

# RULES

## FOR THE CLASSIFICATION AND CONSTRUCTION OF MOBILE OFFSHORE DRILLING UNITS

### PART VI FIRE PROTECTION

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# **RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF MOBILE OFFSHORE DRILLING UNITS**

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Rules for the Classification and Construction of Mobile Offshore Drilling Units (the MODU Rules) of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established approval procedure and come into force on 1 September 2023.

The present Rules are based on the latest version of the Rules for the Classification, Construction and Equipment of Mobile Offshore Drilling Units and Fixed Offshore Platforms, 2022, taking into account the amendments and additions developed immediately before publication.

The procedural requirements, unified requirements, unified interpretations and recommendations of the International Association of Classification Societies (IACS) and the relevant resolutions of the International Maritime Organization (IMO) have been taken into consideration.

The Rules set down specific requirements for MODU, consider the recommendations of the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code) (IMO resolution A.1023(26), as amended) and supplement the Rules for the Classification and Construction of Sea-Going Ships and the Rules for the Equipment of Sea-Going Ships.

The Rules are published in the following parts:

Part I "Classification";

Part II "Hull";

Part III "Equipment, Arrangements and Outfit";

Part IV "Stability";

Part V "Subdivision";

Part VI "Fire Protection";

Part VII "Machinery Installations and Machinery";

Part VIII "Systems and Piping";

Part IX "Boilers, Heat Exchangers and Pressure Vessels";

Part X "Electrical Equipment";

Part XI "Refrigerating Plants";

Part XII "Materials";

Part XIII "Welding";

Part XIV "Automation";

Part XV "Safety Assessment";

Part XVI "Signal Means";

Part XVII "Life-Saving Appliances";

Part XVIII "Radio Equipment";

Part XIX "Navigational Equipment";

Part XX "Equipment for Prevention of Pollution".

**REVISION HISTORY**

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

## 1 GENERAL

### 1.1 APPLICATION

**1.1.1** The requirements of this Part of the Rules for the Classification and Construction of Mobile Offshore Drilling Units<sup>1</sup> apply to structural fire protection of MODU, fire extinguishing systems and fire detection and alarm systems, as well as to fire-fighting equipment and outfit. In addition to the requirements of this Part, the relevant requirements of Part VI "Fire Protection" of the Rules for the Classification and Construction of Sea-Going Ships<sup>2</sup> shall be met.

**1.1.2** The fire safety design or arrangements may deviate from prescriptive provisions of this Part, provided that the design and arrangements meet the fire protection objectives and functional requirements. When the fire safety design or arrangements deviate from the prescriptive provisions of this Part, the engineering analysis, evaluation and approval of the alternative design and arrangements shall be carried out in accordance with 1.7, Part VI "Fire Protection" of the RS Rules/C.

**1.1.3** Fire protection requirements relating to the structural members of the MODU hull, machinery and parts thereof, electrical equipment, pumping and piping, arrangements, fuel and lubricating oil tanks, construction and location of boilers, refrigerating plants, spaces, etc. are set out in the relevant parts of the MODU Rules.

**1.1.4** Special equipment and outfit (fire extinguishing systems and fire detection and alarm systems, fire extinguishing installations, portable fire fighting outfit items, etc.) intended for fire preventing and fighting in the drilling and process area and not covered by this Part, shall meet their requirements to the extent agreed with the Register in each particular case.

The necessity of installing such equipment and outfit and characteristics thereof shall be determined by the customer having regard to the presence and number of special salvage teams on board MODU and the presence of ships assigned the mark **FF** added to their class notation in the MODU water area.

The scope of the Register technical supervision of the said equipment and outfit is determined by the customer and agreed with the Register.

**1.1.5** Layout of the drilling and process equipment, as well as technical solutions to ensure safe drilling and well operation, collection, storage, treatment and transportation of the well products shall comply with the requirements of the competent State bodies exercising supervision of the safety in oil and gas industry.

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<sup>1</sup> Hereinafter referred to as "the MODU Rules".

<sup>2</sup> Hereinafter referred to as "the RS Rules/C".

## **1.2 DEFINITIONS AND EXPLANATIONS**

**1.2.1** The definitions and explanations relating to the general terminology of the MODU Rules are given in the General Regulations for the Classification and Other Activity and in Part I "Classification" of the MODU Rules. Definitions and explanations concerning fire protection are stated in 1.2, Part VI "Fire Protection" of the RS Rules/C.

**1.2.2** Unless otherwise provided, the following definitions have been adopted in this Part. A self contained breathing apparatus of PDR type (pressure-demand respirator) is a device where the pressure reducer and exhalation valve maintain gage pressure in the mask except at high frequency of breathing. In case the apparatus of PDR type has any leakage, the pressure reducer provides fresh air supply into the mask, preventing ingress of the outside polluted air.

A self contained breathing apparatus of PPR type (positive-pressure respirator) is a device to support gage pressure in the face mask while breathing (inhalation and exhalation).

Hazardous zones and areas, refer to 2.9, Part X "Electrical Equipment".

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

ICAO is the International Civil Aviation Organization.

Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009, is the Code for the Construction and Equipment of Mobile Drilling Units (2009 MODU Code) adopted by IMO resolution A.1023(26).

H class divisions are those divisions, which are formed by bulkheads and decks complying with the following requirements:

they shall be constructed of steel or equivalent material;

they shall be suitably stiffened;

they shall be so constructed as to be capable of precluding the passage of smoke and flame during 120 min of the standard fire test;

they shall be so insulated with non-combustible material or equivalent fire-protective means that the average or maximum (at any point) temperature at the unexposed side will not rise more than 140 °C and 180 °C, respectively, above the original temperature.

Depending on the time, during which the above indicated temperature rise is ensured in the course of the standard fire test, the following symbols are given to divisions: H-120 — during 120 min, H-60 — during 60 min, H-0 — during 0 min.

Fire integrity of divisions is tested according to the method stated in Part 3 of Appendix 1 to the FTP Code, considering that the furnace heating temperature shall be changed in compliance with time-dependent temperature curve during hydrocarbon burning specified in the national or international standards (such as BS EN 1363-2:1999; ASTM 1529-14a; ISO/DIS 20902-1).

Machinery spaces of Category A and other machinery spaces, refer to 1.2, Part VII "Machinery Installations" of the RS Rules/C.

IMDG Code is the International Maritime Dangerous Goods (IMDG) Code adopted by IMO resolution MSC.122(75), as amended by IMO resolutions MSC.157(78), MSC.205(81), MSC.262(84), MSC.294(87), MSC.328(90), MSC.372(93), MSC.406(96), MSC.442(99).

Lower explosive limit (LEL) is the lowest concentration of combustible vapors or gases, by volume in mixture with air at which flame propagation through the mixture is possible at any distance from the ignition source.

Attending personnel are persons who, for the purpose of this Part, permanently or temporarily stay on board MODU in connection with the unit's mission or because of special work being performed on MODU.

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

Dangerous goods are substances, materials and products covered by the IMDG Code.

Hazardous areas are all those areas of MODU where, due to possible presence of a flammable atmosphere arising from the drilling operations, the use without proper consideration of machinery or electrical equipment may lead to fire hazard or explosion.

Process equipment spaces are spaces containing equipment intended for collection, storage, treatment and transportation of the well products.

Control stations are those spaces in which the radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment or the dynamic positioning control system is centralized or where a fire-extinguishing system serving various locations is situated.

In the case of column-stabilized MODU, a centralized ballast control station is a control station.

Service spaces are galleys, bakeries, pantries containing cooking appliances, storerooms, workshops other than those forming part of machinery spaces and similar spaces.

