CHAPTER 9

FIRE SAFETY

9.1 Alternative design and arrangements

When fire safety design or arrangements deviate from the prescriptive provisions of the Code, engineering analysis, evaluation and approval of the alternative design and arrangements should be carried out in accordance with SOLAS regulation II-2/17.

9.2 9.1 Structural fire protection

9.2.1 9.1.1 These provisions requirements have been formulated principally for units having their hull superstructure, structural bulkheads, decks and deckhouses constructed of steel.^{Ψ}

9.2.2 9.1.2 Units constructed of other materials may be accepted, provided that, in the opinion of the Administration, they provide an equivalent standard of safety.

9.2.3 Structural fire protection details, materials and methods of construction should be in accordance with the FTP Code, as applicable, and SOLAS regulations II-2/5.3 and II-2/6, as applied to cargo ships.

Fire integrity of bulkheads and decks

9.2.4 9.1.3 In addition to complying with the specific provisions for fire integrity of bulkheads and decks in this section and in section 9.3 9.2, the minimum fire integrity of bulkheads and decks should be as prescribed in tables 9-1 and 9-2. Exterior boundaries of superstructures and deckhouses enclosing accommodation, including any overhanging decks which support such accommodation, should be constructed to "A-60" standard for the whole of the portion which faces and is within 30 m of the centre of the rotary table. For units that have a movable substructure the 30 m should be measured with the substructure at its closest drilling position to the accommodation. The Administration may accept equivalent arrangements.

9.2.5 9.1.4 The following provisions requirements should govern application of the tables: $^{\Psi}$

- .1 Tables 9-1 and 9-2 should 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 parenthesis preceding each category refers to the applicable column or row in the tables:
 - (1) Control stations are spaces as defined in section 1.3 $\frac{1.3.31}{1.3.31}$.
 - (2) *Corridors* means corridors and lobbies.

- (3) Accommodation spaces are spaces as defined in section 1.3 1.3.45, excluding corridors, lavatories and pantries containing no cooking appliances.
- (4) *Stairways* are 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 should be regarded as part of the space from which it is not separated by a fire door.
- (5) *Service spaces (low risk)* are lockers, store-rooms and working spaces in which flammable materials are not stored, drying rooms and laundries.
- (6) Machinery spaces of category A are spaces as defined in section 1.3 $\frac{1.3.29}{1.3.29}$.
- (7) *Other machinery spaces* are spaces as defined in section 1.3 1.3.30 other than machinery spaces of category A.
- (8) *Hazardous areas* are areas as defined in section 1.3 $\frac{1.3.32}{1.3.32}$.
- (9) *Service spaces (high risk)* are lockers, store-rooms and working spaces in which flammable materials are stored, galleys, pantries containing cooking appliances, paint rooms and workshops other than those forming part of the machinery space.
- (10) *Open decks* are open deck spaces, excluding hazardous areas.
- (11) Sanitary and similar spaces are communal sanitary facilities such as showers, baths, lavatories, etc., and isolated pantries containing no cooking appliances. Sanitary facilities which serve a space and with access only from that space should shall be considered a portion of the space in which they are located.^{Ψ}

9.2.6 9.1.5 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.

9.2.7 9.1.6 In approving structural fire protection details, the Administration should consider have regard to the risk of heat transmission at intersections and terminal points of required thermal barriers. The insulation of a deck or bulkhead should be carried past the penetration, intersection or terminal point for a distance of at least 450 mm in the case of steel and aluminium structures. If a space is divided with a deck or a bulkhead of "A" class standard having insulation of different values, the insulation with the higher value should continue on the deck or bulkhead with the insulation of the lesser value for a distance of at least 450 mm.

