m.

.4 For the purpose of calculating the heeling moments in paragraph 16 (3).3, the following assumptions shall be made:

.1 Moments due to crowding of passengers:

.1.1 four persons per square metre;

.1.2 a mass of 75 kg for each passenger;

.1.3 passengers shall be distributed on available deck areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment.

.2 Moments due to launching of all fully loaded davit-launched survival craft on one side:

.2.1 all lifeboats and rescue boats fitted on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;

.2.2 for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;

.2.3 a fully loaded davit-launched liferaft attached to each davit on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out ready for lowering;

.2.4 persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;

.2.5 life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position.

.3 Moments due to wind pressure:

.3.1 a wind pressure of 120N/m to be applied;

.3.2 the area applicable shall be the projected lateral area of the ship above the waterline corresponding to the intact condition;

.3.3 the moment arm shall be the vertical distance from a point at one half of the mean draught corresponding to the intact condition to the centre of gravity of the lateral area".

(4) In intermediate stages of flooding, -the maximum righting lever shall be at least 0.05 m and the range of positive righting levers shall be at least 7 degrees. In all cases, only one breach in the hull and only one free surface need be assumed"

17 (1) For the purpose of making damage stability calculations. the volume ad surface permeability shall be, general as follows :-

Spaces	Permeability
Appropriated to Cargo coal or stores	60
Occupied by Accommodation	95
occupied by machinery	85
Intended for Liquids	0 or 95

(2) Higher surface permeability shall be assumed in respect of spaces, which, in the vicinity of the damage water plane, contain no substantial quantity of accommodation or machinery and space which are not generally occupied by any substantial quantity of cargo or stores.

18 (1) assumed extent of damage shall be as follows :-

- (i) Longitudinal extent : 3.05 metres plus 3 per cent of the length of the ship, or 10.67 metres, whichever is the less. Where the required factor of sub-division is 0.33 or less the assumed longitudinal extent of damage shall be increased as necessary so as to include any to consecutive main transverse watertight bulkheads;
- (ii) transverse extent (measured inboard from the ship's side at right angles to the centre line at the level of the deepest sub-division load line) : a distance of one-fifth of the breadth of the ship; and
- (iii) vertical extent : from the base line upwards without limit.

(2) If any damage or lesser extent than that indicated in clauses (i), (ii), and (iii) of sub-paragraph (1) of this paragraph would result in a more severe condition regarding heel or loss of meta centric height, such damage shall be assumed in the calculations.

19 Unsymmetrical flooding shall be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting but in any case where control to cross flooding fittings are provided they shall be capable of being operated from above the bulkhead deck. These fittings together with their controls shall be acceptable to the Administration. The maximum angle of heel after flooding but before equalization shall not exceed 15 degrees. Where cross-flooding fittings are required the time for equalization shall not exceed 15 min. Suitable information concerning the use of cross-flooding fittings shall be supplied to the master of the ship. (Refer to the Recommendation on a standard method for establishing compliance with the requirements for cross-flooding arrangements in passenger ships adopted by IMO resolution A.266(VIII))

20 The final conditions of the ship after damage and, in the case of unsymmetrical flooding, after equalization measures have been taken shall be as follows :

- (i) In the case of symmetrical flooding, there shall be a positive residual meta centric height of at least 50 millimeters as calculated by the constant displacement method;
- (ii) In the case of unsymmetrical flooding, the total heel for one-compartment flooding shall not exceed seven degrees. For the simultaneous flooding of two or more adjacent compartments, a heel of 12° may be permitted by the Administration.
- (iii) In no case shall the margin line be submerged in the final stage of flooding. If it is considered that the margin line may become submerged during an intermediate stage of flooding the Director General may require such investigations and arrangements to be made as it considers necessary for the safety of the ship.

21 (1) The master of the ship shall be supplied with the data necessary to maintain sufficient intact stability under service conditions to enable the ship to withstand the critical damage. In the case of ships requiring cross-flooding, the master of the ship shall be kept informed of the conditions of stability on which the calculations of heel are based and cautioned that excessive heeling might result should the ship sustain damage when it is in a less favorable condition.

(2) The data referred to in paragraph 21 (1) to enable the master to maintain sufficient intact stability shall include information which indicates the maximum permissible height of the ship's centre of gravity above keel (KG), or alternatively the minimum permissible meta centric height (GM), for a range of draughts or displacements sufficient to include all service conditions. The information shall show the influence of various trims taking into account the operational limits.

(3) Each ship shall have scales of draughts marked, clearly at the bow and stern. In the case where the draught marks are not located where they are easily readable, or operational constraints for a particular trade make it difficult to read the draught marks, then the ship shall also be fitted with a reliable draught indicating system by which the bow and stern draughts can be determined.

(4) On completion of loading of the ship and prior to its departure, the master shall determine the ship's trim and stability and also ascertain and record that the ship is in compliance with stability criteria in the relevant regulations. The Administration may accept the use of an electronic loading and stability computer or equivalent means for this purpose".

22 (1) No relaxation from the requirements for damage stability may be considered by the Director General unless it is shown to the satisfaction of the Administration that the intact meta centric height in any service condition necessary to meet these requirements is excessive for the service intended and that arrangements and other characteristics of the ship are conducive to stability after damage.

(2) Relaxations from the requirements for damage stability shall be permitted only in exceptional cases and subject to the condition that the Administration is to be satisfied that the proportions, arrangements and other characteristics of the ship are the most favorable to stability after damage which can practically and reasonably be adopted in the particular circumstances

----- End of Appendix 1 (to Annex 4) -----

Appendix 2 (to Annex 4)

Table I : Fire integrity of bulkheads separating adjacent spaces											
Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations (1)	A-0 ^c	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*	A-60
Corridors (2)		C ^e	B-0 ^e	A-0 ^a B-0 ^e	B-0 ^e	A-60	A-0	A-0	A-15 A-0 ^d	*	A-30
Accommodation spaces (3)			C ^e	A-0 ^a B-0 ^e	B-0 ^e	A-60	A-0	A-0	A-15 A-0 ^d	*	A-30 A-0 ^d
Stairways (4)				A-0 ^a B-0 ^e	A-0 ^a B-0 ^e	A-60	A-0	A-0	A-15 A-0 ^d	*	A-30
Service spaces (low risk) (5)					C ^e	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A (6)						*	A-0	A-0	A-60	*	A-60
Other machinery spaces (7)							A-0 ^b	A-0	A-0	*	A-0
Cargo spaces (8)								*	A-0	*	A-0
Service spaces (high risk) (9)									A-0 ^b	*	A-30
Open decks (10)											A-0
Special category and ro-ro spaces (11)											A-30

Table II : Fire integrity of decks separating adjacent spaces											
-- Space above --											
Space below	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*	A-60
Corridors (2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30
Accommodation spaces (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30 A-0 ^d
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*	A-30
Service spaces (low risk) (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A (6)	A-60	A-60	A-60	A-60	A-60	*	A-60 ^f	A-30	A-60	*	A-60
Other machinery spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*	A-0
Cargo spaces (8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*	A-0
Service spaces (high risk) (9)	A-60	A-30 A-0 ^d	A-30 A-0 ^d	A-30 A-0 ^d	A-0	A-60	A-0	A-0	A-0	*	A-30
Open decks (10)	*	*	*	*	*	*	*	*	*	-	A-0
Special category and ro-ro spaces (11)	A-60	A-30	A-30 A-0 ^d	A-30	A-0	A-60	A-0	A-0	A-30	A-0	A-30

Notes: To be applied to both Table I and Table II as appropriate.

- a For clarification as to which applies, see clause 4.47 and clause 4.52, of Annex 4 Part B.
- b Where spaces are of the same numerical category and superscript b appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, (e.g. in category (9)). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.
- c Bulkhead separating the wheelhouse and chartroom from each other may have a "B-0" rating. No fire rating is required for those partitions separating the navigation bridge and the safety centre when the latter is within the navigation bridge
- d See 4.48.2.3 and 4.48.2.4.
- e For the application of clause 4.46.1 of Annex 4 Part B, "B-0" and "C", where appearing in Table I, is to be read as "A-0".
- f Fire insulation need not be fitted if the machinery space in category (7), has little or no fire risk.

* Where an asterisk appears in the tables, the division is required to be of steel or other equivalent material but is not required to be of "A" class standard. However, where a deck, except an open deck, is penetrated for the passage of electric cables, pipes and vent ducts, such penetrations are to be made tight to prevent the passage of flame and smoke. Divisions between control stations (emergency generators) and open decks may have air intake openings without means for closure, unless a fixed gas fire-fighting system is fitted.

-----End of Appendix 2 (to Annex 4)-----

ANNEX : 5 Prevention of Collisions

5.1 Application

River-sea passenger vessels Type 3 & 4 shall comply with the provisions of Section 285 of the M.S.Act and M.S (Prevention of Collisions) Rules, 1975 (as amended).

ANNEX : 6 Life Saving Appliances

6.1 Equivalence

Pursuant to the exemption of RSPVs from provisions of Section 288, 289 & 290 of the M.S. Act and M.S. (Life Saving Appliances Rules) 1991 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

6.2 Application

This Annex shall apply to all River-Sea Passenger Vessels.

6.3 Definitions

For the purpose of this Annex:

- a. **Approved** means approved by Administration.
- b. **Length** shall be defined as 96% of the total length on the waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the fore-side of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this is measured shall be parallel to the designed waterline.
- c. **Certificated person** is a person who holds a certificate of proficiency in survival craft issued under the authority of, or recognized as valid by, the Administration in accordance with the requirements of the International Convention on Standards of Training, Certification and Watch keeping for Seafarers, in Force; or a person who holds a certificate issued or recognized by the Administration of a State not a Party to that Convention for the same purpose as the convention certificate.
- d. **Embarkation ladder** is the ladder provided at survival craft embarkation stations to permit safe access to survival craft after launching.
- e. **Float-free launching** is that method of launching a survival craft whereby the craft is automatically released from a sinking ship and is ready for use.
- f. **Marine evacuation system** is an appliance for the rapid transfer of persons from the embarkation deck of a ship to a floating survival craft.
- g. **Rescue boat** is a boat designed to rescue persons in distress and to marshal survival craft.
- h. **Survival craft** is a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship.
- i. **Marine evacuation system** is an appliance for the rapid transfer of persons from the embarkation deck of a ship to a floating survival craft.
- j. **Lightest sea-going condition** is the loading condition with the ship on even keel, without cargo, with 10% stores and fuel remaining and in the case of a passenger ship with the full number of passengers and crew and their luggage.
- k. **Code** means the International Life-Saving Appliance (LSA) Code adopted by the Maritime Safety Committee of the Organization by resolution MSC.48(66), as it may be amended by the organization, provided that such amendments are adopted and brought into force.

6.4 Survival craft

- 6.4.1 All survival craft required to provide for abandonment by the total number of persons on board shall be capable of being launched with their full complement of person and equipment within a period of 30 minutes from the time the abandon ship signal is given after all persons have been assembled. With lifejackets donned.

6.4.2 Every Type 3 River-Sea Passenger Vessel shall carry davit launched life rafts on each side to accommodate fifty percent of persons which the ship is certified to carry.

6.4.3 Every Type 4 River-Sea Passenger Vessel shall carry

- a) Lifeboats with aggregate capacity as will accommodate atleast 30% of total number of persons onboard and be equally distributed on each side of ship. and
- b) Davit launched life rafts on each side sufficient to accommodate the total number of persons the ship is certified to carry.

6.5. Rescue Boats

6.5.1 Type 3 and Type 4 River-Sea Passenger Vessels of 500 gross tonnage and over shall carry at least one rescue boat complying with the requirements of the LSA Code on each side of the ship.

6.5.2 Type 3 and Type 4 River-Sea Passenger Vessels of less than 500 gross tonnage shall carry at least one rescue boat complying with the requirements of the LSA Code.

