

MSC Guidelines for Review of Vessel Structural Fire Protection

Procedure Number: H2-13

Revision Date: 1/24/2018

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Purpose

The purpose of the Plan Review Guideline is to provide the submitter with general guidance and information for the preparation and submission of Structural Fire Protection plans.

References

- a. Navigation and Vessel Inspection Circular (NVIC) 9-97, Change 1, "Guide to Structural Fire Protection"
 - b. NVIC 8-93 "Equivalent Alternatives to 46 CFR Subchapter H Requirements Related to Means of Escape, Safe Refuge Areas, and Main Vertical Zone Length"
 - c. Commandant (G-MTH) letter of March 24, 1994 w/ enclosure, "Alternative Guidelines for the Application of Navigation and Vessel Inspection Circular 8-93 (NVIC 8-93) to Certain Vessels"
 - d. International Convention for the Safety of Life at Sea, 1974 (SOLAS 74), as amended
 - e. SNAME Technical & Research Bulletin 2-21, "Aluminum Fire Protection Guidelines"
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Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone. Please refer to the Procedure Number: **H2-13**

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General Administrative Guidance

- Determine the vessel type and the applicable regulatory subchapter and any chosen/applicable policies (e.g. refs (b), (c)).
 - Review the applicability section of any referenced policy to ensure the vessel meets the criteria for application of the policy.
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- ❑ Determine if the vessel will be certified for international voyages and if so review Chapter II-2 of reference (d) and the SOLAS vessel sections contained in reference (a).
 - ❑ For aluminum construction, review Chapter 4 of reference (a) and reference (e), if applicable.
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General Review Guidance

It is recommended that the structural fire protection plan and the emergency escape 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.

Subchapter K 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 and 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;
- (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 evacuation plan indicates in all possible fire scenarios, there is capacity to physically locate all persons in areas not adjacent to the fire affected space, 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 should not degrade the integrity of the

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decks by permitting fire spread to compartments above through other windows or openings. Consideration should 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 an external Safety Area must be fire resistant to prevent smoke and flame from impacting the safe refuge of passengers in the external refuge area directly above.

46 CFR 199.145(b)(1) specifically states that “there must not be any openings between the marine evacuation system’s embarkation station and the vessel’s side at the waterline with the vessel in its lightest seagoing condition.” For the purposes of this section, openings include any permanent openings, recessed promenades, or temporary openings such as shell doors, louvers, doors, hatches, accesses, non-fixed windows or ports or fixed windows with non-fire-protection rated glazing.

Fire Protection Requirements

- ❑ Determine the compartment classifications that will be used to apply fire boundary requirements. For Subchapter K, Subchapter H, SOLAS and the HSC Code there are tables in each regulation and definitions to clarify the space designations. For Subchapters I, R and U there are not tables but space types and areas where fire boundaries are required may be specified.
- ❑ Ensure all space classifications meet the requirements/definitions. Check also for spaces not separated by fire boundaries.
- ❑ Review section 3.11 of reference (a) which advises “Open deck areas that include embarkation stations, lowering and/or stowage locations for primary lifesaving appliances, areas of refuge and escape routes to such areas are considered safety areas which are type 4 spaces.”
- ❑ Ensure all bulkheads/deck classifications meet the regulations.
- ❑ Provide the location of draft stops as necessary.
- ❑ Ensure the insulation and penetration details satisfy the guidance of reference (a), reference (e), or against specifications accompanying supporting fire tests and/or type approvals.
- ❑ Identify spaces in which the furniture or furnishings are restricted in a tradeoff for lesser structural fire protection (e.g. type 5A space). In such cases, ensure that appropriate fire restricted furnishings are being used and

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that fire load calculations are provided. See PRG H2-14 for further guidance on fire load calculations.

- Verify what materials require the proper approvals. The requirements for approved materials vary greatly and are found in the applicable regulations.
 - If materials are required to be “approved” then verify that type approval numbers are provided for each material.
 - If non-type approved materials are used then submit the fire test certificates and accompanying reports which show compliance with the applicable fire test criteria from the regulations.
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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, who is responsible for implementing this guidance.