Spaces		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations	(1)	A-0 ^(d)	A-0	A-60	A-0	A-15	A-60	A-15	A-60 ^(e)	A-60	*	A-0
Corridors	(2)		С	B-0	B-0 A-0 ^(b)	В-0	A-60	A-0	A-0 ^(e)	A-0	*	B-0
Accommodation spaces	(3)			С	B-0 A-0 ^(b)	В-0	A-60	A-0	A-0 ^(e)	A-0	*	С
Stairways	(4)				B-0 A-0 ^(b)	B-0 A-0 ^(b)	A-60	A-0	A-0 ^(e)	A-0	*	B-0 A-0 ^(b)
Service spaces (low risk)	(5)					С	A-60	A-0	A-0	A-0	*	B-0
Machinery spaces of category A	(6)						*(a)	A-0 ^(a)	A-60	A-60	*	A-0
Other machinery spaces	(7)							A-0 ^{(a)(c)}	A-0	A-0	*	A-0
Hazardous areas	(8)									A-0	-	A-0
Service spaces (high risk) (9)									A-0 ^(c)	*	A-0
Open decks	(10)										-	*
Sanitary and similar spaces	(11)											С

Table 9-1 – Fire integrity of bulkheads separating adjacent spaces

See notes under table 9-2 9-4

Space Spa below ↓ above	\rightarrow	(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 ^(e)	A-0	*	A-0
Corridors	(2)	A-0	*	*	A-0	*	A-60	A-0	A-0 ^(e)	A-0	*	*
Accommodation spaces	(3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0 ^(e)	A-0	*	*
Stairways	(4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0 ^(e)	A-0	*	A-0
Service spaces (low risk)	(5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A	(6)	A-60	A-60	A-60	A-60	A-60	*(a)	A-60	A-60	A-60	*	A-0
Other machinery spaces	(7)	A-15	A-0	A-0	A-0	A-0	A-0 ^(a)	*(a)	A-0	A-0	*	A-0
Hazardous areas	(8)	A-60 ^(e)	A-0 ^(e)	A-0 ^(e)	A-0 ^(e)	A-0	A-60	A-0		A-0	*	A-0
Service spaces (high risk)	(9)	A-60	A-0	A-0	A-0	A-0	A-60 A-0	A-0	A-0	A-0 ^(c)	*	A-0
Open decks	(10)	*	*	*	*	*	*	*	-	*	_	*
Sanitary and similar spaces	(11)	A-0	A-0	*	A-0	*	A-0	A-0	A-0	A-0	*	*

Table 9-2 – Fire integrity of decks separating adjacent spaces

Notes: to be applied to tables 9-1 and 9-2, as appropriate

- (a) Where the space contains an emergency power source or components of an emergency power source adjoining a space containing a ship's service generator or the components of a ship's service generator, the boundary bulkhead or deck between those spaces should be an "A-60" class division.
- (b) For clarification as to which note applies see paragraphs 9.3.3 and 9.3.5 $\frac{9.2.1}{9.2.1}$ and 9.2.3.
- (c) Where spaces are of the same numerical category and superscript "c" 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.
- (d) Bulkheads separating the navigating bridge, chartroom and radio room from each other may be "B-0" rating.
- (e) An engineering evaluation should be conducted in accordance with paragraph 9.3.1. In no case should the bulkhead or deck rating be less than the value indicated in the tables. Where an asterisk appears in the tables, the division should be of steel or equivalent material, but need not be of "A" class standard. However, where a deck is penetrated for the passage of electric cables, pipes and vent ducts, such penetrations should be made tight to prevent the passage of flame and smoke.

9-5

9.2.8 9.1.7 Windows and sidescuttles, with the exception of navigating bridge windows, should be of the non-opening type. Navigating bridge windows may be of the opening type provided the design of such windows permits rapid closure. The Administration may permit windows and sidescuttles outside hazardous areas to be of the opening type.

9.2.9 9.1.8 The fire resistance of doors should, as far as practicable, be equivalent to that of the division in which they are fitted. External doors in superstructures and deckhouses should be constructed to at least "A-0" class standard and be self-closing, where practicable.

9.2.10 Self-closing doors in fire rated bulkheads should not be fitted with hold-back hooks. However, hold-back arrangements incorporating remote release fittings of the fail-safe type may be utilized.

