[F1ANNEX I U.K.

SAFETY REQUIREMENTS FOR NEW AND EXISTING PASSENGER SHIPS ENGAGED ON DOMESTIC VOYAGES

Textual Amendments

F1 Substituted by Commission Directive 2010/36/EU of 1 June 2010 amending Directive 2009/45/EC of the European Parliament and of the Council on safety rules and standards for passenger ships (Text with EEA relevance).

CHAPTER II-2 U.K.

FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART B U.K.

FIRE SAFETY MEASURES

1 **Structure (R 23)** U.K.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.1 The hull, superstructures, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material. For the purpose of applying the definition of steel or other equivalent material as given in Regulation II-2/A/2.7, the ‘applicable fire exposure’ shall be according to the integrity and insulation standards given in the tables of Regulations II-2/B/4 and 5. For example, where divisions such as decks or sides and ends of deckhouses are permitted to have ‘B-0’ fire integrity, the ‘applicable fire exposure’ shall be half an hour.

.2 However, in cases where any part of the structure is of aluminium alloy, the following shall apply: U.K.

.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 paragraph .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 paragraph .2.1 shall apply at the end of half an hour.

.3 Crowns and casings of category A 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.

2 **Main vertical zones and horizontal zones (R 24)** U.K.

NEW CLASS B, C AND D SHIPS:

.1.1 In ships carrying more than 36 passengers, the hull, superstructure and deckhouses shall be subdivided into main vertical zones by A-60 class divisions. U.K.

Steps and recesses shall be kept to a minimum but where they are necessary, they shall also be A-60 class divisions.

Where an open deck space, a sanitary or similar space or a tank including a fuel oil tank, void space or auxiliary machinery space having little or no fire risk, is on one side or where fuel oil tanks are on both sides of the division the standard may be reduced to A-0.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.1.2 For new class B, C and D ships carrying not more than 36 passengers and for existing class B ships carrying more than 36 passengers, the hull, superstructure and deckhouses in way of accommodation and service spaces shall be subdivided into main vertical zones by 'A' class divisions. These divisions shall have insulation values in accordance with the tables in Regulation 5.

NEW CLASS B, C AND D SHIPS:

.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 1 600 m^2 on any deck. The length or width of a main vertical zone is the maximum distance between the furthermost points of the bulkheads bounding it.

NEW CLASS B, C AND D SHIPS AND EXISTING CLASS B SHIPS CARRYING MORE THAN 36 PASSENGERS:

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

.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 4.2 for new ships carrying more than 36 passengers, and existing class B ships carrying more than 36 passengers.

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.1 On ships designed for special purposes, such as automobile or railroad car ferries where the provision of main vertical zone bulkheads would defeat the purpose for which the ship is intended, equivalent protection shall be obtained by dividing space in horizontal zones.

.2 However, in a ship with special category spaces, any such space shall comply with the applicable provisions of Regulation II-2/B/14 and in so far as such compliance would

be inconsistent with compliance with other requirements of this part, the requirements of Regulation II-2/B/14 shall prevail.

3 **Bulkheads within a main vertical zone (R 25)** U.K.

NEW CLASS B, C AND D SHIPS CARRYING MORE THAN 36 PASSENGERS:

.1.1 For new ships carrying more than 36 passengers all bulkheads which are not required to be 'A' class divisions shall be at least 'B' class or 'C' class divisions as prescribed in the tables in Regulation 4. All such divisions may be faced with combustible materials in accordance with the provisions of Regulation II-2/B/11.

NEW CLASS B, C AND D SHIPS CARRYING NOT MORE THAN 36 PASSENGERS AND EXISTING CLASS B SHIPS CARRYING MORE THAN 36 PASSENGERS:

.1.2 For new ships carrying not more than 36 passengers and existing class B ships carrying more than 36 passengers 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 Regulation II-2/B/5. U.K.

All such divisions may be faced with combustible materials in accordance with the provisions of Regulation 11.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.2 In new class B, C and D ships carrying not more than 36 passengers and in existing class B ships carrying more than 36 passengers all corridor bulkheads where not required to be 'A' class shall be 'B' class divisions which shall extend from deck to deck except: U.K.

.1 when continuous 'B' class ceilings or linings are fitted on both sides of the bulkhead, the portion of the bulkhead behind the continuous ceiling or lining shall be of material which, in thickness and composition, is acceptable in the construction of 'B' class divisions but which shall be required to meet 'B' class integrity standards only in so far as is reasonable and practicable;

.2 in the case of a ship protected by an automatic sprinkler system complying with the provisions of Regulation II-2/A/8, the corridor bulkheads of 'B' class materials may terminate at a ceiling in the corridor provided such ceiling is of material which, in thickness and composition, is acceptable in the construction of 'B' class divisions.

Notwithstanding the requirements of Regulations II-2/B/4 and 5, such bulkheads and ceilings shall be required to meet 'B' class integrity standards only in so far as is reasonable and practicable. 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.

.3 All bulkheads required to be 'B' class division, except corridor bulkheads prescribed in paragraph .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 **Fire integrity of bulkheads and decks in new ships carrying more than 36 passengers (R 26)** U.K.

NEW CLASS B, C AND D SHIPS:

.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 all bulkheads and decks shall be as prescribed in tables 4.1 and 4.2.

.2 The following requirements shall govern the application of the tables: U.K.

.1 Table 4.1 shall apply to bulkheads not bounding either main vertical zones or bounding horizontal zones.

Table 4.2 shall apply to decks not forming steps in main vertical zones nor bounding horizontal zones.

.2 For determining the appropriate fire integrity standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (14). Where the contents and use of a space are such that there is a doubt as to its classification for the purpose of this Regulation, it shall be treated as a space within the relevant category having the most stringent boundary requirements. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row 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,
- spaces containing centralised emergency public address system stations and equipment.

(2) Stairways:
- interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) for passengers and crew and enclosures thereto;
- in this connection a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door.

(3) Corridors:
- passenger and crew corridors.

(4) Evacuation stations and external escape routes:
- survival craft stowage area,
- open deck spaces and enclosed promenades forming lifeboat and life-raft embarkation and lowering stations,
- assembly stations, internal and external,
- external stairs and open decks used for escape routes,

— the ship's side to the waterline in the lightest seagoing condition, superstructure and deckhouse sides situated below and adjacent to the life-rafts and evacuation slide's embarkation areas.

(5) Open deck spaces:

— open deck spaces and enclosed promenades clear of lifeboat and life-raft embarkation and lowering stations,

— air spaces (the space outside superstructures and deckhouses).

(6) Accommodation spaces of minor fire risk:

— cabins containing furniture and furnishing of restricted fire risk,

— offices and dispensaries containing furniture and furnishings of restricted fire risk,

— public spaces containing furniture and furnishings of restricted fire risk and having a deck area of less than 50 m^2.

(7) Accommodation spaces of moderate fire risk:

— spaces as in category (6) above but containing furniture and furnishing of other than restricted fire risk,

— public spaces containing furniture and furnishing of restricted fire risk and having a deck area of 50 m^2 or more,

— isolated lockers and small storerooms in accommodation spaces having areas less than 4 m^2 (in which flammable liquids are not stowed),

— sale shops,

— motion picture projection and film stowage rooms,

— diet kitchens (containing no open flame),

— cleaning gear lockers (in which flammable liquids are not stowed),

— laboratories (in which flammable liquids are not stowed),

— pharmacies,

— small drying rooms (having a deck area of 4 m^2 or less),

— specie rooms,

— operating rooms.

(8) Accommodation spaces of greater fire risk:

— public spaces containing furniture and furnishing of other than restricted fire risk and having a deck area of 50 m^2 or more,

— barber shops and beauty parlours.

(9) sanitary and similar spaces:

— communal sanitary facilities, shower, baths, water closets, etc.,

— small laundry rooms,

— indoor swimming pool area,

— isolated pantries containing no cooking appliances in accommodation spaces,

— private sanitary facilities shall be considered a portion of the space in which they are located.

(10) Tanks, voids and auxiliary machinery spaces having little or no fire risk:

— water tanks forming part of the ship's structure;
— voids and cofferdams;
— auxiliary machinery spaces which do not contain machinery having a pressure lubrication system and where storage of combustibles is prohibited, such as;
— ventilation and air-conditioning rooms; windlass room; steering gear room; stabiliser equipment room; electrical propulsion motor room; rooms containing section switchboards and purely electrical equipment other than oil-filled electrical transformers (above 10 kVA); shaft alleys and pipe tunnels; spaces for pumps and refrigeration machinery (not handling or using flammable liquids),
— closed trunks serving the spaces listed above,
— other closed trunks such as pipe and cable trunks.

(11) Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk:
— cargo oil tanks,
— cargo holds, trunkways and hatchways,
— refrigerated chambers,
— oil fuel tanks (where installed in a separate space with no machinery),
— shaft alleys and pipe tunnels allowing storage of combustibles,
— auxiliary machinery spaces as in category (10) which contain machinery having a pressure lubrication system or where storage of combustibles is permitted,
— oil fuel filling stations,
— spaces containing oil-filled electrical transformers (above 10 kVA),
— spaces containing small internal combustion engines of power output up to 110 kW driving generators, sprinkler, drencher or fire pumps, bilge pumps, etc.,
— closed trunks serving the spaces listed above.

(12) Machinery spaces and main galleys:
— main propulsion machinery rooms (other than electric propulsion motor rooms) and boiler rooms,
— auxiliary machinery spaces other than those in categories (10) and (11) which contain internal combustion machinery or other oil burning, heating or pumping units,
— main galleys and annexes,
— trunks and casings to the spaces listed above.

