

D11 Safety features

(1979)
(Rev.1
1990)
(Rev.2
1996)
(Rev.3
Jan
2012)

D11.1 Fire protection and extinction

D11.1.1 General

Fire protection arrangements and fire extinguishing systems are to be in accordance with the Rules as specified herein. Fire control plans are to be submitted for review- on which the following, as a minimum, should be clearly shown:

- (1) Locations of fire control stations;
- (2) Various fire sections enclosed by various classes of fire divisions;
- (3) Arrangement of fire detectors and manual fire alarm stations;
- (4) Arrangement of combustible gas detectors;
- (5) Arrangement of hydrogen sulphide gas detectors;
- (6) Locations of respiratory protection equipment for hydrogen sulphide;
- (7) General alarm actuating positions;
- (8) Arrangement of various fire-extinguishing appliances;
- (9) Locations of Fighter's Outfits;
- (10) Location of Helicopter Crash Kit;
- (11) Arrangement of water spray nozzles and sprinklers (if fitted);
- (12) Locations of emergency shutdown (such as oil fuel source shutdown, engine shutdown, etc.) stations;
- (13) The Ventilating system including Fire dampers positions, Ventilating Fans control positions with indication of identification numbers of Ventilating Fans serving each section;
- (14) Arrangement of fire/watertight doors and their remote control positions;
- (15) Blowout preventer control positions;
- (16) Escape route and means of access to different compartments, decks, etc.;

Notes:

1. This UR apply to mobile offshore drilling units contracted for construction on and after 1 January 2013.
2. The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR) No. 29.

D11

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(17) Locations of Emergency Escape Breathing Devices (EEBD); and

(18) Arrangement of emergency muster stations and life-saving appliances.

D11.1.2 Governmental authority

Attention is directed to the appropriate governmental authority in each case, as there may be additional requirements, depending on the size, type and intended service of the units as well as other particulars and details. Consideration will be given to fire protection arrangements and fire extinguishing systems which comply with the published requirements of the governmental authority of the country in which the unit is to be registered.

Also, attention is directed to Chapter ~~VII~~ 9 of the ~~IMO~~ IMO Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009, which contains minimum requirements for structural fire protection.

D11.2 Fire fighting water supply

D11.2.1 Fire 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 so arranged that a fire in any one compartment will not put all fire pumps out of action.

D11.2.2 Pressure

Each fire pump is to be able to maintain a pressure of at least 350 ~~Kpa~~ kPa (50 lb/in²) at any hydrants through the fire main with two 19 mm (3/4 in.) nozzles in action. In addition where a foam system is provided for protection of the helicopter deck, the pump should be capable of maintaining a pressure of 700 ~~Kpa~~ kPa (100 lb/in²) at the foam installation and the water consumption used for foam system is to be added to the pump capacity. If the water consumption for any other fire protection or fire-fighting purpose should exceed the rate of the helicopter deck foam installation, this consumption should be the determining factor in calculating the required capacity of the fire pumps.

D11.2.3 Nozzles

Dual purpose jet spray nozzles are to be fitted throughout the unit with a minimum nozzle diameter of 12 mm (1/2 in.) for accommodation and service spaces and with a maximum diameter of 19 mm (3/4 in.) for machinery spaces and exterior locations.

D11.2.4 Supply

~~Due to the height of some units, it may be necessary to incorporate special provisions for an adequate and readily available water supply for fire fighting purposes. For intermediate tanks in which water is kept at a prescribed level for the above purposes, the requirements of D11.2.5 and D11.2.6 are to apply.~~

D11.2.5 Tank capacity

~~The intermediate tanks are to be of such size and so operated that the lowest water level permitted will ensure that the supply of water is adequate for two hoses at a minimum of 350 Kpa (50 lb/in²) nozzle pressure at the uppermost hydrant for at least 15 minutes (minimum tank capacity of 10 m³ or 2640 gallons). The intent is to allow for sufficient time for bringing a~~

D11

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replenishment pump into service. Valves and pumps serving the intermediate tank which are not readily accessible are to be provided with means for remote operation.

D11.2.6 Features

The following features are to be incorporated in a system using an intermediate tank:

- (i) — A low water level alarm.
 - (ii) — Two reliable and adequate means to replenish water in the intermediate tank are to be provided. These pumps are to be arranged in accordance with D11.2.1 and D11.2.2. At least one of the replenishment pumps is to be arranged for automatic operation.
 - (iii) — If the unit is intended to operate in cold weather, the entire fire fighting system is to be protected from freezing. This would include tanks used as water reservoirs.
- (1) At least two water supply sources (sea chests, valves, strainers and pipes) are to be provided and so arranged that one supply source failure will not put all supply sources out of action.
 - (2) For the self-elevating units, the following additional fire water supply measures are to be provided:
 - (a) Water is to be supplied from sea water main filled by at least two submersible pumping systems. One system failure will not put the other system(s) out of function, and
 - (b) Water is to be supplied from drill water system while unit lifting or lowering. Water stored in the drill water tank(s) is not less than 40 m³ 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.