9.3 9.2 Protection of accommodation spaces, service spaces and control stations

9.3.1 In general, accommodation spaces, service spaces and control stations should not be located adjacent to hazardous areas. However, where this is not practicable, an engineering evaluation should be performed to ensure that the level of fire protection and blast resistance of the bulkheads and decks separating these spaces from the hazardous areas are adequate for the likely hazard.

9.3.2 All bulkheads that are to be "A" class divisions should extend from deck to deck and to the deckhouse side or other boundaries.

9.3.3 9.2.1 All bulkheads forming required to be "B" class divisions should extend from deck to deck and to the deckhouse side or other boundaries, unless continuous "B" class ceilings or linings are fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling or lining. In corridor bulkheads, ventilation openings may be permitted only in and under the doors of cabins, public spaces, offices and sanitary spaces. The openings should be provided only in the lower half of the door. Where such an opening is in or under a door, the total net area of any such opening or openings should not exceed 0.05 m². When such an opening is cut in a door it should be fitted with a grille made of non-combustible material. Such openings should not be provided in a door in a division forming a stairway enclosure.^{Ψ}

9.3.4 9.2.2 Stairs should be constructed of steel or equivalent material.

9.3.5 9.2.3 Stairways which penetrate only a single deck should be protected at least at one level by "A" or "B" class divisions and self-closing doors so as to limit the rapid spread of fire from one deck to another. Personnel lift trunks should be protected by "A" class divisions. Stairways and lift trunks which penetrate more than a single deck should be surrounded by "A" class divisions and protected by self-closing doors at all levels. Self-closing doors should not be fitted with hold back hooks. However, hold back arrangements incorporating remote release fittings of the fail safe type may be utilized.

9.3.6 9.2.4 Air spaces enclosed behind ceilings, panellings or linings should be divided by close fitting draught stops spaced not more than 14 m apart. In the vertical direction, such enclosed air spaces, including those behind linings of stairways, trunks, etc., should be closed at each deck.

9.3.7 9.2.5 Except for insulation in refrigerated compartments, insulation material, pipe and vent duct lagging, ceilings, linings and bulkheads should be of non-combustible material. Insulation of pipe fittings for cold service systems and vapour barriers and adhesives used in

This is a preview. Click here to purchase the full publication. © 2015 Stade

conjunction with insulation need not be non-combustible but they should be kept to a minimum and their exposed surfaces should have low-flame low flame spread characteristics.²⁸ In spaces where penetration of oil products is possible, the surfaces of the insulation should be impervious to oil or oil vapours.

9.3.8 9.2.6 The framing, including grounds and the joint pieces of bulkheads, linings, ceilings and draught stops, should be of non-combustible material.

9.3.9 9.2.7 All exposed surfaces in corridors and stairway enclosures and surfaces in concealed or inaccessible spaces in accommodation and service spaces and control stations should have low-flame low-flame spread characteristics. Exposed surfaces of ceilings in accommodation and service spaces and control stations should have low flame spread characteristics.²⁹

The following footnote was deleted:

Refer to IMO resolution A.653(16) Recommendation on improved fire test procedures for surface flammability of bulkhead, ceiling and deck finish materials, in conjunction with resolution A.166(ES.IV) Guidelines on the evaluation of fire hazard properties of materials and Annex I, Part I of the International Code for Application of Fire Test Procedures (FTP Code).

9.3.10 9.2.8 Bulkheads, linings and ceilings may have combustible veneers provided that the thickness of such veneers should not exceed **2.5** 2 mm within any space other than corridors, stairway enclosures and control stations where the thickness should not exceed 1.5 mm. Combustible materials used on these surfaces should have a calorific value²⁹ not exceeding 45 MJ/m² of the area for the thickness used. Alternatively, veneers which have a calorific value not exceeding 45 mJ/m² of the area for the thickness used may be accepted by the Administration, irrespective of the thickness of those veneers.

