



RULES FOR BUILDING AND CLASSING

MOBILE OFFSHORE DRILLING UNITS 2008

PART 5 FIRE AND SAFETY – MEASURES AND FEATURES

**American Bureau of Shipping
Incorporated by Act of Legislature of
the State of New York 1862**

**Copyright © 2007
American Bureau of Shipping
ABS Plaza
16855 Northchase Drive
Houston, TX 77060 USA**

Rule Change Notice (2008)

The effective date of each technical change since 1993 is shown in parenthesis at the end of the subsection/paragraph titles within the text of each Part. Unless a particular date and month are shown, the years in parentheses refer to the following effective dates:

(2000) and after	1 January 2000 (and subsequent years)	(1996)	9 May 1996
(1999)	12 May 1999	(1995)	15 May 1995
(1998)	13 May 1998	(1994)	9 May 1994
(1997)	19 May 1997	(1993)	11 May 1993

Listing by Effective Dates of Changes from the 2006 Rules

Notice No. 1 (effective on 1 January 2007) which is incorporated in the 2008 Rules, is summarized below.

EFFECTIVE DATE 1 January 2007 – shown as (2007)
(based on the contract date for new construction between builder and Owner)

<i>Part/Para. No.</i>	<i>Title/Subject</i>	<i>Status/Remarks</i>
5-3-1//7	Emergency Control Stations	To add a cross-reference to 4-3-2/15.5.2. (Incorporates Notice No. 1)

PART

5

Fire and Safety – Measures and Features

CONTENTS

CHAPTER 1	Passive Fire Protection	1
Section 1	General	3
CHAPTER 2	Active Fire Protection Systems and Equipment	11
Section 1	General	13
Section 2	Fixed Fire Fighting Systems	15
Section 3	Additional Fixed Fire Fighting Systems	21
Section 4	Portable Fire Fighting Systems.....	25
Section 5	Fire and Gas Detection.....	29
CHAPTER 3	Outfitting.....	31
Section 1	General	33

This Page Intentionally Left Blank

PART

5

CHAPTER

1 Passive Fire Protection

CONTENTS

SECTION 1	General	3
1	General	3
1.1	Administration Review.....	3
1.3	Bureau Review.....	3
1.5	Materials Containing Asbestos.....	3
3	Structural Fire Protection	3
3.1	Construction Materials	3
3.3	Alternate Materials	3
3.5	Fire Integrity of Bulkheads and Decks.....	4
5	Protection of Accommodation Spaces, Service Spaces and Control Stations	7
TABLE 1	Fire Integrity of Bulkheads Separating Adjacent Spaces	4
TABLE 2	Fire Integrity of Decks Separating Adjacent Spaces	5

This Page Intentionally Left Blank

PART

5

CHAPTER 1 **Passive Fire Protection**

SECTION 1 **General (1993)**

1 **General (1993)**

All mobile offshore drilling units are to meet the requirements of this Chapter with regard to structural fire protection, protection of accommodation spaces, service spaces and control stations.

1.1 **Administration Review**

When a Mobile Offshore Drilling Unit Safety Certificate is issued to a MODU by an Administration or its agent other than the Bureau, such certificate will be accepted as evidence that the unit is in accordance with the requirements of this Chapter.

1.3 **Bureau Review**

In all other cases, the required information and plans are to be submitted to the Bureau for review.

1.5 **Materials Containing Asbestos (2005)**

Installation of materials, which contain asbestos, is prohibited except for the following:

- i) Vanes used in rotary vane compressors and rotary vane vacuum pumps;
- ii) Watertight joints and linings used for the circulation of fluids when, at high temperature [in excess of 350°C (662°F)] or high pressure [in excess of 70.0 bar (71.38 kgf/cm², 1015.3 psi)], there is a risk of fire, corrosion or toxicity; and
- iii) Supple and flexible thermal insulation assemblies used for temperatures above 1000°C (1832°F).

3 **Structural Fire Protection (1993)**

3.1 **Construction Materials**

These requirements apply to mobile offshore drilling units with their hulls, superstructures, structural bulkheads, decks and deckhouses constructed of steel.

3.3 **Alternate Materials**

Construction of other materials may be accepted, provided that they provide an equivalent standard of safety.

3.5 Fire Integrity of Bulkheads and Decks (1999)

In addition to complying with the specific provisions for fire integrity of bulkheads and decks in this Section and in 5-1-1/5, the minimum fire integrity of bulkheads and decks is to be as prescribed in 5-1-1/Table 1 and 5-1-1/Table 2. These requirements apply to all permanent structures and temporary or portable accommodation (including workspaces). The exterior boundary of superstructures and deckhouses enclosing accommodations, including any overhanging decks supporting such accommodations, are to be an “A-60” Class boundary for the whole of the portion which faces and is within 30 m (98 ft) of the center of the rotary table. The 30 m (98 ft) is measured with the rotary at its closest drilling position to the accommodation.

Note: Class “A” or Class “B” divisions and their associated insulation index are as defined in SOLAS Regulation II-2/3.2 or 3.4, respectively.

TABLE 1
Fire Integrity of Bulkheads Separating Adjacent Spaces (1993)

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control Stations (1)	A-0 ⁽⁴⁾	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*	A-0
Corridors (2)		C	B-0	B-0 A-0 ⁽²⁾	B-0	A-60	A-0	A-0	A-0	*	B-0
Accommodation Spaces (3)			C	B-0 A-0 ⁽²⁾	B-0	A-60	A-0	A-0	A-0	*	C
Stairways (4)				B-0 A-0 ⁽²⁾	B-0 A-0 ⁽²⁾	A-60	A-0	A-0	A-0 *	*	B-0 A-0 ⁽²⁾
Service Spaces (low risk) (5)					C	A-60	A-0	A-0	A-0	*	B-0
Machinery Spaces of Category A (6)						*Note 1	A-0 ⁽²⁾	A-60	A-60	*	A-0
Other Machinery Spaces (7)							A-0 ^(1,3)	A-0	A-0	*	A-0
Hazardous Areas (8)								—	A-0	—	A-0
Service Spaces (high risk) (9)									A-0 ⁽³⁾	*	A-0
Open Decks (10)										—	*
Sanitary and Similar Spaces (11)											C

Notes: To be applied to both 5-1-1/Table 1 and 5-1-1/Table 2, as appropriate.

- 1 Where the space contains an emergency power source or components of an emergency power source that adjoins a space containing a unit’s service generator or the components of a unit’s service generator, the boundary bulkhead or deck between those spaces is to be an “A-60” Class division.
- 2 For clarification as to which note applies, see paragraphs 5-1-1/5.1 and 5-1-1/5.5.
- 3 Where spaces are of the same numerical category and superscript (3) 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-60” bulkhead.
- 4 Bulkheads separating the navigation bridge, chart room and radio from each other may be “B-0” rating.
- * When an asterisk appears in the tables, the division is required to be of steel or equivalent material but is not required to 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.