6.5.3 A lifeboat may be accepted as a rescue boat provided its launching and recovery arrangements also comply with the requirements for a rescue boat.

6.6 Survival craft and rescue boat embarkation arrangements

6.6.1. All River Sea Passenger ships, survival craft embarkation arrangements shall be designed for:

6.6.1.1 All lifeboats to be boarded and launched either directly from the stowed position or from an embarkation deck but not both;

6.6.1.2 Davit-launched liferafts to be boarded and launched from a position immediately adjacent to the stowed position or from a position to which the liferaft is transferred prior to launching.

6.6.2. Rescue boat arrangements shall be such that the rescue boat can be boarded and launched directly from the stowed position with the number of persons assigned to crew the rescue boat on board. Notwithstanding the requirements of paragraph 6.6.1.1, if the rescue boat is also a lifeboat and the other lifeboats are boarded and launched from an embarkation deck, the arrangements shall be such that the rescue boat can also be boarded and launched from the embarkation deck.

6.7 Stowage of survival craft

6.7.1. Each survival craft shall be stowed:

6.7.1.1 so that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching station;

6.7.1.2. as near the water surface as is safe and practicable and, in the case of a survival craft other than a liferaft intended for throw over board launching, in such a position that the survival craft in the embarkation position is not less than 2 m above the waterline with the ship in the fully loaded condition under unfavorable conditions of trim of up to 10° and listed up to 20° either way, or to the angle at which the ship's weather deck edge becomes submerged, whichever is less;

- 6.7.1.3 in a state of continuous readiness so that two crew members can carry out preparations for embarkation and launching in less than 5 min;
- 6.7.1.4. fully equipped as required by this chapter and the Code; and
- 6.7.1.5.as far as practicable, in a secure and sheltered position and protected from damage by fire and explosion.
- 6.7.2. Lifeboats for lowering down the ship's side shall be stowed as far forward of the propeller as practicable. On cargo ships of 80 m in length and upwards but less than 120 m in length, each lifeboat shall be so stowed that the after end of the lifeboat is not less than the length of the lifeboat forward of the propeller. On cargo ships of 120 m in length and upwards and passenger ships of 80 m in length and upwards, each lifeboat shall be so stowed that the after end of the lifeboat is not less than 1.5 times the length of the lifeboat forward of the propeller. Where appropriate, the ship shall be so arranged that lifeboats, in their stowed positions, are protected from damage by heavy seas.
- 6.7.3. Lifeboats shall be stowed attached to launching appliances.
- 6.7.4.1. Every life raft shall be stowed with its painter permanently attached to the ship.
- 6.7.4.2. Each life raft or group of life rafts, shall be stowed with a float-free arrangement complying with the requirements the Code so that each floats free and, if inflatable, inflates automatically when the ship sinks.
- 6.7.4.3. Life rafts shall be so stowed as to permit manual release of one raft or container at a time from their securing arrangements.
- 6.7.5. Davit-launched life rafts shall be stowed within reach of the lifting hooks, unless some means of transfer is provided which is not rendered inoperable within the limits of trim and list prescribed in paragraph 6.7.1.2 or by ship motion or power failure.
- 6.7.6 The stowage height of a survival craft on a passenger ship shall take into account the requirements of regulation 6.7.1.2 , .For a davit-launched survival craft, the height of the davit head with the survival craft in embarkation position, shall, as far as practicable, not exceed 15 m to the waterline when the ship is in its lightest seagoing condition.

6.8 Stowage of rescue boats

- 6.8.1 Rescue boats shall be stowed:
- 6.8.1.1 In a state of continuous readiness for launching in not more than 5 min, and if the inflated type, in a fully inflated condition at all times;
- 6.8.1.2. In a position suitable for launching and recovery;
- 6.8.1.3 So that neither the rescue boat nor its stowage arrangements will interfere with the operation of any survival craft at any other launching station; and
- 6.8.1.4 If it is also a lifeboat, in compliance with the requirements of regulation 6.7.

6.9 Muster stations

- 6.9.1 Every passenger ship shall have passenger muster stations which shall:
- 6.9.1.1.Be in the vicinity of, and permit ready access for the passengers to, the embarkation stations unless in the same location; and

6.9.1.2. Have ample room for marshalling and instruction of the passengers, but at least 0.35 m² per passenger.

6.10 Life buoys

6.10.1 River-Sea Passenger Vessels shall carry not less than the number of lifebuoys determined according to the following table:

Length of River-Sea Passenger Vessel	Minimum number of lifebuoys
Under 60	8
60 and under 120	12
120 and under 180	18
180 and under 240	24
240 and over	30

A River-Sea Passenger Vessel of under 60 m in length shall carry not less than six lifebuoys provided with self-igniting lights.

6.10.2 Lifebuoys complying with the requirements of the Code shall be:

6.10.2.1 so distributed as to be readily available on both sides of the ship and as far as practicable on all open decks extending to the ship's side; at least one shall be placed in the vicinity of the stern; and

6.10.2.2 so stowed as to be capable of being rapidly cast loose, and not permanently secured in any way.

6.10.3 At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline equal in length to not less than twice the height at which it is stowed above the waterline in the lightest seagoing condition, or 30 m, whichever is the greater.

6.10.4 Not less than one half of the total number of lifebuoys shall be provided with lifebuoy self-igniting lights not less than two of these shall also be provided with lifebuoy self-activating smoke signals and be capable of quick release from the navigation bridge; lifebuoys with lights and those with lights and smoke signals shall be equally distributed on both sides of the ship and shall not be the lifebuoys provided with lifelines

6.10.5 Each lifebuoy shall be marked in block capitals of the Roman alphabet with the name and port of registry of the ship on which it is carried.

6.11 Life Jackets

6.11.1 River-Sea Passenger Vessels shall be provided with approved life jackets for every person onboard the ship. In addition:

6.11.1.1 In addition to 6.11.1, every river-sea passenger ship shall carry lifejackets for not less than 5% of the total number of persons on board. These lifejackets shall be stowed in conspicuous places on deck or at muster stations.

6.11.1.2 River-Sea Passenger Vessels on voyages less than 24 h, a number of infant lifejackets equal to at least 2.5% of the number of passengers on board shall be provided.

6.11.1.3 For River-Sea Passenger Vessels on voyages 24 h or greater, infant lifejackets shall be provided for each infant on board;

6.11.1.4 A number of lifejackets suitable for children equal to at least 10% of the number of passengers on board shall be provided or such greater number as may be required to provide a lifejacket for each child;

6.11.1.4 A sufficient number of lifejackets shall be carried for persons on watch and for use at remotely located survival craft stations. The lifejackets carried for persons on watch should be stowed on the bridge, in the engine control room and at any other manned watch station; and

6.11.1.5 Life jackets shall be of approved type as per LSA Code.

6.12. Distress signals

6.12.1 Every River-Sea Passenger Vessel shall be provided with not less than 12 Rocket parachute as per LSA Code

6.12.2 They shall be stored on or near the place at which the River-Sea Passenger Vessel is normally navigated.

6.12.3 They shall be so placed as to be readily accessible and their position shall be plainly indicated.

6.13 On-board communications and alarm systems

6.13.1. An emergency means comprised of either fixed or portable equipment or both shall be provided for two-way communications between emergency control stations, muster and embarkation stations and strategic positions on board.

6.13.2. Every River-Sea Passenger Vessel shall be provided with a general emergency alarm system capable of sounding the general emergency alarm signal consisting of seven or more short blasts followed by one long blast on the River-Sea Passenger Vessel's whistle or siren and additionally on an electrically operated bell or klaxon or other equivalent warning system, which shall be powered from the ship's main supply and the emergency source of electrical power. The system shall be capable of operation from the navigating bridge and except for the ship's whistle also from other strategic points. The system shall be audible throughout all the accommodation and normal crew working spaces. Entertainment sound systems shall automatically be turned off when the general emergency alarm system is activated.

6.13.3 The system shall be capable of operation from the navigation bridge or control station as appropriate and shall be audible throughout all accommodation and normal working spaces. The system shall also be audible on all open decks.

6.14 Public address systems

6.14.1. General Alarm System shall be supplemented by either a public address system or other suitable means of communication.

6.14.2 The public address system shall be connected to the emergency source of electrical power

6.15 Embarkation Ladders

6.15.1 Type 3 and Type 4 River-Sea Passenger Vessels shall be provided with an embarkation ladder on each side of the ship at embarkation stations.

6.16. Line Throwing Appliances (LTA)

6.16.1 Type 3 and Type 4 River-Sea Passenger Vessels shall be provided with a line throwing appliance as per LSA Code

6.17. Muster list and emergency instructions

6.17.1. Clear instructions to be followed in the event of an emergency shall be provided for every person on board. In the case of passenger ships these instructions shall be drawn up in the language or languages required by the ship's flag State and in the English language.

6.17.2. Muster lists and emergency instructions shall be exhibited in conspicuous places throughout the ship including the navigating bridge, engine-room and crew accommodation spaces.

6.17.3. Illustrations and instructions in appropriate languages shall be posted in passenger cabins and be conspicuously displayed at muster stations and other passenger spaces to inform passengers of:

1. their muster station;
2. the essential actions they must take in an emergency; and
3. the method of donning lifejackets.

6.18. Operating instructions

6.18.1 Posters or signs shall be provided on or in the vicinity of survival craft and their launching controls and shall:

6.18.1.1. illustrate the purpose of controls and the procedures for operating the appliance and give relevant instructions or warnings;

6.18.1.2. be easily seen under emergency lighting conditions; and

6.18.1.3. use symbols in accordance with the recommendations of the Organization.

6.19 Decision support system for masters of passenger ships

6.19.1. In all river sea passenger ships, a decision support system for emergency management shall be provided on the navigation bridge.

6.19.2. The system shall, as a minimum, consist of a printed emergency plan or plans. All foreseeable emergency situations shall be identified in the emergency plan or plans, including, but not limited to, the following main groups of emergencies:

1. fire;
2. damage to ship;
3. pollution;
4. unlawful acts threatening the safety of the ship and the security of its passengers and crew;
5. personnel accidents;
6. cargo-related accidents; and
7. emergency assistance to other ships.

6.19.3. The emergency procedures established in the emergency plan or plans shall provide decision support to masters for handling any combination of emergency situations.

6.19.4. The emergency plan or plans shall have a uniform structure and be easy to use. Where applicable, the actual loading condition as calculated for the passenger ship's voyage stability shall be used for damage control purposes.

6.19.5. In addition to the printed emergency plan or plans, the Administration may also accept the use of a computer-based decision support system on the navigation bridge which provides

all the information contained in the emergency plan or plans, procedures, checklists, etc., which is able to present a list of recommended actions to be carried out in foreseeable emergencies.

6.20. Drills

- 6.20.1. On passenger ships, an abandon ship drill and fire drill shall take place weekly. The entire crew need not be involved in every drill, but each crew member must participate in an abandon ship drill and a fire drill each month . Passengers shall be strongly encouraged to attend these drills.

6.21. Recovery of persons from the water

- 6.21.1. all ships shall have specific plans and procedures for recovery of persons from the water, taking into account the guidelines developed by the Organization. The plans and procedures shall identify the equipment intended to be used for recovery purposes and measures to be taken to minimize the risk to shipboard personnel involved in recovery operations.

6.22. Marine evacuation system

- 6.22.1. River Sea passenger vessels may be fitted with Marine evacuation system
- 6.22.2 Every ship fitted with a marine evacuation system shall be provided with on-board training aids in the use of the system.
- 6.22.3 On ships fitted with a marine evacuation system communication between the embarkation station and the platform or the survival craft shall be ensured.

