Requirements concerning FIRE PROTECTION

CONTENTS

F1 Cathodic protection on oil tankers

(1971) (Rev.1, June 2002)

F1.1 Impressed current systems are not permitted in oil cargo tanks.

F1.2 Magnesium or magnesium alloy anodes are not permitted in oil cargo tanks and tanks adjacent to cargo tanks.

F1.3 Aluminium anodes are only permitted in cargo tanks and tanks adjacent to cargo tanks in locations where the potential energy does not exceed 28 kg m (200 ft lb). The height of the anode is to be measured from the bottom of the tank to the centre of the anode, and its weight is to be taken as the weight of the anode as fitted, including the fitting devices and inserts. However, where aluminium anodes are located on horizontal surfaces such as bulkhead girders and stringers not less than 1 m wide and fitted with an upstanding flange or face flat projecting not less than 75 mm above the horizontal surface, the height of the anode may be measured from this surface. Aluminium anodes are not to be located under tank hatches or Butterworth openings (in order to avoid any metal parts falling on the fitted anodes), unless protected by adjacent structure.

F1.4 There is no restriction on the positioning of zinc anodes.

F1.5 The anodes should have steel cores and these should be sufficiently rigid to avoid resonance in the anode support and be designed so that they retain the anode even when it is wasted.

F1.6 The steel inserts are to be attached to the structure by means of a continuous weld of adequate section. Alternatively they may be attached to separate supports by bolting, provided a minimum of two bolts with locknuts are used. However, approved mechanical means of clamping will be accepted.

F1.7 The supports at each end of an anode should not be attached to separate items which are likely to move independently.

F1.8 When anode inserts or supports are welded to the structure, they should be arranged so that the welds are clear of stress raisers.

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F2 Aluminium Coatings on Board Oil Tankers and Chemical Tankers

(1971) (Rev. 1 May 1998)/ Corr.1, March 1999

The use of aluminium coatings is prohibited in cargo tanks, cargo tank deck area, pump rooms, cofferdams or any other area where cargo vapour may accumulate.

Aluminised pipes may be permitted in ballast tanks, in inerted cargo tanks and, provided the pipes are protected from accidental impact, in hazardous areas on open deck.

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F3 Tank cleaning openings

(1971)

Ullage plugs, sighting ports and tank cleaning openings are not to be arranged in enclosed spaces.

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F4 Deleted

◄◄

F5 Pump room alarms

(1971)
(Rev. 1
1973)

Where audible alarms are fitted to warn of the release of fire extinguishing medium into pump rooms, they may be of the pneumatic type or electric type.

(a) *Pneumatically operated alarms*

In cases where the periodic testing of such alarms is required,CO_2 operated alarms should not be used owing to the possibility of the generation of static electricity in the CO_2 cloud. Air operated alarms may be used provided the air supply is clean and dry.

(b) *Electrically operated alarms*

When electrically operated alarms are used, the arrangements are to be such that the electric actuating mechanism is located outside the pump room except where the alarms are certified intrinsically safe.

It was further agreed that the use of CO_2 operated alarms should be discouraged.

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F6 Standardization of flash points

(1971)
(Rev 1 1996)

In context of these Unified Requirements, oil tankers shall be considered as vessels capable of carrying oil having a flash point not exceeding 60°C (closed cup test).

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F7 Portable instruments for measuring oxygen and flammable vapour concentrations

(1971)
(Rev. 1 1989)
(Rev.2 May 1999)

Every oil tanker is to be provided with at least two portable gas detectors capable of measuring flammable vapour concentrations in air and at least two portable O_2 analysers.

In addition, for tankers fitted with inert gas systems, at least two portable gas detectors are to be capable of measuring concentrations of flammable vapours in inerted atomosphere.

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F8 Pressurisation of cargo tanks

(1971)
(Rev. 1
1989)

PV valves to oil tanks should not be set at pressures in excess of 0,21 bar unless the tank scantlings have been specially considered.

