

MSC Guidelines for the Review of Chemical Tankship Lightship and Stability

Procedure Number: C1-27

Revision Date: February 29, 2016

T. O. PHILLIPS, CDR, Chief, Tank Vessel and Offshore Division

Purpose

To establish a process for reviewing lightship and stability calculations submitted for a U.S flag Chemical Tankship operating upon U.S. waters and/or on international voyages, regulated under Subchapters O and D and/or SOLAS/IBC (where applicable).

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 Designation:1321-14, Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) 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, SOLAS Consolidated Edition 2014, and its Protocol of 1988
 - f. International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, 2007 Edition (IBC CODE)
 - 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
-

Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by email or phone.

Email: MSC@uscg.mil

Phone: 202-795-6731

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

Responsibilities

Using applicable portions of references (a) through (h), the submitter shall provide sufficient documentation and plans to indicate compliance with the applicable requirements. The submission shall be made electronically to the

MSC Guidelines for Chemical Tankship Lightship and Stability

Procedure Number: C1-27

Revision Date: February 29, 2016

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

- If the vessel's stability is being reviewed under Navigation and Vessel Inspection Circular (NVIC) No. 3-97, "Stability Related Review Performed by the American Bureau of Shipping for U.S. Flag Vessels," then MSC review of stability items is not required.
- The submitter must clearly state what is desired from the MSC.
- The following documents, drawings, supporting calculations and certificates must accompany the submission:
 - General Arrangements
 - Lines, offsets, or computer disk with hull model
 - Hydrostatic Tables
 - Tank Capacity Tables/Plan
 - Ullage & Sounding Tables
 - Intact Stability calculations
 - Damage Stability calculations
 - Lifting calculations (if the vessel is equipped to lift cargo)
 - Trim and Stability Booklet
 - Application for Inspection
- Check the applicability of the following regulations:
 - Will the vessel engage in international voyages (See reference (e), SOLAS, Chapter I, Part A, Regulation 2(d))?
 - If yes, does the vessel carry a cargo listed in the table in Chapter 17 of reference (f), the IBC Code?
 - If yes, then apply the requirements of **Chapter 2 of the IBC Code, reference (f)**. [Note: Per reference (e), SOLAS, Chapter II-1, Part B, Subdivision and stability, Regulation 4, states, ships shown to comply with the IBC code may be excluded from the application of SOLAS II-1, Part B-1, Stability.]
 - If no, stability guidance may be found in Plan Review Guide C1-21 (Tankship Stability and Hypothetical Oil Outflow).

MSC Guidelines for Chemical Tankship Lightship and Stability

Procedure Number: C1-27

Revision Date: February 29, 2016

- If no (vessel does not engage in international voyages), does the vessel carry cargoes listed in **46 CFR Subchapter O** (Table 1 of 46 CFR 153)?
 - If yes, then apply the requirements from 46 CFR 172 Subpart F.
 - If no, then check to see if the cargo is listed under 46 CFR Subchapter D and if so, stability guidance may be found in Plan Review Guide C1-21 (Tankship Stability and Hypothetical Oil Outflow).
- If the cargo is not listed in 46 CFR Subchapter D or O, then contact CG-ENG-5 for authorization to carry the cargo in U.S. waters.
- Verify light ship parameters utilizing one of the following methods:
 - Does a sister vessel, with known characteristics, exist?
 - 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.
- Verify 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 verify 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.

MSC Guidelines for Chemical Tankship Lightship and Stability

Procedure Number: C1-27

Revision Date: February 29, 2016

- Verify 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.
 - 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 reference (f), Section 2.7 and 2.9 of the IBC Code.
 - The differences between domestic and international voyage criteria for survival conditions are:
 - The maximum angle of heel differs
 - The IBC Code has a righting energy requirement, and
 - U.S. regulations have a minimum GM requirement
 - If applicable, check Plan Review Guide C1-21 (Tankship Stability and Hypothetical Oil Outflow) for Tankship Stability to check conditions when the vessel is carrying a oil in bulk.
 - Check the location of downflooding and ensure this is taken into account for compliance with the appropriate stability criteria.
 - If the vessel is carrying a crane, ensure compliance with reference (h).

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

MSC Guidelines for Chemical Tankship Lightship and Stability

Procedure Number: C1-27

Revision Date: February 29, 2016

Disclaimer

This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is neither intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current guidance 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, which is the unit responsible for implementing this guidance.