TABLE 2
Fire Integrity of Decks Separating Adjacent Spaces (1993)

Spaces ↓ 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	*	A-0
Corridors	(2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	*
Accommodation Spaces	(3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	*
Stairways	(4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	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	A-0	A-0	A-0	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-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	*	*

Notes: See Notes under 5-1-1/Table 1.

3.7 Application of Tables

The following requirements govern application of the tables:

3.7.1

5-1-1/Table 1 and 5-1-1/Table 2 apply, respectively, to the bulkheads and decks separating adjacent spaces.

3.7.2

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 those spaces in which
 - Radio or main navigation equipment is located, or
 - Where the fire monitoring or fire control equipment is centralized, or
 - Where the dynamic positioning system controls or fire-extinguishing systems serving various location are situated, or
 - Centralized ballast control station in column-stabilized units.
- (2) *Corridors* means corridors and lobbies.
- (3) *Accommodation Spaces* are those used for public spaces, cabins, offices, hospitals, cinemas, game and hobby rooms and similar spaces. Public spaces are those portions of the accommodation which are used for meeting halls, dining rooms, lounges and similar permanently enclosed spaces.

- (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 is regarded as part of the space from which it is not separated by a fire door.
- (5) (1999) *Services Spaces (low risk)* are lockers, storerooms and working spaces in which flammable materials are not stored, drying rooms, laundries, refrigerating, ventilation and air-conditioning machinery spaces with motors having an aggregate capacity not greater than 7.5 kW (10 HP).
- (6) *Machinery Spaces of Category A* are all spaces which contain internal combustion type machinery used either:
 - For main propulsion or
 - For other purposes where such machinery has in the aggregate a total power of not less than 375 kW (500 hp) or which contain any oil-fired boiler or oil fuel unit; and trunks to such spaces.
- (7) (1999) *Other Machinery Spaces* are those spaces, including trunks to such spaces, containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery (SCR, MCC and switchgear), oil filling station, refrigerating, ventilation and air-conditioning machinery with motors having an aggregate capacity greater than 7.5 kW (10 HP), and similar spaces, but are not machinery spaces of Category A.
- (8) *Hazardous Areas* are all those areas where, due to the possible presence of a flammable atmosphere arising from the drilling operation, the use without proper consideration of machinery or electrical equipment may lead to fire hazard or explosion. See [Section 4-3-6](#).
- (9) *Services Spaces (high risk)* are lockers, storerooms 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 spaces.
- (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 shall be considered a portion of the space in which they are located.

3.9

Continuous “B” class ceilings or linings in association with the relevant decks or bulkheads will be accepted as contributing to the required insulation and integrity of a division.

3.11

Structural fire protection details are to avoid the risk of heat transmission at intersections and terminal points of required thermal barriers. Unless specifically indicated otherwise, an extension of insulation by 300–380 mm (12–15 in.) beyond the intersections or terminal points will be acceptable.

3.13

Windows and sidescuttles, with the exception of navigation bridge windows, are to be of the non-opening type. Navigation bridge windows may be of the opening type, provided the design of such windows permits rapid closure. Windows and sidescuttles outside of hazardous areas may be of the opening type.

3.15

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

3.17 (1999)

Arrangements are to be made to ensure that the fire resistance is not impaired when

- i) “A” and “B” class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, etc.
- ii) “A” class divisions are penetrated for girders, beams or other structural members, or
- iii) “B” class divisions are penetrated for the fitting of ventilation terminals, lighting fixtures and similar devices.

3.19 (1999)

Pipes penetrating “A” or “B” class divisions are to be of materials approved by the Administration, having regard to the temperature that such divisions are required to withstand.

5 Protection of Accommodation Spaces, Service Spaces and Control Stations (1993)

5.1

All bulkheads required to be “B” Class divisions are to extend from deck to deck and to the deckhouse side or other boundaries, unless continuous “B” Class ceilings and/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 are to be provided only in and under the doors of cabins, public spaces, offices and sanitary spaces. The openings are to be provided only in the lower half of the door. Any such opening in or under a door is to have a total net opening no larger than 0.05 m² (0.54 ft²) and is to be fitted with a noncombustible grill. Such openings are not to be provided in a door in a division forming a stairway enclosure.

5.3

Stairs are to be constructed of steel or other equivalent material.

5.5

Stairways which penetrate only a single deck are to 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. Elevator trunks are to be protected by “A” Class divisions. Stairways and elevator trunks which penetrate more than a single deck are to be surrounded by “A” Class divisions and protected by “A” Class self-closing doors at all levels. Self-closing doors are not to be fitted with hold-back hooks. However, hold-back arrangements incorporating remote release fittings of the fail-safe type may be used.

5.7

Air spaces enclosed behind ceilings, paneling or linings are to be divided by close fitting draft stops spaced not more than 14 m (46 ft) apart.

5.9

Ceilings, linings, bulkheads and insulation, except for insulation in refrigerated compartments, are to be of noncombustible material. Vapor barriers and adhesive used in conjunction with insulation, as well as insulation of pipe fittings for cold service systems need not be noncombustible, but they should be kept to a minimum and their exposed surfaces are to have low flame spread characteristics. In spaces where penetration of oil products is possible, the insulation surfaces are to be impervious to oil or oil vapors.

5.11

The framing, including grounds and the joint pieces of bulkheads, linings, ceilings and draft stops are to be of noncombustible material.

5.13

In accommodation and service spaces and control stations, the following surfaces are to have low flame-spread characteristics:

- i)* All exposed surfaces in corridors and stairway enclosures;
- ii)* Surface in concealed or inaccessible spaces;
- iii)* Exposed surfaces of ceilings.

5.15

Bulkheads, linings and ceilings may have combustible veneers, provided that the thickness of such veneers does not exceed 2 mm (0.08 in.) within any space other than corridors, stairway enclosures and control stations where the thickness is not to exceed 1.5 mm (0.06 in.). Alternately, thicker veneers of low calorific value [not exceeding 45 mJ/m² (3960 Btu/ft²)] will be considered.

5.17

Primary deck coverings, if applied, are to be of approved materials which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures.

5.19

Paints, varnishes and other finishes used on exposed interior surfaces are not to be of a nature to offer an undue fire hazard and are not to be capable of producing excessive quantities of smoke or toxic fumes.

5.21

Ventilation ducts are to be of a noncombustible material, unless they are no more than 2 m (6.6 ft) long and have a cross-sectional area no more than 0.02 m² (0.22 ft²) and:

- i)* Are of a material which has a low fire risk;
- ii)* Are used only at the end of the ventilation device;
- iii)* Are not situated less than 600 mm (23.5 in.), measured along the duct, from its penetration of any “A” or “B” class division, including continuous “B” class ceilings.

5.23

Ventilation ducts larger than 0.02 m² (0.22 ft²) penetrating “A” class bulkheads or decks are to be steel or lined with a steel sheet sleeve that:

- i) Are at least 3 mm thick and at least 900 mm (35.4 in.) Long (preferably 450 mm (17.7 in.) On each side of bulkheads), provided with fire insulation having the same fire integrity as the bulkhead or deck; and
- ii) Those exceeding 0.075 m² (0.81 ft²), except those serving hazardous areas, are to also have automatic fire damper and manual closures from both sides with a position indicator. The fire dampers are not required for ducts through spaces which have the same fire integrity as the divisions which they penetrate.

