

MSC Guidelines for Review of Gas Carrier Structural Fire Protection

Procedure Number: T1-31

Revision Date: 01/18/00

References

- a. 46 CFR Subchapter D
- b. 46 CFR Subchapter I
- c. 46 CFR Subchapter O
- d. 46 CFR Subchapter S
- e. Navigation and Vessel Inspection Circular (NVIC) 9-97; Guide to Structural Fire Protection
- f. ABS rules for Building and Classing Vessels Intended to Carry Liquefied Gases and Chemical Cargoes in Bulk
- g. International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
- h. International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1978 (SOLAS), as amended

Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

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: **T1-31**

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General Review Guidance

- If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, no plan review will occur until receipt of a copy of the Application.

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- ❑ Is it clearly stated what is desired from the MSC? Are all plans requiring Coast Guard review and/or approval submitted in triplicate? Are there any special or unusual requests involved?
- ❑ The majority of gas carrier reviews involve unmanned tank barges and independent pressure vessel barges regulated under a dual Subchapter O/D certification, for vessels not on an international voyage. Determine applicability of regulations per 46 CFR 151.01-10, as follows:
 - ❑ For **unmanned** barges only, if cargo is listed in 46 CFR Table 151.05 and **has** flammability or combustibility characteristics as indicated by a fire protection requirement in the table, then Subchapters O and D apply.
 - ❑ For **unmanned** barges only, if cargo is listed in 46 CFR Table 151.05 and **does not have** flammability or combustibility characteristics as indicated by a fire protection requirement in the table, then Subchapters O and D or O and I apply. The option for applying D or I, in addition to O, should be indicated by the owner on the Application for Inspection.
 - ❑ Per 46 CFR 151.01-10(e), **manned** barges which carry a cargo listed in Table 151.05 will be considered individually by Commandant for applicable regulations and design requirements. Many of the SFP requirements of 46 CFR, Subchapters D and I involve protection of accommodation areas and other service spaces for manned tank vessels, not listed in the following review procedure.
- ❑ If the vessel is an existing tank barge, consult 46 CFR 151.01-25(c) for applicable requirements.
- ❑ If the vessel is a self-propelled tankship, consult 46 CFR, Subchapter O, Parts 153 and 154. Also consult with G-MOC and G-MSE for other potential compliance and plan review issues. Ensure compliance with references (f), (g), and (h), as applicable for international voyages. (See MSC Guidelines for Review of Tankship SFP for details of SOLAS SFP requirements.) Per 46 CFR 32.56-1(b), SOLAS structural fire protection regulations are considered equivalent requirements for tankships certificated under Subchapter O/D.
- ❑ Ensure steel construction per 46 CFR 32.57-10(a) and 46 CFR 32.60-1(a). Aluminum is not acceptable for hatch covers and ullage openings.
- ❑ Subdivision of cargo space into tight compartments, per 46 CFR 32.60-5
- ❑ Segregation of cargo, per 46 CFR 32.60-10 & 153.233:

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- (a) General cargo spaces, and enclosed spaces where sources of vapor ignition normally present, by cofferdams or other specified spaces. Note that 46 CFR 38.05-1(d) does not allow the void between the primary and secondary barriers to function as the cofferdam
- (b) Cargo tank spaces extend to the main deck, with hatches and vents located on the weather deck
- (c) Enclosed spaces
 - (1) Cargo and vent piping continuous
 - (2) No openings to cargo tank
- (d) Adequate ventilation of enclosed spaces used as stowage spaces
- (e) Openings
 - (1) No manholes or other openings from cargo tanks to any other enclosed spaces (with some exceptions for access to inner bottoms)
 - (2) Vents, sounding tubes, and similar piping passing through tanks run in a trunk, or minimum wall thickness as specified
- Ensure separation of tanks from machinery, service, and other spaces, per 46 CFR 153.233.
- Independent tanks, per 46 CFR 32.60-30:
 - (a) independent tanks may be located in hold spaces or other cargo tanks, provided a minimum 15 inch clearance
 - (b) when independent cargo tank is located in an enclosed space other than a cargo tank, such enclosed space shall be considered as equivalent to a pumproom and safeguarded in accordance with 46 CFR 32.60-20 (gastight bulkheads to isolate vapor ignition sources, segregation, ventilation, ducting, and access requirements)
- Maximum service temperature per 46 CFR 38.05-2
- Tank insulation in accordance with 46 CFR 38.05-20;
 - Insulation in a location exposed to possible high temperature or source of ignition shall be either:
 - Incombustible, complying with 46 CFR 164.009, or
 - Self-extinguishing, as determined by ASTM Specification D-1692, and covered by a suitable steel cover.

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- ❑ No material requirements other than chemical stability for insulation in locations protected by enclosure in tight steel envelope with inert conditions maintained or by continuous surrounding structural voids/ballast tanks
- ❑ All insulation with vapor-proof construction; tanks exposed to weather with removable 0.083 inch sheet metal jacket and flashed for weathertightness.
- ❑ Protection of all insulation in areas of probable mechanical damage
- ❑ Piping insulation self-extinguishing
- ❑ For refrigerated systems, ensure maximum allowable pressure maintained in accordance with 46 CFR 38.05-25
- ❑ Insulation forming integral part of the secondary barrier:
 - ❑ Insulating material not affected by leaking cargo; insulation and sealers testing requirements
 - ❑ Sufficient mechanical strength and thermal expansion design
- ❑ Tankship ventilation in accordance with 38.20-10:
 - ❑ (a) power ventilation system shall be provided for compartments containing pumps, compressors, etc. connected with the cargo handling facilities, complete air changeout in less than 3 minutes
 - ❑ (b) Inlet/outlet locations
 - ❑ (c) Means for purging cargo vapors in other areas
 - ❑ (d) Ventilation of auxiliary machinery spaces, design must prevent entry of cargo vapors into the space through space access and ventilation system

Definition

International Voyage: A voyage from a country to which the present Convention applies to a port outside such country, or conversely. (See SOLAS Chapter I, Part A, Regulation 2(d).)