### 1.3 FIRE PLANS

**1.3.1** At the central control station or in conspicuous positions in corridors and lobbies of MODU, there shall be exhibited general arrangement plans clearly showing the following for each deck:

- .1 location of control stations;
- .2 arrangement of fire-resisting and fire-retarding divisions;
- .3 spaces protected by automatic fire detectors and manual fire alarm stations of fire detection and fire alarm system;
- .4 spaces protected by automatic gas detectors of the combustible gas detection and alarm system (hydrocarbon gases, hydrocarbon fluid vapours);
- .5 spaces protected by automatic hydrogen sulphide gas detectors of hydrogen sulphide detection and alarm system;
- .6 location of respiratory protection equipment for hydrogen sulphide;
- .7 general alarm actuating positions;
- .8 arrangement of fire extinction stations, fixed fire extinguishing appliances, fire pumps, hydrants, section valves of fire extinguishing system, nozzles of pressure water-spraying systems and sprinklers of sprinkler system (if installed), valve remote controls of fire extinguishing systems, fire pumps, as well as remote controls of fire extinguishing system activation; spaces protected by fixed fire extinguishing systems;
- .9 locations of fighter's outfits;
- .10 location of helicopter crash kit;
- .11 location of other fire-fighting outfits;
- .12 location of emergency shutdown (engine shutdown, pump shutdown, oil fuel source shutdown, etc.) stations;
- .13 ventilating system, including position of closing appliances for ventilation inlets and outlets, fire dampers, fire damper and ventilating controls of fire dampers with indication of identification numbers of ventilating fans serving the groups of spaces enclosed by fire structures;
- .14 arrangement of fire/watertight doors and their remote controls;
- .15 location of blowout preventer control stations;
- .16 escape route and means of access to different compartments, decks, etc.;
- .17 locations of emergency escape breathing devices (EEBD);
- .18 arrangement of emergency muster stations and life-saving appliances; and
- .19 location of documents referred to in [1.3.6](#).

**1.3.2** A stitched set of plans with information specified in [1.3.1](#) shall be supplied to each officer, and one copy shall be available at all times on board in a readily accessible position.

**1.3.3** A set of the plans protected against marine environment shall be permanently stowed outside the superstructure in a weathertight enclosure painted red and marked as indicated in [Fig. 1.3.3-1](#).



Fig 1.3.3-1

The enclosure shall be capable of being easily opened, be readily available to the salvage teams, be located in a conspicuous well-illuminated position, if possible, including illumination from an emergency source.

The enclosure shall not be located in a hazardous zone and on exterior bulkheads of superstructures which face hazardous zone and on side bulkheads abutting thereon.

If the enclosure is not adjacent to place of boarding of the salvage teams, there shall be guide signs (refer to [Fig. 1.3.3-2](#)) showing the way thereto.

The dimensions of the signs shall be not less than 300 × 400 mm.

The signs shall be arranged at the same level and the spacing between them shall not exceed 50 m.

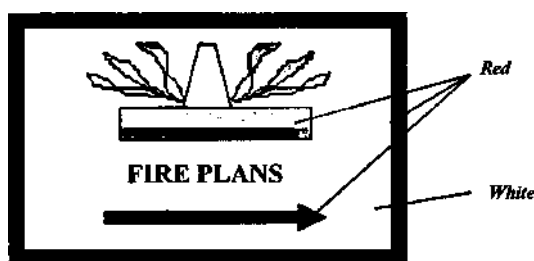


Fig. 1.3.3-2

**1.3.4** Plans and booklets shall be made in the state language and shall contain translation into English, thus the symbols for items listed in [1.3.1](#) shall be in agreement with IMO resolution A.952(23) "Graphical Symbols for Shipboard Fire Control Plans" as amended by IMO resolution A.1116(30) for items, which signs are not indicated in IMO resolution A.952(23).

Graphical symbols shall be coloured.

**1.3.5** Plans and booklets shall be continuously updated and any alterations in the fire protection shall be entered therein at the earliest possible date.

**1.3.6** To be kept in a separate file in a readily accessible position are instructions for maintenance, repair, inspections and use of all systems, means to extinguish and confine a fire, fire-fighting outfit in accordance with the requirements of IMO resolution A.1023(26). The maintenance program may be computer-based. Maintenance and inspections shall be carried out in accordance with the requirements of IMO Circular MSC/Circ.850.



## 2 STRUCTURAL FIRE PROTECTION

### 2.1 GENERAL

#### 2.1.1 Requirements for structural fire protection.

**2.1.1.1** To provide effective structural fire protection, all relevant requirements of 2.1, Part VI "Fire Protection" of the RS Rules/C shall be applied.

**2.1.1.1.1** Structural fire protection details, materials and products of MODU shall be tested in accordance with the FTP Code, evaluated and approved by the Register.

**2.1.1.2** To provide effective structural protection of the accommodation and service spaces on MODU, method IC referred to in 2.3, Part VI "Fire Protection" of the RS Rules/C shall be used.

**2.1.1.3** On MODU, the minimum fire integrity of bulkheads and decks separating adjacent spaces shall be as prescribed in Tables [2.1.1.3-1](#) and [2.1.1.3-2](#).

The following requirements shall govern application of the tables:

**.1** tables shall apply respectively to the bulkheads and decks separating adjacent spaces;

**.2** for determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk, as shown in 11 categories below. The title of each category is intended to be typical rather than restrictive.

Table 2.1.1.3-1

**Fire integrity of bulkheads separating adjacent spaces**

| Spaces                         | (1)  | (2)              | (3) | (4)  | (5)                     | (6)                     | (7)            | (8)                | (9)               | (10)             | (11) |                         |
|--------------------------------|------|------------------|-----|------|-------------------------|-------------------------|----------------|--------------------|-------------------|------------------|------|-------------------------|
| Control stations               | (1)  | A-0 <sup>1</sup> | A-0 | A-60 | A-0                     | A-15                    | A-60           | A-15               | A-60 <sup>2</sup> | A-60             | *    | A-0                     |
| Corridors                      | (2)  |                  | C   | B-0  | B-0<br>A-0 <sup>3</sup> | B-0                     | A-60           | A-0                | A-0 <sup>2</sup>  | A-0              | *    | B-0                     |
| Accommodation spaces           | (3)  |                  |     | C    | B-0<br>A-0 <sup>3</sup> | B-0                     | A-60           | A-0                | A-0 <sup>2</sup>  | A-0              | *    | C                       |
| Stairways                      | (4)  |                  |     |      | B-0<br>A-0 <sup>3</sup> | B-0<br>A-0 <sup>3</sup> | A-60           | A-0                | A-0 <sup>2</sup>  | A-0              | *    | B-0<br>A-0 <sup>3</sup> |
| Service spaces (low risk)      | (5)  |                  |     |      |                         | C                       | A-60           | A-0                | A-0               | A-0              | *    | B-0                     |
| Machinery spaces of category A | (6)  |                  |     |      |                         |                         | * <sup>4</sup> | A-0 <sup>4</sup>   | A-60              | A-60             | *    | A-0                     |
| Other machinery spaces         | (7)  |                  |     |      |                         |                         |                | A-0 <sup>4,5</sup> | A-0               | A-0              | *    | A-0                     |
| Hazardous areas                | (8)  |                  |     |      |                         |                         |                |                    |                   | A-0              | -    | A-0                     |
| Service spaces (high risk)     | (9)  |                  |     |      |                         |                         |                |                    |                   | A-0 <sup>5</sup> | *    | A-0                     |
| Open decks                     | (10) |                  |     |      |                         |                         |                |                    |                   |                  | -    | *                       |
| Sanitary and similar spaces    | (11) |                  |     |      |                         |                         |                |                    |                   |                  |      | C                       |

<sup>1</sup> Bulkheads separating spaces containing radio and navigational equipment from each other may be of "B-0" class.

<sup>2</sup> Additional provisions for fire divisions shall be assessed in accordance with [2.2.1](#). In no case shall the bulkhead or deck rating be less than the value indicated in Tables [2.1.1.3-1](#) and [2.1.1.3-2](#).