9.3.11 9.2.9 Primary deck coverings, if applied within accommodation and service spaces and control stations, should be of approved material which will not readily ignite, this being determined in accordance with the FTP Code. should be of approved material which will not readily ignite, or give rise to toxic or explosive hazards at elevated temperatures.³⁰

The following footnote was deleted: Refer to IMO resolution A.687(17) Fire test procedures for ignitability of primary deck coverings.

9.3.12 9.2.10 Paints, varnishes and other finishes used on exposed interior surfaces should not be capable of producing excessive quantities of smoke and toxic products, this being determined in accordance with the FTP Code. offer an undue fire hazard in the judgement of the Administration and should not be capable of producing excessive quantities of smoke 9-14

9.3.13 9.2.11 Ventilation ducts should be of non-combustible material. Short ducts, however, not generally exceeding 2 m in length and with a cross-sectional area not exceeding 0.02 m^2 need not be non-combustible, subject to the following conditions:

This is a preview. Click here to purchase the full publication.

²⁸ Refer to IMO resolution A.653(16) Recommendation on improved fire test procedures for surface flammability of bulkhead, ceiling and deck finish materials, adopted by the Organization by resolution A.653(16), in conjunction with resolution A.166(ES.IV) Guidelines on the evaluation of fire hazard properties of materials adopted by the Organization by resolution A.166(ES.IV) and Annex I, Part I of the International Code for Application of Fire Test Procedures (FTP Code).

²⁹ Refer to the recommendations published by the International Organization for Standardization, in particular publication ISO 1716:2002, Reaction to fire tests for building products – Determination of the heat of combustion.

- .1 these ducts should be of a material which, in the opinion of the Administration, has a low fire risk;
- .2 they may only be used at the end of the ventilation device;
- .3 they should not be situated less than 600 mm, measured along the duct, from where it penetrates any "A" or "B" class division including continuous "B" class ceilings.

9.3.14 9.2.12 Where a thin plated duct with a free cross-sectional area equal to, or less than, 0.02 m^2 passes through class "A" bulkhead or decks, the opening should be lined 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 the bulkhead or, in the case of the deck, wholly laid on the lower side of the deck pierced. Where ventilation ducts with a cross-sectional area exceeding 0.02 m^2 pass through "A" class bulkheads or decks, the opening should be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of penetrations through the deck or bulkhead; the ducts and sleeves at such places should comply with the following:

- .1 The ducts or sleeves should have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length should be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, should be provided with fire insulation. The insulation should have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of the Administration.
- .2 Ducts with a cross-sectional area exceeding 0.075 m², except those serving hazardous areas, should be fitted with fire dampers in addition to meeting the requirements of provisions of paragraph 9.3.14.1 2.1. The fire damper should operate automatically but should also be capable of being closed manually from both sides of the bulkhead or deck. The damper should 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. The Administration may, given special considerations, permit operation from one side of a division only.

9.3.15 9.2.13 In general, Ducts provided for ventilation systems for machinery spaces of category A, galleys and hazardous areas should be separated from each other and from the ventilation systems serving other spaces not pass through accommodation spaces, service spaces or control stations. Ducts serving hazardous areas should not pass through accommodation spaces, service spaces, or control spaces. Ducts provided for the ventilation of machinery spaces of category A and galleys should not pass through accommodation spaces, control stations or service spaces unless: However, the Administration may permit a relaxation from this requirement, except for the ducts serving hazardous areas passing through accommodation spaces, control stations and galleys, provided that the ducts are:

.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

102

a thickness obtained by interpolation for ducts of 300 mm in width or less and of at least 5 mm for ducts of 760 mm in width and over; in the case of ducts the width or diameter of which is between 300 mm and 760 mm, the thickness should be obtained by interpolation;

- .2 the ducts are suitably supported and stiffened;
- .3.2 the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
- .4.3 the ducts are insulated to "A-60" class standard from the machinery spaces or galleys to a point at least 5 m beyond each fire damper;
- or
- **.5**.4 the ducts are constructed of steel in accordance with paragraphs 9.3.15.1.1 and 9.3.15.1.2 .+; and
- .6 .5 the ducts are insulated to "A-60" class standard throughout the accommodation spaces, service spaces or control stations.

