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GUIDELINES FOR EVALUATION OF FIRE RISK OF EXTERNAL AREAS ON PASSENGER SHIPS

1 The Maritime Safety Committee, at its eighty-first session (10 to 19 May 2006), having approved draft amendments to SOLAS chapter II-2 related to the safety of cabin balconies in response to the fire on board the **Star Princess**, instructed the Sub-Committee on Fire Protection to consider the safety of all external areas on passenger ships.

2 The Maritime Safety Committee, at its eighty-fourth session (7 to 16 May 2008), having considered the draft Guidelines for evaluation of fire risk of external areas on passenger ships prepared by the Sub-Committee on Fire Protection at its fifty-second session (14 to 18 January 2008), approved the Guidelines for evaluation of fire risk of external areas on passenger ships, set out in the annex.

5 The annexed Guidelines consist of two parts:

- .1 part 1: Design Guidelines for the evaluation of fire risk of external areas on new passenger ships; and
- .2 part 2: Simplified risk assessments method for external areas on passenger ships.

4 The annexed Guidelines are not intended to apply to external areas where cargoes and/or vehicles are stored.

5 Member Governments are invited to bring the annexed Guidelines to the attention of all Parties concerned and, in particular, recommend that such Parties:

- .1 use part 1 of the annexed Guidelines at the early stage of design of new passenger ships when determining the fire risk of external areas;
- .2 conduct fire risk assessments in accordance with part 2 of the annexed Guidelines whenever an external area on existing passenger ships is subject to change of use; and
- .3 document fire risk assessments when conducted in accordance with part 2 of the annexed Guidelines within the Shipboard Safety Management System.

ANNEX

PART 1

DESIGN GUIDELINES FOR THE EVALUATION OF FIRE RISK OF EXTERNAL AREAS ON PASSENGER SHIPS

1 FOREWORD

1.1 External areas have routinely been assumed to have little or no fire risk, and have not been required to comply with SOLAS chapter II-2 requirements applicable to interior spaces.

1.2 While this assumption may be accurate for general open deck areas, the continual evolution of new types of passenger amenities on open deck areas may be introducing levels of fire risk that are not fully accounted for by the existing regulations.

1.3 These Guidelines are not intended to be applicable to cabin balconies as these areas shall comply with the relevant requirements set out in resolution MSC.216(82).

1.4 These Guidelines have been developed to provide Administrations and designers with a tool that may be used at the early stage of a design to assess the fire risk of external areas.

2 PERFORMANCE OF THE RISK ASSESSMENT

2.1 In considering fire protection for external areas, the fire risk of all external areas as well as the impact of a fire in such areas should be evaluated¹ taking into consideration such factors as:

- .1 use of the space (type of persons who have access to, any restriction of access due to security reasons);
- .2 presence of combustible materials;
- .3 presence of sources of ignition;
- .4 ready accessibility for fire-fighting operations;
- .5 ease of escape;
- .6 proximity of ventilation intakes;
- .7 proximity to essential systems;
- .8 possibility of an external fire spreading to more than one internal fire zone; and
- .9 relationship to escape routes, assembly stations and evacuation routes to survival craft.

¹ Refer as appropriate to part 2 of these Guidelines.

3 EVALUATION OF THE RISK ASSESSMENT

3.1 For ships subject to part 1, the following paragraphs apply in lieu of paragraph 4.12 of part 2.

3.2 Should the results of the risk assessment show that the fire risk of external areas, that are normally categorized as category (4) or (5) in accordance with SOLAS regulation II-2/9.2.2.3.2.2 or category (10) in accordance with SOLAS regulation II-2/9.2.2.4.2.2, as appropriate, is such that actions should be taken to reduce it, the designers should consider:

- .1 mitigation measures (including but not limited to those listed under 4 below), to be used in conjunction with a new risk assessment; or
- .2 the area being constructed in accordance with the fire protection requirements applicable to internal spaces having same or similar fire risk.

3.3 Risk assessment and relevant evaluation resulting in additional fire protection requirements should be communicated to the Administration.

4 POSSIBLE MITIGATION MEASURES TO BE USED IN CONJUNCTION WITH THE RISK ASSESSMENT

4.1 In relation to the results of the risk assessment, it is suggested that the following mitigation measures should be applied, as appropriate:

- .1 Ignitability and smoke and toxicity of primary deck coverings.
Primary deck coverings located in positions where risk of ignition from below is possible should comply with SOLAS regulations II-2/4.4.4 and II-2/6.3.
- .2 Partial bulkheads.
Partial bulkheads should be constructed of non-combustible materials in accordance with SOLAS regulation II-2/5.3.1.2.1.
- .3 Low flame-spread, smoke and toxicity characteristics of exposed surfaces.
Surface materials such as deck finishes, carpets, decorations and veneers should comply with parts 2 and 5 of annex 1 of the International Code for Application of Fire Test Procedures (FTP Code).
- .4 Fire detection and suppression.
The area should be covered by a fire suppression and detection system.
- .5 Lining of non-combustible material.
Lining of bulkheads and ceilings should be of non-combustible material in accordance with SOLAS regulation II-2/3.1.2.1.
- .6 Furniture and furnishings.
Furniture and furnishings should be of restricted fire risk in accordance with SOLAS regulation II-2/3.40.

- .7 Structural fire protection.
Additional structural fire protection should be provided at boundaries.
- .8 Suspended material.
Suspended materials should have quality of resistance to the propagation of flame in accordance with part 7 of annex 1 of the FTP Code.