<sup>3</sup> For clarification of the type of division, refer to 2.1.2.4, 2.1.2.5 and applicable provisions of 2.1.4.3, Part VI "Fire Protection" of the RS Rules/C.

<sup>4</sup> Where the space contains an emergency power source or components of an emergency power source adjoining a space containing a MODU service generator or the components of a MODU service generator, the boundary bulkhead or deck between these spaces shall be an "A-60" class division.

<sup>5</sup> 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 used for 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.

Note. Where an asterisk (\*) appears in the tables, the division shall 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 penetration shall be made tight to prevent the passage of flame and smoke.

Table 2.1.1.3-2

**Fire integrity of decks separating adjacent spaces**

| Spaces                         | (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 <sup>2</sup> | A-0              | *    | A-0 |
| Corridors                      | (2)  | A-0               | *                | *                | A-0              | *    | A-60             | A-0            | A-0 <sup>2</sup> | A-0              | *    | A-0 |
| Accommodation spaces           | (3)  | A-60              | A-0              | *                | A-0              | *    | A-60             | A-0            | A-0 <sup>2</sup> | A-0              | *    | *   |
| Stairways                      | (4)  | A-0               | A-0              | A-0              | *                | A-0  | A-60             | A-0            | A-0 <sup>2</sup> | 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 | * <sup>4</sup>   | A-60           | A-60             | A-60             | *    | A-0 |
| Other machinery spaces         | (7)  | A-15              | A-0              | A-0              | A-0              | A-0  | A-0 <sup>4</sup> | * <sup>4</sup> | A-0              | A-0              | *    | A-0 |
| Hazardous areas                | (8)  | A-60 <sup>2</sup> | A-0 <sup>2</sup> | A-0 <sup>2</sup> | A-0 <sup>2</sup> | 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 <sup>5</sup> | *    | A-0 |
| Open decks                     | (10) | *                 | *                | *                | *                | *    | *                | *              | -                | *                | -    | *   |
| Sanitary and similar spaces    | (11) | A-0               | A-0              | A-0              | A-0              | *    | A-0              | A-0            | A-0              | A-0              | *    | *   |

<sup>1, 2, 3, 4, 5</sup> Refer to relevant footnotes in [Table 2.1.1.3-1](#).

**Note.** Where an asterisk (\*) appears in the tables, the division shall 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 penetration shall be made tight to prevent the passage of flame and smoke.

- (1) Control stations:  
spaces as defined in [1.2.2](#).
- (2) Corridors:  
corridors and lobbies.
- (3) Accommodation spaces:  
spaces as defined in [1.2.2](#), excluding corridors, lavatories and pantries containing no cooking appliances.
- (4) Stairways:  
interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto. In this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.
- (5) Service spaces (low risk):  
lockers, store-rooms and working spaces in which flammable materials are not stored, drying rooms and laundries.
- (6) Machinery spaces of Category A: spaces as defined in [1.2.2](#).
- (7) Other machinery spaces:  
spaces as defined in [1.2.2](#) other than machinery spaces of Category A.
- (8) Hazardous areas:  
areas, the definition of which is given in [1.2.2](#).
- (9) Service spaces (high fire risk):  
galleys, pantries containing cooking appliances;  
lockers and store-rooms in which flammable liquids are stored (including paints, medicines, etc);  
workshops other than those forming part of machinery space.
- (10) Open decks:  
open deck spaces and enclosed decks containing no fire risk. Open deck spaces (spaces outside the superstructures and deckhouses), excluding drilling area, which are not adjacent to drilling area.
- (11) Sanitary and similar spaces:  
communal sanitary facilities such as showers, baths, lavatories, etc., and separate pantries containing no cooking appliances. Sanitary facilities which serve a space and with access only from that space shall be considered as portion of the space in which they are located.

**2.1.2 Stairways, lift trunks and escape routes.**

**2.1.2.1** Stairways situated within superstructures shall be protected by divisions with self-closing doors.

**2.1.2.1.1** Stairways shall be constructed of steel or equivalent material.

**2.1.2.2** Stairways which penetrate only a single deck shall 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 shall be protected by "A" class divisions.

Stairways and lift trunks, which penetrate more than a single deck, shall be surrounded by "A" class divisions and protected by self-closing doors at all levels.

**2.1.2.3** Stairway enclosures shall have direct communication with the corridors and be provided with landings as required by 8.5.4.2, Part III "Equipment, Arrangements and Outfit" of the RS Rules/C. Within the perimeter of such stairway enclosures, only public toilets, lockers for storage of salvage and fire fighting outfit are permitted. Only public spaces, corridors, public toilets, external areas and other stairways required by 8.5, Part III "Equipment, Arrangements and Outfit" of the RS Rules/C are permitted to have direct access to these stairway enclosures.

**2.1.2.4** Furniture shall not be permitted in corridors forming escape routes in accommodation areas.

**2.1.2.5** Consideration shall be given to the siting of superstructures, deckhouses and equipment such that in the event of fire in the drilling or process area at least one escape route to the embarkation position and survival craft is protected against radiation effects of that fire as far as practicable, this being subject to separate consideration by the Register.

**2.1.3 Fire-resisting and fire-retarding divisions.**

**2.1.3.1** Exterior boundaries of superstructures and deckhouses enclosing accommodation spaces, including any overhanging decks, which support such accommodation spaces as stations, assembly stations and escape routes, as well as machinery and service spaces connected therewith shall be constructed to:

.1 H-60 standard for the whole of the portion, which faces and is within 30 m of the centre of the rotary table. For MODU that have a movable superstructure, the 30 m shall be measured with the superstructure at its closest drilling position to the specified spaces in all areas faced the drilling or process area liable to heat effect in case of fire in the specified areas;

.2 A-60 standard for all the rest areas.

**2.1.4 Closures of openings in fire-resisting and fire-retarding divisions.**

**2.1.4.1** Where the exterior boundaries of superstructures and deckhouses facing the drilling or process area, as well as the adjoining outward sides for a distance of 3 m are required to be fitted with windows and side scuttles, the latter shall be of non-opening type to meet the requirements of 7.2, Part III "Equipment, Arrangements and Outfit" of the RS Rules/C. Wheelhouse windows on MODU may be of opening type which would permit their rapid closure.

Windows and side scuttles in A-60 and H-60 class divisions facing the drilling or process area shall be of fire class complying with these structures or protected by water curtain or be fitted with shutters of steel or equivalent material.

Installation of windows and side scuttles of opening type is permitted outside hazardous areas (refer to definition in [1.2](#)).

**2.1.4.2** No doors to accommodation spaces, control stations and service, machinery spaces connected therewith and other spaces directly communicating with such spaces shall be fitted in the exterior boundaries of superstructures and deckhouses facing the drilling or process area and also on adjoining outward sides for a distance of 3 m.

**2.1.4.3** No doors, windows and other openings shall be generally arranged on hull structures with a center situated at a distance of 3 m from the point of the drilling mud diversion.

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

**2.1.4.5** Self-closing doors in fire rated bulkheads shall not be fitted with hold-back hooks. However, hold-back arrangements incorporating remote release fittings may be utilized.

**2.1.5 Protection of accommodation spaces, service spaces and control stations.**

**2.1.5.1** All bulkheads that shall be "A" class divisions shall extend from deck to deck and to deckhouse side or other boundaries.

**2.1.5.2** All bulkheads forming "B" class divisions shall 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 of lining.

In corridor bulkheads, ventilation openings may be permitted only in and under the doors of cabins, public spaces, offices and sanitary spaces. Except as permitted below, the openings shall 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 shall not exceed 0,05 m<sup>2</sup>. If such an opening is cut in a door it shall be fitted with a grille made of noncombustible material. Such openings shall not be provided in a door in a division forming a stairway enclosure.