(13) Store-rooms, workshops, pantries, etc.:
— main pantries not annexed to galleys,
— main laundry,
— large drying rooms (having a deck area of more than 4 m^2),
— miscellaneous stores,
— mail and baggage rooms,
— garbage rooms,

— workshops (not part of machinery spaces, galleys, etc.),

— lockers and storerooms having areas greater than 4 m^2, other than those spaces that have provisions for the storage of flammable liquids.

(14) Other spaces in which flammable liquids are stowed:

— paint lockers,

— store-rooms containing flammable liquids (including dyes, medicines, etc.),

— laboratories (in which flammable liquids are stowed).

.3 Where a single value is shown for the fire integrity of a boundary between two spaces, that value shall apply in all cases.

.4 There are no special requirements for material or integrity of boundaries where only a dash appears in the tables.

.5 The Administration of the flag State shall determine in respect of category (5) spaces whether the insulation values in table 4.1 shall apply to ends of deckhouses and superstructures, and whether the insulation values in table 4.2 shall apply to weather decks. In no case shall the requirements of category (5) of table 4.1 or 4.2 necessitate enclosure of spaces which in the opinion of the Administration of the flag State need not be enclosed.

.3 Continuous 'B' class ceiling or linings, in association with the relevant decks or bulkheads, may be accepted as contributing wholly or in part, to the required insulation and integrity of a division.

.4 In approving structural fire protection details the Administration of the flag State shall have regard to the risk of heat transmission at intersections and terminal points of required thermal barriers.

Table 4.1

Bulkheads not bounding either main vertical zones or horizontal zones

Spaces	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**
Control stations (1)	B-0^0	A-0	A-0	A-0	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0^0	A-0	A-0	A-0	A-0	A-15	A-15	A-0^0	A-0	A-15	A-30	A-15	A-30
Corridors (3)			B-15	A-60	A-0	B-15	B-15	B-15	B-15	A-0	A-15	A-30	A-0	A-30
Evacuation stations and external escape routes (4)					A-0	A-0^0	A-0^0	A-0^0	A-0^0	A-0	A-60^0	A-60^0	A-60^0	A-60^0
Open deck spaces (5)					—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0

Table 4.1

Bulkheads not bounding either main vertical zones or horizontal zones

Accommodation spaces of minor fire risk	(6)					B-0	B-0	B-0	C	A-0	A-0	A-30	A-0	A-30
Accommodation spaces of moderate fire risk	(7)						B-0	B-0	C	A-0	A-15	A-60	A-15	A-60
Accommodation spaces of greater fire risk	(8)							B-0	C	A-0	A-30	A-60	A-15	A-60
Sanitary and similar spaces	(9)								C	A-0	A-0	A-0	A-0	A-0
Tanks voids and auxiliary machinery spaces having little or no fire risk	(10)									A-0[0]	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar	(11)										A-0[0]	A-0	A-0	A-15

Table 4.1

Bulkheads not bounding either main vertical zones or horizontal zones

spaces of moderate fire risk														
Machinery spaces and main galleys	(12)											A-0[0]	A-0	A-60
Storerooms, workshops, pantries, etc.	(13)												A-0[0]	A-0
Other spaces in which flammable liquids are stowed	(14)													A-30

Table 4.2

Decks neither forming steps in main vertical zones nor bounding horizontal zones

Space below ↓ Space above→	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**
Control stations	(1)	A-30	A-30	A-15	A-0	A-0	A-0	A-15	A-30	A-0	A-0	A-0	A-60	A-0	A-60
Stairways	(2)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-30
Corridors	(3)	A-15	A-0	A-0[a]	A-60	A-0	A-0	A-15	A-15	A-0	A-0	A-0	A-30	A-0	A-30
Evacuation stations and external escape routes	(4)	A-0	A-0	A-0	A-0	—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0	A-0	—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of	(6)	A-60	A-15	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0

Table 4.2

Decks neither forming steps in main vertical zones nor bounding horizontal zones

minor fire risk														
(7) Accommodation spaces of moderate fire risk	A-60	A-15	A-15	A-60	A-0	A-0	A-15	A-15	A-0	A-0	A-0	A-0	A-0	A-0
(8) Accommodation spaces of greater fire risk	A-60	A-15	A-15	A-60	A-0	A-15	A-15	A-30	A-0	A-0	A-0	A-0	A-0	A-0
(9) Sanitary and similar spaces	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
(10) Tanks, voids and auxiliary machinery spaces having little or no fire risk	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0[a]	A-0	A-0	A-0	A-0
(11) Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate	A-60	A-60	A-60	A-60	A-0	A-0	A-15	A-30	A-0	A-0	A-0[a]	A-0	A-0	A-30

Table 4.2

Decks neither forming steps in main vertical zones nor bounding horizontal zones

fire risk															
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-30	A-30[a]	A-0	A-60
Storerooms, workshops, pantries, etc.	(13)	A-60	A-30	A-15	A-60	A-0	A-15	A-30	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Other spaces in which flammable liquids are stowed	(14)	A-60	A-60	A-60	A-60	A-0	A-30	A-60	A-60	A-0	A-0	A-0	A-0	A-0	A-0

a Where adjacent spaces are in the same numerical category and superscript a appears, a bulkhead or deck between such spaces need not to be fitted if deemed unnecessary by the Administration of the flag State. For example, in category (12) a bulkhead need not be required between a galley and its annexed pantries provided the pantry bulkhead and decks maintain the integrity of the galley boundaries. A bulkhead is, however, required between a galley and a machinery space even though both spaces are in category (12).

b The ship's side, to the waterline in the lightest seagoing condition, superstructure and deckhouse sides situated below and adjacent to the life-rafts and evacuation slides may be reduced to A-30.

c Where public toilets are installed completely within the stairway enclosure, the public toilet bulkhead within the stairway enclosure can be of 'B' class integrity.

d Where spaces of categories 6, 7, 8 and 9 are located completely within the outer perimeter of the assembly station, the bulkheads of these spaces are allowed to be of 'B-0' class integrity. Control positions for audio, video and light installations may be considered as part of the assembly station.

Notes to be applied to tables 4.1 and 4.2

5 **Fire integrity of bulkheads and decks in new ships carrying not more than 36 passengers and existing class B ships carrying more than 36 passengers (R 27)** U.K.

NEW CLASS B, C, AND D SHIPS CARRYING NOT MORE THAN 36 PASSENGERS AND EXISTING CLASS B SHIPS CARRYING MORE THAN 36 PASSENGERS:

[[F2].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 5.1 or 5.1(a), and 5.2 or 5.2(a), as appropriate. U.K.

When approving 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 of where the thermal barring devices terminate.**]**

Textual Amendments

F2 Substituted by Commission Directive (EU) 2016/844 of 27 May 2016 amending Directive 2009/45/EC of the European Parliament and of the Council on safety rules and standards for passenger ships (Text with EEA relevance).

.2 The following requirements shall govern application of the tables: U.K.

.1 Tables 5.1 and 5.2 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 as defined in Regulation II-2/A/2.10 excluding corridors.

(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 m^2 and drying rooms and laundries.

(6) Machinery spaces of category A:
- spaces as defined in Regulation II-2/A/2.19.1.

(7) Other machinery spaces:
- spaces as defined in Regulation II-2/A/2.19.2 excluding machinery spaces of category A.

(8) Cargo spaces:

— all spaces used for cargo (including cargo oil tanks) and trunkways 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 m^2 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 Regulation II-2/A/2.18.

.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 complying with the provisions of Regulation II-2/A/8 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 complying with the provisions of Regulation II-2/A/8 or between such zones both of which are so protected, the lesser of the two values given in the tables shall apply. Where a sprinklered zone and a non-sprinklered zone meet within accommodation and service spaces, the higher of the two values given in the tables shall apply to the division between the zones.

.3 Continuous ‘B’ class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

.4 External boundaries which are required in Regulation 1.1 to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles 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 of the flag State.

Table 5.1

Fire integrity of bulkheads separating adjacent spaces

Spaces		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations	(1)	A-0^0	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	0^0	A-60
Corridors	(2)		C^0	B-0^0	A-0^0	B-0^0	A-60	A-0	A-0	A-15	0^0	A-15
					B-0^0					A-0^0		
Accommodation spaces	(3)			C^0	A-0^0	B-0^0	A-60	A-0	A-0	A-15	0^0	A-30
					B-0^0					A-0^0		A-0^0

Table 5.1

Fire integrity of bulkheads separating adjacent spaces

Stairways	(4)				A-0[0]	A-0[0]	A-60	A-0	A-0	A-15	0	A-15
					B-0[0]	B-0[0]				A-0[0]	0	
Service spaces (low risk) undefined	(5)					C[0]	A-60	A-0	A-0	A-0	0	A-0
Machinery spaces of category A	(6)						0	A-0	A-0	A-60	0	A-60
Other machinery spaces	(7)							A-0[0]	A-0	A-0	0	A-0
Cargo spaces	(8)								0	A-0	0	A-0
Service spaces (high risk)	(9)									A-0[0]	0	A-30
Open decks	(10)											A-0
Special category spaces	(11)											A-0

[F3The following table shall apply to ALL CLASS B, C and D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018:

[X1Table 5.1(a)

Fire integrity of bulkheads separating adjacent spaces

Spaces	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
Control stations (1)	A-0[0]	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	0	A-60
Corridors (2)		C[0]	B-0[0]	A-0[0] B-0[0]	B-0[0]	A-60	A-0	A-0	A-15 A-0[0]	0	A-30
Accommodation spaces (3)			C[0]	A-0[0] B-0[0]	B-0[0]	A-60	A-0	A-0	A-15 A-0[0]	0	A-30 A-0[0]
Stairways (4)				A-0[0] B-0[0]	A-0[0] B-0[0]	A-60	A-0	A-0	A-15 A-0[0]	0	A-30

[XI Table 5.1(a)

