

MSC Guidelines for Review of Chemical Tankship Lightship and Stability

Procedure Number: T1-27

Revision Date: 01/18/00

References

- a. 46 CFR 170, Subpart F, Determination of Lightweight Displacement and Centers of Gravity
 - b. NVIC 17-91, Guidelines for Conducting Stability Tests
 - c. ASTM F 1321-92, Standard Guide for Conducting a Stability Test (Inclining and Lightweight Survey) to Determine the Light Ship Displacement and Centers of Gravity of a Vessel
 - d. 46 CFR 170, Subpart E, Weather Criteria
 - e. International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1978 (SOLAS)
 - f. International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 1994 (IBC)
 - g. 46 CFR 172, Subpart F, Special Rules Pertaining to a Ship That Carries a Hazardous Liquid Regulated Under Subchapter O of this Chapter
 - h. 46 CFR 173, Subpart B, Lifting
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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: **T1-27**

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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?
- Verify applicability of regulations:
 - Does the vessel operate on an international voyage? (See SOLAS Chapter I, Regulation 2(d))
 - If yes, does the vessel carry a cargo listed on the table in Chapter 17 of the IBC Code? If yes, then apply the requirements below from **Chapter 2 of the IBC Code**. [Note: Per SOLAS Chapter II-1, Regulation 25-1, ships complying with the IBC code may be excluded from complying with the requirements in SOLAS.] If no, then follow **46 CFR Subchapter O** applicability checks below.
 - If no [vessel not on an international voyage], does the vessel carry a cargo listed in Table 1 of 46 CFR 153? If yes, then the requirements from 46 CFR 172 Subpart F will apply. If no, check to see if the cargo is listed under 46 CFR Subchapter D and if so, refer to the MSC Guidelines for Review of Tank Ship (non-chemical) Lightship and Stability. If the cargo is not listed in 46 CFR Subchapter D or O, then contact G-MSO-3 for authorization to carry the cargo in U.S. waters.
 - Ensure the following drawings (items) have been submitted:
 - General Arrangements
 - Lines, offsets, or computer disk with hull model
 - Hydrostatic Tables
 - Tank Capacity Tables\Plan
 - Ullage & Sounding Tables
 - Intact calculations
 - Damage Stability calculations
 - Lifting calculations
 - Trim and Stability Booklet
 - Verify light ship parameters utilizing one of the following methods:
 - 1) Does a sister vessel, with known characteristics, exist?
 - 2) Has an approved procedure and subsequent stability test been performed in accordance with references (a), (b), and (c)? If so, use the MSC Guidelines for Review of the Stability Test Results.

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- Ensure compliance with the intact stability requirements defined in reference (d). Ensure actual GM is larger than required GM in all loading conditions. If the vessel is less than 100 meters, then ensure compliance with 46 CFR 170.173.
- Determine the vessel type (I, II, or III) and the resulting areas where damage shall be applied along the vessel's length. Domestic voyages only: 46 CFR 153.1 and 46 CFR 172.125-172.150. International voyage: IBC Code, Section 2.1.2 and 2.8.
 - (Note: The IBC Code and U.S. regulations are different concerning a Type III vessel. The IBC Code requires damage anywhere in the vessel length for a ship greater than 225m. U.S. regulations specify requirements for a vessel over 125m, while the IBC Code has a distinction between 125m and 225m.)
- Ensure that the proper extents of damage are being used in the calculations. For a tanker operated only on domestic voyages use the criteria in 46 CFR 172.135, reference (g). For a tanker operated on an international voyage, use the criteria in the IBC Code, Section 2.5 .
 - (Note: The differences between domestic and international voyage criteria for extents are the longitudinal bottom damage extent and the transverse extent for parts of the ship aft of 0.3L.)
- Ensure the survival conditions have been met. For a tanker operated only on domestic voyages, use the criteria in 46 CFR 172.150. For a tanker operated on international voyages, use the criteria in Section 2.7 and 2.9 of the IBC Code.
 - (Note: The differences between domestic and international voyage criteria for survival conditions are:
 - 1) the maximum angle of heel differs
 - 2) the IBC Code has a righting energy requirement, and
 - 3) U.S. regs have a minimum GM requirement.
- Refer to the MSC Guidelines for Review of Tankship Stability, as applicable, if the vessel intends to carry a partial or full load of cargo of oil in bulk.
- Ensure that the location of downflooding is properly accounted for in the calculations for compliance with the stability criteria.

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- If the vessel is carrying a crane, ensure compliance with reference (h).
- The MSC will construct a detailed HECSALV or GHS model from the lines plan, offsets, or electronic model provided, and will verify the stability of the vessel using this model and the criteria specified.

Definitions

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).)

Downflooding Point: The lowest opening on a vessel that allows the entry of seawater into the hull or superstructure of an undamaged vessel due to heel, trim, or submergence of the vessel.

Oil: Petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products. 33 CFR 157.03.