6.23. Stowage of Marine Evacuation Systems

- 6.23.1. The ship's side shall not have any openings between the embarkation station of the marine evacuation system and the waterline in the lightest seagoing condition and means shall be provided to protect the system from any projections.
- 6.23.2. Marine evacuation systems shall be in such positions as to ensure safe launching having particular regard to clearance from the propeller and steeply overhanging positions of the hull and so that, as far as practicable, the system can be launched down the straight side of the ship.
- 6.23.3. Each marine evacuation system shall be stowed so that neither the passage nor platform nor its stowage or operational arrangements will interfere with the operation of any other life-saving appliance at any other launching station.
- 6.23.4. Where appropriate, the ship shall be so arranged that the marine evacuation systems in their stowed positions are protected from damage by heavy seas.

ANNEX : 7 Fire Fighting Appliances

7.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 289 & 290 of the M.S. Act and M.S. (Fire Fighting Appliances) Rules, 1990 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

7.2 Application

This part shall apply to all Type 3 and Type 4 River Sea Passenger Vessels.

7.3 Definitions

7.3.1 For the purpose of this Annex:

- **Approved** means approved as per BIS, equivalent ISO standards or FSS code as acceptable to the administration.

7.4 Detection and alarm

7.4.1 General requirements.

7.4.1.1 All vessels shall be provided with a fixed fire detection and fire alarm system appropriate for the space and approved type complying with the Fire Safety Systems Code. A fixed fire detection and fire alarm system for passenger ships shall be capable of remotely and individually identifying each detector and manually operated call point.

7.4.2 Protection of machinery spaces.

7.4.2.1 A fixed fire detection and fire alarm system shall be installed in periodically unattended machinery spaces and other machinery spaces where automatic or remote control systems have been approved in lieu of continuous manning.

7.4.2.2 The detection system so prescribed shall not be based only on thermal detectors and be capable of audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire.

7.4.3 Protection of accommodation spaces

7.4.3.1 Smoke detectors of an approved type shall be installed in stairways, corridors and escape routes within accommodation spaces.

7.5 Containment of fire

7.5.1 See Annex 4, Part B of this Notification.

7.6 Fire fighting

7.6.1 Fire mains and hydrants

7.6.1.1 General.

Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants. Isolation valves are to be fitted for all open deck fire main branches used for purposes other than fire fighting.

The arrangements for ready availability of water supply shall be :

- (a) for River Sea Passenger Vessels of 1,000 gross tonnage and upwards such that at least one effective jet of water is immediately available from any hydrant in an interior location and so as to ensure the continuation of the output of water by the automatic starting of one required fire pump;
- (b) for River Sea Passenger Vessels of less than 1,000 gross tonnage by automatic start of at least one fire pump or by remote starting from the navigation bridge of at least one fire pump. If the pump starts automatically or if the bottom valve cannot be opened from where the pump is remotely started, the bottom valve shall always be kept open; and
- (c) if fitted with periodically unattended machinery spaces, the administration shall determine provisions for fixed water fire-extinguishing arrangement for such spaces equivalent to those required for normally attended machinery spaces;

7.6.1.2 Diameter of fire mains

The diameter of the fire main and water service pipes shall be sufficient for the discharge of 140 m³/h

7.6.1.3 Isolating valves and relief valves

Isolating valves shall be so arranged so that the fire main is not disabled due to fire in the machinery space and such valves are fitted in an easily accessible and tenable position outside machinery spaces.

A valve shall be fitted to serve each fire hydrant so that any fire hose may be removed while the fire pumps are in operation.

Relief valves shall be provided in conjunction with fire pumps if the pumps are capable of developing pressure exceeding the design pressure of the fire main system.

7.6.1.4 Number and position of hydrants

(a) The number and position of hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, may reach any part of the vessel normally accessible to the crew while the vessel is being navigated and any part of any cargo space when empty.

Such hydrants shall be positioned near the access to the protected spaces.

(b) In the accommodation, service and machinery spaces the number and position of hydrants shall be such that the requirements of para 7.6.1.4 (a) may be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed; and

(c) where access is provided to a machinery space containing oil-fired boilers, oil fuel units, internal combustion engines for main propulsion, internal combustion engines having aggregate total output of not less than 375 kW at a low level from an adjacent shaft tunnel, two hydrants shall be provided external to, but near the entrance to that machinery space. Where such access is provided from other spaces, in one of those spaces two hydrants shall be provided near the

entrance to the machinery space. Such provision need not be made where the tunnel or adjacent spaces are not part of the escape route.

7.6.1.5 Pressure at hydrants

With the two pumps simultaneously delivering a quantity of water through any adjacent hydrants of maintaining the following pressure at any hydrant :

(i) 4,000 tons and upwards:

3.1. bar (0.31 N/mm²)

(ii) of 1,000 tons and upwards but under 4,000 tons :

2.7 bar (0.27 N/mm²)

(iii) of under 1,000 tons :

2.1 bar (0.21 N/mm²)

7.6.1.6 International shore connection

All River sea passenger vessels of 500 GT and above shall be provided with at least one international shore connection usable of either side of the vessel.

7.7 Fire pumps

7.7.1 Number of fire pumps.

River sea passenger vessels shall be provided with at least two independently driven approved fire pumps.

7.7.2 Arrangement of fire pumps and fire mains.

For River Sea Passenger Vessels of less than 1,000 gross tonnage if a fire in any one compartment could put all the pumps out of action, there shall be an alternative means consisting of an approved emergency fire pump with its source of power and sea connection located outside the space where the main fire pumps or their sources of power are located.

For River Sea Passenger Vessels of 1,000 gross tonnage and upwards, in the event of a fire in any one compartment all the fire pumps will not be put out of action.

The space containing the emergency fire pump shall not be contiguous to the boundaries of the machinery spaces or those spaces containing the two main fire pumps.

No direct access shall be permitted between the machinery space and the space containing the emergency fire pump and its source of power. Alternatively, the access may be through a watertight door capable of being operated from a space remote from the machinery space and the space containing the emergency fire pump unlikely to be

cut-off in the event of fire in those spaces. In such cases a second means of access to the space containing the emergency fire pump and its source of power is to be provided.

Ventilation arrangement to the space containing the independent source of power for the emergency fire pump shall be such as to preclude the possibility of smoke from machinery space fire entering or being drawn into that space.

7.7.3 Capacity of fire pumps

7.7.4.1 Total capacity of fire pumps

The required fire pumps shall be capable of delivering for fire-fighting purposes a quantity of water not less than two thirds of the quantity required to be dealt with by the bilge pumps when employed for bilge pumping.

7.7.4.2 Capacity of each fire pump

Each of the fire pumps shall have a capacity not less than 80% of the total required capacity divided by the minimum number of required fire pumps but have a minimum capacity of 25 m³/h, and capable of delivering at least the two required jets of water as prescribed in para 7.6.1.4 (a).

7.7.4.3 Emergency fire pump provided for vessel of less than 1000 GT shall have capacity not to be less than 40% of total capacity of fire pumps but need not to be more than 25 m³/h.

7.8 Fire hoses and nozzles

7.8.1 General specifications

7.8.1.1 Approved fire hoses shall be of non-perishable material and shall be sufficient in length to project a jet of water to any of the spaces in which they may be required to be used.

7.8.1.2 Each hose shall be provided with a nozzle and the necessary couplings.

7.8.1.3 Hoses specified in this Annex as "fire hoses" shall, together with any necessary fittings and tools, be kept ready for use in conspicuous positions near the water service hydrants or connections.

7.8.1.4 Fire hoses shall have a length of at least 10 m, but not more than;
15 m in machinery spaces
20 m in other spaces and open decks, and
25 m for open decks on vessels with a maximum breadth in excess of 30 m.

7.8.1.5 Unless one hose and nozzle is provided for each hydrant in the vessel, there shall be complete interchangeability of hose couplings and nozzles.

7.8.2 Number and diameter of fire hoses.

7.8.2.1 River sea passenger vessels shall be provided with fire hoses, the number and diameter of which, shall be to the satisfaction of the Administration. Hose diameter shall be maximum of 64 mm and minimum of 38 mm and they shall be lined.

7.8.2.2 As a guideline, river sea passenger vessels shall be provided with one fire hose for each 30 m in length of the vessel and one spare, but in no case less than five in all.

7.8.3 Size and types of nozzles.

7.8.3.1 Standard nozzle sizes shall be 12 mm, 16 mm and 19 mm or as near thereto as possible.

7.8.3.2 Larger diameter nozzles may be permitted at the discretion of the.

7.8.3.3 Nozzles shall be of a dual-purpose type (i.e. spray/jet type) approved for marine use incorporating a shutoff.

7.9 Portable fire extinguishers

7.9.1 Arrangement of fire extinguishers.

7.9.1.1 Every ship shall be provided with at least one portable fire extinguisher in each of the passenger spaces above the bulkhead deck, and with at least two such extinguishers in each of the crew spaces and the passenger space below that deck. At least one portable fire extinguisher shall be available for use in any gallery. Vessels of 1,000 gross tonnage and upwards shall carry at least five portable fire extinguishers.

7.9.1.2 One of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

7.9.1.3 Carbon dioxide fire extinguishers shall not be placed in accommodation spaces.

7.9.1.4 Fire extinguishers shall be situated ready for use at easily visible places, which can be reached quickly and easily at any time in the event of fire.

7.9.1.5 Portable fire extinguishers shall be provided with devices which indicate whether they have been used.

7.9.1.6 Spare charges shall be provided for 100% of the first ten extinguishers and 50% of the remaining fire extinguishers capable of being recharged on board. For fire extinguishers which cannot be recharged on board, additional portable fire extinguishers of the same quantity, type, capacity and number shall be provided in lieu of spare charges.

7.10 Fixed fire fighting systems

7.10.1 Types of fixed fire-extinguishing systems

7.10.1.1 A fixed fire fighting system required in para 7.11, 7.13 & 7.14 may be any of the following:

- a. A fixed gas fire-extinguishing system,
- b. A fixed high-expansion foam fire-extinguishing system,
- c. A fixed pressure water-spraying fire-extinguishing system

7.10.1.2 Fire extinguishing systems using Halon 1211, 1301 and 2402 and per fluorocarbons shall be prohibited.

7.10.2 Closing appliances for fixed fire-extinguishing systems.

7.10.2.1 Where a fixed gas fire-extinguishing system is used, openings which may admit air to, or allow gas to escape from, a protected space shall be capable of being closed from outside the protected space.

7.10.3 Storage rooms of fire-extinguishing medium.

7.10.3.1 When a fire-extinguishing medium is stored outside a protected space, it shall be stored in a room which is located behind the forward collision bulkhead, and is used for no other purposes.

7.10.3.2 Any entrance to such a storage room should preferably be from the open deck and should be independent of the protected space.

7.10.3.3 If the storage space is located below deck, it shall be located no more than one deck below the open deck and shall be directly accessible by a stairway or ladder from the open deck.

7.10.3.4 Spaces which are located below deck shall be fitted with mechanical ventilation system designed to take exhaust air from the bottom of the space and shall be sized to provide at least 6 air changes per hour.

7.11 Fire extinguishing systems in machinery spaces

7.11.1 Fixed fire-extinguishing arrangements

7.11.1.1 Machinery spaces containing oil-fired boilers, any oil-fired equipment other than boilers, oil fuel units, internal combustion engines for main propulsion, internal combustion engines having aggregate total output of not less than 375 kW shall be provided with one of the fixed fire-extinguishing systems in 7.10.1.1.

7.11.1.2 In addition to the above, for ships of more than 500 GT, machinery spaces of 500 m³ and above, an approved fixed water based or equivalent local application fire extinguishing system shall be provided to protect areas such as the following without the need of engine shutdown, personnel evacuation or sealing of spaces:

- i. Fire hazard portion of internal combustion machinery used for main propulsion and power generation
- ii. Boiler fronts
- iii. Fire hazard portions of incinerators
- iv. Purifiers for heated fuel oil

7.11.1.3 Activation of local application system shall give a visual and distinct audible alarm in the protected space and continuously manned stations.

