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MSC/Circ.1168

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**INTERIM GUIDELINES FOR THE TESTING, APPROVAL AND MAINTENANCE OF  
EVACUATION GUIDANCE SYSTEMS USED AS AN ALTERNATIVE TO  
LOW-LOCATION LIGHTING SYSTEMS**

1 The Maritime Safety Committee, at its seventy-fifth session (15 to 24 May 2002), recognized the need for the development of guidelines for the testing, approval and maintenance of evacuation guidance systems used as an alternative to low-location lighting systems required by SOLAS chapter II-2 and the FSS Code.

2 The Committee, at its eightieth session (11 to 20 May 2005), having considered a proposal by the forty-ninth session of the Sub-Committee on Fire Protection, approved the Interim Guidelines for the testing, approval and maintenance of evacuation guidance systems alternative to the low-location lighting systems, set out in the annex.

3 Member Governments are invited to apply the annexed Interim Guidelines and submit to the Sub-Committee on Fire Protection information on experience gained in the implementation of the Interim Guidelines and on any progress made in the development of the testing, approval and maintenance of evacuation guidance systems.

4 Member Governments are also invited to bring the annexed Interim Guidelines to the attention of ship designers, shipowners, ship operators, shipbuilders and other parties involved in the design, construction, testing, approval and maintenance of evacuation guidance systems.

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## ANNEX

### INTERIM GUIDELINES FOR THE TESTING, APPROVAL AND MAINTENANCE OF EVACUATION GUIDANCE SYSTEMS USED AS AN ALTERNATIVE TO LOW-LOCATION LIGHTING SYSTEMS

#### 1 Scope

The purpose of these Guidelines is to provide standards for the testing, approval and maintenance for alternative systems to low-location lighting systems required by SOLAS regulation II-2/13.3.2.5.1 and chapter 11 of the FSS Code.

#### 2 Testing

2.1 Test for corridors should be performed in reduced visibility using theatrical (white) smoke with an Optical Density at least  $OD\ 0.5\ m^{-1}$ \*. Measuring equipment should conform to a standard acceptable to the Administration.

2.2 If the system is to be installed in public spaces, the test should be performed in reduced visibility using theatrical (white) smoke with an Optical Density at least  $OD\ 0.1\ m^{-1}$ .

2.3 Test for stairway enclosures should be performed in clear (no smoke) conditions.

2.4 A minimum 80% of the participants should reach the pre-designated exit with a speed of movement of at least 0.7 m/s calculated using the distance measurement of the optimum route. Participants achieving a speed of movement of less than 0.7 m/s should be deemed to have failed. There is no speed of movement criterion applied to stairway enclosure tests.

2.5 The maximum percentage of participants choosing failed exits should not exceed the value of 2% for public spaces and 5% for accommodation areas, corridors and stairway enclosures.

2.6 In the public space configuration when testing with two correct exits, no more than 15% of the participants may choose the more distant exit.

2.7 There should be a minimum of 60 participants for each test - being at least 8 and not more than 12 of each age group 16-25, 26-35, 36-45, 46-55, 56-65, 66-75 with an average of 45-55% male/female of the entire group.

2.8 A “control” test should be performed with no guidance system in operation in order to demonstrate that there is no significant inherent bias to favour the pre-designated exit. Participants of the “control” test should not participate in any previous or subsequent tests.

2.9 For the purpose of this section:

- .1 a “correct exit” is an exit to which the evacuation guidance system intentionally guides participants;

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\* Refer to the United Kingdom Government’s Health and Safety Executive (HSE) 1998 report: OTH 533 Emergency Way Guidance Lighting Systems (<http://www.hse.gov.uk/research/othpdf/500-599/oth533.pdf>).

- .2 participants arriving at any of the “fail exits” are deemed to have “failed” the test and should be stopped at that point;
- .3 only one participant should be in the test at a time in order to preclude any crowd behavioural influence;
- .4 the test area should be illuminated by the emergency lighting as required by SOLAS; and
- .5 during the test signage other than those being part of the test should not be used.

### **3 Test facility design**

#### **3.1 *Public spaces***

3.1.1 If the system is intended to be installed in public spaces, the test facility should be designed so that participants are required to navigate to a pre-designated exit across a public space, where the shortest distance to that exit is not along a wall. A minimum of two exits should be provided to test the ability of participants to identify and proceed to an exit within an open space. An additional fail exit should be located 2 to 3 m from each correct exit.

3.1.2 The test room should be not less than 15 m by 10 m with the start point and pre-designated exit being on the long sides, diagonally opposite each other, such that the distance around the walls is approximately equal in either direction. The density of the smoke should be great enough to prevent a participant from being able to see no more than half to two-thirds of the distance to the nearest exit OD  $0.1 \text{ m}^{-1}$ . Direct distance between start and a correct exit should be not less than 12 m.

#### **3.2 *Accommodation areas and corridors***

The test layout should be such that participants should be required to navigate correctly their way to a pre-designated exit via at least four decision points including at least two cross-junctions and at least one T-junction. It should not be possible to navigate the correct route by remaining attached to one continuous wall. The correct route should include the placement of a non-exit door within 2 to 3 m of the correct exit door. A non-exit door is a fail exit. The total distance travelled over the correct route should be not less than 25 m, with the distance between decision points being not less than 5 m.

#### **3.3 *Stairway enclosures***

Participants should be required to use the stairway enclosures to a pre-designated floor. The participants should enter the stairway enclosures from a mid-point where each will be instructed by the guidance system to proceed either up or down. The option of up or down should be randomly chosen.

### **4 Participant briefing**

Participants to be briefed on the purpose of the test and the technology to be tested, using the proposed briefing technique that would be used in the implementation on board ship, e.g. the briefing

given during lifeboat drill, instructions on backs of cabin doors or via the ship's public address system, etc. No briefing should be given on the route, test layout or numbers of exits.

## **5 Approval**

All systems should be approved by the Administration for compliance with the Performance standards for evacuation guidance systems (MSC/Circ.1167) developed by the Organization and, for electrically powered systems, IEC 60092 *Electrical Installations in Ships*. Installation requirements should be included in the approval procedures, and individual onboard arrangements should be verified accordingly.

## **6 Maintenance**

6.1 All elements of the system should be visually examined and checked at least once per week, and a record thereof should be kept. All missing, damaged or inoperable elements should be replaced.

6.2 All systems should have their signal tested at least once every five years. Readings should be taken on site. Should any reading be found to be outside manufacturer's tolerances, then that element of the system should be replaced.

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