5.25

Ducts provided for ventilation of machinery spaces of Category A, hazardous areas, and galleys are not to pass through accommodation and service spaces or control stations. However, some relaxation from this requirement (except for the ducts serving hazardous areas and passing through accommodation spaces, control stations, and galleys) will be considered, provided that the ducts are:

- i) Constructed of steel at least 3 mm (0.12 in.) Thick for ducts 300 mm (12 in.) Wide or less and at least 5 mm (0.20 in.) For ducts 760 mm (30 in.) Wide and over. The minimum thickness is to be interpolated for widths or diameters between 300 and 760 mm (12 and 30 in.);
 - ii) Fitted with an automatic fire damper close to the boundaries penetrated; and
 - iii) Insulated to “A-60” standard from the machinery space or galleys to a point at least 5 m (16.4 ft) beyond each fire damper;
- or
- iv) Constructed of steel in accordance with 5-1-1/5.25i) above; and
 - v) Insulated to “A-60” standard throughout the accommodation spaces, service spaces or control stations.

5.27

Ducts provided for ventilation of accommodation and service spaces or control stations are not to pass through machinery spaces of Category A hazardous areas or galleys. However, a relaxation from this requirement, except for the ducts passing through hazardous areas, will be considered, provided:

- i) The ducts where they pass through a machinery space of category A or a galley are constructed of steel in accordance with 5-1-1/5.25i).
 - ii) Automatic fire dampers are fitted close to the boundaries penetrated; and
 - iii) The integrity of the machinery space or galley boundaries is maintained at the penetrations;
- or
- iv) The ducts where they pass through a machinery space of category A or a galley are constructed of steel in accordance with 5-1-1/5.25i); and
 - v) Are insulated to “A-60” standard within the machinery space or galley.

5.29

Ventilation ducts larger than 0.02 m² (0.22 ft²) penetrating “B” class bulkheads are to be steel or lined with steel sheet sleeves at least 450 mm (17.7 in.) on each side of the bulkhead.

5.31

Exhaust ducts from galley ranges are to be “A” class fire division integrity or equivalent where they pass through accommodation spaces or spaces containing combustible materials, and these ducts are to be fitted with:

- i) A grease trap readily removable for cleaning;
- ii) A fire damper located in the lower end of the duct;
- iii) Arrangements, operable from within the galley, for shutting off the exhaust fans; and
- iv) Fixed means for extinguishing a fire within the duct.

5.33

All ventilation systems’ main inlets and outlets are to be capable of being closed from outside the space being ventilated.

5.35

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

5.37

Windows and sidescuttles in boundaries which are required to meet an “A-60” standard which face the drill floor area are to be:

- i) Constructed to an “A-60” standard; or
- ii) (1999) Protected by a water curtain system on the exposed wall. The water curtain system should be designed to provide a discharge rate of 6.0 liters per minute per square meter (0.15 gpm per square foot); or
- iii) Fitted with shutters of steel or equivalent material.

5.39

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

2 Active Fire Protection Systems and Equipment

CONTENTS

SECTION 1	General.....	13
1	Governmental Authority	13
3	Plans and Specifications.....	13
3.1	General	13
3.3	Fire Control Plans	14
SECTION 2	Fixed Fire Fighting Systems	15
1	Fire Main Systems	15
1.1	Fire Pumps.....	15
1.3	Fire Main	17
1.5	Hydrants, Hoses and Nozzles	17
	FIGURE 1 International Shore Connection	19
SECTION 3	Additional Fixed Fire Fighting Systems.....	21
1	Fixed Fire Fighting Systems	21
3	Gas Smothering	21
3.1	General	21
3.3	Carbon Dioxide Systems.....	22
5	Foam.....	22
5.1	Fixed High Expansion Foam Systems	22
5.3	Low Expansion Foam System.....	22
7	Fixed Pressure Water Spraying Systems	23
9	Protection of Helicopter Decks	23
9.1	General	23
9.3	Helicopter Decks with No Refueling Capabilities.....	23
9.5	Helicopter Decks with Refueling Capabilities	23
11	Paint and Flammable Liquid Lockers.....	24
11.1	Lockers of 4 m ² (43 ft ²) or More Floor Area and Lockers with Access to Accommodation Spaces	24
11.3	Lockers of Less Than 4 m ² (43 ft ²) Floor Area Having no Access to Accommodation Spaces	24

SECTION 4	Portable Fire Fighting Systems	25
1	Portable Fire Extinguishers and Sand	25
1.1	Extinguishers	25
1.3	Sand	25
3	Fireman's Outfit	25
3.1	Number	25
3.3	Breathing Apparatus	25
3.5	Lifeline	26
3.7	Safety Lamp and Axe	26
3.9	Boots and Gloves	26
3.11	Helmet	26
3.13	Protective Clothing	26
TABLE 1	Classification of Portable and Semi-portable Extinguishers	26
TABLE 2	Hand Portable Fire Extinguishers and Semi-portable Fire-Extinguishing Systems	27

SECTION 5	Fire and Gas Detection	29
1	Other Fire Protection Requirements	29
1.1	Fire Detection and Alarm Systems	29
1.3	General Alarm	29
1.5	Mud Tank Level Alarm	29
1.7	Ventilation System Alarms	29
3	Gas Detection and Alarm Systems	30

PART

5

CHAPTER **2 Active Fire Protection Systems and Equipment**

SECTION **1 General**

1 Governmental Authority (1999)

Attention is drawn to the appropriate governmental authority in each case, as there may be additional requirements, depending on the size, type and intended service of the unit, as well as other particulars and details. Consideration will be given to fire extinguishing systems which comply with the published requirements of the governmental authority in which the unit is to be registered, as an equivalent alternative or addition to the requirements of this section.

3 Plans and Specifications

3.1 General

The following plans together with supporting data and particulars are to be submitted.

- Arrangement and details of fire main systems
- Foam smothering systems
- Other fire extinguishing arrangements.
- Fire control plans
- Fire detection systems
- Fixed fire extinguishing systems
- Fire extinguishing appliances
- Control station for emergency closing of openings and stopping machinery
- Gas detection systems
- Fireman's outfits

3.3 Fire Control Plans (1996)

Fire control plans are to be permanently exhibited for the guidance of operating personnel, showing clearly for each deck provision, location, controls and particulars, as applicable, of the following:

- Fixed fire detection, alarm and extinguishing systems
- Portable fire-fighting equipment and appliances
- Controls of fuel-oil pumps and valves
- Ventilation system shut-downs and closing of openings.
- Locations and type of fire retarding bulkheads

PART

5

CHAPTER **2 Active Fire Protection Systems and Equipment**

SECTION **2 Fixed Fire Fighting Systems**

1 Fire Main Systems

1.1 Fire Pumps

1.1.1 Number of Pumps

There are to be at least two independently-driven fire pumps. The pumps, their source of power, and piping and valves are to be arranged so that a fire in any one compartment will not put all fire pumps out of action.