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

**2.1.5.4** Air spaces enclosed behind ceilings, panellings or linings shall 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 finings of stairways, trunks, etc., shall be closed at each deck.

**2.1.5.5** Except for insulation in refrigerated compartments, thermal insulation of pipes and vent ducts, ceilings, finings and bulkheads shall be of noncombustible material.

Vapour barriers and adhesives used in conjunction with anti-condensation insulation of cooling water piping of the conditioning systems and cooling systems, as well as insulation of piping valves, fittings and joints may be combustible but they shall be kept to the minimum, as far as practicable, while their exposed surfaces shall be low flame-spread.

In the spaces where oily products may be present the insulation surface shall be oily vapours impermeable, which may be provided by coating insulation with galvanized steel sheets, reinforced aluminium foil, aluminium foil laminated fiberglass cloth or by other means.

**2.1.5.6** The framing, including grounds and the joint pieces of bulkheads, linings, ceilings and draught stops, shall be of non-combustible material.

**2.1.5.7** All exposed surfaces in corridors and stairway enclosures and surfaces in concealed or inaccessible spaces in accommodation and service spaces shall have low-flame spread characteristics. Exposed surfaces of ceilings in accommodation and service spaces and control stations shall have low- flame spread characteristics.

**2.1.5.8** Bulkheads, linings, and ceilings may have combustible veneers provided that the thickness of such veneers shall not exceed 2,5 mm in any spaces other than corridors, stairway enclosures and control stations where the thickness shall not exceed 1,5 mm. Combustible materials used on these surfaces shall have a calorific value<sup>1</sup> not exceeding 45 MJ/m<sup>2</sup> of the area for the thickness used.

**2.1.5.9** Primary deck coverings, if applied within accommodation, service spaces and control stations, shall be of approved material, which will not readily ignite, this being determined in accordance with the FTP Code.

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<sup>1</sup> Refer to ISO 1716:2002.

**2.1.5.10** Paints, vanishes and other finishes used on exposed interior surfaces in accommodation, service spaces and control stations, and in stairway enclosures shall not be capable of producing excessive quantities of smoke and toxic products, this being determined in accordance with the FTP Code.

## **2.2 LOCATION OF SPACES**

**2.2.1** In general, accommodation spaces, service spaces, control stations and spaces containing vital machinery and equipment shall not be located adjacent to hazardous areas (vital machinery and equipment are those that are essential to the safety of the MODU and all personnel on board. They include, but are not limited to, fire pumps, emergency sources of power, dynamic positioning systems, remote blowout preventer activation controls, and other operational or safety systems the sudden failure of which may result in hazardous situations. This does not include spaces (e.g. the driller's cabin) located on the drill floor).

However, where this is not practicable, an engineering evaluation shall be performed in accordance with national or international standards (refer to standards such as ISO 13702:2015 or API RP 2FB) 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. Where it is shown that these spaces may be exposed to a radiant heat flux in excess of 100 kW/m<sup>2</sup>, the bulkhead or deck shall be constructed to at least an "H-60" standard.

**2.2.2** Spaces containing equipment intended for well drilling, collection, storage, treatment and transportation of well products shall not be adjacent to accommodation spaces and control stations and shall be enclosed by "A-0" class divisions.

**2.2.3** Superstructures and deckhouses shall be sited 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 radiant heat flux levels in excess of 2,5 kW/m<sup>2</sup> emanating from the drill floor.

**2.2.4** No fuel oil and lubricating oil tanks shall be located adjacent to the accommodation and service spaces, as well as to the escape routes in the superstructure.

## **2.3 HELICOPTER FACILITIES**

**2.3.1** Helicopter facilities (a complex of technical means including a helideck, helicopter refueling facilities and compressed gas or special liquid filling facilities (if any), as well as spaces (if any) where helicopter maintenance facilities are located and hangars) shall be so arranged as to ensure protection of MODU against fire hazard associated with the use of helicopters:

**.1** the helicopter facilities shall be arranged away from the drilling and process area, as well as from the areas containing sources of ignitions and spaces where large amounts of heat are produced;

**.2** the helicopter facilities shall not be adjacent to accommodation spaces;

**.3** the helicopter facilities shall be so located that in the event of fire in the drilling or process area they are protected by the superstructures against direct effects of the flame.

**2.3.2** The helicopter facility shall meet the requirements of Section 6, Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" of the RS Rules/C.

## **2.4 SPACES FOR WELDING OPERATIONS. FIXED OXYGEN AND ACETYLENE SYSTEM**

**2.4.1** Spaces for electric welding operations and store-rooms for storage of oxygen and acetylene cylinders shall comply with the requirements of 2.1.5.4, Part VI "Fire Protection" of the RS Rules/C.

**2.4.2** Areas for the storage of oxygen and acetylene cylinders shall not be located in the vicinity of the drilling and process area. Provision shall be made for the expeditious removal of oxygen cylinders and acetylene cylinders from the storage rooms in the event of fire.

**2.4.2.1** Where cylinders are stowed on open deck, means shall be provided to:

- .1 protect cylinders and associated piping from likely damages and heating;
- .2 ensure suitable drainage from the deck areas where the cylinders are stowed.

**2.4.3** Fixed piping system for oxygen and acetylene shall comply with the following requirements:

- .1 pipes shall be made of steel or equivalent material and approved joints shall be fitted;
- .2 material containing more than 70 % of copper shall not be used in the fittings, except for welding and cutting tips;
- .3 allowance shall be made for expansion of piping;
- .4 pipes shall be as short as possible and protected from physical damage.

**2.4.4** Fire-extinguishing arrangements for the protection of spaces for electric welding operations shall comply with the requirements of item 4.13 of Table 5.1.2, Part VI "Fire Protection" of the RS Rules/C. Fire-extinguishing arrangements for the protection of areas or spaces on open deck where such cylinders are stored shall be agreed with the Register.



### **3 FIRE-FIGHTING EQUIPMENT AND SYSTEMS**

#### **3.1 GENERAL**

**3.1.1** The requirements of this Section are applicable to all fire-fighting equipment and systems fitted on MODU.

The fire extinguishing systems shall also comply with the requirements of Sections 2, 4, 5, Part VIII "Systems and Piping" of the RS Rules/C.

**3.1.2** In addition to the water fire main system and in accordance with the purpose for which they are intended, spaces of MODU, considering performance of fired work therein, shall be protected by one of the fixed fire extinguishing systems according to [Table 3.1.2](#), unless expressly provided otherwise.

Fixed fire-extinguishing systems shall comply with the applicable requirements of Section 3, Part VI "Fire Protection" of the RS Rules/C.

**3.1.3** In well-grounded cases, instead of water-screen and pressure water-spraying systems, fire-resisting and fire-retarding divisions may be used.

**3.1.4** Decks in way of oil storage tanks and the tanks themselves shall be protected by a fixed deck foam fire extinguishing system and fixed inert gas system, except that instead of the above systems, the Register, considering the arrangement and equipment of the MODU, may accept other combinations of the systems, provided they ensure equivalent protection.

To be reckoned as equivalent, the system proposed instead of the deck foam fire extinguishing system shall:

- extinguish oil spillage fire and prevent ignition of oil spillages which are not on fire yet;
- extinguish fire in all opened oil storage tanks.

To be reckoned as equivalent, the system proposed instead of the fixed inert gas system shall:

- prevent dangerous accumulation of explosive mixtures in the intact storage tanks during normal service and during necessary operations performed in the tanks;

- be so designed as to minimize the ignition hazard due to static electricity which can be formed by the system itself.

**3.1.5** Arrangement of fire-fighting equipment and installation of fire extinguishing system pipes in the areas of zones to be specified shall be carried out, as far as practicable, in such a way as to avoid damage risk in the event of emergency and to retain their operability.

