
4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

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**INTERIM GUIDELINES FOR MINIMIZING THE INCIDENCE AND CONSEQUENCES OF
FIRES IN RO-RO SPACES AND SPECIAL CATEGORY SPACES OF NEW AND
EXISTING RO-RO PASSENGER SHIPS**

- 1 The Maritime Safety Committee, at its 101st session (5 to 14 June 2019), approved *Interim guidelines for minimizing the incidence and consequences of fires in ro-ro spaces and special category spaces of new and existing ro-ro passenger ships*, prepared by the Sub-Committee on Ship Systems and Equipment, at its sixth session, as set out in the annex.
- 2 The Committee agreed to keep the Interim guidelines under review, taking into account operational experience gained with their application.
- 3 Member States are invited to bring the Interim guidelines to the attention of all parties concerned and to recount their experience gained through the use of these Interim guidelines to the Organization.

ANNEX

INTERIM GUIDELINES FOR MINIMIZING THE INCIDENCE AND CONSEQUENCES OF FIRES IN RO-RO SPACES AND SPECIAL CATEGORY SPACES OF NEW AND EXISTING RO-RO PASSENGER SHIPS

For the purpose of these guidelines, section 1 applies to new and existing ro-ro passenger ships and sections 2 to 5, except 3.2, apply only to new ships unless specified otherwise.

1 PREVENTION/IGNITION

1.1 Inspection of ship's power supply equipment and cables

1.1.1 Electrical cables, sockets, and their associated equipment in ro-ro and special category spaces intended for power supply to vehicles or cargo units should be inspected, in principle prior to their use, by trained crew or other trained personnel according to an established procedure.

1.1.2 Non-ship cables provided and connected by drivers present an increased risk of overheating or short circuit; therefore, only ship power supply equipment and cables should be used.

1.2 Maintenance plan for electrical cables and their sockets in ro-ro and special category spaces intended for power supply to vehicles or cargo units

A maintenance plan should be developed for electrical cables, sockets, and their associate equipment in ro-ro and special category spaces intended for power supply to vehicles or cargo units.

1.3 Electrical cables

1.3.1 In addition to SOLAS regulation II-1/45.5.1 to .6, electrical cables intended for power supply to vehicles or cargo units that may be damaged by vehicles or cargo units during loading and unloading operations should be suitably protected, even when armoured, unless the ship's structure provides adequate protection. The arrangement should be sufficiently protected against corrosion and effectively earthed.

1.3.2 When not in use, electric cables intended for power supply to vehicles or cargo units should be stored in a way that they cannot be damaged by loading/unloading operations.

1.4 Shock/waterproof rating of electrical connections

1.4.1 In addition to SOLAS regulation II-2/20.3.2, sockets should be provided with a degree of protection of at least IP56 in accordance with standard IEC 60529.

1.4.2 The socket should be provided with means to maintain the same degree of protection after the plug is removed from the socket. Where a loose cover is used for this purpose, it should be anchored to its socket, for example by means of a chain.

1.5 Circuit breakers

The electrical system should detect potentially detrimental loads or earth faults, so that the affected socket will be isolated.

1.6 Electrical connections and disconnections of cargo units and electrical vehicles

Only trained personnel or other persons under the supervision of ship's crew should perform the electrical connection and disconnection of cargo units and electrical vehicles.

1.7 Check points at patrols

1.7.1 During patrols by crew in ro-ro spaces and special category spaces, the following should be checked, for example, but not limited to:

- .1 leakages from the vehicles;
- .2 conditions of electrical connections and ship's power supply cables to vehicles; and
- .3 common cargo fire hazards.

1.7.2 It is recommended that portable thermal imaging devices be used for screening during fire rounds and upon suspicion to detect hot areas and overheated electrical equipment.

1.8 Strengthening of the requirement for elimination of sources of ignition

1.8.1 The company should establish a fire-fighting plan that, in particular, identifies any risks specific to alternatively powered vehicles, including battery powered vehicles, and outlines the most appropriate fire-fighting techniques for such vehicles. The company should ensure adequate training and good access to any specialized fire-fighting equipment for alternatively powered vehicles.

1.8.2 During voyages when vehicles powered by compressed natural gases or hydrogen are carried, the hazards associated with accumulation of flammable gases and gases lighter than air under ceilings need to be addressed.

1.8.3 Pipes with combustible hydraulic oil should be protected from damage. Hydraulic oil from a damaged pipeline in contact with a source of ignition, for example, a refrigerating unit of a truck working during the voyage, can cause a fire.

2 DETECTION AND DECISION

2.1 Addressable fixed fire detection and alarm systems

2.1.1 For ships built before July 2010, it is recommended that a fixed fire detection and alarm system with individually addressable detectors be considered to replace existing systems in ro-ro spaces and special category spaces.

