

MSC Guidelines for the Review of Gas Carrier General Arrangements

Procedure Number: C1-29

Revision Date: March 30, 2012



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Purpose

To establish a process for reviewing general arrangements plans submitted for a gas carrier/independent pressure tank barge regulated under 46 CFR, Subchapters O, I, and/or D.

References

- a. 46 CFR, Subchapter D
 - b. 46 CFR, Subchapter I
 - c. 46 CFR, Subchapter O
 - d. IGC Code, International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
 - e. International Convention for the Safety of Life at Sea, Consolidated Edition 2009, Consolidated text of the Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988 (SOLAS), as amended
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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 C1-29.

Email: MSC@uscg.mil

Phone: 202-475-3403

Website: <http://homeport.uscg.mil/msc>

Responsibilities

Using applicable portions of references (a) through (e), the submitter shall provide sufficient documentation and plans to indicate compliance with the applicable requirements. The submission shall be made electronically to the above email address or, if paper, in triplicate to the MSC's address found on the above website. To facilitate plan review and project management, all plans and information specified in these guidelines should be submitted as one complete package through a single point of contact for the project.

General Guidance

- The submitter must indicate whether the vessel is new or existing. No plan review may occur until receipt of a copy of the Application for Inspection.

MSC Guidelines for Review of Gas Carrier General Arrangements

Procedure Number: C1-29

Revision Date: March 30, 2012

- Hard copy plans must be submitted in triplicate, where all spaces must be identified and designated on the plans.
- ❑ If the vessel is new and no file exists, basic information is taken from the Application for Inspection. In general, no plan review will occur until the MSC receives a copy of the Application for Inspection.
 - ❑ Is it clear what the submitter is asking for? Are there any special or unusual requests or a time critical element involved?
 - ❑ The majority of gas carrier reviews involve unmanned tank barges and independent pressure vessel barges regulated under a dual Subchapter O/D certification not engaged on international voyages. Determine applicability of regulations per 46 CFR 151.01-10, as follows:
 - For **unmanned** barges only, if any desired 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 any desired 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 the submitter may choose whether to apply Subchapters O and D or O and I. Because Subchapter O is not an inspection subchapter, D or I must be applied. 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 (CG-5223) for applicable regulations and design requirements.
 - ❑ If the vessel is a **self-propelled tankship**, consult 46 CFR, Subchapter O, Parts 153 and 154. Also consult with the Headquarters Office of Vessel Activities, CG-543, phone (202)372-1251, and CG-521 Office of Design and Engineering Standards, phone (202)375-1532, for other potential compliance and plan review issues. Compliance with references (d) and (e) should also be verified, as applicable for international routes. For a foreign flagged tankship, also consult MSC Guidance C1-43, Generation of a Subchapter O Endorsement, as the International Certificate of Fitness is normally accepted in lieu of full plan review.
 - ❑ **Barge Hull Types:** Per 46 CFR 38.05-1 and 46 CFR 151.15-3(d), a minimum of Type II barge hull is required for gas barges. A Type I barge hull may be

MSC Guidelines for Review of Gas Carrier General Arrangements

Procedure Number: C1-29

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required depending on appropriate hazard of cargo. The required protective voids are as follows:

- Type I: 4.0 ft inboard from side and box end void
25.0 ft rake bulkhead for lead barges
15.0 inches bottom inspection clearance
 - Type II: 3.0 inboard ft side and box end void
25.0 ft rake bulkhead for lead barges
15.0 inches bottom inspection clearance
- Design and construction standards of 46 CFR :
- No stowage of dangerous cargoes per 46 CFR 38.01-2(a)(9).
 - 38.05-1(b) Access and ventilation intakes arranged to prevent flow of cargo vapor from the weather deck, openings adjacent to cargo area at least 24 inches above cargo handling deck.
 - 38.05-1(e) Compartments containing cargo tanks or pipes accessible from the weather deck only. No openings from these compartments to other parts of the vessel permitted.
- Per 38.05-1(d) & 32.60-10:
- cargo tank spaces must be isolated from the remainder of the vessel by cofferdams in accordance with 32.60-10.
 - no access from cargo tanks to enclosed spaces, 32.60-10(c)(2).
 - ventilation required for stowage purposes in enclosed spaces, 32.60-10(d).
- Design and construction of non-pressure vessel type cargo tanks, 46 CFR 38.05-4; secondary barriers required where leakage from primary barrier results in unsafe temperature reduction in vessel structures.
- Per 38.05-10(e), clearances of 24 inches from the side and 15 inches from the bottom around independent containment systems (in addition to the required protective voids.)
- For pressure vessel designs, distance between tanks and between the hull and tanks must allow inspection of all hull and tank surfaces.
 - For non-pressure vessel type containment systems, access shall be arranged to permit inspection of one side of each of the primary tank and secondary barrier.
 - Weathertightness of the deck must be maintained for designs with protruding tanks, except for vessel on restricted/protected routes, and open hopper type barges of acceptable design per 38.05-10(g)(3).

MSC Guidelines for Review of Gas Carrier General Arrangements

Procedure Number: C1-29

Revision Date: March 30, 2012

- Per 38.05-10(a)(2), cargo tanks installed in barges shall comply with the requirements of 32.63-25:
 - Verify tanks meet the minimum requirements for collision protection, 32.63-25 (b)(1) & (2).

- Per 46 CFR 38.05-10(g), for pressure vessel type cargo tanks:
 - Location restrictions.
 - Gastight and watertight penetrations of the weather deck, where liquefied flammable gas tanks installed in cargo tanks.
 - Weathertightness of penetrations above the weather deck, where installed in non-tank hull spaces.
 - Guardrails and bulwarks: Guardrails shall be constructed in accordance with 46 CFR 32.01-10 or 46 CFR 92.25. The height of rails and bulwarks shall be at least 39.5 inches.

- All spaces divided into tight compartments, per 46 CFR 32.60-5.

- Tank spaces extended to the main deck with hatches and vents extended to the weather deck, per 46 CFR 32.60-10.

- Any installed pump room must be isolated from vapor sources, per 46 CFR 32.60-20.

- For an oceangoing barge, verify compliance with 33 CFR and 46 CFR Subchapter O. A double bottom shall be fitted in accordance with 33 CFR 157.10d(c)(2).

- Manned gas barges are not typical designs, and require special attention by Commandant on an individual basis to determine applicable regulations and design requirements, per 46 CFR 151.01-10(e). Requirements for construction standards and accommodations in tankship gas carriers, from 46 CFR 153 and/or 154, may be used in these cases (e.g. access restrictions in 153.201, tank separation requirements in 153.233, etc). Other accommodation standards contained in 46 CFR, Subchapters D and/or I may also be applied (e.g. means of escape in 32.02-1, berthing requirements of 32.40-20(b), etc). In general, consult with GG-5431 and CG-5223 to determine applicability and design requirements for manned gas barges.

- For open hopper barges, evaluate coaming height requirements. A 36 inch, (may be graduated to 24 inch at mid-length and 18 inch thereafter) minimum height plowshare breakwater on the forward rake is required, unless

MSC Guidelines for Review of Gas Carrier General Arrangements

Procedure Number: C1-29

Revision Date: March 30, 2012

demonstrating to the Commandant that sufficient protection without the plowshare, per 46 CFR 151.10-20 (2).

- ❑ Tank access openings located above the maximum liquid level and as close to the top of the tank as possible, sized at least 15 x 18 inches, per 46 CFR 151.15-3(d)(3) and 38.05-2(f).
 - ❑ Inspection clearances in the area between tanks or between a tank and the vessel's shell shall not be less than 15 inches, per 46 CFR 151.15-3(d)(2).
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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 MSC, the unit responsible for implementing this guidance.