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F9 Lighting and sighting ports in pump room/engine room bulkheads

(1971)

F9.1 Where the pump room is illuminated through glazed ports, these are to be effectively protected from mechanical damage and are to have strong covers secured from the side of the sage space.

F9.2 Glazed ports are to be so constructed that glass and sealing will not be impaired by the working of the ship.

F9.3 The glass and the protection of the light fitting are not to impair the integrity of the bulkhead and are to be of equivalent strength.

F9.4 The fitting is to have the same resistance to fire and smoke as the unpierced bulkhead.

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F10 Deleted

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F11 Deleted

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F12 Deleted

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F13 Gland seals in pump room bulkheads

(1972)
(Rev. 1
1977)

Where drive shafts pass through pump room bulkhead or deck plating, gastight glands are to be fitted. The glands are to be efficiently lubricated from outside the pumproom. The seal parts of the glands are to be of material that will not initiate sparks. The glands are to be constructed and fitted in accordance with the relative rules for fittings attached to watertight bulkheads, and if a bellows piece is incorporated in the design, it should be pressure tested before fitting.

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F14 Deleted

- the requirements are now addressed by IMO Res. A.446 (XI)

F15 Piping passing through dangerous zones

(1982) (Rev. 4 1989) (Rev 5. 1996)

F15.1 Ballast piping passing through cargo tanks and cargo oil pipes passing through segregated ballast tanks, as permitted by MARPOL Annex 1 Reg. 13F, are to comply with the following requirements.

F15.1.1 The pipes are to be of heavy gauge steel of minimum wall thickness according to the table hereunder with welded or heavy flanged joints the number of which is to be kept to a minimum.

Expansion bends only ~~(~~not glands~~)~~ are permitted in these lines within cargo tanks for serving the ballast tanks and within the ballast tanks for serving the cargo tanks.

Nominal diameter (mm)	Minimum wall thickness (mm)
50	6,3
100	8,6
125	9,5
150	11,0
200 and above	12,5

F15.2 The thicknesses shown in the above table refer to carbon steel.

F15.3 Connection between cargo piping and ballast piping referred to above is not permitted except for emergency discharge as specified in the Unified Interpretation to Reg. 1 (17) of MARPOL 73/78, Annex 1.

Nevertheless, provision may be made for emergency discharge of the segregated ballast by means of a connection to a cargo pump through a portable spool piece. In this case non-return valves should be fitted on the segregated ballast connections to prevent the passage of oil to the ballast tanks. The portable spool piece should be mounted in a conspicuous position in the pump room and a permanent notice restricting its use should be prominently displayed adjacent to it.

Shut-off valves shall be provided to shut off the cargo and ballast lines before the spool piece is removed.

F15.4 The ballast pump is to be located in the cargo pump room, or a similar space within the cargo area not containing any source of ignition.

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F16 Bow and stern loading and unloading arrangements on oil tankers

(1972) (Rev.1 June 2000)

Where a cargo hose connection is arranged outside the cargo tank area, the pipe leading to such connections is to be provided with means of segregation such as a spectacle flange, removable spool piece or equivalent* located within the cargo area. The space within 3 m of the manifold is to be considered as a dangerous area with regard to electrical or incendive equipment.

* See MSC/Circ. 474.

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F17 Deleted

- this is of a general nature concerning operational matters and should not be categorosed as UR.

F18 Deleted (1997)

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F19 Deleted

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F20 Inert Gas Systems

(1984) (Rev.1 1983 (Rev. 2 1987) (Rev. 3 May,1998) (Corr. Sept.2001) (Rev.4 May 2004) (Rev.5 Nov. 2005)

F20.1 General Requirements

F20.1.1 All types of inert gas systems are to comply with the following:

.1 Plans in diagrammatic form are to be submitted for appraisal and should include the following:

- details and arrangement of the inert gas generating plant including all control and monitoring devices;
- arrangement of the piping system for distribution of the inert gas.