9.3.16 9.2.14 Ducts provided for the ventilation of accommodation spaces, service spaces or control stations should not pass through machinery spaces of category A, galleys or hazardous areas. However, the Administration may permit a relaxation from these provisions this requirement, except for the ducts passing through hazardous areas, provided that:^{Ψ}

- .1 the ducts where they pass through a machinery space of category A or a galley are constructed of steel in accordance with paragraphs 9.3.15.1.1 and 9.3.15.1.29.2.13.1;
- .2 automatic fire dampers are fitted close to the boundaries penetrated; and
- .3 the integrity of the machinery space or galley boundaries is maintained at the penetrations;
- or
- .4 the ducts where they pass through a machinery space of category A or a galley are constructed of steel in accordance with paragraphs 9.3.15.1.1 and 9.3.15.1.2 9.2.13.1; and
- .5 are insulated to "A-60" standard within the machinery space or galley.

9.3.17 9.2.15 Ventilation ducts with a cross-sectional area exceeding 0.02 m² passing through "B" class bulkheads should be lined with steel sheet sleeves of 900 mm in length divided preferably into 450 mm on each side of the bulkhead unless the duct is of steel for this length.

9.3.18 9.2.16 Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges should be of equivalent fire integrity to "A" class divisions.

9.3.19 9.2.16 Each galley exhaust duct should be fitted with:

- .1 a grease trap readily removable for cleaning;
- .2 a fire damper located in the lower galley end of the duct which is automatically and remotely operated and, in addition a remotely operated fire damper located in the exhaust 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.

9.3.20 9.2.17 The main inlets and outlets of all ventilation systems should be capable of being closed from outside the spaces being ventilated.

9.3.21 9.2.18 Power ventilation of accommodation spaces, service spaces, control stations, machinery spaces and hazardous areas should be capable of being stopped from an easily accessible position outside the space being served. The accessibility of this position in the event of a fire in the spaces served should be specially considered. The means provided for stopping the power ventilation serving machinery spaces or hazardous areas should be entirely separate from the means provided for stopping ventilation of other spaces.

9.3.22 9.2.19 Windows and sidescuttles in boundaries which are required to meet an "A-60" standard which face the drill floor area should be:

- .1 constructed to an"A-60" standard; or
- .2 protected by a water curtain; or
- .3 fitted with shutters of steel or equivalent material.

9.3.23 9.2.20 The ventilation of the accommodation spaces and control stations should be arranged in such a way as to prevent the ingress of flammable, toxic or noxious gases, or smoke from surrounding areas.

9.4 9.3 Means of escape

9.4.1 9.3.1 Within the accommodation spaces, service spaces and control stations the following provisions requirements should be applied: Ψ

- .1 In every general area which is likely to be regularly manned or in which personnel are accommodated at least two separate escape routes should be provided, situated as far apart as practicable, to allow ready means of escape to the open decks and embarkation stations. Exceptionally, the Administration may permit only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who might normally be accommodated or employed there.
- .2 Stairways should normally be used for means of vertical escape; however, a vertical ladder may be used for one of the means of escape when the installation of a stairway is shown to be impracticable.

- .3 Every escape route should be readily accessible and unobstructed and all exit doors along the route should be readily operable. Dead-end corridors exceeding 7 m in length should not be permitted.
- .4 In addition to the emergency lighting, the means of escape in accommodation areas, including stairways and exits, should be marked by lighting or photoluminescent strip indicators placed not more than 300 mm above the deck at all points of the escape route, including angles and intersections. The marking should enable personnel to identify the routes of escape and readily identify the escape exits. If electric illumination is used, it should be supplied by the emergency source of power and it should 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, escape route signs and fire equipment location markings should be of photoluminescent material or marked by lighting. The Administration should ensure that such lighting or photoluminescent equipment has been evaluated, tested and applied in accordance with the FSS Code.