Fire integrity of bulkheads separating adjacent spaces

Service spaces (low risk)	(5)					C[0]	A-60	A-0	A-0	A-0	[0]	A-0
Machinery spaces of category A	(6)						[0]	A-0	A-0	A-60	[0]	A-60
Other machinery spaces	(7)							A-0[0]	A-0	A-0	[0]	A-0
Cargo spaces	(8)								[0]	A-0	[0]	A-0
Service spaces (high risk)	(9)									A-0[0]	[0]	A-30
Open decks	(10)											A-0
Special category spaces	(11)											A-30**]]**

Table 5.2

Fire integrity of decks separating adjacent spaces

Space below ↓ Space above→		**(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	[0]	A-30
Corridors	(2)	A-0	[0]	[0]	A-0	[0]	A-60	A-0	A-0	A-0	[0]	A-0
Accommodation spaces	(3)	A-60	A-0	[0]	A-0	[0]	A-60	A-0	A-0	A-0	[0]	A-30
												A-0[0]
Stairways	(4)	A-0	A-0	A-0	[0]	A-0	A-60	A-0	A-0	A-0	[0]	A-0
Service spaces (low risk)	(5)	A-15	A-0	A-0	A-0	[0]	A-60	A-0	A-0	A-0	[0]	A-0

Table 5.2

Fire integrity of decks separating adjacent spaces

Machinery spaces of category A	(6)	A-60	A-60	A-60	A-60	A-60	0	A-60[0]	A-30	A-60	0	A-60
Other machinery spaces	(7)	A-15	A-0	A-0	A-0	A-0	A-0	0	A-0	A-0	0	A-0
Cargo spaces	(8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	0	A-0	0	A-0
Service spaces (high risk)	(9)	A-60	A-30	A-30	A-30	A-0	A-60	A-0	A-0	A-0	0	A-30
			A-0[0]	A-0[0]	A-0[0]							
Open decks	(10)	0	0	0	0	0	0	0	0	0	—	A-0
Special category spaces	(11)	A-60	A-15	A-30	A-15	A-0	A-30	A-0	A-0	A-30	A-0	A-0
				A-0[0]								

[F3The following table shall apply to ALL CLASS B, C and D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018:

[X1Table 5.2(a)

Fire integrity of decks separating adjacent spaces

Space Below↓ Space Above →	***(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*	g	*A-60*
Corridors	*(2)*	*A-0*	g	g	*A-0*	g	*A-60*	*A-0*	*A-0*	*A-0*	g	*A-30*
Accommodation spaces	*(3)*	*A-60*	*A-0*	g	*A-0*	g	*A-60*	*A-0*	*A-0*	*A-0*	g	*A-30* *A-0[d]*
Stairways	*(4)*	*A-0*	*A-0*	*A-0*	g	*A-0*	*A-60*	*A-0*	*A-0*	*A-0*	g	*A-30*
Service spaces (low risk)	*(5)*	*A-15*	*A-0*	*A-0*	*A-0*	g	*A-60*	*A-0*	*A-0*	*A-0*	g	*A-0*
Machinery spaces of	*(6)*	*A-60*	*A-60*	*A-60*	*A-60*	*A-60*	g	*A-60[f]*	*A-30*	*A-60*	g	*A-60*

[X1 Table 5.2(a)

Fire integrity of decks separating adjacent spaces

category A												
Other machinery spaces	*(7)*	*A-15*	*A-0*	*A-0*	*A-0*	*A-0*	*A-0*	g	*A-0*	*A-0*	g	*A-0*
Cargo spaces	*(8)*	*A-60*	*A-0*	*A-0*	*A-0*	*A-0*	*A-0*	*A-0*	g	*A-0*	g	*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*	g	*A-30*
Open decks	*(10)*	g	g	g	g	g	g	g	g	g	—	*A-0*
Special category 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]]*

a	[F2For clarification as to which applies, see Regulations II-2/B/3 and 8.
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	Bulkheads separating the wheelhouse and chartroom from each other may be 'B-0' rating.
d	See paragraph .2.3 and .2.4 of this Regulation.
e	For the application of Regulation 2.1.2, 'B-0' and 'C', where appearing in table 5.1 and 5.1a, shall 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.
g	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. In ships, which are constructed on or after 1 January 2003, however, where a deck, except in a category (10) space, is penetrated for the passage of electric cables, pipes and ventilation ducts, such penetration shall 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. For the application of Regulation II-2/B/2.1.2. an asterisk, where appearing in table 5.2 and 5.2(a), except for categories (8) and (10), shall be read as 'A-0'.

Notes to be applied to tables 5.1, 5.1(a), 5.2 and 5.2(a), as appropriate:]

6 **Means of escape (R 28)** U.K.

NEW CLASS B, C AND D SHIPS AND EXISTING CLASS B SHIPS:

.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, due regard being paid to the nature and location of spaces and to the number of persons who might be normally employed there.

In such a case the sole means of escape shall provide safe escape.

For ships which are constructed on or after 1 January 2003, the abovementioned dispensation may only be given 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 If a radiotelegraph station has no direct access to the open deck, two means of escape from or access to such station shall be provided, one of which may be a porthole or window of sufficient size or another means.

.4 In existing class B ships, a corridor, or part of a corridor from which there is only one route of escape shall not exceed:

.1 5 metres in length for ships constructed on or after 1 October 1994,

.2 13 metres in length for ships constructed before 1 October 1994, carrying more than 36 passengers, and

.3 7 metres in length for ships constructed before 1 October 1994, carrying not more than 36 passengers.

In new class A, B, C and D ships of 24 metres in length and above, a corridor, lobby or part of a corridor from which there is only one route of escape shall be prohibited.

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.

NEW CLASS B, C AND D SHIPS OF 24 METRES IN LENGTH AND ABOVE CONSTRUCTED BEFORE 1 JANUARY 2003:

.5 At least one of the means of escape required by paragraphs .1.1 and .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 lifeboat and life-raft embarkation decks, or to the uppermost deck if the embarkation deck does not extend to the main vertical zone being considered. U.K.

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 in accordance with Regulation III/5.3 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 Member State, but shall in no case be less than 600 mm. 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 1 800 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 m^2 in area and shall increase by 1 m^2 for every 10 persons provided for in excess of 20 persons but need not exceed 16 m^2, except for those landings servicing public spaces having direct access onto the stairway enclosure.

CLASS B, C AND D SHIPS OF 24 METRES IN LENGTH AND ABOVE CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

.5a At least one of the means of escape required in the paragraphs .1.1 and .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 lifeboat and life-raft embarkation decks or to the uppermost weather deck if the embarkation deck does not extend to the main vertical zone being considered. U.K.

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 in accordance with Regulation III/5.3 and slip-free surfaces underfoot. Boundaries facing external open stairways and passageways forming part of an escape route and boundaries in such a position that their failure during a fire would impede escape to the embarkation deck shall have fire integrity, including insulation values, in accordance with tables 4.1 to 5.2, as appropriate.

The widths, number and continuity of escapes shall be in accordance with the requirements of the Fire Safety Systems Code.

NEW CLASS B, C AND D CONSTRUCTED BEFORE 1 JANUARY 2003 AND EXISTING CLASS B SHIPS:

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

CLASS B, C AND D SHIPS CONSTRCTED ON OR AFTER 1 JANUARY 2003:

.6a Protection of access from the stairway enclosures to the lifeboat and life-raft embarkation areas shall be provided either directly or through protected internal routes which have fire integrity and insulation values for stairway enclosures as determined by tables 4.1 to 5.2, as appropriate.

NEW CLASS B, C AND D SHIPS:

.7 In addition to the emergency lighting required by Regulations II-1/D/3 and III/5.3, the means of escape including stairways and exits, shall be marked by lighting or photoluminescent 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 photoluminescent material or

marked by lighting. The Administration of the flag State shall ensure that such lighting or photoluminescent equipment have been evaluated, tested and applied in accordance with the guidelines as given in IMO Resolution A.752(18). U.K.

However, for new class B, C and D ships constructed on or after 1 January 2003 the Administration of the Flag State shall ensure that such lighting or photoluminescent equipment has been evaluated, tested and applied in accordance with the Fire Safety Systems Code.
CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

.8 In ships carrying more than 36 passengers the requirements of paragraph .1.7 of this Regulation shall also apply to the crew accommodations.

.9 Normally locked doors that form part of an escape route. U.K.

.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. Quick release mechanisms shall be designed and installed to the satisfaction of the Administration of the flag State and in particular:

.2.1 consist of bars or panels, the actuating portion of which extends across at least one half of the width of the door leaf, at least 760 mm and not more than 1 120 mm above the deck;

.2.2 cause the door latch to release when a force not exceeding 67 N is applied; and

.2.3 not be equipped with any locking device, set screw or other arrangement that prevents the release of the latch when pressure is applied to the releasing device.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.2 .1In special category spaces the number and disposition of the means of escape both below and above the bulkhead deck shall be to the satisfaction of the Administration of the flag State and in general the safety of access to the embarkation deck shall be at least equivalent to that provided under paragraphs .1.1, .1.2, .1.5 and .1.6.

In new class B, C and D ships constructed on or after 1 January 2003, such spaces shall be provided with designated walkways to the means of escape with a breadth of at least 600 mm, and where practicable and reasonable those designated longitudinal walkways shall raise at least 150 mm above the deck surface. The parking arrangements for the vehicles shall maintain the walkways clear at all times.

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

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

.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. In new ships, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. In new class B, C and D ships constructed on or after 1 January 2003 that ladder shall be located within a protected enclosure that satisfies Regulation II-2/B/4, category (2) or II-2/B/5, category (4), as appropriate, 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 × 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.

NEW CLASS A, B, C AND D SHIPS:

.3 From spaces for monitoring of operation of machinery, and from work spaces, there shall be at least two means of escape, of which one shall be independent of the machinery space and give access to the embarkation deck.

