

MSC Guidelines for Review of Emergency Evacuation Plans (Subchapter K)

Procedure Number: H2-12

Revision Date: 1/24/2018

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Purpose

The purpose of this Plan Review Guideline is to provide the submitter with general guidance and information for the development of Subchapter K Emergency Evacuation Plans (EEP).

References

- a. Navigation and Vessel Inspection Circular (NVIC) 9-97, Change 1, "Guide to Structural Fire Protection,"
 - b. 46 CFR 116, Subpart E, "Escape and Embarkation Station Requirements"
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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 **H2-12**.

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General Guidance

It is recommended that the structural fire protection plan and the emergency evacuation plan be concurrently designed and reviewed on initial construction and at any time the escape arrangements or structural fire protection are altered. A number of issues are intertwined and must be reviewed together.

Area of Refuge

The definition of 'area of refuge' in 46 CFR 114.400 states that the area of refuge must provide separation from the "effects" of fire. In the absence of a systematic approach, which considers plausible fire scenarios, methods used to protect passengers while the crew attempts fire suppression, or passengers await embarkation of lifesaving appliances, the Coast Guard considers the following minimum provisions acceptable:

- (1) minimum separation of A-60 integrity from spaces other than voids, cofferdams, and tanks;

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(2) ventilation systems shall only service a single area of refuge, unless separated from other spaces by smoke and fire dampers; and

(3) the refuge area shall be located in a public space above the bulkhead deck.

If the area of refuge is located adjacent to a 5A space, then C-class smoke tight boundaries are permitted in accordance with reference (a), enclosure (1), Section 4.2. Also, if the EEP indicates in all possible fire scenarios, there is capacity to physically locate all persons in areas not adjacent to the fire affected space, then the boundaries may be as per the table in 46 CFR 116.415.

Ship Side Considerations

Identify the window ratings where located below areas of refuge. Special consideration should be given to windows/openings located in the ship side below lifeboat/liferaft embarkation areas, refuge/safety areas, or lifeboats/liferafts based on the potential for fire and smoke to affect the embarkation area or the actual lowering of the lifesaving appliances. Windows or openings in the ship side of the vessel shall not degrade the integrity of the decks by permitting fire spread to compartments above through other windows or openings. Consideration shall be given in the design of the vessel exterior boundaries and ship side to prevent this mechanism of fire spread. If the affected deck is not protected by sprinklers, the external glass located immediately below the external refuge area must be fire resistant to prevent smoke and flame from impacting the safe refuge of passengers in the external refuge area directly above. Fire resistant glass is generally considered to be laminated glass, wire-inserted glass, or some other fire resistant material. Tempered or annealed glass does not meet this requirement; however, it may be utilized below an external refuge area in vessels with multiple Main Vertical Zones (MVZ) if all passengers can safely refuge in either an out-of-zone refuge area or a refuge area located below the affected deck.

Means of Escape

- ❑ Ensure the EEP designates at least two embarkation stations on the embarkation deck of each MVZ, and at least one on each side of the vessel. [46 CFR 116.510(a)]
 - ❑ Identify possible casualties involving fires or flooding, including a fire in the largest passenger space in each MVZ on the EEP, and ensure they are included in the plan. [46 CFR 116.520(a)]
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- Identification of possible casualties can be as simple as a fire on Deck X, MVZ Y.
- Identification of flooding casualties is only necessary if flooding will affect passenger occupied spaces.
- Each level of a space containing a balcony must have two independent means of escape. [46 CFR 116.439(b)] Stairs communicating between the upper and lower portions of an accommodation space with a balcony cannot be considered a means of escape. [46 CFR 116.438(l)]
- Ensure the EEP includes procedures to evacuate passengers from the vessel using an abandon ship plan. The plan must indicate at least one escape route from each area of refuge to each embarkation station. [46 CFR 116.520(c)]
- Ensure the EEP identifies at least two means of escape from each space. [46 CFR 114.400, 46 CFR 116.500(a) & 46 CFR 116.520(b)(2)]
 - At least one means from each space must not be a watertight door (watertight doors should be duly identified on plans submitted for approval). [46 CFR 116.500(a)]
 - The two required means for each space must be widely separated and, if possible, at opposite ends or sides. [46 CFR 116.500(b)]
 - Ladders leading to deck scuttles may not be included as a means of escape except as permitted by 46 CFR 116.500(k).
 - Windows may only be included as one of the means of escapes as permitted by 46 CFR 116.500(o).
 - The following spaces are not permitted to be used as means of escape:
 - Service spaces
 - Cargo spaces
 - Machinery & Auxiliary spaces
 - Control spaces
 - Rest rooms