.2 An automatic control capable of producing suitable inert gas under all service conditions is to be fitted.

.3 Materials used in inert gas systems are to be suitable for their intended purpose in accordance with the Rules of the Classification Society.

.4 All the equipment is to be installed on board and tested under working conditions to the satisfaction of the Surveyor.

.5 Subsequent surveys are to be carried out at the intervals required by the Classification Society Rules.

F20.2 Inert Gas Systems on Tankers Carrying Crude Oil and Petroleum Products

F20.2.1 The following requirements apply where an inert gas system based on boiler flue gas and oil fired inert gas generators is fitted on board tankers intended for the carriage of crude oil and petroleum products in bulk having a flashpoint not exceeding 60°C (closed cup test) as determined by an approved flashpoint apparatus, and a Reid vapour pressure which is below atmospheric pressure, and other liquid products having a similar fire hazard.

F20.2.2 The inert gas system is to comply with the requirements of Ch. 15 of the FSS Code, insofar as they are applicable to new ships only.

Any use of the word "Administration" in the Regulation is to be considered as meaning the relevant Classification Society.

F20.2.3 In addition to the requirements detailed in Ch. 15 of the FSS Code, the following is to be complied with:

.1 When two blowers are provided, the total required capacity of the inert gas system is preferably to be divided equally between the two blowers, and in no case is one blower to have a capacity less than 1/3 of the total capacity required.

.2 In particular those parts of scrubbers, blowers, non-return devices, scrubber effluent and other drain pipes which may be subjected to corrosive action of the gases and/or liquids are to be either constructed of corrosion resistant material or lined with rubber, glass fibre epoxy resin or other equivalent coating material.

.3 The compartment in which any oil fired inert gas generator is situated is to be treated as machinery space of Category A with respect to fire protection.

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F20 cont'd

.4 Arrangements are to be made to vent the inert gas from oil fired inert gas generators to the atmosphere when the inert gas produced is off specification, e.g., during start-up or in the event of equipment failure.

.5 Automatic shut-down of the oil fuel supply to inert gas generators is to be arranged on predetermined limits being reached with respect to low water pressure or low water flow rate to the cooling and scrubbing arrangement and with respect to high gas temperature.

.6 Automatic shut-down of the gas regulating valve is to be arranged with respect to failure of the power supply to the oil fired inert gas generators.

F20.3 Inert Gas Systems on Chemical Tankers

F20.3.1 The following requirements apply where an inert gas system based on oil fired inert gas generators is fitted on board chemical tankers.

F20.3.2 The inert gas system is to comply with the requirements of Resolution A.567(14).

Any use of the word "Administration" in the Resolution is to be considered as meaning the relevant Classification Society.

F20.3.3 As an alternative to the water seal in the inert gas line on deck, an arrangement consisting of two shut-off valves in series with a venting valve in between may be accepted (double block and bleed) . The following conditions apply:

- The operation of the valve is to be automatically executed. Signal(s) for opening/closing is (are) to be taken from the process directly, e.g. inert gas flow or differential pressure.

- Alarm for faulty operation of the valves is to be provided, e.g. the operation status of "Blower stop" and "supply valve(s) open" is an alarm condition.

F20.3.4 In addition to the requirements detailed in Resolution A.567(14), the requirements for inert gas systems, contained in paragraphs F20.2.3.1 to F20.2.3.3, are to be complied with.

F20.4 Nitrogen Generator Systems

F20.4.1 The following requirements are specific only to the gas generator system and apply where inert gas is produced by separating air into its component gases by passing compressed air through a bundle of hollow fibres, semi-permeable membranes or adsorber materials.