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

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.3.2 In a ship of less than 24 metres in length, the Administration of the flag State 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 of the flag State 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. In new class B, C and D ships constructed on or after 1 January 2003, 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.

.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.

[[F3]CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018

.3.4 Two means of escape shall be provided from the main workshop within a machinery space. At least one of those escape routes shall provide a continuous fire shelter to a safe position outside the machinery space.**]**

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

.5 NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS OF 40 METRES IN LENGTH AND ABOVE: U.K.

.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 In ships carrying more than 36 passengers, two emergency escape breathing devices, in addition to those required in subparagraph .5.2 shall be carried in each main vertical zone.

.4 However, subparagraphs .5.2 and .5.3 do not apply to stairway enclosures which constitute individual main vertical zones and for the main vertical zones in the fore or aft end of a ship, which do not contain spaces of categories (6), (7), (8) or (12) defined in Regulation II-2/B/4.

.5 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.

.6 Reference is made to the Guidelines for the performance, location, use and care of emergency escape breathing devices (EEBD) in IMO MSC/Circ.849.

.7 The number and location of these devices shall be indicated in the fire control plan required in Regulation II-2/A/13.

6-1 **Escape routes on ro-ro passenger ships (R 28-1)** U.K.

.1 REQUIREMENTS APPLICABLE TO NEW CLASS B, C AND D AND EXISTING CLASS B RO-RO PASSENGER SHIPS U.K.

.1.1 This paragraph applies to new class B, C and D and existing class B ro-ro passenger ships.

.1.2 Handrails or other handholds shall be provided in all corridors along the entire escape route, so that a firm handhold is available 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 metres in width and transverse corridors more than 1 metre 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.

.1.3 Escape routes shall not be obstructed by furniture or 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.

.1.4 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 related to life-saving appliances and arrangements, adopted by IMO by Resolution A.760(18) as amended.

.1.5 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.

.1.6 Decks shall be sequentially numbered, starting with '1' at the tank top or lowest deck. These 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.

.1.7 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.

.1.8 Cabin and stateroom doors shall not require keys to unlock them from inside the room. Neither shall there be any doors along any designed escape route which require keys to unlock them when moving in the direction of escape.

.2 REQUIREMENTS APPLICABLE TO NEW CLASS B, C AND D RO-RO PASSENGER SHIPS U.K.

.2.1 The lowest 0,5 metres of bulkheads and other partitions forming vertical divisions along escape routes shall be able to sustain a load of 750 N/m^2 to allow them to be used as walking surfaces from the side of the escape route with the ship at large angles of heel.

.2.2 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.

.2.3 External routes shall be provided from open decks, referred to in paragraph 2.2, to the survival craft embarkation stations.

.3 REQUIREMENTS APPLICABLE TO NEW CLASS B, C AND D RO-RO PASSENGER SHIPS CONSTRUCTED ON OR AFTER 1 JULY 1999 U.K.

For new class B, C and D ro-ro passenger ships constructed on or after 1 July 1999, 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 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 the 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.

7 **Penetrations and openings in 'A' and 'B' class divisions (R 30, 31)** U.K.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.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.

.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.

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

.4 Fire doors in main vertical zone bulkheads and stairways enclosures other than power-operated sliding watertight doors and doors normally locked, shall satisfy the following requirements:

.1 The doors shall be self-closing and be capable of closing with an angle of up to 3,5° opposing closure. The speed of closure shall, if necessary, be controlled so as to prevent undue danger to persons. In new ships the uniform rate of closure shall be no more than 0,2 m/s and no less than 0,1 m/s with the ship in the upright position.

NEW CLASS B, C AND D SHIPS:

.2 Remote-controlled sliding or power-operated doors shall be equipped with an alarm that sounds at least 5 seconds but no more than 10 seconds before the door begins to move and continue sounding until the door is completely closed. Doors designed to re-open upon contacting an object in its path shall re-open sufficiently to allow a clear passage of at least 0,75 metres, but no more than one metre.

.3 All doors, except fire doors which are normally kept closed, shall be capable of remote and automatic release from a continuously manned central control station, either simultaneously or in groups, and also individually from a position at both sides of the door. Indication must be provided at the fire control panel in the continuously manned central control station whether each of the remote-controlled doors is closed. The release mechanism shall be so designed that the door will automatically close in the event of disruption of the control system or central power supply. Release switches shall have an on-off function to prevent automatic resetting of the system. Holdback hooks not subject to central control station release are prohibited.

.4 Local power accumulators for power-operated doors shall be provided in the immediate vicinity of the doors to enable the doors to be operated at least 10 times (fully opened and closed) using the local controls.

.5 Double-leaf doors equipped with a latch necessary to their fire integrity shall have a latch that is automatically activated by the operation of the doors when released by the system.

.6 Doors giving direct access to special category spaces which are power-operated and automatically closed need not be equipped with alarms and remote-release mechanisms required in .4.2 and .4.3.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Instead of .4 the following paragraph .4a shall apply

.4a 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 paragraph .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.

NEW CLASS B, C AND D SHIPS:

.5 The requirements for 'A' class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles, provided that there is no requirement for such boundaries to have 'A' class integrity in Regulation 10. Similarly, the requirements for 'A' class integrity shall not apply to exterior doors in superstructures and deckhouses.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Instead of .5: the following paragraph .5a shall apply:

.5a The requirements for 'A' class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles, provided that there is no requirement for such boundaries to have a 'A' class integrity in Regulation 10.

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.

NEW CLASS B, C AND D SHIPS:

.6 Except for watertight doors, weathertight 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.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.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 m^2. 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 m^2. All ventilation openings shall be fitted with a grill made of non-combustible material. Doors shall be non combustible.

.7.1 For reasons of noise reduction, the Administration may approve, as an equivalent, doors with built-in ventilation sound-locks with openings at the bottom on one side of the door and at the top on the other side, on condition that the following provisions have been complied with: U.K.

.1 The upper opening shall always face towards the corridor and shall be provided with a grating of non-combustible material and an automatically operating fire damper, which is activated at a temperature of about 70 °C.

.2 The lower opening shall be provided with a grating made of a non-combustible material.

.3 The doors shall be tested in accordance with Resolution A.754(18).

NEW CLASS B, C AND D SHIPS:

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

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.9 The requirements for 'B' class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles. Similarly the requirements for 'B' class integrity shall not apply to exterior doors in superstructures and deckhouses. For ships carrying not more than 36 passengers, the Administration of the flag State may permit the use of combustible materials in doors separating cabins from the individual interior sanitary spaces such as showers.

8 **Protection of stairways and lifts in accommodation and service spaces (R 29)** U.K.

NEW CLASS B, C AND D SHIPS:

.1 All stairways shall be of steel frame construction, except where the Administration sanctions the use of other equivalent material, and shall be within enclosures formed of 'A' class divisions, with positive means of closure of all openings except that: U.K.

.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 Regulations 4 and 5;

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

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.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. U.K.

NEW CLASS B, C AND D SHIPS: 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, special category spaces, other escape stairways required by Regulation II-2/B/6-1.5 and external areas are permitted to have direct access to these stairway enclosures.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.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.

[F2 9 Ventilation systems for ships built before the 1 January 2018 (R 32)] U.K.

.1 *Ships carrying more than 36 passengers* U.K.

NEW CLASS B, C AND D SHIPS:

.1 The ventilation system shall, in addition to paragraph 1 in Regulation II/32 of the 1974 SOLAS Convention, as in force on 17 March 1998, also be in compliance with subparagraphs .2.2 to .2.6, .2.8 and .2.9 of this Regulation.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.2 In general, the ventilation fans shall be so disposed that the ducts reaching the various spaces remain within the main vertical zone.

.3 Where ventilation systems penetrate decks, precautions shall be taken, in addition to those relating to fire integrity of the deck required by Regulation II-2/A/12.1, to reduce the likelihood of smoke and hot gases passing from one between-deck space to another through the system. In addition to insulation requirements contained in this Regulation, vertical ducts shall, if necessary, be insulated as required by the appropriate tables in Regulation 4.

NEW CLASS B, C AND D SHIPS:

.4 Ventilation ducts shall be constructed of the following materials:

.1 ducts not less than 0,075 m^2 in sectional area and all vertical ducts serving more than a single between-deck space shall be constructed of steel or other equivalent material;

.2 ducts less than 0,075 m^2 in sectional area other than vertical ducts referred to in subparagraph .1.4.1 shall be constructed of non-combustible materials. Where such ducts penetrate ‘A’ or ‘B’ class divisions due regard shall be given to ensuring the fire integrity of the division;

.3 short lengths of duct, not in general exceeding 0,02 m^2 in sectional area nor two metres in length, need not be non-combustible provided that all of the following conditions are met:

.1 the duct is constructed of a material of low fire risk to the satisfaction of the Administration of the flag State;

.2 the duct is used only at the terminal end of the ventilation system; and

.3 the duct is not located closer than 600 mm measured along its length to a penetration of an ‘A’ or ‘B’ class division, including continuous ‘B’ class ceilings.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

instead of subparagraph .1 the following subparagraph .1a shall apply:

.1a the duct shall be of a material which has low flame spread characteristics.

.5 Stairway enclosures shall be ventilated and shall be served only by an independent fan and duct system which shall not serve any other spaces in the ventilation system.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.6 All power ventilation, except machinery space and cargo space ventilation and any alternative system which may be required under subparagraph .9.2.6, shall be fitted with controls so grouped that all fans may be stopped from either of two separate positions which shall be situated as far apart as practicable. Controls provided for the power ventilation serving machinery spaces shall also be grouped so as to be operable from two positions, one of which shall be outside such spaces. Fans serving power ventilation systems to cargo spaces shall be capable of being stopped from a safe position outside such spaces.