7.12 Additional fire-extinguishing systems

7.12.1 There shall be at least one approved portable foam applicator unit.

7.12.2 There shall be minimum two foam-type fire extinguishers, each of at least 45 litre capacity or equivalent in spaces containing internal combustion machinery. In the case of boiler rooms containing boilers of 175 kW and above, one foam extinguisher of at least 135 litre capacity is to be provided.

7.12.3 There shall be sufficient number of portable foam extinguishers which should be so located that, as far as practicable, no point in the space is more than 10 m from an extinguisher.

7.12.4 River sea passenger vessels carrying more than 36 passengers, each machinery space containing oil-fired boilers, any oil-fired equipment other than boilers, oil fuel units, internal combustion engines for main propulsion, internal combustion engines having aggregate total output of not less than 375 kW shall be provided with at least two suitable water fog applicators.

7.13 Fire extinguishing arrangements in control stations, accommodation & service spaces

7.13.1 Type 4 passenger and Type 3 passenger vessels carrying more than 36 passengers shall be equipped with an automatic sprinkler, fire detection and alarm system of an approved type in all control stations, accommodation and service spaces, including corridors and stairways.

7.13.2 Administration may exempt Type 3 passenger vessels carrying more than 36 passengers from the requirement of rule 7.13.1 to the extent that it is satisfied to do so by reason of the intended service of the ship.

7.13.3 Alternatively, control stations, where water may cause damage to essential equipment, may be fitted with an approved fixed fire-extinguishing system of another type. Spaces having little or no fire risk such as voids, public toilets, carbon dioxide rooms and similar spaces need not be fitted with an automatic sprinkler system.

7.13.2 Spaces containing flammable liquid

7.13.2.1 Paint lockers and flammable liquid lockers, at a minimum, shall be protected by a portable carbon dioxide fire extinguisher of adequate size. A discharge port shall be arranged in the locker to allow the discharge of the extinguisher without having to enter the protected space. Alternatively, paint lockers may be protected by a dry powder system designed for 0.5 [Kg powder/ m³] or a water spraying or sprinkler system designed for 5 [l/m².min].

7.13.3 Deep-fat cooking equipment

7.13.3.1 Deep-fat cooking equipment shall be fitted with the following:

- a. An approved fire-extinguishing system,
- b. A primary and backup thermostat with an alarm to alert the operator in the event of failure of either thermostat
- c. Arrangements for automatically shutting off the electrical power upon activation of the fire-extinguishing system
- d. An alarm for indicating operation of the fire-extinguishing system in the galley where the equipment is installed
- e. Controls for manual operation of the fire-extinguishing system which are clearly labeled for ready use by the crew.

7.14 Fire Fixed gas fire-extinguishing systems for cargo spaces

Any river sea passenger vessel engaged in the carriage of dangerous goods or cargoes of other than low fire risk shall be provided with an approved fixed carbon dioxide or inert gas fire-extinguishing system.

7.15 Fire-fighter's outfits

7.15.1 River sea passenger vessels shall carry at least two fire-fighter's outfits. In addition:

- i. for every 80 m, or part thereof, of the aggregate of the lengths of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate of such lengths, two fire-fighter's outfits and, in addition, two sets of personal equipment, each set comprising the items stipulated in the Fire Safety Systems Code. River sea passenger vessels carrying more than 36 passengers, two additional fire-fighter's outfits shall be provided for each main vertical zone.
And
- ii. On river sea passenger vessels carrying more than 36 passengers, for each pair of breathing apparatus there shall be provided one water fog applicator which shall be stored adjacent to such apparatus.

7.15.2 A minimum of two "two-way" portable radiotelephone apparatus for each fire party for fire-fighter's communication shall be carried on board. Those two-way portable radiotelephone apparatus shall be of an explosion-proof type or intrinsically safe.

7.15.3 The fire-fighter's outfits shall be kept ready for use in an easily accessible location that is permanently and clearly marked. At least two fire-fighter's outfits and, in addition, one set of personal equipment shall be available at any one position. At least two fire-fighter's outfits shall be stored in each main vertical zone.

7.16 Notification of crew

7.16.1 A general emergency alarm system shall be used for notifying the crew and passengers of a fire.

7.16.2 A public address system or other effective means of communication shall be available throughout the accommodation and service spaces and control stations and open decks.

7.17 Operational requirements

7.17.1 Operational readiness and maintenance

7.17.1.1 At all times while a river sea passenger vessel is in service,

- a. fire protection systems and fire fighting systems and appliances shall be maintained ready for use; and
- b. fire protection systems and fire fighting systems and appliances shall be properly tested and inspected.

7.17.1.2 A river sea passenger vessel is not in service when:

- a. it is in for repairs or lay-up (either at anchor or in port) or in dry-dock;
and
- b. it is declared not in service by the owner or the owner's representative.

7.17.1.3 Portable extinguishers which have been discharged shall be immediately recharged or replaced with an equivalent unit.

7.17.1.4 A maintenance plan shall be developed and implemented for ensuring reliability of fire-fighting systems and appliances, in accordance with the circulars/orders/notices issued by the Directorate on this matter from time to time.

7.17.1.5 The maintenance plan should be kept on board and should be available for inspection whenever required by the Administration.

7.17.1.6 The maintenance plan shall include at least the following fire-fighting systems and appliances, where installed:

- fire mains, fire pumps and hydrants, including hoses, nozzles and international shore connections;
- fixed fire detection and fire alarm systems;
- fixed fire-extinguishing systems and other fire-extinguishing appliances;
- automatic sprinkler, fire detection and fire alarm systems;
- ventilation systems, including fire and smoke dampers, fans and their controls;
- emergency shutdown of fuel supply;
- fire doors including their controls;
- general emergency alarm systems;
- emergency escape breathing devices (for requirement see Annex 4, Clause 4.49.5);
- portable fire extinguishers, including spare charges; and
- fire-fighter's outfits
- low-location lighting (for vessels carrying more than 36 passengers)
- public address systems (for vessels carrying more than 36 passengers)

7.17.1.7 The maintenance plan may be computer-based.

7.17.2 Instructions, on-board training and drills

7.17.2.1 Crew members shall receive instruction on fire safety on board the vessel.

7.17.2.2 Crew members shall receive instructions on their assigned duties.

7.17.2.3 Parties responsible for fire extinguishing shall be organized. These parties shall have the capability to complete their duties at all times while the vessel is in service.

7.17.2.4 Crew members shall be trained to be familiar with the arrangements of the vessel as well as the location and operation of any fire-fighting systems and appliances that they may be called upon to use.

7.17.2.5 Training in the use of emergency escape breathing devices shall be considered as part of on-board training.

7.17.2.6 Performance of crew members assigned fire-fighting duties shall be periodically evaluated by conducting on-board training and drills to identify areas in need of improvement, to ensure competency in fire-fighting skills is maintained, and to ensure the operational readiness of the fire-fighting organisation.

7.17.2.7 A training manual, written in the working language of the ship, shall be provided in each crew mess room and recreation room or in each crew cabin and shall explain the following:

- general fire safety practice and precautions related to the dangers of smoking, electrical hazards, flammable liquids and similar common shipboard hazards;
- general instructions on fire-fighting activities and fire-fighting procedures, including procedures for notification of a fire and use of manually operated call points;
- meanings of the ship's alarms;
- operation and use of fire-fighting systems and appliances;
- operation and use of fire doors;
- operation and use of fire and smoke dampers; and
- escape systems and appliances.

7.17.3 Fire control plan

7.17.3.1 General arrangement plans should be permanently exhibited for the guidance of the vessel's officers, showing clearly for each deck the control stations, the various fire sections enclosed by "A" class divisions, the sections enclosed by "B" class divisions together with particulars of the fire-detection and fire alarm systems, the sprinkler installation, the fire extinguishing appliances, means of access to different compartments, decks, etc. and the ventilating system, including particulars of the fan control positions, the position of dampers and identification numbers of the ventilating fans serving each section. For river sea passenger vessels carrying more than 36 passengers, plans and booklets required by this regulation shall provide information regarding fire protection, fire detection and fire extinction.

At the discretion of the Administration, the aforementioned details may be set out in a booklet, a copy of which should be supplied to each officer, and one copy shall at all times be available on board in an accessible position. Plans and booklets shall be kept up to date; any alterations thereto should be recorded as soon as practicable. Description in such plans and booklets shall be in English, or in the working language of the vessel, if not English.

7.17.3.2 A duplicate set of the fire control plan or a booklet containing such plans shall be permanently stored in a prominently marked weather tight enclosure outside the deckhouse for the assistance of shore-side fire-fighting personnel.

7.17.4 Operations

7.17.4.1 All river sea passenger vessels shall be provided with a fire safety operational booklet that shall contain the necessary information and instructions for the safe operation of the ship and cargo handling operations in relation to fire safety.

7.17.4.2 The booklet shall include information concerning the crew's responsibilities for the general fire safety of the vessel.

7.17.4.3 For river sea passenger vessels carrying dangerous goods, the fire safety operational booklet shall provide pertinent fire-fighting and emergency cargo handling instructions.

7.17.4.4 The fire safety operational booklet shall be provided in each crew mess room and recreation room or in each crew cabin.

7.17.4.5 The fire safety operational booklet shall be written in English or the working language of the ship, if not English.

7.17.4.6 The fire safety operational booklet may be combined with the training manuals required by para 7.17.2.7.

ANNEX: 8 Radio Communications

8.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 291 of the M.S. Act, M.S (Radio) Rules, 1983 (as amended) and M.S. (Distress and Safety Radio Communication) Rules 1995 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

8.2 Application

This Annex shall apply to all River-Sea Passenger Vessels.

8.3 Approval and performance standards of navigational equipment

All radio equipment provided onboard Type 3 and Type 4 River Sea Passenger Vessels shall be of approved type as per IMO performance standards acceptable to the Administration.

8.4 Radio communication equipment

8.4.1 All River-Sea Passenger Vessels of less than 300 GT shall be provided with:

- 8.4.1.1 2 X VHF radio installations capable of transmitting and receiving radiotelephony on Channel 6, Channel 13 and Channel 16 with at least one VHF radio installation having DSC facility on Channel 70.
- 8.4.1.2 1 X Class "A" Automatic Identification System (AIS).
- 8.4.1.3 2 X Radar Transponders (SART's) capable of operating on the 9 GHz band, which shall be so stowed that it can be easily utilized.
- 8.4.1.4 1 X Satellite Emergency Position-Indicating Radio Beacon (EPIRB).
- 8.4.1.5 1 X Receiver capable of receiving NAVTEX service broadcasts.
- 8.4.1.6 1 X MF/HF SSB radio installation capable of transmitting and receiving using radiotelephony.
- 8.4.1.7 1 X Global Positioning System (GPS)
- 8.4.1.8 3 X Two-Way VHF hand held Radio Telephone (for lifeboat) along with 3 nos. sealed batteries as spares.
- 8.4.1.9 1 X Two-Way on-scene radio communications for search and rescue purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated.

8.4.2 All River-Sea Passenger Vessels of 300 GT and more but less than 3000 GT shall be provided with:

- 8.4.2.1 2 X VHF radio installations capable of transmitting and receiving radiotelephony on Channel 6, Channel 13 and Channel 16 with both VHF radio installations having DSC facility on Channel 70.
- 8.4.2.2 1 X Class "A" Automatic Identification System (AIS).
- 8.4.2.3 2 X Radar Transponders (SART's) capable of operating on the 9 GHz band, which shall be so stowed that it can be easily utilized.