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- Barber shops & Sales rooms
 - Hazardous areas
 - Escalators & elevators
- Only one means of escape is required for certain spaces in accordance with 46 CFR 116.500(p).
 - Ensure the dimensions of the means of escape from each space are sufficient for the number of persons served. [46 CFR 116.500(d)]
 - The minimum clear opening of a door or passageway used by passengers must not be less than 32 inches (28 inches if used solely by the crew). [46 CFR 116.500(f)]
 - The sum of the width of all doors and passageways used as a means of escape from each space must not be less than 0.333 inches multiplied by the number of persons for which the space is designed. [46 CFR 116.500(f)]
 - Examine the length of escape passages:
 - Ensure no dead end passageways extend more than 20 feet in length. [46 CFR 116.500(g)]
 - The maximum allowable travel distance from the most remote point in a space to the nearest exit must be less than 150 feet. [46 CFR 116.500(h)]
 - Ensure that (with the exception of staterooms) each door, hatch or scuttle opens toward the expected direction of escape from the space served [46 CFR 116.510(i)].
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Space Capacity

- Ensure the number of persons indicated for each space served is in accordance with 46 CFR 116.438(n)(2), i.e.:
 - Maximum seating for spaced with fixed seating, or
 - Designed capacity for overnight accommodations, or

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- One person for each 10 square feet of deck area.
 - If applicable, ensure the effect of inclement weather on passenger capacity has been addressed.
 - Ensure the EEP identifies enough readily accessible areas of refuge for the maximum number of persons on board. [46 CFR 116.520(b)(1)]
 - Occupancy may not exceed one person for each 3 square feet of deck area. [46 CFR 116.438(n)(2) & 46 CFR 116.520(b)(1)]
 - If applicable, ensure the effect of inclement weather on exposed areas of refuge has been addressed.
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Stairs

- Each MVZ with more than two deck levels, each having enclosed or partially enclosed accommodation spaces, other than rest rooms and open decks, must be served by at least one stairtower. [46 CFR 116.438(m)(1)]
 - Each stairtower must give access to an embarkation station or an area of refuge. [46 CFR 116.438(m)(2)]
 - Stairtowers may not directly access category 9, 10, 11 or 12 spaces. [46 CFR 116.438(m)(3)]
 - A stairtower is not required to extend below deck to serve spaces in which a fire is likely to originate if one of the means of escape is:
 - A stairway leading directly to weather, or
 - A stairway, with self-closing doors top and bottom, leading to the stairtower. [46 CFR 116.438(m)(4)]
 - For vessels in which a stairtower is not required, a stairway must provide a means of escape for each deck of the MVZ. [46 CFR 116.438(m)(6)]
 - Ensure stairways and stairtowers are properly sized. [46 CFR 116.438(n)]
 - The minimum tread width of a stairway or stairtower must be 0.333 inches for each person served, but must not be less than 36 inches. [46 CFR 116.438(n)]
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- The minimum tread width of a stairway or stairtower is determined for each deck considering only those persons on that deck. [46 CFR 116.438(n)(1)]
- Once a minimum tread width is established it must not be decreased in the direction of escape. [46 CFR 116.438(n)(1)]
- If more than one stairtower serves a MVZ, the number of persons in that zone may be distributed among the stairtowers.

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.