9.4.2 9.3.2 Two means of escape should be provided from each machinery space of category A , by one of the following: . Ladders should be of steel or other equivalent material. In particular, one of the following provisions should be complied with:

- .1 Two sets of ladders, as widely separated as possible, leading to doors in the upper part of the space, similarly separated and from which access is provided to the open deck. One of these ladders should be located within a protected enclosure that satisfies Tables 9-1 and 9-2, category (4), from the lower part of the space it serves to a safe position outside the space. Self-closing fire doors of the same fire integrity standards should be fitted in the enclosure. The ladder should be fixed in such a way that heat is not transferred into the enclosure through non-insulated fixing points. The enclosure should have minimum internal dimensions of at least 800 mm by 800 mm, and should have emergency lighting provisions In general, one of these ladders should provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, the Administration may not require the shelter if, due to the special arrangement or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. This shelter should be of steel, insulated, where necessary, to the satisfaction of the Administration and be provided with a self-closing steel door at the lower end; or
- .2 One steel ladder leading to a door in the upper part of the space from which access is provided to the open deck and additionally, Additionally, in the lower part of the space, in a position well separated from the ladder referred to, a steel door capable of being operated from each side should be provided with and which provides access to a safe escape route from the lower part of the space to the open deck. Exceptionally, the Administration may require only one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who might normally be employed there.

9.4.3 9.3.3 From machinery spaces other than those of category A, escape routes should be provided to the satisfaction of the Administration having regard to the nature and location of the space and whether persons are normally employed there.

9.4.4 9.3.4 Lifts should not be considered as forming one of the required means of escape.

This is a preview. Click here to purchase the full publication.

9.4.5 9.3.5 Consideration should be given by the Administration to the siting of superstructures and deckhouses such that in the event of fire at the drill floor at least one escape route to the embarkation position and survival craft is protected against radiation effects of that fire as far as practicable.

9.4.6 Stairways and corridors used as a means of escape should meet the provisions of paragraph 13.3 of the FSS Code.

9.5 Fire safety systems

Fire safety systems should be in accordance with the FSS Code, as applicable.

9-21

9.6 Emergency escape breathing devices

9.6.1 Emergency escape breathing devices (EEBDs) should comply with the FSS Code. Spare emergency escape breathing devices should be kept on board to the satisfaction of the Administration.

9.6.2 Emergency escape breathing devices should be provided as follows:

- .1 In machinery spaces for category A containing internal combustion machinery used for main propulsion, EEBDs should be positioned as follows:
 - **.1.1** one (1) EEBD in the engine control room, if located within the machinery space;
 - **.1.2** one (1) EEBD in workshop areas. If there is, however, a direct access to an escape way from the workshop, an EEBD is not required; and
 - .1.3 one (1) EEBD on each deck or platform level near the escape ladder constituting the second means of escape from the machinery space (the other means being an enclosed escape trunk or watertight door at the lower level of the space).
 - **.1.4** Alternatively, a different number or location may be determined by the Administration taking into consideration the layout and dimensions or the normal manning of the space.
- .2 For machinery spaces of category A other than those containing internal combustion machinery used for main propulsion, one (1) EEBD should, as a minimum, be provided on each deck or platform level near the escape ladder constituting the second means of escape from the space (the other means being an enclosed escape trunk or watertight door at the lower level of the space).
- **.3** For other machinery spaces, the number and location of EEBDs are to be determined by the Administration.

9.7 9.4 Fire pumps, fire mains, hydrants and hoses

9.7.1 9.4.1 At least two independently driven power pumps should be provided, each arranged to draw directly from the sea and discharge into a fixed fire main. However, in units with high suction lifts, booster pumps and storage tanks may be installed, provided such

107

This is a preview. Click here to purchase the full publication. © 2015 Stade