- 8.4.2.4 2 X Satellite Emergency Position-Indicating Radio Beacon (EPIRB).
- 8.4.2.5 1 X Receiver capable of receiving NAVTEX service broadcasts.
- 8.4.2.6 1 X MF/HF SSB radio installation capable of transmitting and receiving using radiotelephony.
- 8.4.2.7 1 X Global Positioning System (GPS)
- 8.4.2.8 3 X Two-Way VHF hand held Radio Telephone (for lifeboat) along with 3 nos. sealed batteries as spares.
- 8.4.2.9 1 X Two-Way on-scene radio communications for search and rescue purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated.
- 8.4.2.10 An Inmarsat ship earth station capable of:
 - Transmitting and receiving distress and safety communications using direct-printing telegraphy.
 - Initiating and receiving distress priority calls.
 - Maintaining watch for shore to ship distress alerts, including those directed to specifically defined geographical areas.
 - Transmitting and receiving general radio communications, using either radiotelephony or direct printing telegraphy.
- 8.4.2.11 A distress alarm panel providing visual and aural indication of any distress alert or alerts received onboard and shall also indicate through which radio communication service the distress alert have been received.
- 8.4.2.12 Valid Shore Based Maintenance Contract (SBMC).

8.5 All River Sea Passenger Vessels of 3000 GT and above are to comply with requirements of Ch IV of the SOLAS Convention with respect to carriage of Radio Communication Equipment.

8.6 GMDSS reserve Source:

A reserve source or sources of energy shall be provided on every ship to supply power to the Radio installations, for the purpose of conducting Distress and Safety Radio Communications in the event of failure of the Ships main and emergency sources of electrical power.

8.6.1 One hour of reserve source if vessel is provided with emergency source of electrical power, from ships main and emergency sources of electrical power to the radio installation or

8.6.2 Six hours on ships not provided with emergency source of electrical power, from ships main and emergency sources of electrical power to the radio installation.

8.7 Operator and Mobile Station License

8.7.1 All Rive-Sea Passenger Vessels shall be required to have a Mobile Station License issued by the WPC Wing, Ministry of Communications & IT.

8.7.2 All River-Sea Passenger Vessels shall be required to have at least one operator holding a general or restricted operator's certificate for radio communication equipment on board that shall be acceptable to the Ministry of Communications, Government of India.

ANNEX: 9 Safety of Navigation

9.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 356 of the M.S. Act and M.S. (Safety of Navigation) Rules 1997 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

9.2 Application

This Annex shall apply to all river-sea passenger vessels.

9.3 Approval and performance standards of navigational equipment

All navigational equipment provided onboard Type 3 and Type 4 River Sea Passenger Vessels shall be of approved type as per BIS or equivalent ISO/IMO standards acceptable to the Administration.

9.4 Navigational equipment

All Type 3 and Type 4 River-sea Passenger Vessels shall be provided with the following navigational equipment:

Equipment	< 500 GT	500 and above and <3000 GT	3000 and above and <10000 GT
Magnetic Compass (with Azimuth Mirror for Terrestrial Navigation)	1	1	1
Spare Magnetic Compass	1	1	1
Gyro-Compass ¹	1	1	1
Gyro-Compass Heading and Bearing Repeater	0	1	1
Radar ²	1	1	2
GPS ³	1	2	2
Rudder Angle Indicator	1	1	1
Aneroid Barometer	1	1	1
Echo Sounder with Recordable Data	1	1	1
Simplified Voyage Data Recorder / VDR ⁴	1	1	1
Bridge Navigational Watch Alarm System	1	1	1
Aldis Lamp OR Searchlight	1	1	1
Passage Charts	Yes	Yes	Yes
Nautical Almanac	1	1	1
Tide Tables	Yes	Yes	Yes
Sound signal – Horn & Bell ⁵	1 each	1 each	1 each

9.5 All river sea passenger vessels of 10000 GT and above are to comply with requirements of Ch V of the SOLAS Convention with respect to carriage of Navigational Equipment.

Note:

1. For River sea passenger vessels less than 500 GT, a transmitting Heading Device may be provided in lieu of Gyro Compass.
2. All river sea passenger vessels shall at a minimum, be provided with a 9 GHz radar having following minimum specifications:
 - a) X-band
 - b) 180 mm display and
 - c) 24 NM range.

All river sea passenger vessels of 3000 GT and above shall be provided with an additional 3 GHz radar.

3. All river sea passenger vessels of 500 GT and above shall be provided with two GPS, of which one may be portable/hand-held.
4. All river sea passenger vessels of 3000 GT and above shall be provided with Voyage Data Recorder (VDR).
5. The arrangements for giving sound signals for Type 3 and Type 4 River Sea Passenger Vessels shall meet the requirements of COLREGS 1972 (as amended).

ANNEX: 10 Survey and certification

10.1 Equivalence

Pursuant to the exemption of river-sea passenger vessels from provisions of Section 220, 240, 299,303(1), 307(1) and 318 of the M.S. Act and M.S. (Safety Convention Certificates) Rules 1995 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

10.2 Application

This Annex shall apply to all river-sea passenger vessels.

10.3 Inspection and survey

10.3.1 The inspection and survey of river-sea passenger vessels, for the enforcement of the provisions of this Notification, shall be carried out by the Administration.

10.3.2 When a nominated surveyor determines that the condition of the river-sea passenger vessel or its equipment does not correspond substantially with the particulars of the certificate or is such that the river-sea passenger vessel is not fit to proceed to sea without danger to the river-sea passenger vessel, or persons on board, such surveyor or organization shall ensure that corrective action is taken and shall in due course notify the Administration.

10.3.3 In the event as set forth in para 10.3.2, the nominated surveyor may allow the river-sea passenger vessel to proceed to sea provided that the corrective actions as prescribed during the survey are undertaken to be carried out by the owner or manager within a stipulated period.

10.3.4 Type 3 and Type 4 River sea passenger vessels while carrying dangerous cargoes in packaged form are required to comply with the requirements of the International Maritime Dangerous Goods Code (IMDG Code). Compliance with this requirements shall be demonstrated by means of a separate certificate issued by the Administration.

10.4 Surveys

10.4.1 The structure, machinery, life-saving appliances, radio installations and other equipment shall be subject to the surveys specified below:

- a) an initial survey before the river-sea passenger vessel is put in service;
- b) a renewal survey at intervals specified by the Administration not exceeding one year;
- c) Any passenger ship, other than ro-ro passenger ship, of less than 15years of age, shall undergo a minimum of one of the inspections of the outside of the ship's bottom during any five-year period in dry-dock. In all such cases, the maximum interval between any two dry-dock bottom inspections should not exceed 60 months .

Any passenger ship, other than ro-ro passenger ship, of above 15 years of age but less than 30 yrs of age, shall undergo a minimum of two of the inspections of the outside of the ship's bottom during any five-year period in dry-dock. In all. such cases, the maximum interval between any two dry dock bottom inspections should not exceed 36 months. .

Any passenger ship, other than ro-ro passenger ship, of above 30 years of age, shall undergo the inspection of the outside of the ship's bottom in dry dock during every alternate Renewal Passenger-ship Survey.

Inspections of the vessel's bottom required for the renewal survey that are not conducted in dry-dock maybe carried out with the vessel afloat where acceptable to the Administration. The bottom inspection, regardless of method, is to be carried out within the allowable time window for the River-sea passenger vessel safety certificate renewal survey (i.e. within the three-month time window before the expiry date of the certificate). Additionally, an inspection of the outside of the vessel's bottom conducted afloat is only to be carried out when the conditions are satisfactory and the proper equipment and suitably qualified staff is available. Rudder bearing clearances need not be taken at the afloat inspections.

10.4.2 These surveys shall include surveys required under the provisions of the applicable Load Line rules (as amended).

10.4.3 The surveys referred to in para 10.4.1 shall include the following:

10.4.3.1 The structure, machinery and equipment, other than those items surveyed with the life-saving appliances and installations;

10.4.3.2 The fire safety systems and appliances, life-saving appliances and arrangements, the river-sea passenger vessel borne navigational equipment, means of embarkation for pilots and other equipment;

10.4.3.3 The fire control plans, nautical publications, lights, shapes, means of making sound signals and distress signals; and

10.4.3.4 The radio installations of the river-sea passenger vessel.

10.4.4 The initial or renewal survey shall include the following:

10.4.4.1 the initial survey of a new river-sea passenger vessel shall include a complete inspection of the items referred to in para 10.4.3 to ensure that the arrangements, materials, scantling and workmanship of the structure, boilers, and other pressure vessels, their appurtenances, main and auxiliary machinery including steering gear and associated control systems, electrical installations and other equipment comply with the requirements of this Notification, are in satisfactory condition and are fit for the service for which the is intended;

OR

the initial survey of an existing vessel shall include a complete inspection of the items referred to in para 10.4.3 which had to be modified or added in order to comply with the requirements of this Notification to ensure that the arrangements, materials, scantling and workmanship of the structure, boilers, and other pressure vessels, their appurtenances, main and auxiliary machinery including steering gear and associated control systems, electrical installations and other equipment which had to be modified or added comply with the requirements of this Notification, are in satisfactory condition and are fit for the service for which the vessel is intended.

10.4.4.2 The renewal survey inspection of the items referred to in para 10.4.3 to ensure that the arrangements, materials, scantling and workmanship of the structure, boilers, and other pressure vessels, their appurtenances, main and auxiliary

machinery including steering gear and associated control systems, electrical installations and other equipment comply with the requirements of this Notification, are in satisfactory condition and are fit for the service for which the is intended. For the survey of the hull and machinery of any river-sea Passenger ship, the 'running survey' principle as stipulated in Rule 179 of the Merchant Shipping (Construction and Survey of Passenger Ships) Rules, 1981, may be followed; and the items may be opened up and surveyed within the period specified in Rule 171 to 178 of Merchant Shipping (Construction and Survey of Passenger Ships) Rules, 1981, so that full survey of the ship is completed within the period required by these rules. For this purpose, a proper schedule of running surveys needs to be drawn up by the ship-owner and approved by the Administration.

- 10.4.4.3 The inspection of the outside of the river-sea passenger vessel's bottom and survey of related items inspected at the same time shall be such as to ensure that they remain satisfactory for the service for which the vessel is intended.

10.5 Maintenance of conditions after survey

- 10.5.1 The owner or master of every river-sea passenger vessel shall ensure that:

- 10.5.1.1 the condition of the vessel and its equipment is maintained to conform with the provisions of this Notification to ensure that the vessel in all respects will remain fit to proceed to sea without danger to the vessel, persons on board or the environment;
- 10.5.1.2 after any survey of the river sea passenger vessel under para 10.4 has been completed, no significant change shall be made in the structural arrangement, machinery, equipment and other items covered by the survey, without the permission of the Administration and
- 10.5.1.3 whenever an accident occurs to the vessel or a defect is discovered, either of which affects the safety of the vessel or the efficiency or completeness of its life-saving appliances or other equipment, a request be made immediately to the Administration for a survey, as may be required by para 10.4, to be carried out as soon as practicable.

10.6 Issue or endorsement of certificates

- 10.6.1 A certificate called an Indian River-Sea Passenger Vessel Safety Certificate (refer Appendix-I) shall be issued after an initial and renewal survey for a vessel which complies with the requirements of this Notification.
- 10.6.2 The certificate referred to in para 10.6.1 shall be supplemented by a Record of Equipment and Ship Information (refer Appendix-II) which shall be permanently attached thereto and shall contain record of equipment and operations information in compliance with all the relevant Annexes of this Notification for Indian River-Sea Passenger Vessels.
- 10.6.3 The certificate referred to in para 10.6.1 comprises of certificates mentioned in sections 240, 299, 318, 344 Q and 356 C of M. S. Act as amended, Safety Management certificate required under Merchant Shipping Rules (Management for the safe Operation of Ships) as amended, Sewage Pollution prevention certificate required under Merchant Shipping

Rules (Prevention of pollution by Sewage) as amended and Anti Fouling system certificate required under Merchant Shipping Rules (Control of Anti Fouling Systems) as amended.

10.6.4 The certificate referred to in this section shall be issued or endorsed by the Administration.

10.7 Duration and validity of certificates

10.7.1 An Indian River-Sea Passenger Vessel Safety Certificate shall be issued for a period specified by the Administration which shall not exceed one year.