1.1.2 Location of Pumps

1.1.2(a) Location. The two main fire pumps are to be in separate compartments having no direct access between them. Where this is impracticable, special consideration will be given to accesses as follows,

- i)* A watertight door capable of being operated locally from both sides of the bulkhead, and from a safe and accessible location outside of these spaces. For unattended propulsion machinery space operation, this door is to be operable from the fire fighting station; or
- ii)* An air lock consisting of two gastight steel doors. The doors are to be self closing without any hold back arrangements.
- iii)* In addition to the arrangements specified in *i)* or *ii)* above, a second protected means of access is to be provided to the space containing the fire pumps.

Common boundaries are to be at least A-0 construction, except if more than one bulkhead or deck is common, the boundaries are to be at least A-60 construction.

1.1.2(b) Remote Operation. Valves and pumps in the fire-fighting system which are not readily accessible are to be provided with means for remote operation.

1.1.3 Type of Pumps

Sanitary, ballast, bilge or general-service pumps may be accepted as one of the fire pumps, provided that they are not normally used for pumping oil and that if they are subject to occasional duty for the transfer or pumping of fuel oil, suitable changeover arrangements are fitted.

1.1.4 Pressure (1996)

The pressure for the purpose of determining fire pump capacity in accordance with 5-2-2/1.1.5(a) is to be at least 3.5 bar (3.5 kgf/cm², 50 psi) at the hydrant.

The maximum pressure at any hydrant shall be such that the effective control of a fire hose can be demonstrated.

1.1.5 Pump Capacity

1.1.5(a) General (1996). Each of the fire pumps required by 5-2-2/1.1.1 is to have a capacity sufficient to deliver, while maintaining the pressure specified in 5-2-2/1.1.4, two jets of water from nozzles that are connected to the two hydrants at which the pressure drop from the fire pump discharge pressure will be the greatest.

Where a fire pump is utilized for the foam system provided for helicopter deck protection, the pump is also to be capable of maintaining a pressure at the foam station as specified in 5-2-3/9.5.2. If the water consumption for any other fire protection or fire-fighting purposes exceed the rate of the helicopter deck foam installation, this consumption is to be the determining factor in calculating the required capacity of fire pumps.

In no case is the single pump capacity to be less than 25 m³/hr (110 gal/min.).

1.1.5(b) Ship-Type Drilling Units.

- i) Total Pump Capacity.* For ship-type units, the fire pumps required by 5-2-2/1.1.1 are to be capable of delivering for fire-fighting purposes a quantity of water, at the appropriate pressure prescribed, not less than four-thirds of the quantity required under 4-2-4/7.3 to be dealt with by each of the independent bilge pumps when employed on bilge pumping, using in all cases L = length of the unit as defined in 3-1-1/3 of the *ABS Rules for Building and Classing Steel Vessels (Steel Vessel Rules)*, except that the total required capacity of the fire pumps need not exceed 180 m³/hr (792 gal/min.).
- ii) Individual Pump. Capacity* Each of the fire pumps required by 5-2-2/1.1.1 is to have a capacity not less than 80% of the total required capacity divided by the number of required pumps but not less than that required by 5-2-2/1.1.5(a) above. Where more pumps than required are installed, their capacity will be subject to special consideration.

1.1.6 Relief Valves

In conjunction with all fire pumps, relief valves are to be provided if the pumps are capable of developing a pressure exceeding the design pressure of the water-service pipes, hydrants and hoses. These valves are to be so placed and adjusted as to prevent excessive pressure in any part of the fire main system. In general, the relief valve is to be set to relieve at no greater than 1.7 bar (1.75 kgf/cm², 25 psi) in excess of the pump pressure necessary to maintain the requirements of 5-2-2/1.1.4.

1.1.7 Intermediate Tank Water Supply

Where intermediate tanks are used to maintain a constant supply of water to the fire pump suction, the following requirements apply.

1.1.7(a) Tank Capacity. The intermediate tanks are to be of such size and automatically maintained so that the lowest water level permitted will assure that the supply of water is adequate for two hoses at a minimum of 3.5 bar (3.5 kgf/cm², 50 psi) Pitot pressure at the uppermost hydrant for at least 15 minutes, with minimum tank capacity of 10,000 liters (2640 gallons).

1.1.7(b) Features. The following features are to be incorporated in a system using an intermediate tank.

- i)* A low water level alarm
- ii)* Two means to replenish water in the intermediate tank are to be provided. Each pump is to be arranged to deliver at least the amount of water expended under the conditions of 5-2-2/1.1.4. At least one of the replenishment pumps is to be arranged for automatic operation. The arrangement of such pumps is to comply with 5-2-2/1.1.1.
- iii)* If the drilling unit is intended to operate where the atmospheric temperature is expected to be 0°C (32°F) or less, the entire fire-fighting system, including tanks used as water reservoirs, is to be protected from freezing.

1.1.8 Pressurized Main Water Supply

Where fire pumps take suction from a pressurized water main system (i.e., a system not utilizing an intermediate tank supply as on self elevating units), precautions are to be taken to ensure that an adequate supply of water is maintained. The arrangement of water supply, their source of power, valves, their control means and piping are to be arranged so that a fire in one compartment will not jeopardize the essential supply of water.

1.3 Fire Main

1.3.1 Size

The diameter of the fire main and water-service pipes is to be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously, except that the diameter need only be sufficient for the discharge of 140 m³/hr (616 gal/min.).

1.3.2 Cocks or Valves

A valve is to be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are at work.

1.3.3 Isolation

Isolating valves and other arrangements, as necessary, are to be provided so that if a fire pump and its associated piping within its compartment are rendered inoperable, the fire main can be pressurized with a fire pump located in another compartment.

1.3.4 Cold Weather Protection

Fire main systems are to be provided with drains, circulation loops or other means for cold weather protection.

1.3.5 Materials (1997)

Materials readily rendered ineffective by heat are not to be used for fire mains unless adequately protected. In order to be considered not “readily rendered ineffective by heat”, a component is to be certified as having passed an applicable recognized fire test, or the material is to have a melting temperature higher than the test temperature specified in an applicable fire test.

1.3.6 Connections (2009)

In general, the fire main should not have connections other than those necessary for fire fighting purposes. Connections to non-continuous services will be specially considered on the basis of the fire main system being able to supply the required fire fighting services in conjunction with simultaneous operations of the other connected services. Isolation valves are to be installed for all open deck fire main branches used for purposes other than fire fighting.

1.5 Hydrants, Hoses and Nozzles

1.5.1 Hydrants (1997)

The number and position of the hydrants are to be such that at least two jets of water not emanating from the same hydrant, one of which is to be from a single length of hose, may reach any part of the unit normally accessible to the passengers or crew while the unit is being navigated.

The pipes and hydrants are to be so placed that the fire hoses may be easily coupled to them. In units where equipment or stores may be carried on deck, the positions of the hydrants are to be such that they are always readily accessible and the pipes are to be arranged, as far as practicable, to avoid risk of damage by such equipment or stores.

Materials readily rendered ineffective by heat are not to be used for hydrants. See 5-2-2/1.3.5.