D11.3 Fire extinguishing systems

D11.3.1 Fixed and portable fire extinguishing systems are to be provided in accordance with the Rules except the requirements of D11.3.2 and D11.3.3.

D11.3.2 Fixed fire extinguishing systems on drilling and areas

- (a) A fixed water spray system is to be provided to protect drilling area. The minimum water application rate is not less than 20.4 l/min·m², or
- (b) At least two dual-purpose (jet/spray) fire monitors are to be installed to cover drilling and well test areas. The minimum capacity of each monitor is not less than 100m³/h. The monitors may be operated either remotely or locally. Monitor arranged for local operation should be sited on an accessible protected position.

D11.3.3 Fixed fire extinguishing systems on mud processing area

A suitable fixed foam system is to be provided. The system is to be capable of delivering foam solution at a rate of not less than 6.5 l/min·m² (4.1 l/min·m² for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) for 15 minutes. Alternatively, a gas fixed fire extinguishing system may be used for enclosed mud processing spaces.

D11
(cont)**D11.4 Fire fighting equipment for helicopter facilities**

D11.4.1 General

Where areas of a unit are designated for helicopter facilities, the fire fighting systems equipment as given in D11.4.2 and D11.4.3 are to be provided and stored near the access to these areas and so arranged as to adequately protect both the helicopter deck and fuel storage areas.

~~D11.4.2 Helicopter facilities with no refuelling capabilities~~

- ~~(a) Hoses and nozzles: at least two approved combination nozzle and applicators and hoses sufficient in length to reach any part of the helicopter deck.~~
- ~~(b) Portable extinguishers: dry powder extinguishers of a total capacity of not less than 45kg (100 lb).~~
- ~~(c) Back-up system: CO₂ extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped 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 primary extinguishing system.~~

~~D11.4.3 Helicopter facilities with refuelling capabilities~~

- ~~(a) Fire fighting systems as in D11.4.2 and so arranged as to adequately protect both the helicopter deck and fuel storage areas.~~
- ~~(b) Fixed foam system: A suitable foam application system consisting of monitors or foam making branch pipes capable of delivering foam solution at a rate of not less than 6,0 litres per minute per square metre (0.15 gallons per minute per square foot) of the areas protected for at least 5 minutes. Other types of foam systems will be given consideration.~~

D11.4.2 Portable fire extinguishers

- (a) Primary extinguishers: dry powder extinguishers of a total capacity of not less than 45 kg (100 lb).
- (b) Back-up extinguishers: CO₂ extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck. The back-up extinguishers are to be located so that they would not be vulnerable to the same damage as the primary extinguishers.

D11.4.3 Fixed fire fighting systems

- (a) Fire water system: at least two approved nozzles of jet/spray type and hoses sufficient in length to reach any part of the helicopter deck.
- (b) Fixed foam system: A suitable foam application system consisting of monitors or hose streams or both is to be installed. The system is to be capable of delivering foam solution at a rate of not less than 6 l/min·m² (4.1 l/min·m² for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) for at least 5 minutes.

D11

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D11.5 Alarms and public address

D11.5.1 General alarms

~~Attention is directed to the proper governmental authority concerning requirements for general alarm systems on units. Alarm signal devices are to be provided which will produce a distinctive and strong note. (See D11.6.1).~~

- (1) A general alarm system is to be provided and so installed as to be clearly perceptible in all parts of the unit. Alarm signal devices are to be provided which will produce a distinctive and strong note.

The signals used should be limited to: general emergency, toxic gas (hydrogen sulphide), combustible gas, fire alarm and abandon unit signals.

The signals given over the general alarm system should be supplemented by instructions over the public address system.

- (2) At least in the following spaces general alarm is to be capable of being operated:

- (a) Main control station;
- (b) Drilling console;
- (c) Navigating bridge (if any); and
- (d) Fire control station (if any).

D11.5.2 Mud system level alarms

A suitable audible and visual alarm to indicate significant increase or decrease in the level of the contents of the mud pit is to be provided at the control station for drilling operations and at the mud pit. Equivalent means to indicate possible abnormal conditions in the drilling system may be considered by the Society.

D11.5.3 Ventilation system alarm

See D8.2.4.

D11.5.4 Public address

D11.5.4.1 The public address system is to be a loudspeaker installation enabling the broadcast of messages into all spaces where personnel are normally present and muster stations. It is to allow for the broadcast of messages from navigation bridge, central control room, emergency response centre, engine control room, ballast control station, jacking control station and drilling console. It is to be installed with regard to acoustically marginal conditions and not require any action from the addressee. It is to be protected against unauthorized use.

D11.5.4.2 The minimum sound pressure levels for broadcasting emergency announcements are to be:

- (1) In interior spaces 75dB(A) and at least 20dB(A) above the speech interference level; and
- (2) In exterior spaces 80dB(A) and at least 15dB(A) above the speech interference level.