2.1.2 If a fixed water-based deluge system is used for ro-ro spaces and special category spaces then a fire detection and alarm system addressable to the same sections of the deluge systems should be arranged.

2.1.3 In the design of the fire detection alarm system, it should be designed with a system interface which provides logical and unambiguous presentation of the information, to allow a quick and correct understanding and decision-making. In particular, the alarm system section numbering should coincide with the sections of other systems, such as fixed water-based fire-extinguishing system or television surveillance system, if available.

2.2 Video monitoring

2.2.1 Television surveillance systems can be effective for rapid confirmation of a fire after activation of fire alarms, as well as rapid execution of related actions after the confirmation of fire. This supports the activation of the correct deluge section, as well as manual fire-fighting.

2.2.2 Effective television surveillance systems should be provided in ro-ro and special category spaces for continuous video monitoring of these spaces and be provided with immediate playback capability to allow for quick identification of fire location, as far as practicable. Continuous monitoring of the video image by the crew needs not be ensured.

2.3 Fire detection in open ro-ro spaces

In open ro-ro spaces on all ro-ro passenger ships, if smoke detectors are installed they should be supplemented with other effective means of detection e.g. flame detectors, heat detectors.

2.4 Fire detection on weather decks

A fixed fire detection and fire alarm system should be provided for weather decks intended for the carriage of vehicles. The fixed fire detection system should be capable of rapidly detecting the onset of fire on the weather deck. The type of detectors, spacing, and location should be to the satisfaction of the Administration, taking into account the effects of weather, cargo obstruction and other relevant factors. Different settings may be used for specific operation sequences, such as during loading or unloading and during voyage, in order to reduce the false alarms.

2.5 Alarm system design and integration

Alarm notifications should follow a consistent alarm presentation scheme (wording, vocabulary, colour, and position) and that alarms are immediately recognizable on the bridge and not compromised by noise or poor placing. The interface should provide alarm addressability to allow the crew to identify the alarm history, the most recent alarm, and the means to suppress alarms while ensuring the alarms with ongoing trigger conditions are still clearly visible.

2.6 Signage and markings for effective identification and localization

For closed vehicle, ro-ro spaces, and special category spaces where fixed pressure water-spraying systems are fitted, they should be provided with suitable signage and marking on deck and vertical boundaries to easily identify the sections of the fixed fire-extinguishing system. Signage and markings should be adapted to typical patterns of crew movement and should not be obstructed by fixed installations. Section number signs should be of photoluminescent material complying with ISO 15370. The section numbering indicated inside the space should be the same as the section valve identification and section identification at the safety centre or continuously manned control station.

3 EXTINGUISHMENT

3.1 Additional fire-fighting equipment for ro-ro passenger ships

A claw bar should be available for prompt fire-fighting in all ro-ro spaces and special category spaces.

3.2 Appropriate training and drills

3.2.1 Relevant crew members should be trained on fire-fighting strategies and risks associated with alternatively powered vehicles such as battery or gas driven vehicles.

3.2.2 Relevant crew members should receive adequate training and participate in drills in order to be familiar with the specific arrangements of the ship, as well as the location, operation, and limitations of the fire-fighting systems and appliances that they may be called upon for use in ro-ro spaces and special category spaces.

3.3 Positioning of sprinklers and nozzles

MSC.1/Circ.1430/Rev.1 on *Revised guidelines for the design and approval of fixed water-based fire-fighting systems for ro-ro spaces and special category spaces* should be referred to with regard to functional requirements for positioning of sprinklers and nozzles to provide satisfactory performance with respect to both activation time and water distribution.

3.4 Fixed fire-extinguishing measures on weather decks

Additional fire-extinguishing measures such as fire monitors and drainage systems may be considered on weather decks. Remotely controlled fire monitors may allow for safe operation of the monitors, but where suitable, manually operated fire monitors may also be used.

4 CONTAINMENT

4.1 Fire integrity of ro-ro decks and decks in special category spaces

The fire integrity of ro-ro decks separating ro-ro spaces should be at least A-30.

4.2 Types of ro-ro spaces

Vehicles spaces and ro-ro spaces should be either closed ro-ro spaces or weather decks.

5 INTEGRITY OF LIFE-SAVING APPLIANCES AND EVACUATION

5.1 For new and existing ships, the following safety distances (measured horizontally) are recommended to avoid jeopardizing life-saving appliances and embarkation stations in case of fire in ro-ro and special category spaces:

- .1 survival craft and marine evacuation systems stowed and in a position to be deployed:
 - .1 more than 6 m from a cargo space side opening; and
 - .2 more than 8 m from cargo on weather deck; and

- .2 survival craft embarkation stations and muster stations located:
 - .1 more than 6 m away from a cargo space side opening; and
 - .2 more than 13 m from cargo on weather deck.

5.2 Equivalent arrangements to the satisfaction of the Administration, providing at least the same level of protection, could be considered.