NEW CLASS B, C AND D SHIPS:

.7 Where public spaces span three or more open decks and contain combustibles such as furniture and enclosed spaces such as shops, offices and restaurants, the space shall be equipped with a smoke extraction system. The smoke extraction system shall be activated by the required smoke detection system and be capable of manual control. The fans shall be sized such that the entire volume within the space can be exhausted in 10 minutes or less.

.8 Ventilation ducts shall be provided with suitably located hatches for inspection and cleaning, where reasonable and practicable.

.9 Exhaust ducts from galley ranges in which grease or fat is likely to accumulate shall meet requirements of subparagraphs .9.2.3.2.1 and .9.2.3.2.2 and shall be fitted with: U.K.

.1 a grease trap readily removable for cleaning unless an alternative approved grease removal system is fitted;

.2 a fire damper located in the lower end of the duct which is automatically and remotely operated, and in addition a remotely operated fire damper located in the upper end of the duct;

.3 a fixed means for extinguishing a fire within the duct;

.4 remote control arrangements for shutting off the exhaust fans and supply fans, for operating the fire dampers mentioned in .2 and for operating the fire-extinguishing system, which shall be placed in a position close to the entrance to the galley. Where a multi-branch system is installed, means shall be provided to close all branches exhausting through the same main duct before an extinguishing medium is released into the system; and

.5 suitably located hatches for inspection and cleaning.

.2 *Ships carrying not more than 36 passengers* U.K.

NEW CLASS B, C AND D SHIPS:

.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 m^2 need not be non-combustible, subject to the following conditions:

.1 these ducts shall be of a material which, in the opinion of the Administration of the flag State, has a low fire risk;

.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.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

instead of subparagraph .1 the following subparagraph .1a shall apply:

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

.2a Where the ventilation ducts with a free-sectional area exceeding 0,02 m^2 pass through class 'A' bulkheads or decks, the openings shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead and the ducts and sleeves shall comply in this part with the following:

.1 The sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length shall be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes.

.2 Ducts with a free cross-sectional area exceeding 0,075 m^2 shall be fitted with fire dampers in addition to the requirements of sub-paragraph .9.2.2.1. The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by 'A' class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they pierce. Fire dampers shall be easily accessible. In new class B, C and D ships constructed on or after 1 January 2003, where fire dampers are placed behind ceilings or linings, these ceilings or linings shall be provided with an inspection door on which a plate reporting the identification number of the fire damper is provided. The fire damper identification number shall also be placed on any remote controls required.

.2b In new class B, C and D ships constructed on or after 1 January 2003, where a thin plated duct with a free cross-sectional area equal to or less than 0,02 m^2 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 subparagraphs .9.2.3.1.1 to .9.2.3.1.4 or .9.2.3.2.1 and .9.2.3.2.2:

.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 paragraphs .9.2.3.1.1 and .9.2.3.1.2; 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 subparagraph .9.2.8.

In new class B, C and D ships constructed on or after 1 January 2003, 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. Except that the galley ventilation systems on passenger ships carrying not more than 36 passengers need not be completely separated, but may be served by separate ducts from a ventilation unit serving other spaces. In any 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 subparagraphs .9.2.4.1.1 to .9.2.4.1.3 or .9.2.4.2.1 and .9.2.4.2.2:

.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 subparagraphs .9.2.3.1.1 and .9.2.3.1.2;

.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 subparagraphs .9.2.3.1.1 and .9.2.3.1.2; 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 subparagraph .9.2.8.

.5 Ventilation ducts with a free-sectional area exceeding 0,02 m^2 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 to comply with the requirements of Regulation II- 2/A/12.1. 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.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

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

NEW CLASS B, C AND D SHIPS:

.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.

.3 CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003: U.K.

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.

[F3 9a Ventilation systems in ships U.K.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018

.1 *General* U.K.

.1 Ventilation ducts, including single and double wall ducts, shall be of steel or an equivalent material, except for flexible bellows of short length not exceeding 600 mm used for connecting fans to the ducting in air-conditioning rooms. Unless expressly provided otherwise in paragraph .1.6, any other material used in the construction of ducts, including insulation, shall also be non-combustible. However, short ducts, not exceeding 2 m in length and with a free cross-sectional area (The term free cross-sectional area means, even in the case of a pre-insulated duct, the area calculated on the basis of the inner dimensions of the duct itself and not the insulation) not exceeding 0,02 m^2, need not be of steel or equivalent material, subject to the following conditions: U.K.

.1 the ducts shall be made of non-combustible material which may be faced internally and externally with membranes having low flame-spread characteristics and, in each case, a calorific value not exceeding 45 MJ/m^2 of their surface area for the thickness used. The calorific value shall be calculated in accordance with the recommendations published by the International Organization for Standardization, in particular publication ISO 1716:2002, 'Reaction to the fire tests for building products — Determination of the heat of combustion'.;

.2 the ducts are only used at the end of the ventilation device; and

.3 the ducts are not situated less than 600 mm, measured along the duct, from an opening in an 'A' or 'B' class division, including continuous 'B' class ceiling.

.2 The following arrangements shall be tested in accordance with the Fire Test Procedures Code: U.K.

.1 fire dampers, including their relevant means of operation, although the testing is not required for dampers located at the lower end of the duct in exhaust ducts for galley ranges, which must be of steel and capable of stopping the draught in the duct; and

.2 duct penetrations through 'A' class divisions, although the testing is not required where steel sleeves are directly joined to ventilation ducts by means of riveted or screwed connections or by welding.

.3 Fire dampers shall be easily accessible. Where they are placed behind ceilings or linings, those ceilings or linings shall be provided with an inspection hatch on which the identification number of the fire damper is marked. The fire damper identification number shall also be marked on any remote controls provided.

.4 Ventilation ducts shall be provided with hatches for inspection and cleaning. The hatches shall be located near the fire dampers.

.5 The main inlets and outlets of ventilation systems shall be capable of being closed from outside the spaces being ventilated. The means of closing shall be easily accessible as well as prominently and permanently marked and shall indicate the operating position of the closing device.

.6 Combustible gaskets in flanged ventilation duct connections are not permitted within 600 mm of openings in 'A' or 'B' class divisions and in ducts required to be of 'A' class construction.

.7 Ventilation openings or air balance ducts between two enclosed spaces shall not be provided except as permitted by Regulation II-2/B/7.7.

.2 *Arrangement of ducts* U.K.

.1 The ventilation systems for machinery spaces of category A, vehicle spaces, Ro-Ro spaces, galleys, special category spaces and cargo spaces shall be separated from each other and from the ventilation systems serving other spaces. However, the galley ventilation systems in passenger ships carrying not more than 36 passengers 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.

.2 Ducts provided for the ventilation of machinery spaces of category A, galleys, vehicle spaces, Ro-Ro spaces or special category spaces shall not pass through accommodation spaces, service spaces, or control stations unless they comply with paragraph .2.4.

.3 Ducts provided for the ventilation of accommodation spaces, service spaces or control stations shall not pass through machinery spaces of category A, galleys, vehicle spaces, Ro-Ro spaces or special category spaces unless they comply with paragraph .2.4.

.4 As permitted by paragraphs .2.2 and .2.3 ducts shall be either: U.K.

.1.1 constructed of steel having a thickness of at least 3 mm for ducts with a free cross-sectional area of less than 0,075 m^2, at least 4 mm for ducts with a free cross-sectional area of between 0,075 m^2 and 0,45 m^2, and at least 5 mm for ducts with a free cross-sectional area of over 0,45 m^2;

.1.2 suitably supported and stiffened;

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

.1.4 insulated to 'A-60' class standard from the boundaries of the spaces they serve to a point at least 5 m beyond each fire damper;

or

.2.1 constructed of steel in accordance with paragraphs .2.4.1.1 and .2.4.1.2; and

.2.2 insulated to 'A-60' class standard throughout the spaces they pass through, except for ducts that pass through spaces of category (9) or (10) as defined in Regulation II-2/B/4.2.2.

.5 For the purposes of paragraphs .2.4.1.4 and .2.4.2.2, ducts shall be insulated over their entire cross-sectional external surface. Ducts that are outside but adjacent to the specified space, and share one or more surfaces with it, shall be considered to pass through the specified space and shall be insulated over the surface they share with the space for a distance of 450 mm past the duct (Sketches of such arrangements are contained in the Unified Interpretations of SOLAS chapter II-2 (MSC.1/Circ.1276)).

.6 Where it is necessary that a ventilation duct passes through a main vertical zone division, an automatic 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 control location shall be readily accessible and be clearly and prominently marked. The duct between the division and the damper shall be constructed of steel in accordance with paragraphs .2.4.1.1 and .2.4.1.2 and insulated to at least the same fire integrity as the division penetrated. The damper shall be fitted on at least one side of the division with a visible indicator showing the operating position of the damper.

.3 *Details of fire dampers and duct penetrations* U.K.

.1 Ducts passing through 'A' class divisions shall meet the following requirements: U.K.

.1 where a thin plated duct with a free cross sectional area equal to, or less than, 0,02 m^2 passes through 'A' class divisions, the opening shall be fitted with a steel sheet 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 a bulkhead or, in the case of a deck, wholly laid on the lower side of the decks penetrated;

.2 where ventilation ducts with a free cross-sectional area exceeding 0,02 m^2, but not more than 0,075 m^2, pass through 'A' class divisions, the openings shall be lined with steel sheet sleeves. The ducts and sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length shall be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the division through which the duct passes; and

.3 automatic fire dampers shall be fitted in all ducts with a free cross-sectional area exceeding 0,075 m^2 that pass through 'A' class divisions. Each damper shall be fitted close to the division penetrated and the duct between the damper and the division penetrated shall be constructed of steel in accordance with paragraphs .2.4.2.1 and .2.4.2.2. The fire damper shall operate automatically, but shall also be capable of being closed manually from both sides of the division. The damper shall be fitted with a visible indicator which shows the operating position of the damper. Fire dampers are not required, however, where ducts pass through spaces surrounded by 'A' class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they penetrate. A duct of cross-sectional area exceeding 0,075 m^2 shall not be divided into smaller ducts at the penetration of an 'A' class division and then recombined into the original duct once through the division to avoid installing the damper required by this provision.