10.7.2 The renewal survey is completed within three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of renewal survey to a date not exceeding one year from the date of expiry of the existing certificate.

10.7.3 When the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding one year from the date of expiry of the existing certificate.

10.7.4 When the renewal survey is completed more than three months before or after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding one year from the date of completion of the renewal survey.

10.7.5 Where the renewal survey has been completed and new certificate cannot be issued or placed onboard the river sea passenger vessel before the expiry date of the existing certificate, the Administration shall endorse the existing certificate and such a certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.

10.7.6 Where a river-sea passenger vessel at the time when a certificate expires is not in a position to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than three months.

10.7.8 A certificate issued under para 10.7 shall cease to be valid in any of the following cases:

10.7.8.1 where the relevant surveys and inspections are not completed within the periods specified under para 10.4.1; or

10.7.8.2 where the certificate is not endorsed in accordance with the requirements of this Notification; or

10.7.8.3 where the river-sea passenger vessel is withdrawn from the Indian Registry.

10.8 Availability and Display of certificates

10.8.1 The certificates issued under para 10.7 shall be readily available on board for examination at all times; and shall be kept displayed for ready reference of surveyors.

10.9 Form of certificates

10.9.1 The certificates and the record of equipment and information shall be drawn up in the following form.

Appendix -I

Form of Indian River-Sea Passenger Vessel Safety Certificate

INDIAN RIVER-SEA PASSENGER VESSEL SAFETY CERTIFICATE

This Certificate should be supplemented by a Record of Equipment and Vessel Information for River Sea Passenger Vessel Safety

Issued under the provisions of the

NOTIFICATION FOR INDIAN RIVER-SEA PASSENGER VESSELS, 2017

Under the authority of the Government of India

By
Mercantile Marine Department

Name of Vessel	Official No. & Call Sign	Port of Registry	Date of Build (dd/mm/yy)	Gross Tonnage	Propulsion Power(kW)	Deadweight (tons)	IMO Number

Type of Vessel*:Type 3 / Type 4

Number of persons certified to carry (Passengers and Crew):

Last two inspections of the outside of the ship's bottom took place on _____ and _____.

Operational Restrictions (if any) :

This is to certify:

That the river- sea passenger vessel has been surveyed in accordance with the applicable provisions of the Notification for Indian River-Sea Passenger Vessels, 2017

That the survey showed that the river-sea passenger vessel complied with the requirements of the Notification for Indian River-Sea Passenger Vessels 2017 as regards :

- .1 the structure, stability, machinery and electrical installations as defined in Annex 4 of the Notification for Indian River-Sea Passenger Vessels, 2017.
- .2 the safety equipment, safety navigation and radio communication equipment as defined in Annexes 5,6,7,8 and 9 of the Notification for Indian River-Sea Passenger Vessels, 2017
- .3 all relevant requirements of prevention of marine pollution as defined in Annex 11 of the Notification for Indian River-Sea Passenger Vessels, 2017
- .4 all relevant requirements of the Domestic Safety Management Code as defined in Annex 12 of the Notification for Indian River-Sea Passenger Vessels, 2017
- .5 all relevant requirements of the Ship Security measures as defined in Annex 13 of the Notification for Indian River-Sea Passenger Vessels, 2017
- .6 In all other respects the river-sea passenger vessel complied with the relevant requirements of the Notification for Indian River-Sea Passenger Vessels, 2017.
- .7 that the following subdivision load lines have been assigned:

Subdivision load lines assigned and marked on the ship side amidships(regulation II-1/18)	Freeboard (in mm)	To apply when the spaces in which passengers are carried include the following alternative spaces
D.1		
D.2		
D.3		

This certificate is valid untilCompletion date of the survey on which this certificate is based(dd/mm/yyyy)

* Delete as appropriate

Issued at
(Place of issue of certificate)

.....
(Date of Issue) (Signature of authorized official issuing the certificate)

(Seal or stamp of the issuing authority, as appropriate).

Endorsement where the renewal survey of the river-sea passenger vessel has been extended

THIS IS TO CERTIFY that the validity of this certificate is hereby extended until
As the river sea passenger vessel was considered to comply with the relevant provision of the Notification for Indian River Sea Passenger Vessels 2017 for the period of extension.

Signed:
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey of the river-sea passenger vessel has been completed

THIS IS TO CERTIFY that the ship complies with the relevant requirement of the Notification for Indian River-Sea Passenger Vessels 2017, be accepted as valid until

Signed:
(Signature of authorized official)

Place:

Date:

(Seal or stamp of the authority, as appropriate)

Appendix- II

Form of Record of Equipment and vessel information

This Record shall be permanently attached to the Indian River-Sea Passenger Vessel Safety Certificate

RECORD OF EQUIPMENT AND VESSEL INFORMATION FOR COMPLIANCE WITH THE NOTIFICATION FOR INDIAN RIVER-SEA PASSENGER VESSELS, 2017

1. Particulars of vessel

Name of River Sea Passenger Vessel

Official number and Call Sign.....

Port of Registry.....

IMO number

Type of River Sea Passenger Vessel: Type 3/ Type 4*

New/ Existing* River Sea Passenger Vessel

Main Propulsion power output in kW:

Number of persons with required qualifications to operate the radio installations :

Safe manning document for River-sea passenger vessel type 3/ 4* - Reference Number:
dated:

Number of sleeping berths provided for Passengers (if duration of voyage is more than 24 hours):

2. Details of life-saving appliances

1.	Total number of persons for which life-saving appliances are provided		.....
			Port side	Starboard side
2.	Total number of lifeboats		.....	.....
	2.1	Total number of persons accommodated by them	.....	.....
	2.2	Number of totally enclosed lifeboats (LSA Code, section 4.6*)	.....	.....
	2.3	Number of lifeboats with a self-contained air support system (LSA Code, section 4.8*)	.....	.....
	2.4	Number of fire-protected lifeboats (LSA Code, section 4.9*)	.....	.....
3	Number of rescue boats		...	
	3.1	Number of rescue boats which are included in the total lifeboats shown above	...	
4	Number of life rafts		...	
	4.1	Number of life rafts	...	
5	Number of lifebuoys		...	
6	Number of lifejackets		...	

7	Radio installations used in life-saving appliances		...
	7.1	Number of search and rescue locating device (SART)	...
	7.2	Number of two-way VHF radiotelephone apparatus	...

3. Details of navigational systems and equipment (mark "Provided" where equipment/provision exists else write none)

Item		Actual Provision
1	Standard Magnetic Compass (with Azimuth Mirror for terrestrial navigation)	...
2	Spare Magnetic Compass	...
3	Gyro compass	...
4	Gyro compass Heading and Bearing Repeater	...
5	Transmission heading device (in lieu of gyro compass)	...
6	9 GHz Radar	...
7	Second Radar (9GHz/ 3GHz*)	...
8	GPS	...
9	Second GPS	...
10	Rudder angle indicator	...
11	Echo sounder with recordable data	...
12	Aneroid Barometer	...
13	S-VDR / VDR *	...
14	Aldis Lamp/ Search light*	...
15	Passage charts	...
16	Nautical almanac	...
17	Tide Table	...
18	Horn and Bell	...
19	AIS Class A/ B*	...

4. Details of radio facilities (mark "Provided" where equipment/provision exists else write none)

1	VHF radio installations	...
2	DSC Facility on Channel 70	...
3	Second VHF radio installations	
4	Portable handheld VHF Transreceiver	...
5	EPIRB	...
6	NAVTEX receiver	...
7	MF/HF Transreceiver	...
8	Inmarsat C with EGC	...
9	SART	...

5. Details of oil pollution prevention equipment (mark “X” for yes and “-” for no or NA)

1	Oil filtering equipment		...
	1.1	Make and Model.....	
	1.2	Maximum throughput m ³ /h.....	
	1.3	Approval standard...MEPC 107(49) / MEPC 60(33) / A 393(X)/ Any Other (specify) *	
2	Holding tank for oily bilge:		...
	Tank Identification	Tank Location	Volume(m3)
		Total Volume (m3)	
3	Holding tank for oil residues (sludge):		...
	Tank Identification	Tank Location	Volume(m3)
		Total Volume (m3)	
4	Means for disposal of oil residues (sludge)		
5	Standard Discharge Connection		...
6	SOPEP approved on (if any)		

6. Details of sewage treatment plant and equipment(mark “X” for yes and “-” for no or NA)

1	Sewage Treatment Plant		...
	1.1	Make and Model.....	
	1.2	Capacity (No. of persons).....	
	1.3	Approval standard...MEPC 2(VI) / MEPC 159(55)/ Any Other (specify) *	
2	Sewage comminuting and disinfecting system		...
	2.1	Make and Model.....	
	2.2	Approved by.....	
3	Holding tank for sewage:		...
	3.1	Capacity (m ³)	
4	Standard Discharge Connection		...
5	Arrangement for locking toilets in Type 3&Type 4 vessels where sewage treatment plant/comminuting & disinfecting system/ holding tank is not fitted.		...

7. Details of Control of Emission limit under Regulation 13, NOx Technical Code 2008

	Engine1	Engine 2	Engine3	Engine 4	Engine 5
Name and model					
Serial number					
Power output (kW)					
Rated speed (RPM)					
Tier I (Mark “Yes” if compliant)					
Tier II (Mark “Yes” if compliant)					
Tier III(Mark “Yes” if compliant)					

8. Security Equipment:

Equipment	Quantity Required	Quantity Provided	Status
General Alarm	1No.		
Ship Security Alert System (with/without* web display)	A SSAS without web display required for Type 4 vessel (GT>500)		
High Beam Torch	2Nos.		
Batons	2Nos.		
Photo ID for crew	All Crew		
Flood Light (fixed/ portable)	2Nos.		
Walkie Talkies	2Nos.		
Whistles	3 Nos.		
Dog leg mirror	2Nos.		
Hand held metal detector	2Nos.		
Cable ties	Adequate		
Different code colour passes for visitors	Adequate		
Night vision binoculars	1No.		
Automatic Identification System	AIS Class A/ B*		

9. Details of anti-fouling system(s) applied:

Type(s) of anti-fouling system(s) used.....

Date(s) of application of anti-fouling system(s).....

Expected service life of Anti-Fouling system at normal service speed (in months).....

THIS IS TO CERTIFY that this Record is correct in all respects

Issued at on (dd/mm/yyyy).

Official Seal

Authorized signatory

11.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 356 C and 356 E of the M.S. Act and Rules made there under namely Merchant Shipping Rules (Prevention of pollution by Sewage), as amended and Merchant Shipping Rules (Control of Anti Fouling Systems), as amended; the following regulations contained in this Annex provide an alternative safety standards acceptable to the Administration.

11.2 Application

This Annex shall apply to all river-sea passenger vessels.

11.3 For the purpose of prevention of pollution of sea by oil:

11.3.1 Any discharge into the sea of oil or oily mixtures from river-sea passenger vessels of 400 GT and above shall be prohibited except when the following conditions are satisfied:

11.3.1.1 The vessel is proceeding *en route*

11.3.1.2 The oily mixture is processed through a type approved oily water separator

11.3.1.3 The oil content of the effluent without dilution does not exceed 15 parts per million.

11.3.2 'Type 3' and 'Type 4' river-sea passenger vessels of 400 GT and above but less than 3000 GT, that do not comply with the requirements prescribed in para 11.3.1, may be provided with a holding tank of sufficient capacity, for oily bilge water. The oily bilge generated in the machinery spaces shall be collected in the holding tank and periodically discharged to shore reception facilities. Suitable permanent arrangement with a standard discharge connection is to be provided for this purpose. The minimum capacity of aforementioned holding tank shall be 1 m³.