F20.4.2 Where such systems are provided in place of the boiler flue gas or oil fired inert gas generators referred to in sections F20.2 and F20.3, the following requirements of the FSS Code, Ch. 15 or equivalent requirements of Resolution A.567(14) remain applicable for the piping arrangements, alarms and instrumentation downstream of the gas generator: 2.3.1.3.1, 2.3.1.3.2, 2.3.1.5, 2.3.2, 2.4.2, 2.4.3.1.6, 2.4.3.1.8, 2.4.3.1.9, 2.4.3.3, 2.4.3.4, 2.4.4, as well as SOLAS Reg.II-2/4.5.3.4.2, 4.5.6.3, 11.6.3.4

F20.4.3 A nitrogen generator consists of a feed air treatment system and any number of membrane or adsorber modules in parallel necessary to meet the required capacity which is to be at least 125% of the maximum discharge capacity of the ship expressed as a volume.

F20.4.4 The air compressor and the nitrogen generator may be installed in the engine room or in a separate compartment. A separate compartment is to be treated as one of "Other machinery spaces" with respect to fire protection.

F20.4.5 Where a separate compartment is provided, it is to be positioned outside the cargo area and is to be fitted with an independent mechanical extraction ventilation system providing 6 air changes per hour. A low oxygen alarm is to be fitted as well.

The compartment is to have no direct access to accommodation spaces, service spaces and control stations.

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F20.4.6 The nitrogen generator is to be capable of delivering high purity nitrogen with O_2 content not exceeding 5% by volume. The system is to be fitted with automatic means to discharge "off-spec" gas to the atmosphere during start-up and abnormal operation.

F20.4.7 The system is to be provided with two air compressors. The total required capacity of the system is preferably to be divided equally between the two compressors, and in no case is one compressor to have a capacity less than 1/3 of the total capacity required.

Only one air compressor may be accepted provided that sufficient spares for the air compressor and its prime mover are carried on board to enable their failure to be rectified by the ship's crew.

F20.4.8 A feed air treatment system is to be fitted to remove free water, particles and traces of oil from the compressed air, and to preserve the specification temperature.

F20.4.9 Where fitted, a nitrogen receiver/buffer tank may be installed in a dedicated compartment or in the separate compartment containing the air compressor and the generator or may be located in the cargo area. Where the nitrogen receiver/buffer tank is installed in an enclosed space, the access is to be arranged only from the open deck and the access door is to open outwards. Permanent ventilation and alarm are to be fitted as required by paragraph F20.4.5.

F20.4.10 The oxygen-enriched air from the nitrogen generator and the nitrogen-product enriched gas from the protective devices of the nitrogen receiver are to be discharged to a safe location on the open deck.

F20.4.11 In order to permit maintenance, means of isolation are to be fitted between the generator and the receiver.

F20.4.12 At least two non-return devices are to be fitted in the inert gas supply main, one of which is to be of the double block and bleed arrangement (refer to paragraph F20.3.3). The second non-return device is to be equipped with positive means of closure.

F20.4.13 Instrumentation is to be provided for continuously indicating the temperature and pressure of air:

.1 at the discharge side of the compressor,
.2 at the entrance side of the nitrogen generator.

F20.4.14 Instrumentation is to be fitted for continuously indicating and permanently recording the oxygen content of the inert gas downstream of the nitrogen generator when inert gas is being supplied.

F20.4.15 The instrumentation referred to in paragraph F20.4.14 is to be placed in the cargo control room where provided. But where no cargo control room is provided, they shall be placed in a position easily accessible to the officer in charge of cargo operations.

F20.4.16 Audible and visual alarms are to be provided to indicate :

.1 low feed-air pressure from compressor as referred to in paragraph F20.4.13.1,
.2 high air temperature as referred to in paragraph F20.4.13.1,
.3 high condensate level at automatic drain of water separator as referred to in paragraph F20.4.8,
.4 failure of electrical heater, if fitted,
.5 oxygen content in excess of that required in paragraph F20.4.6,
.6 failure of power supply to the instrumentation as referred to in paragraph F20.4.14.