1.5.2 Hoses (1997)

Each of the hydrants required by 5-2-2/1.5.1 is to be provided with a fire hose complete with couplings and nozzles. Additionally, at least one complete fire hose assembly is to be carried as a spare.

Fire hoses are to be certified by a competent independent testing laboratory as being constructed of nonperishable material to recognized standards. The hoses are to be sufficient in length to project a jet of water to any of the spaces in which they may be required to be used. The maximum length of hose is not to exceed 23 m (75 ft).

Each hose is to be provided with a dual purpose nozzle in accordance with 5-2-2/1.5.3 and necessary couplings. Fire hoses together with any necessary fittings and tools are to be kept ready for use in conspicuous positions near the water-service hydrants or connections.

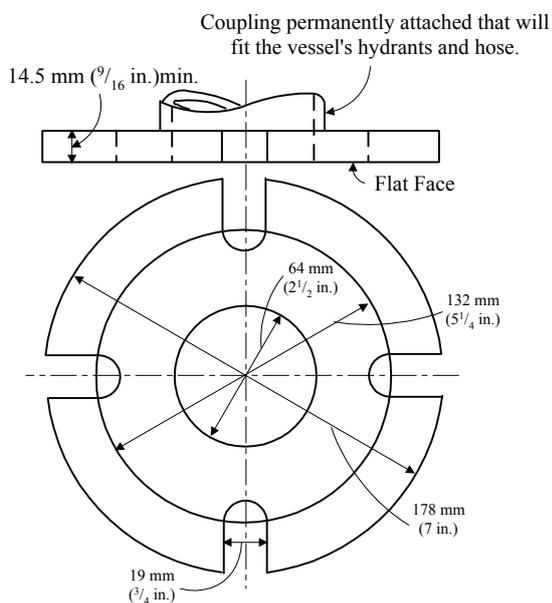
1.5.3 Nozzles (1997)

Dual purpose combined jet spray nozzles are to be fitted throughout the unit with a minimum nozzle diameter of 12 mm (1/2 in.). Fire hose nozzles of plastic type material such as polycarbonate may be accepted, subject to review of their capacity and serviceability as marine use fire hose nozzles.

1.5.4 International Shore Connection

For surface type units, at least one international shore connection, as shown in 5-2-2/Figure 1, is to be provided and kept aboard the unit together with gasket, bolts and eight washers. Facilities are to be available enabling such a connection to be used on either side of the unit.

FIGURE 1
International Shore Connection



Bolts: 4, each of 16 mm ($\frac{5}{8}$ in.) diameter, 50 mm (2 in.) in length
 Flange Surface: Flat face
 Material: Any suited for 10 bar (10.5 kgf/cm², 150 psi)
 Gasket: Any suited for 10 bar (10.5 kgf/cm², 150 psi) service

This Page Intentionally Left Blank

PART

5

CHAPTER **2 Active Fire Protection Systems and Equipment**

SECTION **3 Additional Fixed Fire Fighting Systems**

1 Fixed Fire Fighting Systems (2009)

A fixed firefighting system complying with 5-2-3/3, 5-2-3/5 or 5-2-3/7 is to be provided in each space containing the following equipment:

- i)* Main or auxiliary oil-fired boilers and other processes of equivalent thermal rating.
- ii)* Oil fuel units (as defined by 5-3-1/9.7)
- iii)* Internal combustion machinery used for main propulsion
- iv)* Internal combustion machinery used for purposes other than main propulsion having a total power output of not less than 750 kW (1000 hp).
- v)* Settling tanks for boilers

Where a fixed fire extinguishing system not required by *i)* through *v)* is installed, such system is to meet the applicable requirements of 5-2-3/3, 5-2-3/5, or 5-2-3/7 and is to be submitted for approval.

3 Gas Smothering

3.1 General

3.1.1 Storage (2002)

Where the gas smothering medium is stored outside of the protected space, the storeroom is to be situated in a safe and readily accessible position and is to be effectively ventilated by a ventilation system independent of all other spaces.

Spaces for storage of cylinders or tanks for extinguishing gas should not be used for other purposes. These spaces should not be located forward of the forward collision bulkhead. Access to these spaces should be possible from the open deck. Spaces situated below the deck should be located no more than one deck below the open deck.

Spaces where entrance from the open deck is not provided or which are located below deck are to be fitted with mechanical ventilation. The exhaust duct (suction) should be lead to the bottom of the space. Such spaces should be ventilated with at least six air changes per hour.

3.1.2 Design

Containers and associated pressure components are to be designed based upon an ambient temperature of 55°C (131°F).

3.1.3 Alarm (1995)

Means are to be provided for automatically giving audible warning of the release of fire extinguishing gas into any space to which personnel normally have access. The alarm is to operate for at least a 20-second period before the gas is released. Alarms may be pneumatically (by the extinguishing medium or by air) or electrically operated.

3.1.3(a) Electric. If electrically operated, the alarms are to be supplied with power from the main and an emergency source of electrical power.

3.1.3(b) Pneumatic. If pneumatically operated by air, the air supply is to be dry and clean, and the supply reservoir is to be automatically kept charged at all times and is to be fitted with a low pressure alarm. The air supply may be taken from the starting air receivers. Any stop valve fitted in the air supply line is to be locked or sealed in the open position. Any electrical components associated with the pneumatic system are to be powered from the main and an emergency source of electrical power.

3.1.4 Controls

Except as otherwise permitted herein two independent manual control arrangements are to be provided, one of them being positioned at the storage location and the other in a readily accessible position outside of the protected space.

3.3 Carbon Dioxide Systems

In addition to the applicable requirements of the Rules, fixed carbon dioxide fire extinguishing systems are to be in accordance with Chapter II-2, Regulations 10.4.2 and 10.4.3 of the International Convention for the Safety of Life at Sea (SOLAS) 1974 and Amendments in force, and with Chapter 1.4 and Chapter 5 of the International Code for Fire Safety Systems. Fixed low pressure carbon dioxide systems are to be in accordance with 4-7-3/3.5 of the *Steel Vessel Rules*.

5 Foam

5.1 Fixed High Expansion Foam Systems (1998)

In addition to the applicable requirements of the Rules, fixed high expansion foam systems are to be in accordance with Chapter 6.2.1 and 6.2.2 of the International Code for Fire Safety Systems. Foam concentrates are to be of an approved type.*

* *Note:* Reference is made to the International Maritime Organization MSC/Circular 670 “Guidelines for the Performance and Testing Criteria, and Surveys of High-Expansion Foam Concentrates for Fixed Fire-Extinguishing Systems.”

5.3 Low Expansion Foam System

5.3.1 Application

Low expansion foam systems may be fitted in machinery spaces in addition to the required fixed fire extinguishing system.

5.3.2 Design (1998)

In addition to the applicable requirements of the Rules, fixed low expansion foam systems are to be in accordance with Chapter 6.2.1 and 6.2.2 of the International Code for Fire Safety Systems. Foam concentrates are to be of an approved type.**

*** Note:* Reference is made to the International Maritime Organization MSC/Circular 582 “Guidelines for the Performance and Testing Criteria, and Surveys of Low-Expansion Foam Concentrates for Fixed Fire-Extinguishing Systems.”