**3.1.6** Automatic release of fire extinguishing medium is not permitted, except the cases indicated in 3.3, 3.6.3 and 3.11.2.7, Part VI "Fire Protection" of the RS Rules/C.

Table 3.1.2

| No. | Description of spaces   | Fixed fire extinguishing systems |                         |                 |                         |                           |                |                |
|-----|---|----------------------------------|-------------------------|-----------------|-------------------------|---------------------------|----------------|----------------|
|     |   | Sprinkler                        | Pressure water-spraying | Water screen    | Foam fire extinguishing | Carbon dioxide smothering | Dry powder     | Aerosol        |
| 1   | Accommodation spaces excluding sanitary spaces (shower-rooms, bathrooms, toilets, indoor swimming pools, small laundries, etc.) | + <sup>1</sup>                   |                         |                 |                         |                           |                |                |
| 2   | Service spaces (storerooms for combustible materials)   | + <sup>1</sup>                   |                         |                 |                         |                           |                | +              |
| 3   | Service spaces: paint stores  | +                                | +                       |                 |                         | +                         | + <sup>2</sup> | + <sup>3</sup> |
| 4   | Storerooms for flammable liquids, flammable liquefied and compressed gases <sup>4</sup>   | + <sup>5</sup>                   | + <sup>5</sup>          |                 | + <sup>6</sup>          | +                         | + <sup>2</sup> | + <sup>3</sup> |
| 5   | Spaces for process equipment  |                                  | +                       |                 | + <sup>6</sup>          | +                         |                | + <sup>3</sup> |
| 6   | Degasser room   |                                  | +                       |                 | + <sup>6</sup>          |                           |                |                |
| 7   | Open decks in way of hazardous zones  |                                  | +                       |                 | + <sup>7</sup>          |                           |                |                |
| 8   | Drill floor, collectors   |                                  | +                       |                 | + <sup>7</sup>          |                           | +              |                |
| 9   | Pumps/compressors   |                                  | +                       |                 | + <sup>7</sup>          |                           |                |                |
| 10  | Gas treatment area  |                                  | +                       |                 | + <sup>8</sup>          |                           | +              |                |
| 11  | Methanol area, including service pumps  |                                  | +                       | +               | + <sup>9</sup>          |                           |                |                |
| 12  | Blowout preventer (BOP) area  |                                  | +                       |                 | + <sup>7</sup>          |                           |                |                |
| 13  | Machinery spaces of Category A. Hangars for helicopters and fuel distribution stations  |                                  | + <sup>10</sup>         |                 | + <sup>10, 11</sup>     | + <sup>10</sup>           |                | +              |
| 14  | Silencers of internal combustion engines <sup>12</sup> , exhaust gas boilers, exhaust ventilation ducts of galley               |                                  | +                       |                 |                         | +                         |                |                |
| 15  | Means of escape (refer to <a href="#">2.2.3</a> )   |                                  |                         | +               |                         |                           |                |                |
| 16  | Exits from machinery spaces and process equipment spaces enclosed in trunks   |                                  |                         | + <sup>13</sup> |                         |                           |                |                |
| 17  | Helideck  |                                  |                         |                 | + <sup>7</sup>          |                           |                |                |
| 18  | Oil collecting tanks  |                                  |                         |                 | + <sup>7</sup>          |                           |                |                |
| 19  | Special electrical rooms (refer to 1.2.1, Part X "Electrical Equipment")  |                                  |                         |                 |                         | +                         |                |                |

<sup>1</sup> With attending personnel not over 100 in number — on agreement with the customer; with attending personnel over 100 in number — the system is compulsory.  
<sup>2</sup> Dry powder fire extinguishing system shall ensure the delivery of not less than 0,5 kg powder/m<sup>2</sup>.  
<sup>3</sup> Explosion-proof aerosol generators shall be installed.  
<sup>4</sup> Storerooms for flammable liquids, liquefied and compressed gases, paint stores need not be fitted with a fixed fire extinguishing system, if the area of each storage space is not more than 4 m<sup>2</sup>.  
<sup>5</sup> Water-mist fire extinguishing systems shall be used.  
<sup>6</sup> A system using medium expansion foam shall be used.  
<sup>7</sup> A system using low expansion foam with the use of monitors shall be provided.  
<sup>8</sup> If area contains significant flammable liquids.

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| No.           | Description of spaces   | Fixed fire extinguishing systems |                            |                 |                            |                              |            |
|---------------|---|----------------------------------|----------------------------|-----------------|----------------------------|------------------------------|------------|
|               |   | Sprinkler                        | Pressure<br>water-spraying | Water<br>screen | Foam fire<br>extinguishing | Carbon dioxide<br>smothering | Dry powder |
| <sup>9</sup>  | Alcohol-resistant foam shall be used. In lieu of the foam fire extinguishing system a portable foam unit may be used if the methanol area is small.   |                                  |                            |                 |                            |                              |            |
| <sup>10</sup> | Where the machinery space of Category A and spaces containing fired processes are not entirely separate, or if fuel oil can drain from the latter spaces into the machinery space, the combined machinery space and fired process space shall be considered as one compartment. |                                  |                            |                 |                            |                              |            |
| <sup>11</sup> | A system using high expansion foam shall be used.   |                                  |                            |                 |                            |                              |            |
| <sup>12</sup> | The silencers of medium- and high-speed engines need not to be fitted with the fixed fire extinguishing system, when there are spark arresters in the exhausts.   |                                  |                            |                 |                            |                              |            |
| <sup>13</sup> | Required if the trunk is constructed of "A-0" class division. To be fitted outside the trunk.   |                                  |                            |                 |                            |                              |            |

### **3.2 WATER FIRE MAIN SYSTEM**

**3.2.1** Two water supply sources (sea chests, valves, strainers and pipes) shall be provided and so arranged that one water supply source failure shall not put the other supply source out of action.

At least two independently driven fire pumps shall be provided, each arranged to draw water from its own sea valve and discharge into a fixed fire main. A fire or flooding in any one compartment shall not put all fire pumps out of action.

Each of the fire pumps shall have a minimum capacity of 60 m<sup>3</sup>/h.

However, in units with high suction lifts, booster pumps may be installed, provided such arrangements satisfy the requirements of [3.2.2 — 3.2.9](#).

**3.2.2** One of the fire pumps shall be dedicated for fire-fighting duties and be available for immediate starting at all times.

**3.2.3** The arrangements of sea suction, pumps and sources of power shall be such as to ensure that a fire in any one space shall not put both the required pumps out of action.

**3.2.4** The total capacity and head of the required pumps shall be appropriate to ensure operation of two fire hose nozzles and simultaneous operation of other fire extinguishing systems using water and required for fighting a fire in one of the spaces or areas on open deck of the MODU, for which the maximum quantity of water is required.

**3.2.5** Each pump shall be capable of delivering at least two jets of water simultaneously from any two fire hydrants through nozzles of minimum diameter of 12 mm for accommodation and service spaces and maximum diameter of 19 mm for machinery and exterior spaces (for example, open decks) while maintaining a minimum pressure of 0,35 MPa at hydrants.

Where a foam system is provided for the protection of the helideck, the pumps shall be capable of maintaining a minimum pressure of 0,7 MPa at the foam installation.

If the water consumption for any other fire protection or fire-fighting purpose exceeds the rate of the helideck foam installation, this consumption shall be the determining factor in calculating the required capacity of the fire pumps.

**3.2.6** Where the fire pumps are located in spaces not normally manned, suitable provision shall be made for remote start-up of those pumps and remote operation of associated valves to be effected either from the central control station or from one of the positions where watch keepers are present when MODU is in operating condition.

**3.2.7** Sea water storage tanks shall comply with the requirements of 3.3.2.2, Part VIII "Systems and Piping".

The capacity of the tanks shall be such that minimum permissible amount of water therein permits the operation of two fire hose nozzles during 15 min, but in any case, the capacity shall be not less than 10 m<sup>3</sup>.