11.3.3 'Type 3' and 'Type 4' river-sea passenger vessels below 400 GT, that do not comply with requirements prescribed in para 11.3.1 or 11.3.2, may be provided with suitable fixed or portable holding tank(s) with compatible pumping arrangement for discharging to shore reception facilities.

11.4 Standard Discharge Connection

11.4.1 To enable pipes of reception facilities to be connected with the vessel's discharge pipeline for residues from machinery bilges and from the holding tank, as specified in para 11.3.2 above, both lines shall be fitted with a standard discharge connection in accordance with the following table, namely:-

Standard dimensions of flanges for discharge connections :

Description	Dimension
Outside diameter	215 mm
Inner diameter	According to pipe outside diameter
Bolt circle diameter	183 mm
Slots in flange	6 holes 22 mm in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 22 mm
Flange thickness	20 mm
Bolts and nuts:	6, each of 20 mm in diameter and of suitable
quantity, diameter	length

The flange shall be designed to accept pipes up to a maximum internal diameter of 125 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a gasket of oil-proof material, shall be suitable for a service pressure of 600 kPa

11.5 Shipboard oil spill equipments.

11.5.1 All river sea passenger vessels of 400 GT and above shall have Shipboard oil spill Equipment readily available on the main deck as follows:

Dispersant – Non Toxic	50 Ltrs.
Scoops – U type, Flat type	6 Nos.
Squeezees	6 Nos.
Absorbent – saw dust	100 Kgs.
Absorbent paper / rags	20 Kgs.
Drum – 200 Ltrs. capacity	1 nos
Bucket – 10 Ltr. capacity	2 nos.

11.6 For the purpose of prevention of pollution of sea by sewage:

11.6.1 All River-Sea Passenger Vessel of 400 GT and above and all River-Sea Passenger Vessel of less than 400 GT which are certified to carry more than 15 persons shall be equipped with one of the following sewage systems, namely:-

11.6.1.1 A sewage treatment plant, type approved by the Administration or Recognized Organization, after taking into consideration the standards and test methods developed by the International Maritime Organization; or

11.6.1.2 A sewage comminuting and disinfecting system, approved by the Administration or Recognized Organization, provided that such system shall be fitted with such facilities for temporary storage of sewage when the vessel is less than three nautical miles from the nearest land; or

11.6.1.3 A holding tank of such capacity as may be specified by the Administration or Recognized Organization for the retention of all sewage, having regard to the operation of the vessel, number of persons on board and relevant factors. The minimum size of the holding tank may be obtained by following formula:-

Minimum capacity of the holding tank = 60 Ltrs x No. of persons x 1 day

Provided that such holding tank shall be constructed in such a manner as may be specified by the Administration and shall have means to indicate visually the amount of its contents.

11.6.2 Every river-sea passenger vessels other than those covered under para 11.6.1, shall be provided with holding tank of adequate capacity taking into account the number of persons onboard and voyage duration to the satisfaction of the Administration. Alternatively, these vessels may be provided with arrangements as prescribed under para 11.6.1 of this Annex.

- 11.6.3 Standard discharge connection for Type 3 & 4 river-sea passenger vessel of 400 GT and above and Type 3 & 4 river-sea passenger vessel of less than 400 GT which are certified to carry more than 15 persons – To enable pipes of reception facilities to be connected with the vessel's discharge pipeline, the line shall be fitted with a standard discharge connection, in accordance with the following table, namely:-

Standard dimensions of flanges for discharge connections:.

Description	Dimension
Outside diameter	210 mm
Inner diameter	According to pipe outside diameter
Bolt circle diameter	170 mm
Slots in flange	4 holes 18 mm in diameter, equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery with the slot width of 18 mm
Flange thickness	16 mm
Bolts and nuts: quantity and Diameter	4, each of 16 mm in diameter and of suitable length
The flange shall be designed to accept pipes up to a maximum internal diameter of 100 mm and shall be of steel or other equivalent material having a flat face and this flange, together with a suitable gasket, shall be suitable for a service pressure of 600 kPa.	
For vessels having a moulded depth of 5 m and less, the inner diameter of the discharge connection may be 38 mm.	

- 11.6.4 Discharge of sewage – Subject to the provisions of clause 11.3.1 above, the discharge of sewage into the sea is prohibited, except under the following circumstances, namely:-

11.6.4.1 the river-sea passenger vessel has in operation a sewage treatment plant, which has been type approved by the Administration or recognized organization; or

11.6.4.2 the river-sea passenger vessel is discharging comminuted and disinfected sewage using such system as specified in clause 11.6.1.2 above, at a distance of more than three nautical miles from the nearest land.

11.6.4.3 the river-sea passenger vessel is discharging sewage that has been stored in the holding tank as specified in clause 11.6.1.3 above, to appropriate shore reception facilities.

11.7 For the purpose of prevention of pollution of sea by garbage:

11.7.1 All river-sea passenger vessels shall comply with the respective Merchant Shipping Rules and other notices, circulars or orders issued by the Directorate General of Shipping from time to time to the extent applicable to such vessels.

11.8 For the purpose of prevention of pollution of sea by air:

11.8.1 All river-sea passenger vessels shall comply with the respective Merchant Shipping Rules and other notices, circulars or orders issued by the Directorate General of Shipping from time to time to the extent applicable to such vessels.

11.9 Pollution Prevention Record Book

11.9.1 Every river-sea passenger vessel, irrespective of size, shall be provided with a Pollution Prevention Record Book for recording the transfer/discharge of oil/oily water, sewage and garbage in line with 11.3 to 11.8 of this Annex.

11.9.2 The Pollution Prevention Record Book as a minimum shall record disposal of following:

- a. Port/Location of transfer/discharge
- b. Date & Time of transfer/discharge
- c. Quantity of transfer/discharge

11.9.3 River-sea passenger vessels provided with a separate Oil Record Book, Garbage Record Book and Sewage Record Book shall be deemed to satisfy the requirements set out in para 11.9.1.

11.9.4 Whenever any oil/oily water, sewage or garbage is transferred to a shore reception facility, the receipt from the receiver is to be kept on board at least until the next survey.

11.10 For the purpose of pollution caused by Organotin compounds used in anti fouling system:

Every River-Sea Passenger vessels of more than 24 m in length shall not be applied on their hull or on external surfaces with a paint comprising of Organotin compounds (which act as biocides). All such vessels coming under this section needs to carry a declaration signed by the owner or owner's authorized agent, and such declaration shall contain information about type of anti fouling paint applied and its expected service life. Declaration mentioned in this section needs to be accompanied by appropriate documentation (such as a paint receipt or a contractor invoice) or contain appropriate endorsement.

The waste from the application or removal of Anti-Fouling system are collected, handled, treated and disposed of in a safe and environmentally sound manner in accordance with Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, as amended.

ANNEX: 12 Domestic Safety Management (DSM) Code

12.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of M.S (Management for safe operation of Ships) Rules 2000 made there under, the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

12.2 Application

This Annex shall apply to all river-sea passenger vessels.

12.3 Introduction

12.3.1 The Domestic Safety Management Code (DSM Code), hereinafter referred to as the “Code”, is a code that is based on general principles and objectives of ship safety management, and expressed in such terms that it can be applied to vessels plying exclusively under River-sea passenger vessel rules.

12.3.2 Considering the “Company” operating Indian River-Sea passenger vessels may consist of single owners/operators, it is not anticipated that their documented safety management systems may not be as extensive in coverage or detail as would be expected from a company operating ships certificated under the International Safety Management (ISM) Code.

12.3.3 In view of the above, all such companies operating Indian River-Sea passenger vessels are required to comply with following requirements for development and implementation of Safety Management System.

12.4 Objectives

12.4.1 The purpose of developing the Code is to establish a common standard for safe operation of River-sea passenger vessels engaged exclusively in the domestic trade.

12.4.2 It is recognised that no two shipping companies or ship owners are the same, so also the operations, size and nature of the ships and that ships operate under a wide range of different conditions and locations. For these reasons, the Code is based upon general safety principles and the objectives of the Code are to:

- Ensure safety in the operation of ship
- Prevent injury, loss of life, damage to property and environment
- Comply with applicable rules and guidelines

12.5 The Safety Management System

In order to meet with the objectives of the Code, owners/operators/managers who has assumed the responsibility for operation of the ship and discharge the duties and responsibility of the Code (hereinafter referred to as “Company”) of Type 3 & Type 4 River-sea passenger vessels shall develop a Safety Management System meeting the requirements of the Code.

12.6 Safety and environment protection policy

- 12.6.1 The Company shall develop and implement a policy to address the issues of safety and the protection of environment to fulfill the objectives of the Code.
- 12.6.2 The Company shall ensure that the policy is implemented and maintained at all levels of the organization, both ship-based and shore-based.

12.7 Responsibilities and Authority

- 12.7.1 Company Responsibilities and Authority: Incase the Company who is responsible for the operation of the River-sea passenger vessel is other than the owner must report the full name and details of such Company to the administration.
- 12.7.2 The Company shall define & document the responsibility, authority and interrelation of personnel who manage, perform and verifying work relating to and effecting safety and the protection of environment.
- 12.7.3 The Company is responsible for ensuring that adequate resources and shore-based support is provided to designated person and master to carry out his functions.

12.8 Designated Person:

- 12.8.1 The Company shall nominate an employee as Designated Person ashore, who is having appropriate knowledge on River-sea passenger vessel operation and having direct access to top management. The designated person shall be responsible for the safe operation of each River-sea passenger vessel and he should provide link between company and those on board ship.

12.9 Master's Responsibility and Authority:

- 12.9.1 Master shall be responsible for the safe operation of ship and he shall ensure safety and environmental protection policy of the company implemented on board ship.
- 12.9.2 The Company shall establish in the safety management system that the master has the overriding authority to make decisions regarding the safety and to request the company's assistance as and when required.

12.10 Resources and Personnel

- 12.10.1 The Company shall ensure that each river-sea passenger vessel is manned with qualified, certified and medically fit personnel at all times and that these personnel have received appropriate training for their designated duties;
- 12.10.2 Prior to the first occasion of working on the river-sea passenger vessel, each employee must receive appropriate familiarization training and proper instruction of onboard procedures. This could include but not necessarily limited to:
- a. Mooring and unmooring;
 - b. Launching and recovery of survival craft;
 - c. Evacuation from all areas of the river-sea passenger vessel;
 - d. Donning of lifejackets;
 - e. Use and handling of firefighting equipment; and
 - f. Safe operation of ship.

12.11 Shipboard Operations

12.11.1 The Company shall identify key shipboard operations with regards to safety of the personnel, ship and protection of environment.

12.11.2 The Company shall develop simple procedures for the key shipboard operation of the river-sea passenger vessel. These shall include, but not limited to:

- a. Testing of equipment, including steering gear, prior to commencement of passage;
- b. Navigation and handling of the river-sea passenger vessel;
- c. Maintenance routines;
- d. Bunkering operations;

12.12 Preparation for emergencies

12.12.1 Potential emergencies likely to be encountered by the river-sea passenger vessel must be considered;

12.12.2 Exercises/drills must be carried out in handling of all the emergencies and evacuation from the river-sea passenger vessel;

12.12.3 Where possible, all personnel shall be involved in these exercises/drills, both ashore and on board ship;

12.12.4 The exercises/drills must be recorded. The names of those who participated shall also be recorded. Attempt to be made that all ship board personnel are involved while carrying out drill/exercises.

12.13 Reporting of accidents

12.13.1 All accidents and near accidents shall be recorded and reported to the Company, who shall implement corrective action, with the aim of improving safety and protection of environment.

12.14 Certification & review

12.14.1 Every Company responsible for operations & management of Type 3 or Type 4 river-sea passenger vessels shall be required to be in possession of a valid Domestic Document of Compliance (DDOC).