F20.4.17 Automatic shut-down of the system is to be arranged upon alarm conditions as required by paragraphs F20.4.16.1 to .5.

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F20.4.18 The alarms required by paragraphs F20.4.16.1 to .6 are to be fitted in the machinery space and cargo control room, where provided, but in each case in such a position that they are immediately received by responsible members of the crew.

F20.5 Nitrogen /inert gas systems fitted for purposes other than inerting required by SOLAS Reg II-2/4.5.5.1.1

F20.5.1 This section applies to systems fitted on oil tankers of less than 20.000 DWT, gas tankers or chemical tankers.

F20.5.2 The requirements of section F20.4 apply except paragraphs F20.4.1, F20.4.2, F20.4.3 and F20.4.7.

F20.5.3 Where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by paragraph F20.4.12 may be substituted by two non-return valves.

F21 Pump room ventilation
(1974)

With the following arrangement of exhaust trunking there should be 20 air changes per hour on the total volume of the pump room:

(i) In the pump room bilges just above the transverse floor plates on bottom longitudinals, so that air can flow over the top from adjacent spaces.
(ii) An emergency intake located about 2 m above the pump room lower grating. This emergency intake would be used when the lower intakes are sealed off due to flooding in the bilges. The emergency intake should have a damper fitted which is capable of being opened or closed from the exposed main deck and lower grating level.
(iii) The foregoing exhaust system is in association with open grating floor plates to allow the free flow of air.
(iv) Arrangements involving a specific ratio of areas of upper emergency and lower main ventilator openings, which can be shown to result in at least the required 20 air changes per hour through the lower inlets, can be adopted without the use of dampers. When the lower access inlets are closed then at least 15 air changes per hour should be obtained through the upper inlets.

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F22 Direct loading pipes to oil tanker cargo tanks
(1974)

In order to avoid the generation of static electricity when cargo is loaded direct into tanks, the loading pipes are to be led as low as practicable in the tank.

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F23 Deleted

- the requirements are overtaken by the development of MARPOL Convention.

F24 Temperature of Steam and Heating Media within the Cargo Area

(1971)
(Rev. 1 1975
(Rev. 2 May 1998)

On oil tankers, the steam and heating media temperature within the cargo area is not to exceed 220°C.

On gas carriers and chemical tankers, the maximum temperature is to be adjusted to take into account the temperature class of the cargoes.

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F25 Deleted

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F26 Safety aspects of double bottoms and duct keels under cargo oil tanks

(1977) (Rev 1 1996) (Rev.2 June 2000) (Rev.3 May 2004)

Pipe ducts in the double bottom shall comply with the following requirements:

(i) They should not communicate with the engine room.
(ii) Provision shall be made for at least two exits to the open deck arranged at a maximum distance from each other. One of these exits fitted with a watertight closure may lead to the cargo pumproom.
(iii) In the duct, provision shall be made for adequate mechanical ventilation.

Note: For ships to which the convention applies, refer to SOLAS 1974 (as amended), Reg II-2/4.5.2.4

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Revision Note: Rev.3 only updates references

F27 Cargo openings in the bottoms of topside tanks of ships carrying alternatively oil and grain
(1978)

Ships carrying alternatively oil having a flash point not exceeding 60°C (closed cup test) or other cargoes.

When ships are designed to transport alternatively oil or dry cargoes, openings which may be used for cargo operations are not permitted in bulkheads and decks separating oil cargo spaces from other spaces not designed and equipped for the carriage of oil cargoes unless alternative approved means are provided to ensure equivalent integrity.

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F28 Deleted

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F29 Non-sparking fans

(1973) (Rev. 1 1978) (Rev. 2 1979) Rev. 3 1980) (Rev. 4 1983) (Rev. 5 1994) (Rev.6 June 2005)

F29.1 Introduction

A fan is considered as non-sparking if in either normal or abnormal conditions it is unlikely to produce sparks.