.2 Ventilation ducts with a free cross-sectional area exceeding 0,02 m^2 passing through 'B' class 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.

.3 All fire dampers shall be capable of manual operation. The dampers shall have a direct mechanical means of release or, alternatively, be closed by electrical, hydraulic, or pneumatic operation. All dampers shall be manually operable from both sides of the division. Automatic fire dampers, including those capable of remote operation, shall have a failsafe mechanism that will close the damper in a fire even upon loss of electrical power or hydraulic or pneumatic pressure loss. Remotely operated fire dampers shall be capable of being reopened manually at the damper.

.4 *Ventilation systems for passenger ships carrying more than 36 passengers* U.K.

.1 In addition to the requirements in sections .1, .2 and .3, the ventilation system of a passenger ship carrying more than 36 passengers shall also meet the following requirements: U.K.

.1 In general, the ventilation fans shall be so arranged that the ducts reaching the various spaces remain within a main vertical zone.

.2 Stairway enclosures shall be served by an independent ventilation fan and duct system (exhaust and supply) which shall not serve any other spaces in the ventilation systems.

.3 A duct, irrespective of its cross-section, serving more than one 'tween-deck' accommodation space, service space or control station, shall be fitted, near the penetration of each deck of such spaces, with an automatic smoke damper that shall also be capable of being closed manually from the protected deck above the damper. Where a fan serves more than one 'tween-deck' space through separate ducts within a main vertical zone, whereby each one is dedicated to a single 'tween-deck' space, each duct shall be provided with a manually operated smoke damper fitted close to the fan.

.4 Vertical ducts shall, where necessary, be insulated as required by tables 4.1 and 4.2. Ducts shall be insulated as required for decks between the space they serve and the space being considered, as applicable.

.5 *Exhaust ducts from galley ranges* U.K.

.1 Requirements for passenger ships carrying more than 36 passengers U.K.

.1 In addition to the requirements in sections .1, .2 and .3, exhaust ducts from galley ranges shall be constructed in accordance with paragraphs .2.4.2.1 and .2.4.2.2 and insulated to 'A-60' class standard throughout accommodation spaces, service spaces, or control stations they pass through. They shall also be fitted with: U.K.

.1 a grease trap readily removable for cleaning unless an alternative approved grease removal system is fitted;

.2 a fire damper located in the lower end of the duct at the junction between the duct and the galley range hood which is automatically and remotely operated and, in addition, a remotely operated fire damper located in the upper end of the duct close to the outlet of the duct;

.3 a fixed means for extinguishing a fire within the duct. The fire extinguishing systems shall comply with the recommendations published by the International Organization for Standardization, in particular publication ISO 15371:2009 'Ships and marine technology — Fire-extinguishing systems for protection of galley cooking equipment';

.4 remote-control arrangements for shutting off the exhaust fans and supply fans, for operating the fire dampers mentioned in paragraph .5.1.1.2 and for operating the fire-extinguishing system, which shall be placed in a position outside the galley close to the entrance to the galley. Where a multi-branch system is installed, a remote means located with the above controls shall be provided to close all branches exhausting through the same main duct before an extinguishing medium is released into the system; and

.5 suitably located hatches for inspection and cleaning, including one provided close to the exhaust fan and one fitted in the lower end where grease accumulates.

.2 Exhaust ducts from ranges for cooking equipment installed on open decks shall conform to paragraph .5.1.1, as applicable, when passing through accommodation spaces or spaces containing combustible materials.

.2 Requirements for passenger ships carrying not more than 36 passengers U.K.

When passing through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed in accordance with paragraphs .2.4.1.1 and .2.4.1.2. Each exhaust duct shall be fitted with:

.1 a grease trap readily removable for cleaning;

.2 an automatically and remotely operated fire damper located in the lower end of the duct at the junction between the duct and the galley range hood and, in addition, a remotely operated fire damper in the upper end of the duct close to the outlet of the duct;

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

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

.6 *Ventilation rooms serving machinery spaces of category A containing internal combustion machinery* U.K.

.1 Where a ventilation room serves only such an adjacent machinery space and there is no fire division between the ventilation room and the machinery space, the means for closing the ventilation duct or ducts serving the machinery space shall be located outside of the ventilation room and machinery space.

.2 Where a ventilation room serves such a machinery space as well as other spaces and is separated from the machinery space by a 'A-0' class division, including penetrations, the means for closing the ventilation duct or ducts for the machinery space can be located in the ventilation room.

[[X1].7 *Ventilation systems for laundries in passenger ships carrying more than 36 passengers* U.K.

Exhaust ducts from laundries and drying rooms of category (13) spaces as defined in Regulation II-2/B/4.2.2 shall be fitted with:**]**

.1 filters readily removable for cleaning purposes;

.2 a fire damper located in the lower end of the duct which is automatically and remotely operated;

.3 remote-control arrangements for shutting off the exhaust fans and supply fans from within the space and for operating the fire damper mentioned in paragraph .7.2; and

.4 suitably located hatches for inspection and cleaning.**]**

10 **Windows and sidescuttles (R 33)** U.K.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.1 All windows and sidescuttles in bulkheads within accommodation and service spaces and control stations other than those to which the provisions of Regulation 7.5 apply, shall be so constructed as to preserve the integrity requirements of the type of bulkheads in which they are fitted. U.K.

In new class B, C and D ships constructed on or after 1 January 2003 this shall be determined in accordance with the Fire Test Procedures Code.

.2 Notwithstanding the requirements of the tables in Regulations 4 and 5, all windows and sidescuttles in bulkheads separating accommodation and service spaces and

control stations from weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bed or angle.

NEW CLASS B, C AND D SHIPS CARRYING MORE THAN 36 PASSENGERS:

.3 Windows facing life-saving appliances, embarkation and assembly areas, external stairs and open decks used for escape routes, and windows situated below life-raft and escape slide embarkation areas shall have the fire integrity as required in the tables of Regulation 4. Where automatic dedicated sprinkler heads are provided for windows, 'A-0' windows may be accepted as equivalent U.K.

In new class B, C and D ships constructed on or after 1 January 2003, the automatic dedicated sprinkler heads must either be:

.1 dedicated heads located above the windows and installed in addition to the conventional ceiling sprinklers; or

.2 conventional ceiling sprinkler heads arranged such that the window is protected by an average application rate of at least 5 litres/m^2 per minute and the additional window area is included in the calculation of the area of coverage.

Windows located in the ship's side below the lifeboat embarkation areas shall have the fire integrity at least equal to 'A-0' class.

NEW CLASS B, C AND D SHIPS CARRYING NOT MORE THAN 36 PASSENGERS AND EXISTING CLASS B SHIPS:

.4 Notwithstanding the requirements of the tables in Regulation II-2/B/5, 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.

11 **Restricted use of combustible material (R 34)** U.K.

NEW CLASS B, C AND D SHIPS:

.1 Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, draughtstops, 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.

.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 qualities of resistance to the propagation of flame in accordance with the test procedure of IMO Resolution A.653(16).

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Instead of .2 the following paragraph .2a shall apply:

.2a 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.

.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 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 Regulation II 2-A/8, the above volume may include some combustible material used for erection of 'C' class divisions.

.5 Veneers used on surfaces and linings covered by the requirements of paragraph .3 shall have a calorific value not exceeding 45 MJ/m^2 of the area for the thickness used.

.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 of the flag State 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.

.7 Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Instead of .7 the following paragraph .7a. shall apply:

.7a 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.

.8 Primary deck coverings, if applied within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite, in accordance with the fire test procedures of IMO Resolution A.687(17) or give rise to toxic or explosive hazards at elevated temperatures.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Instead of paragraph .8 the following paragraph .8a shall apply:

.8a 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 Procedure Code.

12 **Details of construction (R 35)** U.K.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

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.

13 **Fixed fire detection and fire alarm systems and automatic sprinkler, fire detection and fire alarm system (R 14) (R 36)** U.K.

NEW CLASS B, C AND D SHIPS:

.1 In ships carrying not more than 36 passengers and in ships with a length of less than 24 metres there shall be installed throughout each separate zone, whether vertical or horizontal, in all accommodation and service spaces and in control stations, except spaces which afford no substantial fire risk such as void spaces, sanitary spaces, etc., either: U.K.

.1 a fixed fire detection and fire alarm system of an approved type and complying with the requirements of Regulation II-2/A/9 and so installed and arranged as to detect the presence of fire in such spaces, however in new class B, C and D ships constructed on or after 1 January 2003 providing smoke detection in corridors, stairways and escape routes within accommodation spaces, or,

.2 an automatic sprinkler, fire detection and fire alarm system of an approved type complying with the requirements of Regulation II-2/A/8 or with the IMO guidelines for an approved equivalent sprinkler system as given in IMO Resolution A.800(19) and so installed and arranged as to protect such spaces and, in addition, a fixed fire detection and fire alarm system of an approved type and complying with the requirements of Regulation II-2/A/9 and so installed and arranged as to provide smoke detection in corridors, stairways and escape routes within accommodation spaces.

.2 Ships carrying more than 36 passengers, except ships with a length of less than 24 metres, shall be equipped with: U.K.

An automatic sprinkler, fire detection and fire alarm system of an approved type complying with the requirements of Regulation II-2/A/8 or with the IMO guidelines for an approved equivalent sprinkler system as given in IMO Resolution A.800(19), in all service spaces, control stations and accommodation spaces, including corridors and stairways.