12.14.2 Assessment of the Company's safety management arrangements and related documentation ashore shall be carried out twice in five years by means of an audit carried out by the Administration at the Company's office premises;

12.14.3 Assessment of the Company's safety management arrangements and related documentation onboard the river-sea passenger vessels shall be carried out by the Administration, during the Renewal survey as set out in para 10.4.1. No separate audit shall be required to be carried out for assessment of safety management arrangements or related documentation on board the Company's river-sea passenger vessels;

12.14.4 Compliance with the shore-based requirements of the Code shall be demonstrated by way of possession of a "Domestic Document of Compliance" (DDOC);

12.14.5 Compliance with the Code onboard river-sea passenger vessels shall be recorded in sub-clause 2.1 on the Indian River-Sea passenger Vessel Safety Certificate, as set out in

Para 10.9.1. Satisfactory implementation of the system onboard shall be verified during the renewal survey of River Sea Passenger Vessels safety certificate.

12.14.6 The river-sea passenger vessel shall not be required to carry any separate certificate demonstrating compliance with the Code.

12.14.7 Every Company shall undertake a review of its safety management system at least once every 5 years.

12.15 Guidelines on Implementation of the Code

12.15.1 Document Review & Planning

12.15.1.1 The purpose of the document review is to verify that the Company has a documented Safety Management System that complies with the requirements of the Code.

12.15.1.2 The document review shall be conducted prior to the application for the DDOC in order to provide sufficient time to draft and implement any major revisions that the audit/assessment may require.

12.15.1.3 The draft SMS may be sent to the Administration for the document review.

12.15.1.4 The SMS shall not be burdensome. The system shall cover the requirements of the Code in terms of the procedures etc. necessary to safeguard safety and environmental protection without imposing an excess of paperwork.

12.15.2 Assessment for Compliance

12.15.2.1 Every company responsible for management and operations of Type 3 & 4 River-Sea Passenger Vessels shall submit their SMS to the Administration for document review.

12.15.2.2 Upon satisfactory completion of the document review, an initial audit of the Company's safety management arrangements and related documentation ashore shall be carried out by the Administration in line with para 12.14.2.

12.15.2.3 Upon satisfactory completion of the initial audit, the Company may be issued a full-term "Domestic Document of Compliance" (DDOC) valid for a maximum period of 5 years.

12.15.2.4 A mid-term audit of the Company's safety management arrangements and related documentation ashore shall be carried out by the Administration or 2 ½ years (+/- 6 months) after the issuance of a full-term DDOC.

12.15.2.5 A renewal audit of the Company's safety management arrangements and related documentation ashore shall be carried out by the Administration upon the expiry of the full-term DDOC. Upon satisfactory completion of the renewal audit, a fresh full-term DDOC, valid for a maximum period of 5 years, may be issued to the Company.

12.15.2.6 The first assessment of the Company's safety management arrangements and related documentation onboard the river-sea passenger vessels shall be carried out by the Administration during the first renewal survey as set out in para 10.4.1 immediately following the issuance of the full-term DDOC.

12.15.2.7 Thereafter, the assessment of the Company's safety management arrangements and related documentation onboard the river-sea passenger vessels shall be carried out by the Administration in line with para 12.14.3 above.

12.15.2.8 It is to be expected that a considerable variance in methodology, practice and record keeping will prevail across the various domestic operators. For this reason, surveyors/auditors are expected to adopt a non-prescriptive and flexible approach to the assessments/audits.

12.15.3 Non-conformities and Corrective Actions

12.15.3.1 Non-conformities shall fall into 3 categories:

- a) *Major Non-Conformity* means an identifiable deviation that poses a serious threat to personnel or ship safety, and requires immediate corrective action.
- b) *Non-Conformity* means an observed situation where objective evidence indicates a non-fulfillment of a specified requirement of the Code.
- c) *Observation* means a statement of fact made during an audit/survey that can be substantiated by objective evidence.

12.15.3.2 Closing out of non-conformities

- a) If a major non-conformity is raised, arrangements shall be made for the issue to be addressed immediately. The Company must take immediate remedial action that will allow the major non-conformity to be closed out or downgraded to a non-conformity before the close of audit.
- b) If a non-conformity is raised, a time-scale for the implementation of corrective action, not exceeding 3 months, shall be agreed to by the auditor and the Company.
- c) Observations require no corrective action date but the Company shall be advised that, if not addressed by the next assessment, the observation may become a non-conformity in future.

12.15.3.3 Corrective Action

- a) The auditor and the Company shall agree to a suitable corrective action, within a realistic time-scale, at the time of the assessment.
- b) The Company shall be responsible for carrying out the corrective actions and reporting to the Administration prior to the agreed action date.
- c) The close out of non-conformities other major non-conformity will not necessarily require a re-visit by the auditor. The presentation of suitable objective evidence will be sufficient for closing out non-conformities.

12.15.4 Acceptance of DOC in lieu of DDOC

- 12.15.4.1 A Company having DOC for passenger ships issued by the Directorate General of Shipping can assume responsibility for operation of River Sea Passenger Vessel, without being in possession of a DDOC.
- 12.15.4.2 The Company will have to comply with the audit requirement for DOC certificate as per Merchant Shipping (Management for the safe Operation of Ship) Rules, 2008, as amended.
- 12.15.4.3 The Company needs to demonstrate at least three months of safety management implementation on passenger ship, other than River Sea Passenger Vessels, covered under DOC during every annual and renewal DOC audit.

13.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from provisions of Section 344 O, 344 Q and 344 R of the M.S. Act and Rules made there under, the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

13.2 Application

This Annex shall apply to all river-sea passenger vessels.

13.3 General

River-Sea Passenger Vessels shall comply with requirements stipulated in the following security matrix:

Type of Vessel	SSP	SSO	CSO	SSAS *	Sec. Equip	Audit of system and verification of Equipment
Type 3 (GT < 500)	Y	N	Y	N	As stipulated in 13.6	ADMINISTRATION
Type 3 GT > 500	Y	Y (need not be certified but to be trained by CSO)	Y	Y		ADMINISTRATION
Type 4 GT < 500	Y	Y (need not be certified but to be trained by CSO)	Y	N		ADMINISTRATION
Type 4 GT > 500	Y	Y	Y	Y (without web display)		ADMINISTRATION

13.4 Ship Security Plan

The SSP referred to in the above matrix shall be a basic Ship Security Plan that shall at a minimum include policies & procedures covering points detailed in Appendix I to this Annex. The SSP shall be user-friendly and contain practical security measures to ensure the security readiness of the River-Sea passenger vessels when operating in and around Indian port and in Indian territorial waters.

13.5 Compliance and verification

13.5.1 Audit of system and verification of equipment of the vessel's security arrangements and related documentation onboard the river-sea passenger vessels shall be carried out annually by the Administration, during the renewal survey as set out in para 10.4.1.

13.5.2 Compliance with the security measures onboard river-sea passenger vessels as required by this Annex shall be verified under clause 2.5 of the Indian River-Sea Passenger Vessel Safety Certificate, as set out in Para 10.9.1. The compliance with the requirement of security equipment onboard river-sea vessels as stipulated in para 13.6 shall be recorded in the Record of Equipment and Ship Information, as set out in para 10.9.1. River-sea passenger vessels shall not be required to carry any separate certificate demonstrating compliance with this Annex.

13.6 Security Equipment

The Security Equipment referred to in the above matrix shall, at a minimum, include:

Security Equipment	Type 3 and Type 4 River Sea Passenger Vessel
General Alarm	1 no.
High Beam Torch	2 no.
Batons	2 nos.
Photo ID for Crew	All Crew
Flood Light (Fixed or Portable)	2 nos.
Walkie Talkies	2 nos.
Whistles	3 nos.
Dog Leg Mirror	2 no.
Hand Held Metal Detector	2 no.
Cable ties	Adequate
Different code colour passes for visitors	Adequate
Night vision binoculars	1 no.
Automatic Identification System	As Stipulated in Annex 7

Access Control Security Measures

- Maintain a 24-hour watch when in operations
- Positively identify anyone accessing the vessel
- Limit physical access to the vessel and its sensitive areas (e.g. wheelhouse & engine room)
- Inspections and searching of persons
- Screen and check baggage, packages, supplies and stores
- Adequate lighting at access points of the vessel

Activity Security Measures

- Secure all unused exit/entrance doors
- Ensure seaward side / quay side surveillance is maintained
- Check for evidence of tampering regularly (e.g. damaged locks, vandalism, open doors, etc.)
- Deny access to unauthorized persons to come onboard
- Report any unattended or suspicious packages, baggage or stores found on board to the relevant Authorities

Security Measures while Navigating in Port and coastal waters

- Maintain appropriate security level
- Keep a sharp look out for small unlit crafts
- Maintain situational awareness for any suspicious activity/craft
- Report any suspicious activity/craft to the appropriate Authorities

Communication, Security Measures & Contact Information

- Keep communication equipment readily available for reporting of incidents or suspicious activity to relevant authorities
- To report any suspicious activity/craft or person or to seek security advice, please contact:

CSO (contact details)

PFSO (contact details).....

MRCC (contact details).....

DG Comm. Centre

Tel 1: +91 22 2261 0606

Tel 2: +91 22 2261 4646

Tel 3: +91 22 3295 9320

Email: dgcommcentre@satyammail.net

ANNEX : 14 Carriage of Cargoes

14.1 Equivalence

4.1.1 Pursuant to the exemption of RSPVs from provisions of Section 330, 331, 331A & 332 of the M.S. Act and the rules made there under and M.S (Carriage of cargo Rules), 1995 (as amended), the regulations contained in this Annex provide an alternative safety standard acceptable to the Administration.

14.2 Application

4.2.1 This Annex shall apply to all Type 3 (where specified) and Type 4 river-sea passenger vessels.

14.3 Cargo information

14.3.1 The shipper shall provide the Master or his representative with appropriate information on the cargo sufficiently in advance of loading to enable the precautions which may be necessary for proper stowage and safe carriage of the cargo to be put into effect.

14.3.2 In the case of general cargo, the cargo information shall include a general description of the cargo, the gross mass of the cargo or of the cargo units, and any relevant special properties of the cargo.

14.4 Stowage and securing of cargo

14.4.1 Cargo carried on or under deck shall be so loaded, stowed and secured as to prevent as far as is practicable, throughout the voyage, damage or hazard to the ship and the persons on board, and loss of cargo overboard. The stowage and securing of the cargo shall conform to the provision of applicable code or the provision of M.S. Act and relevant rules framed there under for the carriage of cargo. Applicable codes namely IMDG, IMSBC, Grain, Timber & Cargo stowage and securing code.

14.4.2 For Type 4 RSPVs of 1600 GT and above, all cargoes shall be loaded, stowed and secured throughout the voyage in accordance with the Cargo Securing Manual approved by the Administration.

14.5 Dangerous goods

14.5.1 Type 3 RSPVs of 1600 GT and above and Type 4 RSPVs while carrying dangerous cargoes, are required to comply with the requirements of the International Maritime Dangerous Goods Code (IMDG Code), Marpol Annex III and the International Maritime Solid Bulk cargo Code (IMSBC Code) as appropriate.

14.5.2 Compliance with the requirements of para 14.5.1 of this Annex shall be demonstrated by means of a certificate issued by the Administration.

ANNEX: 15 CDC and Articles of Agreement

15.1 Equivalence

Pursuant to the exemption of River Sea Passenger Vessels from the provisions of Section 99 and 100 of MS Act and Rules made there under.

15.2 Application

This Annexure shall apply to crew engaged on all the river sea passenger vessels.

15.3 Continuous Discharge Certificate-cum-Seafarers Identity Document (CDC-cum-SID)

The crew engaged on river sea passenger vessels are exempted from possession of a CDC-cum-SID, provided, they are in possession of any photo identity card issued by a State or Central Government.

15.4 Articles of Agreement

The crew engaged on river sea passenger vessels are exempted from entering into an article of Agreement as prescribed under the Act, provided there exists an Agreement, in a form acceptable to both the crew and the employer.