**3.2.8** The fire main shall, where practicable, be routed clear of hazardous areas and be arranged in such a manner as to make the maximum use of physical protection afforded by the MODU structure.

**3.2.9** The fire main shall be provided with isolating valves located so as to permit optimum utilization of the main in the event of physical damage to any part thereof.

**3.2.10** The fire main shall not have connections other than those necessary for fire-fighting purposes.

**3.2.11** Bilge, ballast, sanitary and other sea water pumps may be accepted as fire pumps, provided their capacity and head correspond to those required and they are not normally used for pumping oil.

**3.2.12** On MODU with attending personnel over 100 in number, the water fire main system shall be kept under pressure at all times, and the fire main shall be arranged in way of superstructures as a ring one with shut-off valves fitted to keep the system operable when certain sections of the ring main are disconnected.

**3.2.13** Every centrifugal pump, which is connected to the fire main, shall be provided with a non-return valve fitted on the delivery pipe.

**3.2.14** Pumps capable of developing in the fire main hydrants and hoses a pressure exceeding the permissible value shall be provided with relief valves set to operate at a pressure not more than 10 % in excess of the fire main working pressure, and having the pipes to discharge water into the suction main. Location and adjustment of these valves shall prevent excessive pressure in any part of the fire main.

**3.2.15** Additionally, a fire main shall meet the provisions of [3.2.15.1 — 3.2.15.7](#).

**3.2.15.1** The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from the required fire pumps operating simultaneously.

**3.2.15.2** With the required fire pumps operating simultaneously, the pressure maintained in the fire mains shall meet the requirements of this Part and be adequate for the efficient operation of all equipment supplied therefrom.

**3.2.15.3** All practical precautions consistent with having water readily available shall be taken to protect the fire main against freezing.

**3.2.15.4** In constructing of fire mains, the requirements of 3.1.4.2, Part VI "Fire Protection" of the RS Rules/C shall be met.

**3.2.15.5** Hydrants shall meet the requirements of 3.2.6.1 and 3.2.6.8, Part VI "Fire Protection" of the RS Rules/C.

**3.2.15.6** The number and position of the hydrants shall be such that at least two jets of water, not emanating from the same hydrant, one of which shall be from a single length of fire hose, may reach any part of the unit normally accessible to those on board while the unit is being navigated or engaged in drilling operations. A hose shall be provided for every hydrant.

**3.2.15.7** The MODU shall be provided with at least one international shore connection complying with the provisions of 5.1.8, Part VI "Fire Protection" of the RS Rules/C. Facilities shall be available on the main line enabling such a connection to be used on any side of the MODU.

**3.2.16** For the self-elevating MODU, the additional water supply measures shall be provided:

**.1** water shall be supplied from water main filled by at least two submersible pumping systems, and one pumping system failure will not put other system out of action;

**.2** water shall be supplied from drill water system while self-elevating unit lifting or lowering. Water is stored in the drill water tanks with capacity of not less than 40 m<sup>3</sup> plus engine cooling water consumptions before unit lifting or lowering. Alternatively, water may be supplied from buffer tank(s) in which sea water stored is not less the quantity as the above mentioned.

### 3.3 PRESSURE WATER-SPRAYING SYSTEM

**3.3.1** The pressure water-spraying system is provided to protect the areas and spaces as specified in [Table 3.1.2](#), including protection of areas with the pipelines and equipment directly related to production, critical equipment such as pressure vessels, well heads, specific structural members. The system shall provide cooling of the process equipment and reduce the fire spread probability.

**3.3.2** Each area shall be protected by a section (sections) forming part of the pressure water-spraying system. Between each section and distribution pipework the stop valve shall be installed that is clearly and permanently indicated and readily accessible in a location outside the areas and spaces to be protected.

**3.3.3** Distribution pipework shall have self-draining capability.

**3.3.4** Means for testing the operation of each system and section valves shall be provided by purging with compressed air (without water supply to the nozzles).

**3.3.5** Water pressure available at the inlet to an individual section shall be sufficient for the efficient operation of all nozzles in that section under design water rate (when designing the pressure water-spraying system, the approved technique for hydraulic calculation shall be used).

A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central control station.

**3.3.6** Selected nozzle type, location, position and orientation shall be so that to ensure the supply of the required quantity of water on the protected surfaces. Outlets of the nozzles and cross-section of the associated pipeline of the section shall be selected to prevent them from becoming clogged by corrosion products.

**3.3.7** The design capacity of the pumps supplying the pressure water-spraying system shall be sufficient to provide the rate of water discharge not less than 10 l/min per 1 m<sup>2</sup> of the deck of the protected area or space, unless otherwise specified below.

**3.3.8** The following areas and process equipment located on open deck shall be protected by the pressure water-spraying system with the water discharge rate not less than 20,4 l/min per 1 m<sup>2</sup>:

drilling area with the relevant equipment, including ESD equipment, critical structural components and enclosure fire barriers.;

oil and gas collectors;

pumps and compressors;

mud circulation and treatment equipment;

pipings containing oil and gases;

compressed gas cylinders (oxygen, acetylene, etc.).

**3.3.9** Instead of the pressure water-spraying system the multiple fixed monitors discharging at a minimum flow rate and pressure 1900 l/min at 1 MPa may be provided. They shall be arranged such that all areas and equipment can be reached by at least two monitors, which are widely separated.

Each monitor shall have sufficient movement horizontally and vertically in order to permit the monitor to cover the MODU complete area of protection.

When the oscillating monitors are used, they shall be provided with means of disconnecting the oscillating device for a quick transition to manual control. The monitors shall be also provided with fixing devices.

The monitors may be operated either remotely or locally.

Remotely operated monitors shall be arranged so that they cannot cause injury or block escape routes when operated.

Locally operated monitor shall be available in a readily accessible position and provided with an access far removed from the MODU protected area. The platform of the manually operated monitor shall be protected from the effects of heat radiated by the fire by the water-screen system (not required for remotely operated monitors).

**3.3.10** The main fire pumps may be used to supply the fixed pressure water-spraying system if they have sufficient capacity to simultaneously supply the water-spraying and fire main systems at the required flow and pressure.

**3.3.11** A lockable non-return shut-off valve shall be fitted at the connection pipeline.

**3.3.12** The pipelines shall be protected against mechanical damage as well as against fire and explosion.

**3.3.13** Fire hoses, piping, fittings and related components shall be designed to withstand exposure to temperatures up to 925 °C.

**3.3.14** Release of the pressure water-spraying system shall be provided automatically upon receiving the fire detection signal, shall be possible both manually at the fire risk area and remotely at the control station (fire station) outside the protected area where the operating status of the system (e.g. "valve is open/closed") is monitored.

**3.3.15** Automatic fire detection and fire alarm system shall be installed in the areas protected by the water-spraying system.

### **3.4 WATER-SCREEN SYSTEM**

**3.4.1** The water-screen system is provided to protect escape routes and survival craft embarkation stations against heat radiation from possible fires as specified in [Table 3.1.2](#), as well as to protect the areas where the critical equipment is installed against the areas where other process equipment, e.g. tanks with methanol, including the service pumps, is installed.

**3.4.2** The release of the water screen system shall be performed manually from the place of possible fire and remotely from positions outside the areas and spaces to be protected.

**3.4.3** The water-screen system shall be generally fed from the water fire main. The design capacity of the pumps supplying the system shall be sufficient to provide 70 l/min per linear metre of the screen length. Water discharge of the water-screen nozzles, internal diameters of supply and distribution pipelines, pipeline pressure at the nozzles shall be confirmed by the hydraulic calculation.

**3.4.4** Length of the screen protecting escape routes shall be not less than the length of the escape route. In areas where the escape routes are protected (screened) against heat radiation from possible fires in the process area by superstructures or deckhouses, the water screens shall be extended along their bulkheads for not less than 3 m.