F29.2 Design criteria

F29.2.1 The air gap between the impeller and the casing shall be not less than 0,1 of the shaft diameter in way of the impeller bearing but not less than 2 mm. It need not be more than 13 mm.

F29.2.2 Protection screens of not more than 13 mm square mesh are to be fitted in the inlet and outlet ventilation openings on the open deck to prevent the entrance of objects into the fan housing.

F29.3 Materials

F29.3.1 The impeller and the housing in way of the impeller are to be made of alloys which are recognised as being spark proof by appropriate test.

F29.3.2 Electrostatic charges both in the rotating body and the casing are to be prevented by the use of antistatic materials. Furthermore, the installation on board of the ventilation units is to be such as to ensure the safe bonding to the hull of the units themselves.

F29.3.3 Tests may not be required for fans having the following combinations:

(i) impellers and/or housings of nonmetallic material, due regard being paid to the elimination of static electricity,
(ii) impellers and housings of non-ferrous materials,
(iii) Impellers of aluminium alloys or magnesium alloys and a ferrous (including austenitic stainless steel) housing on which a ring of suitable thickness on non-ferrous materials is fitted in way of the impeller,
(iv) any combination of ferrous (including austenitic stainless steel)impellers and housings with not less than 13 mm tip design clearance.

F29.3.4 The following impellers and housings are considered as sparking and are not permitted:

(i) impellers of an aluminium alloy or magnesium alloy and a ferrous housing, regardless of tip clearance,
(ii) housing made of an aluminium alloy or a magnesium alloy and a ferrous impeller, regardless of tip clearance,
(iii) any combination of ferrous impeller and housing with less than 13 mm design tip clearance.

F29.3.5 Type tests on the finished product are to be carried out in accordance with the requirements of the Classification Society or an equivalent national or international standard.

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F30 Emergency fire pumps in cargo ships

(1974)
(Rev. 1
1976)
(Rev. 2
1978)
Rev. 3
1980)
Rev. 4
1984)
Rev. 5
1995)
(Rev 6
1997)
(Rev. 7
Feb 2002)

Deleted in February 2002.

F30
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F31
(1976) Fire prevention for unattended machinery spaces

The whole UR F31 was deleted as the requirements are now covered by F35.

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F32 (1976) Fire detecting system for unattended machinery spaces

F32.1 An automatic fire detection system is to be fitted in the machinery spaces.

F32.2 The system is to be designed with self-monitoring properties. Power or system failures are to initiate an audible alarm distinguishable from the fire alarm.

F32.3 The fire detection indicating panel is to be located on the navigating bridge, fire control station, or other accessible place where a fire in the machinery space will not render it inoperative.

F32.4 The fire detection indicating panel is to indicate the place of the detected fire in accordance with the arranged fire zones by means of a visual signal. Audible signals clearly distinguishable in character from any other audible signals shall be audible throughout the navigating bridge and the accommodation area of the personnel responsible for the operation of the machinery space.

F32.5 Fire detectors are to be of types, and so located, that they will rapidly detect the onset of fire in conditions normally present in the machinery space. Consideration is to be given to avoiding false alarms. The type and location of detectors are to be approved by the Classification Society and a combination of detector types is recommended in order to enable the system to react to more than one type of fire symptom.

F32.6 Fire detector zones are to be arranged in a manner that will enable the operating staff to locate the seat of the fire. The arrangement and the number of loops and the location of detector heads is to be approved in each case. Air currents created by the machinery are not to render the detection system ineffective.

F32.7 When fire detectors are provided with the means to adjust their sensitivity, necessary arrangements are to be ensured to fix and identify the set point.

F32.8 When it is intended that a particular loop or detector is to be temporarily switched off, this state is to be clearly indicated. Reactivation of the loop or detector is to be performed automatically after a present time.