Alternatively control stations where water may cause damage to essential equipment may be fitted with an approved fixed fire-extinguishing system of another type.

A fixed fire detection and fire alarm system of an approved type, complying with the requirements of Regulation II-2/A/9 shall be installed, so installed and arranged as to provide smoke detection in service spaces, control stations and accommodation spaces, including corridors and stairways. Smoke detectors need not be fitted in private bathrooms and galleys.

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 or fixed fire detection and alarm system.

.3 In periodically unattended machinery spaces a fixed fire detection and fire alarm system of an approved type, in accordance with the relevant provisions of Regulation II-2/A/9, shall be installed. U.K.

This fire detection system shall be so designed and the detectors so positioned as to detect rapidly the onset of fire in any part of those spaces and under any normal conditions of operation of the machinery and variations of ventilation as required by the possible range of ambient

temperatures. Except in spaces of restricted height and where their use is specially appropriate, detection systems using only thermal detectors shall not be permitted. The detection system shall initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed on the navigating bridge and by a responsible engineer officer.

When the navigating bridge is unmanned the alarm shall sound in a place where a responsible member of the crew is on duty.

After installation the system shall be tested under varying conditions of engine operation and ventilation.

[[F3]CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2018

.4 A fixed fire detection and fire alarm system of an approved type, in accordance with the relevant provisions of Regulation II-2/A/9, shall be installed in machinery spaces where: U.K.

.4.1 the installation of automatic and remote control systems and equipment has been approved in lieu of continuous manning of the space; and

.4.2 the main propulsion and associated machinery including sources of main source of electrical power are provided with various degrees of automatic or remote control and are under continuous manned supervision from a control room.

.5 A fixed fire detection and fire alarm system of an approved type, in accordance with the relevant provisions of Regulation II-2/A/9, shall be installed in enclosed spaces containing incinerators.

.6 With regard to the fixed fire detection and fire alarm system required by Regulations II-2/B/13.4 and 13.5, the following shall apply: U.K.

The fire detection system shall be so designed and the detectors so positioned as to detect rapidly the onset of fire in any part of those spaces and under any normal conditions of operation of the machinery and variations of ventilation as required by the possible range of ambient temperatures. Except in spaces of restricted height and where their use is especially appropriate, detection systems using only thermal detectors shall not be permitted. The detection system shall initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed on the navigating bridge and by a responsible engineer officer.

When the navigating bridge is unmanned, the alarm shall sound in a place where a responsible member of the crew is on duty.

After installation, the system shall be tested under varying conditions of engine operation and ventilation.**]**

14 **Protection of special category spaces (R 37)** U.K.

.1 *Provisions applicable to special category spaces whether above or below the bulkhead deck* U.K.

NEW CLASS B, C AND D SHIPS AND EXISTING CLASS B SHIPS CARRYING MORE THAN 36 PASSENGERS:

.1 General U.K.

.1 The basic principle underlying the provisions of this Regulation is that as normal main vertical zoning may not be practicable in special category spaces, equivalent protection must be obtained in such spaces on the basis of a horizontal zone concept and by

the provision of an efficient fixed fire-extinguishing system. Under this concept a horizontal zone for the purpose of this Regulation may include special category spaces on more than one deck provided that the total overall clear height for vehicles does not exceed 10 metres.

[F2.2 The requirements of Regulations II-2/A/12, II-2/B/7, II-2/B/9 and II-2/B/9a for maintaining the integrity of vertical zones shall be applied equally to decks and bulkheads forming the boundaries separating horizontal zones from each other and from the remainder of the ship.]

.2 Structural protection U.K.

.1 In new ships carrying more than 36 passengers the boundary bulkheads and decks of special category spaces shall be insulated to 'A-60' class standard. However, where an open deck space (as defined in Regulation II-2/B/4.2.2(5)), a sanitary or similar space (as defined in Regulation II-2/B/4.2.2(9)) or a tank, void or auxiliary machinery space having little or no fire risk (as defined in Regulation II-2/B/4.2.2(10)), is on one side of the division the standard may be reduced to 'A-0'. U.K.

Where fuel oil tanks are below a special category space, the integrity of the deck between such spaces may be reduced to 'A-0' standard.

[F2.2 In new ships built before 1 January 2018 carrying not more than 36 passengers and existing class B ships carrying more than 36 passengers, the boundary bulkheads of special category spaces shall be insulated as required for category (11) spaces in table 5.1 of Regulation II-2/B/5 and the horizontal boundaries as required for category (11) in table 5.2 of Regulation II-2/B/5. In ships built on or after 1 January 2018 carrying not more than 36 passengers, the boundary bulkheads of special category spaces shall be insulated as required for category (11) spaces in table 5.1a of Regulation II-2/B/5 and the horizontal boundaries as required for category (11) in table 5.2a of Regulation II-2/B/5.]

.3 Indicators shall be provided on the navigating bridge which shall indicate when any fire door leading to or from the special category spaces is closed. U.K.

Doors to special category spaces shall be of such a construction that they cannot be kept open permanently and shall be kept closed during the voyage.

.3 Fixed fire-extinguishing system U.K.

Each special category space shall be fitted with an approved fixed pressure water-spraying system for manual operation which shall protect all parts of any deck and vehicle platform in such space.

In new class B, C and D ships constructed on or after 1 January 2003, such water spray systems shall have:

.1 a pressure gauge on the valve manifold;

.2 clear marking on each manifold valve indicating the spaces served;

.3 instructions for maintenance and operation located in the valve room; and

.4 a sufficient number of drainage valves.

The Administration of the flag State may permit the use of any other fixed fire-extinguishing system that has been shown by full-scale test in conditions simulating a flowing petrol fire in a special category space to be not less effective in controlling

fires likely to occur in such a space. Such fixed pressure water-spraying system or other equivalent fire-extinguishing system shall comply with the provisions of IMO Resolution A.123(V) and the IMO MSC/Circ.1272 'Guidelines when approving alternative water-based fire-fighting systems for use in special category spaces' shall be taken into consideration.

.4 Patrols and detection U.K.

.1 An efficient patrol system shall be maintained in special category spaces. In any such space in which the patrol is not maintained by a continuous fire watch at all times during the voyage there shall be provided a fixed fire detection and fire alarm system of an approved type complying with the requirements of Regulation II-2/A/9. The fixed fire detection system shall be capable of rapidly detecting the onset of fire. The type and the spacing and location of detectors shall determined taking into account the effects of ventilation and other relevant factors. U.K.

In new class B, C and D ships constructed on or after 1 January 2003, after being installed the system shall be tested under normal ventilation conditions and shall give an overall response time to the satisfaction of the Administration of the flag State.

.2 Manually operated call points shall be provided as necessary throughout the special category spaces and one shall be placed close to each exit from such spaces. U.K.

In new class B, C and D ships constructed on or after 1 January 2003, manually operated call points shall be spaced so that no part of the space is more than 20 metres from a manually operated call point.

5 Portable fire-extinguishing equipment U.K.

NEW CLASS B, C AND D CONSTRUCTED BEFORE 1 JANUARY 2003 AND EXISTING CLASS B SHIPS:

.5a There shall be provided in each special category space: U.K.

.1 at least three water fog applicators;

.2 one portable foam applicator unit complying with the provisions of Regulation II-2/A/6.2, provided that at least two such units are available in the ship for use in such spaces; and

.3 at least one portable extinguisher located at each access to such spaces.

CLASS B, C, AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

.5b Portable extinguishers shall be provided at each deck level in each hold or compartment where vehicles are carried, spaced not more than 20 metres apart on both sides of the space. At least one portable fire extinguisher shall be located at each access to such space. U.K.

In addition the following fire extinguishing appliances shall be provided in special category spaces:

.1 at least three water-fog applicators; and

.2 one portable foam applicator unit complying with the provisions of the Fire Safety Systems Code, provided that at least two such units are available in the ship for use in such ro-ro space.

NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.6 Ventilation system U.K.

.1 There shall be provided an effective power ventilation system for the special category spaces sufficient to give at least 10 air changes per hour. The system for such spaces shall be entirely separated from other ventilation systems and shall be operating at all times when vehicles are in such spaces. The number of air changes shall be increased at least to 20 during loading and unloading of vehicles. U.K.

Ventilation ducts serving special category spaces capable of being effectively sealed shall be separated for each such space. The system shall be capable of being controlled from a position outside such spaces.

.2 The ventilation shall be such as to prevent air stratification and the formation of air pockets.

.3 Means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.

.4 Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system in case of fire, taking into account the weather and sea conditions.

.5 Ventilation ducts, including dampers, shall be made of steel and their arrangement shall be to the satisfaction of the Administration of the flag State. U.K.

In new class B, C and D ships constructed on or after 1 January 2003, ventilation ducts that pass through horizontal zones or machinery spaces shall be ‘A-60’ class steel ducts constructed in accordance with Regulations II-2/B/9.2.3.1.1 and II-2/B/9.2.3.1.2.

.2 *Additional provisions applicable only to special category spaces above the bulkhead deck* U.K.

NEW CLASS B, C AND D SHIPS:

.1.1 Scuppers U.K.

In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks consequent on the operation of the fixed pressure water-spraying system, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard.

NEW CLASS B, C AND D AND EXISTING CLASS B RO-RO PASSENGER SHIPS:

.1.2 Discharges U.K.

.1.2.1 Discharge valves for scuppers, fitted with positive means of closing operable from a position above the bulkhead deck in accordance with the requirements of the International Convention on Load Lines in force, shall be kept open while the ships are at sea.

.1.2.2 Any operation of the valves referred to in subparagraph .1.2.1 shall be recorded in the logbook.

NEW CLASS B, C AND D SHIPS:

.2 Precautions against ignition of flammable vapours U.K.

