U.S. COAST GUARD MARINE SAFETY CENTER PLAN REVIEW GUIDELINE

REVIEW OF IMO HIGH-SPEED CRAFT CODE GENERAL ARRANGEMENTS, STRUCTURAL FIRE PROTECTION, AND MEANS OF ESCAPE

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Purpose

The purpose of this Plan Review Guideline (PRG) is to provide submitters with general guidance and information for the preparation and submission of IMO High-Speed Craft (HSC) plans.

Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by e-mail or phone. Please refer to Procedure Number H2-18.

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1. Applicability

This PRG is applicable to general arrangement, structural fire protection, and means of escape plan submissions for HSC vessels and details the necessary information that must be provided for review.

2. References

a. International Code of Safety for High-Speed Craft, 2000 - 2008 Edition
b. MSC Circular 911, "Interpretations of Fire Protection-Related Provisions of the HSC Code."
c. MSC Circular 1102, "Interpretations of the 2000 HSC Code and SOLAS Chapter X."

3. General Requirements

All Vessels

a. Confirm the vessel is capable of a maximum speed, in m/s, of 3.7 $V^{0.1667}$, where V is the displacement (m^3) at the design waterline [HSC 1.4.30].

b. Identify whether the vessel will be a passenger vessel or cargo only.

c. If it is a passenger vessel, determine appropriate category type [HSC 1.4.12 and 1.4.13].
   1. Category A craft generally have more restricted routes and fewer passengers.
   2. Category B craft require a higher level of safety.

d. The number of doors and openings in watertight bulkheads shall be minimized [HSC 2.2.2.1].
   1. Doors should be located in the bulkhead and as far inboard as practicable; B/5 is a good indicator.

e. For ro-ro vessels, inner bow doors must meet the location requirements of HSC 2.2.3, and the ro-ro space must meet the access requirements of HSC 2.2.4.

f. Provide the calculation for A_{bow} [HSC 4.4.1], and ensure no public spaces, control stations, or crew accommodations are located forward of the plane defined by this calculation.

g. Confirm a seat is provided in an enclosed space for all passengers and crew [HSC 4.5.1].

h. Spaces with reduced lighting, such as cinemas and discos are not permitted [HSC 7.1.2.4].

i. Fuel and flammable liquid tanks must be separated from passenger, crew, and baggage spaces by a vapor-proof enclosure or cofferdam [HSC 7.5.1]. Fuel tanks and flammable liquid tanks with a flashpoint over 60°C may not form the boundary with an area of major fire hazard unless made of steel or equivalent material [HSC 7.5.2].

Passenger Vessels:

a. Provide the calculation for the collision design acceleration g_{coll} [HSC 4.3.4].
    1. Confirm that the outfitting meets the general accommodation space design guidelines of HSC Table 4.4.2.

b. The mean length of public spaces on Category B craft may not exceed 40 m [HSC 7.11.1].

Cargo Vessels:

a. Control stations, life-saving appliances stowage positions, escape routes, and places of embarkation into survival craft shall be located adjacent to crew accommodation areas [HSC 7.14].

4. Structural Fire Protection

All Vessels

a. There are six classifications of spaces on HSC vessels, labeled A through F [HSC 7.3.1].

b. Fire rated boundaries are rated based on the time they must prevent the passage of smoke and flame. There are no "A", "B", or "C" class ratings in the HSC Code. All boundaries must be tested in accordance with the Fire Test Procedures Code to ensure the following [HSC 7.2.1]:
    1. All fire resisting boundaries must be non-combustible or fire-resisting.
    2. The temperature on the unexposed time cannot rise more than 140° C above the original temperature, nor can any point on the boundary rise more than 180° C above the original temperature during the fire protection time.

c. HSC Tables 7.4-1 and 7.4-2 show the bulkhead and deck boundary time requirements for any space adjacency. The numbers on either side of the diagonal lines represent the side the protection must be provided. In some cases, insulation will be required on both sides of a boundary.
    1. On Category A craft and cargo vessels, rating times may be reduced based on the demonstrated escape times [HSC 7.4.1.1].

d. Main load carrying structures must be protected from collapse if exposed to a fire for a period equivalent to the space requirement [HSC 7.4.2.3]. Aluminum structures core temperature cannot rise more than 200° C above the ambient temperature during the fire protection time [HSC 7.4.2.4].

e. Combustible materials are restricted in construction [HSC 7.4.3].

f. Draft stops must be spaced every 14m in public spaces. Category A craft with only one public space do not require draft stops [HSC 7.4.4.4 and MSC/Circ. 1102].

g. Fire doors shall meet the requirements of HSC 7.9.3.

Passenger Vessels:

a. On Category B craft, public spaces must be divided into zones and meet the additional requirements of HSC 7.11.1.

Cargo Vessels:

a. Vessels intending to carry Dangerous Goods, per the IMDG Code, must meet the additional requirements of HSC 7.17.

5. Ventilation

a. Independent ventilation systems must be provided for all areas of major fire hazard and assembly stations. Ventilation outlets and galley range exhausts have additional requirements [HSC 7.6.3].

b. Separate public spaces zones on Category B craft must be served by independent ventilation systems [HSC 7.12].

c. Dampers are required for any duct penetration of a fire or smoke boundary. These dampers must be capable of closure both automatically and remotely from a continuously manned control station. [HSC 7.6.4 and HSC 7.6.6].

6. Means of Escape

All Vessels

a. Each enclosed public space or space allocated to passengers or crew must be provided with two exits [HSC 4.7.4].
   1. Escape doors should be located at opposite ends of a space. Where this is impracticable, the distance between two doors in the same end of the space must be greater than the maximum length of the space [HSC 4.7.12].
   2. Category A, category B, and cargo vessels each have particular requirements for where these exits must lead [HSC 4.7.4].

b. Doors in escape routes should open in the direction of escape [HSC 4.7.6]. Corridor, doorway, and stairway widths shall be at least 900 mm on passenger craft, 700 mm for cargo craft, and 600 mm for paths when serving special category spaces and spaces not normally employed [HSC 4.7.13, HSC 4.7.14].

c. Main machinery spaces and ro-ro spaces must meet the escape requirements of HSC 4.7.17.

d. Crew spaces entered only occasionally may have one means of escape independent of watertight doors [HSC 4.7.18].

e. All guardrail and bulwark requirements of HSC 4.11 must be met.

f. Provide the evacuation time calculation required by HSC 4.8.1.
   1. The evacuation time is based on the structural fire protection provided for each space.
   2. A full-scale demonstration of evacuation time must be performed in the presence of the Flag Administration.

Passenger Vessels:

a. Zoned public spaces on Category B passenger craft must meet the escape and alternate safe area requirements of HSC 7.11.1.

b. Passenger access to special category spaces, ro-ro spaces, and cargo spaces is prohibited while at sea [HSC 7.1.2.5].

7. 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 MSC, the unit responsible for implementing this guidance.