D11

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D11.6—Emergency control stations

D11.6.1 General

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

The control stations are to be provided with:

- (i) Manually operated contact makers for actuating the general alarm system.
- (ii) An efficient means of communication between these stations and all locations vital to the safety of the unit.
- (iii) Emergency shut-down facilities (see D10.5.1).

D11.67 Fire detection and alarm systems

D11.7.1 Machinery spaces

Fire detectors are to be fitted in normally unattended machinery spaces containing propulsion equipment, fired boilers, internal combustion engines, oil purifiers and similar equipment and so located that all potential fire outbreak points are effectively guarded. The fire detection system is subject to approval in each case. The fire detection main indicator board is to be at a manned control station.

D11.7.2 Manually operated alarm system

In spaces normally occupied by personnel, which are not covered by automatic fire detection and alarm systems, a manually operated fire alarm system with signal bells or other adequate audible warning is to be installed.

D11.7.3 Smoke Detection

In addition to the requirements of D11.7.2, areas containing sleeping quarters are to be fitted with smoke detectors.

D11.6.1 General

D11.6.1.1 Spaces having a fire risk, in principle, should be provided with an automatic fire detection and alarm system.

D11.6.1.2 In selecting the type of detectors, their following features should be taken into account:

- (a) Capability to detect fire at the incipient stage;
- (b) Ability to avoid spurious alarm and trips; and
- (c) Suitability to the located environment.

D11.6.1.3 The fire detection main indicator board is to be at a manned control station and is to be clearly to indicate where fire has been detected.

D11.6.2 Machinery spaces

Fire detectors are to be fitted in normally unattended machinery spaces.
Detection systems using only thermal detectors, in general, are not to be permitted.

D11

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D11.6.3 Accommodation and service spaces

An automatic fire detection and alarm system is to be provided in all accommodation and service spaces.

Accommodation space is to be fitted with smoke detectors.

Thermal detectors are to be fitted in galleys.

D11.6.4 Electrical rooms and control stations

Smoke detectors are to be provided in all electrical rooms and control stations.

D11.6.5 Drilling and mud processing areas

Flame or thermal detectors are to be installed in open drilling and/or mud processing areas.

Smoke detectors may be used in enclosed mud processing areas.

D11.6.6 Manually operated alarm system

Sufficient manual fire alarm stations are to be installed throughout the accommodation spaces, service spaces and control stations. One manually operated call point is to be located at each exit. Manually operated call points are to be readily accessible in the corridors of each deck such that no part of the corridor is more than 20 m from a manually operated call point.

Measures are to be taken to prevent inadvertent operation of the manual call alarm system.

D11.78 Gas detection Combustible gas detection and alarm systems

D11.78.1 ~~Combustible Gas Detection and Alarm Systems~~ Areas for protection

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

- a) Cellar deck
- b) Drill floor
- c) Mud pit area
- d) Shale shaker area
- e) Enclosed spaces containing the open components of mud circulation system from the bell nipple to the mud pits.
- f) Ventilation intakes of enclosed machinery spaces contiguous to hazardous areas and containing internal combustion engines and boilers; and
- g) Ventilation intakes and near other openings of accommodation spaces.

D11.78.2 Alarms

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 in the main control station.~~

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).

D11.78.3 Portable combustible gas detectors

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

D11
(cont)**D11.8 Hydrogen sulphide detection and alarm system****D11.8.1 Areas for protection**

A fixed automatic hydrogen sulphide gas detection and alarm system are to be provided for the following areas:

- (a) Drill area;
- (b) Mud processing area; and
- (c) Well test area.

D11.8.2 Alarms

The detectors are to be connected to an audible and visual alarm system with indicators in main control room. The system is clearly to indicate where gas has been detected. Low level alarm set at 10 ppm and high level alarm set not higher than 300 ppm are to be designed. The high level alarm is to activate an evacuation alarm. If the alarm at the main control point is unanswered within 2 min, the toxic gas (hydrogen sulphide) alarm and the helideck status light is to be automatically activated.

D11.8.3 Portable hydrogen sulphide gas detectors

At least two portable hydrogen sulphide gas monitoring devices should be provided on the unit.

D11.9 Respiratory protection equipment for hydrogen sulphide

D11.9.1 A self-contained breathing apparatus (SCBA) positive-pressure/pressure-demand breathing equipment with full-face piece and rated for a minimum of 30 minutes is to be provided for each person in working areas where hydrogen sulphide may be encountered, and each person in other areas is to be provided with a SCBA rated for a minimum of 15 minutes, or

D11.9.2 A positive-pressure/pressure-demand air line breathing equipment coupled with a SCBA equipped low pressure warning alarm and rated for a minimum of 15 minutes is to be provided for each person on board the unit.

Breathing air supply line stations are to be provided at least in the following areas:

- (a) Living quarter;
- (b) Muster/evacuation area;
- (c) Drilling areas;
- (d) Mud processing areas; and
- (e) Other working areas.

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