.1 On any deck or platform, if fitted, on which vehicles are carried and on which explosive vapours might be expected to accumulate, except platforms with openings of sufficient size permitting penetration of petrol gases downwards, equipment which may constitute a source of ignition of flammable vapours and, in particular, electrical equipment and wiring, shall be installed at least 450 mm above the deck or platform. Electrical equipment installed at more than 450 mm above the deck or platform shall

be of a type so enclosed and protected as to prevent the escape of sparks. However, if the installation of electrical equipment and wiring at less than 450 mm above the deck or platform is necessary for the safe operation of the ship, such electrical equipment and wiring may be installed provided that it is of a certified safe type approved for use in an explosive petrol and air mixture.

.2 Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

.3 *Additional provisions applicable only to special category spaces below the bulkhead deck* U.K.

NEW CLASS B, C AND D SHIPS:

.1 Bilge pumping and drainage U.K.

In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or tank top consequent on the operation of the fixed pressure water-spraying system, the Administration of the flag State may require pumping and drainage facilities to be provided additional to the requirements of Regulation II-1/C/3.

In new class B, C and D ships constructed on or after 1 January 2003 in such case, the drainage system shall be sized to remove not less than 125 % of the combined capacity of both the water spraying system pumps and the required number of fire hose nozzles. The drainage system valves shall be operable from outside the protected space at a position in the vicinity of the extinguishing system controls. Bilge wells shall be of sufficient holding capacity and shall be arranged at the side shell of the ship at a distance from each other of not more than 40 metres in each watertight compartment.

.2 Precautions against ignition of flammable vapours U.K.

.1 Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures. Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

.2 Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

.4 *Permanent openings* U.K.

CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Permanent openings in the side plating, the ends or deckhead of special category spaces shall be so situated that a fire in the special category space does not endanger stowage areas and embarkation stations for survival craft and accommodation spaces, service spaces and control stations in superstructures and deckhouses above the special category spaces.

15 **Fire patrols, detection, alarms and public address systems (R 40)** U.K.

NEW CLASS B, C AND D SHIPS:

.1 Manually operated call points complying with the requirements of Regulation II-2/A/9 shall be installed.

.2 All ships shall at all times when at sea, or in port (except when out of service), be so manned or equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

.3 A special alarm, operated from the navigating bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the ship's general alarm system but it shall be capable of being sounded independently of the alarm to the passenger spaces.

.4 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. U.K.

In new class B, C and D ships constructed on or after 1 January 2003, this public address system shall comply with the requirements of SOLAS Regulation III/6.5 as amended.
NEW CLASS B, C AND D AND EXISTING CLASS B SHIPS:

.5 For ships carrying more than 36 passengers an efficient patrol system shall be maintained so that an outbreak of fire may be promptly detected. Each member of the fire patrol shall be trained to be familiar with the arrangements of the ship as well as the location and operation of any equipment he or she may be called upon to use. Each member of the fire patrol shall be provided with a two-way portable radio telephone apparatus.

NEW CLASS B, C AND D SHIPS:

.6 Ships carrying more than 36 passengers shall have the detection alarms for the systems required by Regulation 13.2 centralised in a continuously manned central control station. In addition, controls for remote closing of the fire doors and shutting down the ventilation fans, shall be centralised in the same location. The ventilation fans shall be capable of reactivation by the crew at the continuously manned control station. The control panel in the central control station shall be capable of indicating open or closed positions of fire doors, closed or off status of the detectors, alarms and fans. The control panel shall be continuously powered and should have an automatic changeover to standby power supply in case of loss of normal power supply. The control panel shall be powered from the main source of electrical power and the emergency source of electrical power defined by Regulation II-1/D/3 unless other arrangements are permitted by the Regulations, as applicable.

.7 The control panel shall be designed on the fail-safe principle, e.g. an open detector circuit shall cause an alarm condition.

16 **Upgrading of existing class B ships carrying more than 36 passengers (R 41-1)** U.K.

.1 In addition to the requirements for existing class B ships in this Chapter II-2, existing class B ships carrying more than 36 passengers shall comply with the following requirements: U.K.

.1 All accommodation and service spaces, stairway enclosures and corridors shall be equipped with a smoke detection and alarm system of an approved type, and complying with the requirements of Regulation II-2/A/9. Such system need not be fitted in private bathrooms, and spaces having little or no fire risk such as voids and similar spaces. Detectors operated by heat instead of smoke shall be installed in galleys.

.2 Smoke detectors connected to the fire detection and alarm system shall also be fitted above ceilings in stairways and corridors in the areas where ceilings are of combustible construction.

.3.1 Hinged fire doors in stairway enclosures, main vertical zone bulkheads and galley boundaries which are normally kept open shall be self-closing and be capable of release from a central control station and from a position at the door.

.3.2 A panel shall be placed in a continuously manned central control station to indicate whether the fire doors in stairway enclosures, main vertical zone bulkheads and galley boundaries are closed.

.3.3 Exhaust ducts from galley ranges in which grease or fat is likely to accumulate and which pass through accommodation spaces or spaces containing combustible materials shall be constructed of 'A' class divisions. Each galley range exhaust duct shall be fitted with:

.1 a grease trap readily removable for cleaning unless an alternative grease removal process is fitted;

.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;

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

.5 suitably located hatches for inspection and cleaning.

.3.4 Only public toilets, lifts, lockers of non-combustible materials providing storage for safety equipment and open information counters may be located within the stairway enclosure boundaries. Other existing spaces within the stairway enclosure:

.1 shall be emptied, permanently closed and disconnected from the electrical system; or

.2 shall be separated from the stairway enclosure by the provision of 'A' class divisions in accordance with Regulation II-2/B/5. Such spaces may have direct access to stairway enclosures by the provision of 'A' class doors in accordance with Regulation II-2/B/ 5, and subject to a sprinkler system being provided in these spaces. However, cabins shall not directly open into the stairway enclosure.

.3.5 Spaces other than public spaces, corridors, public toilets, special category spaces, other stairways required by Regulation II-2/B/6.1.5, open deck spaces and spaces covered by paragraph .3.4.2 are not permitted to have direct access to stairway enclosures.

.3.6 Existing machinery spaces of category (10) described in Regulation II-2/B/4 and back offices for information counters which open directly into the stairway enclosure may be retained, provided that they are protected by smoke detectors and that back offices for information counters contain only furniture of restricted fire risk.

.3.7 In addition to the emergency lighting required by Regulations II-1/D/3 and III/5.3, the means of escape including stairways and exits shall be marked, at all points of the escape route including angles and intersections, by lighting or photoluminescent strip indicators placed not more than 0,3 metres above the deck. 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 photoluminescent material or marked by lighting. The Administration of the flag State shall ensure that such lighting or photoluminescent equipment have been evaluated, tested and applied in accordance with the guidelines as given in IMO Resolution A.752(18) or in ISO Standard 15370-2001.

.3.8 A general emergency alarm system shall be provided. The alarm shall be audible throughout all the accommodation and normal crew working spaces and open decks, and its sound pressure level shall comply with the standards of the Code on Alarms and Indicators in IMO Resolution A.686(17) as amended.

.3.9 A public address system or other effective means of communication shall be available throughout the accommodation, public and service spaces, control stations and open decks.

.3.10 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 of the flag State 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.

.2 In addition: U.K.

.1 All stairways in accommodation and service spaces shall be of steel frame construction except where the Administration of the flag State sanctions the use of other equivalent material, and shall be within enclosures formed of ‘A’ class divisions, with positive means of closure at all openings, except that:

.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 Regulation II-2/B/5;

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

.2 Machinery spaces shall be fitted with a fixed fire-extinguishing system complying with the requirements of Regulation II-2/A/6.

.3 Ventilation ducts passing through divisions between main vertical zones shall be equipped with a fail-safe automatic closing fire damper which shall also be capable of being manually closed from each side of the division. In addition, fail-safe automatic closing fire dampers with manual operation from within the enclosure shall be fitted to all ventilation ducts serving both accommodation and service spaces and stairway enclosures where they pierce such enclosures. Ventilation ducts passing through a main fire zone division without serving spaces on both sides or passing through a stairway enclosure without serving that enclosure need not be fitted with dampers provided that the ducts are constructed and insulated to ‘A-60’ standard and have no

openings within the stairway enclosure or in the trunk on the side which is not directly served.

.4 Special category spaces shall comply with the requirements of Regulation II-2/B/14.

.5 All fire doors in stairway enclosures, main vertical zone bulkheads and galley boundaries which are normally kept open shall be capable of release from a central control station and from a position at the door.

.6 The requirements of paragraph .1.3.7 of this Regulation shall also apply to the accommodations.

.3 Not later than 1 October 2005 or 15 years after the date of construction of the ship, whichever is the later: U.K.

.1 Accommodation and service spaces, stairway enclosures and corridors shall be fitted with an automatic sprinkler, fire detection and fire alarm system complying with the requirements of Regulation II-2/A/8 or with the guidelines for an approved equivalent sprinkler system as given in IMO Resolution A.800(19).

17 **Special requirements for ships carrying dangerous goods (R 41)** U.K.
NEW CLASS B, C AND D SHIPS CONSTRUCTED BEFORE 1 JANUARY 2003 AND EXISTING CLASS B SHIPS:

The requirements of SOLAS Regulation II-2/54, as in force on 17 March 1998, shall apply, as appropriate, to passenger ships carrying dangerous goods.
CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

The requirements of Regulation 19 of Part G of the SOLAS Chapter II-2, as revised per 1 January 2003, shall apply, as appropriate, to passenger ships carrying dangerous goods.

18 **Special requirements for helicopter facilities** U.K.
CLASS B, C AND D SHIPS CONSTRUCTED ON OR AFTER 1 JANUARY 2003:

Ships equipped with helidecks shall comply with the requirements of Regulation 18 of Part G of the SOLAS Chapter II-2, as revised per 1 January 2003.**]**