### **3.5 FOAM FIRE EXTINGUISHING SYSTEM**

**3.5.1** The foam fire extinguishing system is provided to protect decks in way of the fuel oil tanks and the tanks themselves, as well as the spaces and areas specified in [Table 3.1.2](#).

**3.5.2** The foam fire extinguishing system shall meet the applicable requirements of 3.7, Part VI "Fire Protection" of the RS Rules/C.

**3.5.3** Sufficient foam concentrate shall be supplied to ensure 20 min of foam generation when the oil storage tanks are provided with an inert gas system and 30 min when the oil storage tanks are not provided with an inert gas system.

**3.5.4** Foam extinguishing system shall be provided for operation in drilling mud treatment area. The system shall be capable of delivering foam solution at a rate of not less than 6,5 l/min per 1 m<sup>2</sup> (4,1 l/min per 1 m<sup>2</sup> for aqueous film-forming foam concentrate (AFF) or film-forming fluoroprotein foam concentrate (FFFP)) for 15 min.

Alternatively, a fixed gas fire extinguishing system may be used for enclosed mud treatment spaces.

**3.5.5** The number of portable foam generators and foam applicators shall be determined by calculation in accordance with Tables 3.7.1.3 and 3.7.2.3, Part VI "Fire Protection" of the RS Rules/C.

**3.5.6** On MODU the piping of the foam fire extinguishing system shall be connected to the fire main.

**3.5.7** Helideck fixed foam fire extinguishing system on MODU shall meet the requirements of 6.4.1, Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" of the RS Rules/C.

### **3.6 SPRINKLER SYSTEM**

**3.6.1** Automatic sprinkler system is provided to protect the spaces indicated in [Table 3.1.2](#) where cellulosic fires are expected.

**3.6.2** The system shall meet the applicable requirements of 3.3, Part VI "Fire Protection" of the RS Rules/C.

### **3.7 DRY POWDER SYSTEM**

**3.7.1** The dry powder system is provided to protect the areas and spaces specified in [Table 3.1.2](#) (to protect the spaces with the equipment not containing liquid hydrocarbons, as well as the process equipment with a limited content of hydrocarbon liquids).

**3.7.2** The dry powder system shall meet the applicable requirements of 3.10, Part VI "Fire Protection" of the RS Rules/C. The nature of potential fires shall be considered in selecting the type of dry powder and equipment.

**3.7.3** Dry powder may be discharged through the hand hose lines or fixed monitors aimed at the fire point. Several powder fire extinction stations may be provided.

**3.7.4** When powder and foam concentrate are expected to be used at the same location, their compatibility shall be confirmed.

**3.7.5** Release of the dry powder system shall be provided automatically upon receiving the fire detection signal, shall be possible both manually at the fire risk area and remotely at the control station (fire station) outside the protected area.

## **4 FIRE DETECTION AND ALARM SYSTEMS**

### **4.1 FIRE DETECTION AND FIRE ALARM SYSTEM**

**4.1.1** MODU shall be provided with an automatic fire detection and fire alarm system.

**4.1.2** In addition to the spaces referred to in 4.2.1, Part VI "Fire Protection" of the RS Rules/C, automatic fire detectors shall be fitted in the spaces within hazardous zones and areas 1 and 2 specified in 2.9, Part X "Electrical Equipment" of the MODU Rules.

**4.1.2.1** An automatic fire detection and fire alarm system shall be provided and arranged in such a way as to ensure smoke detection in accommodation spaces.

**4.1.2.2** The fire detection main indicator board shall be placed at a permanently manned control station to indicate where fire has been detected:

**.1** fire detectors shall be fitted in normally unattended machinery spaces, in this case fire detection systems using only thermal detectors shall not be permitted;

**.2** automatic fire detection and alarm system shall be provided in accommodation and service spaces, and accommodation spaces shall be fitted with smoke detectors. Thermal detectors shall be fitted in galleys;

**.3** smoke detectors shall be provided at control stations and in electrical rooms;

**.4** thermal or flame detectors shall be installed in drilling and mud treatment areas. Smoke detectors may be used in enclosed mud treatment areas.

## **4.2 MANUAL FIRE ALARMS**

**4.2.1** MODU shall be provided with manual fire alarms.

**4.2.2** In addition to the spaces referred to in 4.2.1, Part VI "Fire Protection" of the RS Rules/C, manual fire alarms shall be fitted in the spaces within hazardous zones and areas 1 and 2 specified in 2.9, Part X "Electrical Equipment" of the MODU Rules.

### **4.3 GAS DETECTION AND ALARM SYSTEMS AND EQUIPMENT**

**4.3.1** Fixed combustible gas (oil gases and vapours) and hydrogen sulphide detection and alarm systems shall be provided.

**4.3.1.1** Fixed combustible gas detection and alarm systems shall be provided to protect the following areas:

- .1** cellar deck;
- .2** drill floor;
- .3** ventilation intake of positive pressure driller's cabin;
- .4** mud pit area;
- .5** shale shaker area;
- .6** enclosed spaces containing the open components of mud circulation system from the bell nipple to the mud pits;
- .7** ventilation intakes of accommodation spaces;
- .8** ventilation intakes of enclosed machinery spaces contiguous to hazardous areas and containing internal combustion engines, boilers, or non-explosion proof electrical equipment;
- .9** air intakes to all combustion engines or machinery, including internal combustion engines, boilers, compressors or turbines, located outside of an enclosed machinery space;
- .10** at each access (door) to accommodation spaces except for access doors forming part of an air-lock which is provided with a gas detection and alarm system;
- .11** near other openings, including emergency egress, of accommodation spaces, regardless if these openings are fitted with self-closing and gastight closing appliances except for emergency egress doors which are fitted with a mechanism to prevent use other than in an emergency (e.g. doors fitted with security seals acting as a deterrent but easily breakable in a real emergency) as well as except for openings which are designed for maintenance and provided with closing appliances of non-opening type, e.g. bolted closed maintenance ways, etc.

**4.3.1.2** Fixed hydrogen sulphide detection and alarm system shall be provided to protect the following areas:

- drilling floor;
- drilling mud treatment area;
- well area.

Hydrogen sulphide detectors shall be connected to an audible and visual alarm system with indicators at the central control station. The system shall indicate where gas has been detected. Low level alarm set at 3 mg/m<sup>3</sup> and high-level alarm set not higher than 10 mg/m<sup>3</sup> shall be designed. The high-level alarm shall activate an evacuation alarm. If the alarm at the central control station is unanswered within 2 min, hydrogen sulfide alarm and evacuation alarm shall be automatically activated.

**4.3.2** A gas detection and alarm system shall function continuously and shall ensure:

- .1** giving visual and audible signals at the appropriate local control station, drill master's cabin, industrial and at the central control station when the concentration of oil gases and vapours is not more than 25 % and 60 % of LEL;
- .2** starting the ventilation system for operation with maximum air changes per hour in the space;
- .3** cutting off the sampling devices or oil gas or vapour detectors operating on thermochemical principle when hydrogen sulphide concentration reaches 10 mg/m<sup>3</sup> with a signal being given to the central control station;
- .4** giving alarm signal at the central control station to indicate failure in the system itself.

**4.3.3** Visual signals to indicate oil gas and vapour concentration shall be distinct from the signals to indicate hydrogen sulphide concentration.

**4.3.4** The components of the system shall meet the requirements of Part XI "Electrical Equipment" of the RS Rules/C.

**4.3.5** The design of detectors and instruments fitted in hazardous zones and areas shall meet the requirements of 2.11, Part X "Electrical Equipment".

**4.3.6** Sampling devices shall be made of materials resistant to the attack of oil gases and hydrogen sulphide vapours. The diameter and length of the piping shall be based on the supply time of gas sample to the detector to be not in excess of 60 s.