PART 2

SIMPLIFIED RISK ASSESSMENT METHOD FOR EXTERNAL AREAS ON PASSENGER SHIPS

1 FOREWORD

1.1 SOLAS regulations II-2/9.2.2.3.2 and II-2/9.2.2.4.2.2 define open deck spaces as areas having no significant fire risk, and for enclosed promenades that furnishings shall be restricted to deck furniture. All external areas should be evaluated using this part 2 to determine if there is an increased level of fire risk due to the presence of combustibles or ignition sources.

1.2 Measures to mitigate the risk should be implemented where appropriate.

2 APPROACH

2.1 The intent of this part is to present a methodology for performing simplified fire risk assessments of external areas. These Guidelines should not be used to evaluate changes to permanent structure such as bulkheads, decks or surface finishes, or to demonstrate compliance with SOLAS regulation II-2/17.

2.2 The simplified fire risk assessment consists of the following elements:

- .1 description of the intended use of the area;
- .2 identification of the combustible materials;
- .3 identification of the ignition sources;
- .4 description of the means of escape from, and fire-fighting access to the area;
- .5 description of the materials used for the construction of the decks and bulkheads that bound the area (if any);
- .6 description of the fire-fighting systems and appliances in the area (if any);
- .7 description of the fire detection and alarm systems in the area (if any);
- .8 response procedures;
- .9 identification of essential systems;
- .10 identification of any ventilation intakes or equipment in or near the area;
- .11 effects on other areas; and
- .12 evaluation of the risk assessment.

3 PERSONNEL QUALIFICATIONS

3.1 The individuals performing the assessment should be ship's designers, ship's officers, company representatives or other persons suitably qualified. The individuals should be familiar with the arrangement and construction of the ship, as well as the location and operation of fire-fighting and fire detection systems.

4 ASSESSMENT GUIDANCE

4.1 *Description of the intended use of the area*

The intended use and arrangements of the area should be described in sufficient detail to allow an understanding of the equipment and operations to be conducted, including the expected operation each day and any operational requirement or limitation. The location and area to be occupied should be noted.

4.2 *Identification of combustibles materials*

4.2.1 An assessment should be made of the type and quantity of combustible materials and flammable liquids (except for liquors stored in bars for daily use) in the area as a result of the activity should be prepared.

4.2.2 The potential fire load of any lifesaving equipment such as lifeboats, rescue boats and liferafts need not be included in the fire load assessment.

4.2.3 The assessment should also note if any combustible materials for other purposes are routinely stored in or near the area being considered.

4.2.4 The location of any flammable oil tank vents that are in or adjacent to the area should be noted.

4.3 *Identification of the ignition sources*

Any sources of ignition in the area should be noted, along with a description of any safeguards provided. Ignition sources may include cigarettes, any open flames, cooking appliances and electrical equipment.

4.4 *Description of the means of escape from and fire-fighting access to the area*

4.4.1 The expected number of crew and passengers likely to be present in the area should be estimated for day and night conditions.

4.4.2 The location of emergency equipment lockers should be considered with respect to the area, along with the location of fire main valves and hydrants. Access routes for fire fighting should be evaluated.

4.4.3 Consideration should also be given to the abilities of the persons likely to be in the area that may need additional assistance to escape. (i.e. large number of children in play areas).

4.5 *Description of the materials used for the construction of the decks and bulkheads that bound the area*

The vessel drawings should be consulted to determine the fire integrity of any bulkheads or decks adjacent to the area. All combustible materials and finishes (including paints) in the permanent construction of the ship should be noted, and their location with respect to the area of consideration should be verified. Natural hard wood decking systems need not to be included in the assessment.

4.6 *Description of the fire-fighting systems and appliances in the area*

Availability of fire-fighting systems and appliances in or near the area should be evaluated with respect to the intended use and activities, the arrangement and the types of fire that would occur in the area.

4.7 *Description of the fire detection and alarm system in the area*

4.7.1 The fire detection and alarm system in or near the area should be evaluated with respect to the intended use and activities, the arrangement and the types of fire that would occur in the area.

4.7.2 The number of crew in the area and the times they will be present should also be taken into account. Information regarding the coverage of closed circuit television in the area should also be noted.

4.8 *Response procedures*

The fire-fighting procedures and instructions applicable to the area should be reviewed.

4.9 *Identification of essential systems*

Proximity of systems essential for the safe operation of the ship (e.g., ships' propulsion, steering, lifesaving, fire protection systems, internal and external communications) should be considered.

4.10 *Identification of any ventilation intakes or equipment in or near the area*

Any ventilation system equipment that might be affected by a fire in the area should be identified. The distance to any air intakes or similar openings should be noted for the purpose of determining if smoke from a fire could be spread to other areas of the ship.

4.11 *Effects on other areas*

Effects on assembly stations or evacuation routes and the possibility of the fire spread to more than one fire zone should be considered.

4.12 *Evaluation of the risk assessment*

4.12.1 Based on the information provided in paragraphs 4.1 to 4.11 of this part, an evaluation should be performed to determine the relative level of fire risk associated with the new intended use of the area, the potential fire damage to the ship, and whether the fire protection is adequate for the expected level of risk.

4.12.2 If necessary, mitigation measures should be implemented to eliminate or reduce the fire to an acceptable level.