7 Fixed Pressure Water Spraying Systems

In addition to the applicable requirements of the Rules, fixed water spraying systems are to be in accordance with Chapter 7 of the International Code for Fire Safety Systems.

9 Protection of Helicopter Decks (1992)

9.1 General

Where areas of a unit are designated for helicopter operations, details of the facilities are to be submitted and the firefighting systems of 5-2-3/9.3 and 5-2-3/9.5 are to be provided and stored near the access to those areas.

Deckhouse tops directly below helicopter decks are to have no openings. See 4-2-6/17 for helicopter deck drainage.

9.3 Helicopter Decks with No Refueling Capabilities

9.3.1 Hoses and Nozzles

At least two approved combination solid stream and water spray nozzles and detachable applicators and hoses sufficient in length to reach any part of the helicopter deck are to be provided.

9.3.2 Portable Extinguishers

The helicopter deck area is to be protected by at least two approved dry powder extinguishers of a total capacity of not less than 45 kg (100 lb). At least one portable extinguisher is to be located at each helicopter deck access point.

9.3.3 Back-up System

A back-up firefighting system is to be provided, consisting of CO₂ extinguishers of a total capacity of not less than 18 kg (40 lb) or equivalent, one of these extinguishers being equipped so as to enable it to reach the engine area of any helicopter using the deck. The back-up system is to be located so that the equipment would not be vulnerable to the same damage as the dry powder extinguishers required by 5-2-3/9.3.2.

9.5 Helicopter Decks with Refueling Capabilities

9.5.1 Firefighting Systems

A firefighting system as required by 5-2-3/9.3 is to be provided and arranged so as to adequately protect both the helicopter deck and helicopter fuel storage areas.

9.5.2 Fixed-Foam System (1996)

A fixed-foam fire-extinguishing system consisting of monitors or hose streams or both is to be installed to protect the helicopter landing area and fuel storage areas. The helicopter landing area is the area contained within a circle of diameter “D” where “D” is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter with a single main rotor and across both rotors for a tandem rotor helicopter or the full area of the deck, whichever is less. The system is to be capable of delivering foam solution at a rate of 6.0 liters per square meter per minute (0.15 gpm per square foot) for protein foam or 4.1 liters per square meter per minute (0.10 gpm per square foot) for aqueous film forming foam (AFFF) of the areas protected for at least five minutes. The pump is to be capable of maintaining a pressure of 7 bar (7 kgf/cm², 100 psi) at the foam installation.

11 Paint and Flammable Liquid Lockers (2001)

Paint and flammable liquid lockers or any similar service spaces used for the storage of flammable liquids (such as solvents, adhesives, lubricants etc.) are to be protected by a fire-extinguishing arrangement enabling the crew to extinguish a fire without entering the space. Unless required or permitted otherwise by the flag Administration, one of the following systems is to be provided:

11.1 Lockers of 4 m² (43 ft²) or More Floor Area and Lockers with Access to Accommodation Spaces

Paint lockers and flammable liquid lockers of floor area 4 m² (43 ft²) or more and also such lockers of any floor area with access to accommodation spaces are to be provided with one of the fixed fire-extinguishing systems specified below:

- i) CO₂ system, designed for 40 % of the gross volume of the space.
- ii) Dry powder system, designed for at least 0.5 kg/m³ (0.03 lb/ft³).
- iii) Water spraying system, designed for 5 liters/m²/minute (0.12 gpm/ft²). The water spraying system may be connected to the unit’s fire main system, in which case the fire pump capacity is to be sufficient for simultaneous operation of the fire main system as required in 5-2-2/1.1.5 and the water spray system. Precautions are to be taken to prevent the nozzles from being clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.
- iv) Systems or arrangements other than those referenced above may be also considered, provided they are not less effective.

11.3 Lockers of Less Than 4 m² (43 ft²) Floor Area Having no Access to Accommodation Spaces

For paint lockers and flammable liquid lockers of floor area less than 4 m² (43 ft²) having no access to accommodation spaces, portable fire extinguisher(s) sized in accordance with 5-2-4/1.1 and which can be discharged through a port in the boundary of the lockers may be accepted. The required portable fire extinguishers are to be stowed adjacent to the port. Alternatively, a port or hose connection may be provided for this purpose to facilitate the use of water from the fire main.

PART

5

CHAPTER **2 Active Fire Protection Systems and Equipment**

SECTION **4 Portable Fire Fighting Systems**

1 Portable Fire Extinguishers and Sand

1.1 Extinguishers

Portable and semi-portable extinguishers are to be provided in the quantities and locations indicated in 5-2-4/Table 1 and 5-2-4/Table 2. The fire extinguishers are to be visible and readily accessible.

1.3 Sand

On self-propelled units fitted with main or auxiliary oil-fired boilers, each firing space is to be provided with a receptacle containing at least 0.28 m³ (10 ft³) of sand, sawdust impregnated with soda or other dry material suitable for extinguishing oil fires. Alternatively, an approved portable extinguisher may be substituted therefore.

3 Fireman's Outfit (1993)

3.1 Number

At least two fireman's outfits consisting of a breathing apparatus, a lifeline, a safety lamp, an axe, nonconductive boots and gloves, a rigid helmet and protective clothing complying with the requirements of this paragraph are to be stored so as to be easily accessible and ready for use and are to be stored in separate positions so that a fire in one location would not block access to both outfits.

3.3 Breathing Apparatus

The breathing apparatus is to be of an approved type and may be one of the following:

- i) A smoke helmet or smoke mask with a suitable air pump and a length of air hose sufficient to reach from the open deck, well clear of hatch or doorway, to any part of below deck spaces or machinery spaces. If, in order to comply with this requirement, an air hose exceeding 36 m (120 ft) in length would be necessary, a self contained breathing apparatus is to be substituted or provided in addition.
- ii) A self contained breathing apparatus which is capable of functioning for a period of at least 30 minutes. Other periods of time will be specially considered. At least one spare charge is to be carried for each required breathing apparatus carried onboard.

3.5 Lifeline

Each breathing apparatus is to have attached to its belt or harness, by means of a snap-hook, a fireproof lifeline of sufficient length and strength.

3.7 Safety Lamp and Axe

A safety lamp (hand lantern) of an approved type and an axe are to be provided. Such safety lamps are to be electric and are to have a minimum burning period of three hours.

3.9 Boots and Gloves

The boots and gloves are to be made of rubber or other electrically nonconductive material.

3.11 Helmet

A rigid helmet is to be supplied which will provide effective protection against impact.

3.13 Protective Clothing

The protective clothing is to be made of material that will protect the skin from the heat of fire and burns from scalding steam. The outer surface is to be water resistant.

TABLE 1
Classification of Portable and Semi-portable Extinguishers

Fire extinguishers are designated by types as follows: A, for fires in combustible materials such as wood; B, for fires in flammable liquids and greases; C, for fires in electrical equipment.