**4.3.7** Use of change-over devices, which provide successive gas monitoring in several points, is permitted. The fixed position shall be maintained during the time period sufficient for a gas sample to pass to the detector.

**4.3.8** Positions of the oil gas or vapour concentration sampling devices or detectors (hydrogen sulphide concentration detectors) are dictated by the field facilities construction project with due regard for the density of gases, technical data and location of the equipment used.

**4.3.9** On MODU, gas sampling devices or detectors of the oil gas and vapour monitoring system shall be fitted:

**.1** in spaces:

in way of delivery side of each drilling mud and cement pump at a height of not more than 0,5 m above the deck or above the continuous plating;

above the drilling mud tanks at a height of 0,2 m above their upper edge and at a height of 0,5 m above the deck where they are fitted;

near the shale shaker at a distance of not more than 1 m, horizontally, at a height of not more than 0,5 m above it;

**.2** on open decks — near the drilling mud diverter, at least in four points at a distance of not more than 1 m therefrom. Where the diverter is located in semi-enclosed spaces, not less than in two points.

**4.3.10** On MODU, gas sampling devices or detectors of hydrogen sulphide monitoring system shall be fitted:

**.1** in spaces containing drilling mud tanks, drilling mud pumps and mud circulating system:

in the working area at a height of not more than 1 m above the deck or above the continuous plating;

near the shale shaker at a distance of not more than 1 m therefrom at a height of 1 m above the deck (floor);

**.2** in open and semi-enclosed areas — near the drilling mud diverter.

**4.3.11** MODU shall be provided with:

**.1** two portable gas monitoring devices capable of measuring a concentration of oil gases and vapours;

**.2** two portable gas monitoring devices capable of measuring a concentration of hydrogen sulphide.

## 5 FIRE-FIGHTING OUTFIT, SPARE PARTS AND TOOLS

### 5.1 GENERAL

**5.1.1** As a minimum, the fire-fighting outfit, spare parts and tools shall comply with Section 5, Part VI "Fire Protection" of the RS Rules/C as applied to oil tankers and as far as the helicopter facilities are concerned they shall comply with 6.4, Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" of the RS Rules/C.

**5.1.2** Fireman's outfit shall be supplied, as a minimum, in compliance with the requirements of Section 5, Part VI "Fire Protection" of the RS Rules/C as applied to oil tankers, with due account for the provisions of [5.1.2.1 — 5.1.2.2](#).

**5.1.2.1** Use of a smoke helmet or a smoke mask complete with an air hose and an air pump is not permitted in the fireman's outfit.

**5.1.2.2** Each fireman's outfit shall include a portable instrument for measuring oxygen and flammable vapour concentrations.

**5.1.3** The number and distribution of portable fire extinguishers in spaces of MODU, except for the helicopter facilities, shall be adopted in accordance with Section 5, Part VI "Fire Protection" of the RS Rules/C, as applied to oil tankers. Where the requirements of Section 5, Part VI "Fire Protection" of the RS Rules/C differ from the requirements of [Table 5.1.3](#), it will be necessary to be guided by the latter, considering the fire hazard characteristic of the space concerned.

**5.1.4** Recharging of air cylinders.

The apparatus for recharging air cylinders, if provided on MODU, shall have its power supplied from the emergency supply or be independently diesel-powered, or be so constructed or equipped that the air cylinders may be used immediately after recharging:

**.1** the apparatus shall be suitably located in a sheltered space above main deck level on MODU. Intakes for air compressors shall draw from a source of clean air. The air shall be filtered after compression to eliminate compressor oil contamination;

**.2** apparatus for recharging shall be: breathing air compressors with a minimum capacity of 60 l/min but not more than 420 l/min, or self-contained air storage systems of suitable pressure to recharge the breathing apparatus used on MODU, with a capacity of at least 1200 l per required breathing apparatus, but not to exceed 50000 l of free air.

**5.1.5** Breathing equipment to protect the personnel against hydrogen sulphide:

**.1** self-contained breathing apparatuses of PPR/PDR types with full-face piece rated for a minimum of 30 min, shall be provided for each person in working areas where hydrogen sulphide may be encountered. Each person in other areas shall be provided with self-contained breathing apparatus of PPR/PDR types rated for a minimum of 15 min; or

**.2** breathing air line coupled with a self-contained breathing apparatus of the PPR/PDR types equipped with low pressure warning alarm installed and rated for a minimum of 15 min, shall be provided for each person on board MODU.

Breathing air supply line shall be provided at least in the following areas:

- living quarters;
- muster/evacuation areas;
- drilling floor;
- mud treatment area;
- other working areas.



Table 5.1.3

| Nos. | Items of outfit  | Number of items of outfit to be available on MODU   |
|------|--|---|
| 1    | <p>Portable foam fire extinguishers, dry powder fire extinguishers and carbon dioxide fire extinguishers.</p> <p>The use of dry powder fire extinguishers is permitted in all spaces instead of foam and carbon dioxide fire extinguishers except for the spaces where the energized electrical or radio equipment is installed of over 1000 V</p> | <p><b>1. Machinery spaces:</b><br/>1 foam fire extinguisher and 1 carbon dioxide fire extinguisher to extinguish fire on electrical equipment of the main control panels when the main control panels are installed in space containing the main power sources;<br/>2 carbon dioxide fire extinguishers in the immediate vicinity of the main control panel.</p> <p><b>2. Machinery spaces of category A:</b><br/>1 foam fire extinguisher nearby each furnace front in spaces containing oil-fired boilers, provided that the total capacity of additional fire extinguishers for any one space does not exceed 45 l;<br/>2 foam fire extinguishers or equivalent thereto in each space containing fuel-oil units;<br/>1 foam fire extinguisher for each 750 kW, or part thereof, of the machinery power. The total number of portable fire extinguishers so provided shall be not less than two, however, there is no need for more than six portable fire extinguishers.</p> <p><b>3. Machinery spaces of category A which are periodically unattended:</b><br/>1 foam fire extinguisher at each entrance to the space.</p> <p><b>4. Cranes driven by internal combustion engines:</b><br/>1 dry powder fire extinguisher at the crane control location (in cabin) and 1 foam fire extinguisher at exterior to the crane machinery compartment</p> <p><b>5. Drill floor:</b><br/>1 dry powder fire extinguisher at each exit to drill floor but not less than 2.</p> <p><b>6. Mud pits and mud processing area:</b><br/>1 foam fire extinguisher for each enclosed space.<br/>Travel distance to the fire extinguisher shall not exceed 10 m for open space.</p> <p><b>7. Spaces wherein fired work is performed:</b><br/>2 foam fire extinguishers or equivalent thereto in each such space</p> |
| 2    | Foam fire extinguishers of at least 45 l capacity  | 1 fire extinguisher or equivalent thereto in each machinery space of category A   |

## **6 DANGEROUS GOODS**

**6.1** Dangerous goods carried on MODU shall be stored and secured safely according to class/subclass of the goods with due account for the requirements of [6.1 — 6.6](#), as well as all applicable requirements of the IMDG Code.

**6.2** Incompatible goods shall be segregated from one another.

**6.3** Explosives shall be stored in the suitable magazines, which shall be kept securely closed to prevent unauthorized access. Such explosives shall be segregated from detonators.

**6.4** Flammable liquids which give off dangerous vapours and flammable gases shall be stored in well-ventilated spaces (requirements of 2.1.5.3, Part VI "Fire Protection" of the RS Rules/C shall be fulfilled as well) or on open deck.

**6.5** Substances, which are liable to spontaneous heating or combustion, shall not be carried on board MODU, unless adequate precautions have been taken to prevent the outbreak of fire.

**6.6** Radioactive substances shall be stored and handled in a safe manner.

Russian Maritime Register of Shipping

**Rules for the Classification and Construction of Mobile Offshore Drilling Units  
Part VI  
Fire Protection**

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