

**U.S. COAST GUARD MARINE SAFETY CENTER
DESIGN VERIFICATION GUIDELINE**



REVIEW OF GENERAL ARRANGEMENT PLANS FOR TOWING VESSELS (M)

Procedure Number: H1-18

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Purpose

This Design Verification Guideline (DVG) provides guidance and information to the marine industry regarding verification of stability compliance for towing vessels certificated under 46 Subchapter M.

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 DVG-H1-18.

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Table of Contents

1. Applicability	3
2. References	3
3. Submittal Checklist	3
4. General Review Guidance	4
5. Special Consideration	6
6. Disclaimer	6

U.S. COAST GUARD MARINE SAFETY CENTER DESIGN VERIFICATION GUIDELINE



1. Applicability

This Plan Review Guideline is applicable to general arrangement plans reviewed by MSC for towing vessels with a keel laid on or after July 20, 2017; or those that underwent a major conversion on or after July 20, 2017. General arrangement plan verification for a towing vessel under Subchapter M does not need to be completed by MSC. The owner of the vessel may pursue plan verification via any of the three sources:

1. A registered professional engineer (P.E.) licensed by one of the states of the United States or the District of Columbia.
2. An authorized classification society that has been delegated the authority to issue the SOLAS Cargo Ship Safety Construction Certificate under 46 CFR 8.320.
3. U.S. Coast Guard

2. References

- a. [46 CFR 144, Construction and Arrangement](#)
- b. [Marine Safety Manual \(MSM\) Vols. II & IV](#)
- c. [ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways](#)
- d. ABS Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length

3. Submittal Checklist

Check that the following items are included in the submittal package:

- a. Letter of intent identifying what is included in the submittal and requested actions to be taken by the Marine Safety Center;
- b. Copy of Application for Inspection submitted to the Officer in Charge, Marine Inspection (OCMI);
- c. Outboard Profile
- d. Inboard Profile
- e. Arrangement of decks

All plans must include sufficient detail to allow for independent verification of compliance with the applicable requirements of 46 CFR Subchapter M.



4. General Review Guidance

Ensure the vessel complies with the requirements of Subchapter M, including the following applicable items:

a. General and Structural Fire Protection (46 CFR 144.400-430)

- (1) Machinery and fuel tank spaces must be separated from accommodation spaces to prevent the passage of vapors.
- (2) Paint and flammable liquid lockers must be constructed of steel or equivalent material, or wholly lined with steel or equivalent material.
- (3) Waste receptacles must be constructed of noncombustible materials with no opening in the sides or bottom.

b. Escape Requirements (46 CFR 144.500-515)

- (1) Each space accessible to passengers, or regularly used by crew, must have two widely separated means of escape.
- (2) Only one means of escape is required from a space where:
 - (i) the space has a deck area less than 30 m² (322 ft²);
 - (ii) there is no stove, heater or other source of fire in the space;
 - (iii) the means of escape is located as far as possible from a machinery space or fuel tank; and
 - (iv) if an accommodation space, the single means of escape does not include a deck scuttle or ladder.
- (3) A window or windshield may be used as a means of escape from an enclosed space, provided it:
 - (i) does not lead directly overboard;
 - (ii) is suitably marked; and
 - (iii) has a means to open the window or break the glass.

c. Crew Spaces (46 CFR 144.700-720)

- (1) Decks above crew accommodation spaces must be above the deepest load waterline.

U.S. COAST GUARD MARINE SAFETY CENTER

DESIGN VERIFICATION GUIDELINE



(2) Overnight accommodations must be provided for crewmembers if the vessel is operated more than 12 hours in a 24-hour period with the same crew.

d. Rails and Guards (46 CFR 144.800-830)

(1) Rails must be installed around decks accessible to crew. Equivalent protection may include lifelines, wire rope, chains and bulwarks that provide strength and support equivalent to fixed rails.

(2) Hand grabs may be substituted in areas where space limitations make deck rails impractical.

(3) An exposed hazard such as gears and rotating machinery, must be protected by a cover, guard, or rail.

(4) Each exhaust pipe from an internal combustion engine which is within reach of personnel must be insulated or otherwise guarded. On a new vessel, each pipe containing vapor, gas or liquid that has a temperature exceeding 150 °F which is within reach of personnel must be insulated where necessary or otherwise guarded.

e. Pumps, pipes, valves, and fittings for essential systems (46 CFR 143.540)

Vessels designed in accordance with reference (d) must meet section 4-4-4 / 1.1.1 of reference (d). Specifically, as far as practicable, fuel oil tanks are to be part of the vessel's structure and located outside of Category A machinery spaces.

f. Steering systems (46 CFR 143.550)

Vessels designed in accordance with reference (d) must meet section 4-3-3 / 1.13 of reference (d). Specifically, the main and the auxiliary steering gears are to be protected from weather. The power units may be located either within or outside of the compartment containing the rudder actuators.

g. Window Construction and Visibility (46 CFR 144.905-920)

(1) Glass and other glazing material used in windows must not break into dangerous fragments if fractured.

(2) Windows and portholes must be capable of withstanding expected maximum loads.

(3) Windows and other openings at the operating station must be of sufficient size and in the proper location to provide a clear field of vision for safe operation in any condition.

(4) The field of vision from the operating station on a new vessel must extend over an arc from dead ahead to at least 60 degrees on either side of the vessel.

U.S. COAST GUARD MARINE SAFETY CENTER

DESIGN VERIFICATION GUIDELINE



(5) If a new vessel is towing astern, the operating station must be provided with a view aft.

(6) Means must be provided to ensure that windows immediately forward of the operating station allow for adequate visibility to ensure safe navigation regardless of weather conditions.

(7) Glass or other glazing material used in windows at operating station must meet light transmission and other testing requirements of ANSI Z 26.1, "American National Standard for Safety Glazing Materials for Glazing Motor Vehicles and Motor Vehicle Equipment Operating on Land Highways - Safety Standard."

h. Watertight or weathertight integrity (46 CFR 144.320-330)

(1) Each vessel fitted with installed bulwarks around the exterior of the main deck must have sufficient freeing ports or scuppers or a combination to allow water to run off the deck quickly without adversely affecting the stability.

(2) Closure devices must be provided for deckhouses or hull penetrations, which open to the exterior of the vessel and which may allow water to enter the vessel.

(3) The OCMI may require review of a vessel's watertight and weathertight integrity. This review may be performed by an individual who meets the requirements of 46 CFR 144.140 (P.E. or Authorized Classification Society).

i. Collision Bulkhead (References (c) and (d))

(1) The collision bulkhead must be at least 5% of the length between perpendiculars (LBP) aft of the forward perpendicular. Watertight collision bulkheads are to be fitted up to the deck in all vessels.

(2) Machinery spaces below the deck are to be enclosed by transverse bulkheads which are watertight to the deck.

5. Special Consideration

In accordance with 46 CFR 136.120, the cognizant OCMI who issues the COI may give special consideration to authorizing departures from the specific requirements of 46 CFR Subchapter M when unusual circumstances or arrangements warrant such departures and an equivalent level of safety is provided.

6. 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

U.S. COAST GUARD MARINE SAFETY CENTER DESIGN VERIFICATION GUIDELINE



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.