F32.9 The fire detection indicating panel is to be provided with facilities for functional testing.

F32.10 The fire detecting system shall be fed automatically from the emergency source of power by a separate feeder if the main source of power fails.

F32.11 Facilities are to be provided in the fire detecting system to release manually the fire alarm from the following places:

Passageways having entrances to engine and boiler rooms,
navigating bridge,
control station in engine room.

F32.12 The testing of the fire detecting system on board is to be carried out to the satisfaction of the individual Classification Society.

NOTE
Requirements on indication of the operation of each individual detecting head are left to the discretion of each Classification Society.

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F33 (1981) Prohibition of carriage in fore peak tanks of oil or other liquid substances which are flammable

In ships of 400 tons gross tonnage and above, compartments forward o f the collision bulkhead shall not be arranged for the carriage of oil or other liquid substances which are flammable.

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F34 Low-pressure carbon dioxide smothering systems

(1982)
(Rev.1
1989)

Deleted with effect from 1 July 2010 following entry into force of IMO Res. MSC.206(81).

End of Document

F35 Fire Protection of Machinery Spaces

(1986) (Rev. 1 1989) (Rev. 2 1992) (Rev. 3 1995) (Rev. 4 1996) (Rev. 5 1997) (Rev.6 June 1999) (Rev.7 July 2003) (Rev.8 June 2005)

In the implementation of the SOLAS Chapter II-2, the following requirements are to be met:

1. Reg.II-2/4.2.2.4

Air pipes from oil fuel tanks should be led to a safe position on the open deck.

Air pipes from lubricating oil storage tanks may terminate in the machinery space, provided that the open ends are so situated that issuing oil cannot come into contact with electrical equipment or heated surfaces.

Any overflow pipe should have a sectional area of at least 1,25 times that of the filling pipe and should be led to an overflow tank of adequate capacity or to a storage tank having space reserved for overflow purposes.

An alarm device should be provided to give warning when the oil reaches a predetermined level in the tank, or alternatively, a sight glass should be provided in the overflow pipe to indicate when any tank is overflowing. Such sight glasses should be placed on vertical pipes only and in readily visible positions.

2. Reg.II-2/4.2.2.3.5.1

Short sounding pipes may be used for tanks other than double bottom tanks without the additional closed level gauge provided an overflow system is fitted.

3. Reg.II-2/4.2.2.3

Level switches may be used below the tank top provided they are contained in a steel enclosure or other enclosures not capable of being destroyed by fire.

4. Reg.II-2/5.2.2.3

Controls required by this regulation should also be provided from the compartment itself.

5. Reg.II-2/4.2.2.5.1

Hose clamps and similar types of attachments for flexible pipes should not be permitted.

6. Reg.II-2/4.2.2 and 4.2.5.2

Oil fuel in storage tanks should not to be heated to temperatures within 10°C below the flash point of the fuel oil, except that where oil fuel in service tanks, settling tanks and any other tanks in supply system is heated the following arrangements should be provided:

- the length of the vent pipes from such tanks and/or a cooling device is sufficient

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F35
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for cooling the vapours to below 60°C, or the outlet of the vent pipes is located 3m away from a source of ignition;

- the vent pipes are fitted with flame screens;
- there are no openings from the vapour space of the fuel tanks into machinery spaces (bolted manholes are acceptable) ;
- enclosed spaces are not located directly over such fuel tanks, except for vented cofferdams ;
- electrical equipment is not fitted in the vapour space of the tanks, unless it is certified to be intrinsically safe.

F36 Deleted

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F37 UR F37 has been recategorised to be Recom 53.1 and deleted (May, 1998).

◄◄

F38 F38 has been re-categorised to be Recom. 53.2 and deleted (May 1998).

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F39 Measures to prevent explosions in cargo pump rooms on oil tankers

(1993)
(Rev. 1 1994)
(Rev 2 1997)
(Rev. 2/ Corr. 1 1998)
(Rev.3 July 1999)
(Rev.4 May 2001)

F 39 was deleted on 1 July 2002.

