

MSC Guidelines for Protection of Deck Openings in Two Deck Spaces

Procedure Number: SOLAS-13

Revision Date: 4/5/2016

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References:

- SOLAS II-2/9.2.2.3.2.2 (previously II-2/26.2)
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Contact Information:

If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by email or phone. Please refer to the Procedure Number **SOLAS-13**.

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Reference Text:

“...Smaller enclosed rooms within a space that have less than 30% communicating openings to that space are considered separate spaces. The fire integrity of the boundary bulkheads and decks of such smaller rooms shall be prescribed in tables 9.1 and 9.2.”

Guidance:

This guidance does not apply to atriums or other spaces equipped with an approved smoke extraction system. Deck openings that are less than 30% open, relative to the surface area of the lower space (i.e. the total ceiling area of the lower space), should be protected. The transmission of heat, smoke, and flame through the deck opening should be addressed. The expectation is that protection measures will limit heat, smoke, and flame transmission through the opening when a fire occurs at any point in the lower space. Additionally, passengers and crew in both the lower and upper spaces should have time to safely evacuate the space in the event of a fire in the lower space. Therefore, immediate notification should be provided to the upper space when a fire occurs in the lower space.

- Where the sum of partial deck openings is less than 30% of the total deck area between the two spaces, the following additional protection methods should be followed:
 - a) Audible detection shall be provided for both spaces, such that occupants in one area will be immediately notified of the need to evacuate given an event in any other area of the common space;

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- b) The partial deck, not in way of the opening, shall be insulated to the standards of SOLAS II-2/Table 9.2 as if the connected compartments were two separate spaces;
 - c) A non-combustible smoke/draught curtain of at least 450 mm in depth shall be fitted around the opening; and
 - d) A water spray curtain shall be provided to protect the opening. The water spray curtain shall be arranged using sprinklers placed at 2 m intervals and located between 150-300 mm from the draught curtain on the side away from the opening. Where sprinklers are placed at less than 1.8 m intervals, the sprinklers shall be installed in baffles, to control the rate or sprinkler activation.
- ❑ In lieu of water spray curtain, high pressure water MIST nozzles may be used to create a water curtain provided they are placed at 2 m intervals and located between 150-300 mm from the draught curtain on the side away from the opening. Where MIST nozzles are placed at less than the 1.8 m intervals, the nozzles shall be installed in baffles, to control the rate of nozzle activation.
 - ❑ The draught curtain may be omitted, provided the sprinklers or MIST nozzles are installed in an open head (or deluge system) configuration, which actuates upon the activation of any two smoke detectors within the lower space.
 - ❑ Other opening protection methods will be considered on a case-by-case basis in consultation with the appropriate Flag Administrations and Port States according to SOLAS I/5.
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Background:

The U.S. has noted that recent trends in passenger vessel design have incorporated various types of openings in the deck to connect accommodation spaces. Where the deck opening is less than 30%, SOLAS II-2/9.2.2.3.2.2 requires the spaces to be considered separate spaces.

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For openings, less than the minimum acceptable opening area, we consider the combination of (1) a mechanism to provide early notification to occupants and (2) a method to protect the opening against the spread of heat, smoke, and flame as equivalent to the requirements of SOLAS II-2/9.4.1. Typical protection, to date, has been to place water spray sprinklers around the opening. This guidance was derived from a series of full scale fire tests used to demonstrate the protection of escalator openings in mercantile buildings using standard water spray sprinklers.

Lacking specific test results, the guidance for standard spray sprinkler protection has been extended to high pressure water MIST systems and in some cases the draught curtain has been omitted. We are concerned that these systems will not perform adequately without the draught curtain to contain heated gases. The guidance above is a conservative approach to ensure guidance based on empirical fire testing is not extended to situations where it may no longer be applicable.

Disclaimer:

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and may assist industry, mariners, the general public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative, you may contact the Marine Safety Center (MSC), the unit responsible for implementing this guidance.