Fire extinguishers are designated by size where size I is the smallest and size V is the largest. Sizes I and II are hand portable extinguishers, and sizes III, IV, and V are semiportable extinguishers.

Classification		Water, liters (U.S. gallons)	Foam, liters (U.S. gallons)	Carbon Dioxide, kg (lb)	Dry Chemical, kg (lb)	Halon 1211 kg (lb)
Type	Size					
A	II	9.5 (2.5)	9.5 (2.5)	—	2.25 (5) ⁽²⁾	—
B	I	—	4.7 (1.25)	1.8 (4)	0.9 (2)	1.1 (2.5)
B	II	—	9.5 (2.5)	6.7 (15)	4.5 (10)	4.5 (10) ⁽³⁾
B	III	—	45.5 (12)	15.8 (35)	9.0 (20)	—
B	IV	—	76 (20)	22.5 (50)	22.5 (50)	—
B	V	—	152 (40)	45 (100) ⁽¹⁾	22.5 (50) ⁽²⁾	—
C	I	—	—	1.8 (4)	0.9 (2)	—
C	II	—	—	6.7 (15)	4.5 (10)	—
C	III	—	—	15.8 (35)	9.0 (20)	—
C	IV	—	—	22.5 (50)	13.5 (30)	—

Notes:

- 1 For outside use, double the quantity of agent that must be carried.
- 2 Must be specifically approved as type A, B, or C extinguisher.
- 3 For outside use only.

TABLE 2
Hand Portable Fire Extinguishers and
Semi-portable Fire-Extinguishing Systems

<i>Space</i>	<i>Classification*</i>	<i>Quantity and Location</i>
Safety areas	C-I	2 near the exit. (See Note 1)
Wheelhouse and control room		
Stairway and elevator enclosure	—	None required.
Corridors	A-II	1 in each corridor not more than 45 m (150 ft) apart. (May be located in stairways.)
Lifeboat embarkation and lowering stations	—	None required.
Radio room	C-I	2 near the exit. (See Note 1)
Accommodations	—	None required.
Staterooms, toilet spaces, public spaces, offices, lockers, small storerooms, and pantries, open decks, and similar spaces.		
Service spaces	B-II or C-II	1 for each 232 m ² (2,500 ft ²) or fraction thereof suitable for hazards involved.
Galleys		
Paint and lamp rooms	B-II	1 outside each room in vicinity of exit. (See Note 2)
Storerooms	A-II	1 for each 232 m ² (2,500 ft ²) or fraction thereof located in vicinity of exits, either inside or outside the spaces. (See Note 2)
Workshop and similar spaces	C-II	1 outside each space in vicinity of an exit. (See Note 2)
Machinery spaces	B-II	2 required in each space.
Oil-fired boilers: Spaces containing oil-fired boilers, either main or auxiliary, or their fuel units	B-V	1 required in each space.
Internal combustion or gas turbine machinery spaces.	B-II	1 for each 746 kW (1000 hp) but not less than 2 nor more than 6 in each space.
Electric generators, propulsion motors, thrusters that do not have enclosed ventilating system.	B-III	1 required in each space. (See Note 3)
Electric generators, propulsion motors, thrusters that have enclosed ventilating systems.	C-II	1 for each motor or generator.
	—	None required.
Auxiliary spaces	B-II	1 outside the space containing engines or turbines in vicinity of exit. (See Note 2)
Internal combustion engines or gas turbine		
Electric emergency motors or generators	C-II	1 outside the space containing motors or generators in vicinity of exit. (See Note 2)
Steam driven auxiliary machinery	—	None required.
Trunks to machinery spaces	—	None required.
Fuel tanks	—	None required.
Miscellaneous areas		
Drill floor	C-II	2 required.
Cranes with internal combustion engines	B-II	1 required.
Helicopter landing decks	(See 5-2-3/9.3)	
Helicopter fueling facilities	(See 5-2-3/9.5)	

Notes:

- 1 One of which must be placed inside.
- 2 Vicinity is intended to mean within 1 m (3 ft)
- 3 Not required when a fixed gas-extinguishing system is installed.
- * See 5-2-4/Table 1.

This Page Intentionally Left Blank

PART

5

CHAPTER **2 Active Fire Protection Systems and Equipment**

SECTION **5 Fire and Gas Detection**

1 Other Fire Protection Requirements

1.1 Fire Detection and Alarm Systems (1997)

Fire detectors are to be fitted in machinery spaces which are not intended to be normally manned and which contain fired boilers, internal combustion engines, oil purifiers and similar equipment, and are located so that all potential fire outbreak points are effectively monitored. The fire-detection system is subject to approval in each case. The fire-detection main indicator board is to be at a normally manned station. Accommodation spaces and service spaces are to be covered by automatic fire detection and alarm systems. Smoke detectors are to be the type of fire detection provided in sleeping quarters. A sufficient number of manual fire alarm stations are to be fitted at suitable locations throughout the unit.

1.3 General Alarm

Alarm signal devices are to produce a distinctive and loud sound. Attention is directed to the proper governmental authority concerning the requirements for general alarm systems on units.

1.5 Mud Tank Level Alarm

A suitable audible and visual alarm to indicate significant increase or decrease in the level of the contents of the active mud tanks is to be provided, both at the control station for drilling operations and at the mud tank.

1.7 Ventilation System Alarms

See [4-3-6/5](#) and [4-3-3/9.3.3](#).

3 Gas Detection and Alarm Systems

Fixed automatic combustible gas detection and alarm systems are to be provided for the following areas:

- i)* Cellar deck
- ii)* Drill floor
- iii)* Mud pit area
- iv)* Shale shaker area
- v)* Enclosed spaces containing open components of the mud circulation system from the bell nipple to the mud pits.

The gas detectors are to be connected to an audible and visual alarm system with indicators on the drill floor and at the required emergency control stations (See 5-3-1/7). The alarm system is to clearly indicate the location and concentration of the gas hazard. The combustible gas detectors are to alarm at not more than 25% and at 60% of the lower explosive limit (LEL).

In addition to the fixed automatic gas detection system, two portable combustible gas detectors are to be provided for operating personnel to locate small leaks.

PART

5

CHAPTER **3 Outfitting**

CONTENTS

SECTION 1	General	33
1	Means of Escape	33
3	Means of Access and Egress	34
5	Guards and Rails	34
5.1	Floor Deck Areas and Openings	34
5.3	Helicopter Landing Deck	34
7	Emergency Control Stations	35
9	Arrangements in Machinery Space.....	35
9.1	Ventilating Fans and Openings	35
9.3	Other Auxiliaries.....	35
9.5	Oil Tank Suction Pipes	35
9.7	Oil Fuel Unit	35
11	Segregation of Fuel Oil Purifiers	35
13	Rotary Table Area.....	36
15	Fire Precautions for Machinery Spaces.....	36

This Page Intentionally Left Blank

PART

5

CHAPTER **3 Outfitting**

SECTION **1 General**

1 Means of Escape (1993)

1.1

The following requirements are to apply to accommodation spaces, service spaces and control stations:

1.1.1

In every general area that is likely to be regularly manned or in which personnel are accommodated, at least two separate escape routes are to be provided, situated as far apart as practicable, to allow ready means of escape to the open decks and/or embarkation stations. Exceptionally, one means of escape may be considered, taking into account the nature and location of spaces and the number of persons who might normally be accommodated or employed there.