F40 Deleted 1997

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F41 Sea intakes for fire pump on ships with ICE Class
(1993)

1. On ships with ICE Class at least one of the fire pumps is to be connected to a sea chest which is provided with de-icing arrangements.

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F42 Fire testing of flexible pipes
(1995)

1. Flexible pipes with end attachments which are required to be of fire-resisting materials, shall be subject to a fire for 30 minutes at a temperature of 800^{o}C, while water at the maximum service pressure is circulated inside the pipe. The temperature of the water at the outlet shall not be less than 80^{o}C. No leak should be recorded during or after the test.

2. An alternative is to fire test the flexible pipe with flowing water at a pressure of at least 5 bar and subsequent pressure test to twice the design pressure.

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F43 Installation requirements for analysing units for continuous monitoring of flammable vapours

F43 (1997) (Rev.1 July 1999) (Rev. 2 June 2002)

This UR applies to gas analysing units of the sampling type located outside gas dangerous zones and fitted on board gas carriers or on board oil/chemical tankers.

Gas analysing units with non-explosion proof measuring equipment may be located in areas outside cargo areas, e.g. in cargo control room, navigation bridge or engine room when mounted on the forward bulkhead provided the following requirements are observed:

1. Sampling lines shall not run through gas safe spaces, except where permitted under 5.

2. The gas sampling pipes shall be equipped with flame arresters. Sample gas is to be led to the atmosphere with outlets arranged in a safe location.

3. Bulkhead penetrations of sample pipes between safe and dangerous areas shall be of approved type and have same fire integrity as the division penetrated. A manual isolating valve shall be fitted in each of the sampling lines at the bulkhead on the gas safe side.

4. The gas detection equipment including sample piping, sample pumps, solenoids, analysing units etc. shall be located in a reasonably gas tight enclosure (e.g. a fully enclosed steel cabinet with a gasketed door) which is to be monitored by its own sampling point. At gas concentrations above 30% LFL inside the enclosure the entire gas analysing unit is to be automatically shut down.

5. Where the enclosure cannot be arranged directly on the bulkhead, sample pipes shall be of steel or other equivalent material and without detachable connections, except for the connection points for isolating valves at the bulkhead and analysing units, and are to be routed on their shortest ways.

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F44 Fore peak ballast system on oil tankers

(June 2000) (Rev.1 Aug 2008) (Rev.2 Oct 2010)

The fore peak tank can be ballasted with the system serving other ballast tanks within the cargo area, provided:

- The fore peak tank is considered as a hazardous area;
- The vent pipe openings are located on open deck at an appropriate distance from sources of ignition. In this respect, the hazardous zones distances are to be defined in accordance to IEC 60092-502: Electrical installations in ships - Tankers - Special features;
- Means are provided, on the open deck, to allow measurement of flammable gas concentrations within the fore peak tank by a suitable portable instrument;
- The sounding arrangement to the fore peak tank is direct from open deck;
- The access to the fore peak tank is direct from open deck. Alternatively, indirect access from the open deck to the fore peak tank through an enclosed space may be accepted provided that:

  1. In case the enclosed space is separated from the cargo tanks by cofferdams, the access is through a gas tight bolted manhole located in the enclosed space and a warning sign is to be provided at the manhole stating that the fore peak tank may only be opened after:

     - it has been proven to be gas free; or
     - any electrical equipment which is not certified safe in the enclosed space is isolated.

  2. In case the enclosed space has a common boundary with the cargo tanks and is therefore a hazardous area, the enclosed space can be well ventilated.

In respect to all paragraphs of this unified requirement, the hazardous area classification is to be defined in accordance to IEC 60092-502: Electrical installations in ships - Tankers - Special features.

Notes:

1. Rev.2 of this UR is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2012.

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.

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