1.1.2

Stairways are to normally be used for means of vertical escape. However, a vertical ladder may be used for one of the means of escape from machinery spaces when the installation of a stairway is shown to be impracticable.

1.1.3

Every escape route should be readily accessible and unobstructed and all exit doors along the route are to be readily operable from both sides. Dead-end corridors exceeding 7 m (23 ft) in length are not permitted.

1.3

Two means of escape are to be provided from every machinery space of Category A by either of the following:

1.3.1

Two sets of steel ladders as widely separated as practicable leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck. In general, one of those ladders should provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, the shelter may not be required if, due to special arrangements or dimensions of machinery space, a safe escape route from the lower part of this space is provided. This shelter is to be of steel, insulated, where necessary, and provided with a self-closing steel door, operated from both sides, at the lower end.

1.3.2

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, 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 open deck. Exceptionally, one means of escape may be permitted, due regard being paid to the nature and location of spaces and to the number of persons who might normally be employed there.

1.5

From machinery spaces other than those of Category A, escape routes are to be provided having regard to the nature and location of the space and whether persons are normally employed in that space.

1.7

Elevators are not to be considered as forming one of the required means of escape.

1.9

At least one escape route from the superstructure and deckhouses to the survival craft embarkation area is to be protected against radiation effects of a drill floor area fire as far as practicable

3 Means of Access and Egress

At least two means of escape are to be provided. They are to consist of fixed stairways or fixed ladders constructed of steel and extending from the platform to the surface of the water. In the case of self-elevating drilling units, the means of escape will be specially considered. Sufficient personnel landings are to be provided on each drilling unit to assure safe access and egress. When, due to special construction, personnel landings are not feasible, suitable transfer facilities to provide safe access and egress are to be installed.

5 Guards and Rails

5.1 Floor Deck Areas and Openings (2003)

Except for helicopter landing decks, which are provided for in 5-3-1/5.3, and areas not normally occupied, the unprotected perimeter of all floor or deck areas and openings is to be protected with efficient guard rails or bulwarks. The height of the bulwarks or guard rails is to be at least 1 m (39.5 in.) from the deck, except that where this height would interfere with the normal operation of the unit, a lesser height may be considered if adequate protection is provided. Where approval of a lesser height is requested, justifying information is to be submitted, such as arrangements provided to prevent personnel going over the guard rails or bulwarks. The opening below the lowest course of the guard rails is not to exceed 230 mm (9 in.). The other courses are not to have more than 380 mm (15 in.) clear opening. In the case of units with rounded gunwales, the guard rail supports are to be placed on the flat of the deck.

5.3 Helicopter Landing Deck

The unprotected perimeter of the helicopter landing deck is to be provided with safety netting or equivalent.

7 Emergency Control Stations (2007)

At least two emergency control stations are to be provided. One of the stations is to be located near the drilling console and the other station is to be at a suitable manned location outside of the hazardous areas. The control stations are to be provided with the following.

- Manually operated contact makers for actuating the general alarm system.
- An efficient means of communication between these stations and all locations vital to the safety of the unit.
- Emergency shut-down facilities. (See 4-3-5/7.1.1)

9 Arrangements in Machinery Space

9.1 Ventilating Fans and Openings

Means are to be provided for stopping ventilating fans serving machinery spaces and for closing all doorways, ventilators, annular spaces around funnels and other openings to such spaces. These means are to be capable of being manually operated from outside of such spaces in case of fire.

9.3 Other Auxiliaries (2009)

Machinery driving forced and induced draft fans, electric motor pressurization fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps are to be fitted with remote controls situated outside of the space concerned so that they may be manually stopped in the event of a fire arising in the space in which they are located. See 4-3-2/19.1.2.

In addition to the remote shutdowns required above, a means to shutdown the equipment is to be provided within the space itself.

9.5 Oil Tank Suction Pipes

Every fuel oil suction pipe from a storage, settling or daily service tank which emanates at such a level that it will be subjected to a static head of oil from the tank is to be fitted with a positive shutoff valve capable of being closed manually from a readily accessible location outside of the space in which the valve is located.

9.7 Oil Fuel Unit (1995)

Oil fuel unit is any equipment, such as pumps, filters and heaters, used for the preparation and delivery of fuel oil to oil-fired boilers (including incinerators and inert gas generators), internal-combustion engines or gas turbines at a pressure of more than 1.8 bar (1.8 kgf/cm², 26 psi).

11 Segregation of Fuel Oil Purifiers (1997)

Fuel oil purifiers for heated oil are to be placed in a separate room or rooms, enclosed by steel bulkheads extending from deck to deck and provided with self-closing doors. In addition, the room(s) is to be provided with the following: (See also 5-3-1/9.1 and 5-3-1/9.3)

- i) Independent mechanical ventilation or a ventilation arrangement which can be isolated from the machinery space ventilation
- ii) Fire detection system

- iii)* Fixed fire extinguishing system capable of activation from outside the room. The extinguishing system is to be separate for the room but may be part of the main fire extinguishing system for the machinery space.
- iv)* Means of closing ventilation openings from a position close to where the fire extinguishing system is activated

If it is impracticable to locate the fuel oil purifiers in a separate room, special consideration will be given in regard to location, containment of possible leakage, shielding and ventilation. In such cases, a local fixed fire extinguishing system is to be provided and arranged to be activated automatically, where permitted, or manually from the machinery control position or from another suitable location. If automatic release is provided, additional manual release is also to be arranged.

13 Rotary Table Area

The area adjacent to the rotary table is to be free of openings through which gases or water can enter the hull structure. Any such openings that are necessary are to be equipped with quick-acting closing devices.

15 Fire Precautions for Machinery Spaces (1996)

Installation in machinery spaces which contain fired boilers, internal combustion engines, oil purifiers and similar equipment are to comply with the following:

- i)* The surfaces of all internal combustion engines, gas turbines, boilers, exhaust pipes and other exposed parts which may be heated to a temperature in excess of 220°C (428°F) and may be exposed to flammable liquids are to be insulated. Where insulation is oil absorbing and exposed to penetration of oil, this insulation is to be encased in sheet metal or an equivalent impervious sheet.
- ii)* Drip trays for collecting oil, as required in 4-2-1/7.29, are to be fitted below pumps, burners, tanks, etc. They are to be of suitable height and provided with suitable drainage to a collecting tank incorporating a high level alarm.
- iii)* Hydraulic pumps, actuators, motors and accessories are to be suitable for the intended duty, compatible with the working fluid and are to be designed to operate safely at full-power conditions. In general, the hydraulic fluid is to be nonflammable or have a flash point above 157°C (315°F).
- iv)* For unmanned machinery spaces, fuel oil heaters, purifiers, pumps and filters are to be shielded or grouped in a special room or location ventilated by suction.