MSC Guidelines for the Review of Crane Lifting Calculations

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Purpose: The purpose of this document is to provide guidance and information regarding the submission of Crane Lifting Calculations.

References:

a. 46 CFR 173, Subpart B

b. Marine Safety Manual, Volume IV, 6.E.5.b(7) & 6.E.11

Contact Information: If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by email or phone, and refer to Plan Review Guide Number C1-03.

Email: MSC@uscg.mil
Phone: 202-795-6731
Website: http://homeport.uscg.mil/msc

Responsibilities: Using applicable portions of references (a) and (b), the submitter shall provide sufficient documentation and plans to indicate compliance with the 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:

- If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, plan review may not occur until a copy of the Application is received.
- Does the submission include all necessary information to demonstrate compliance with the applicable requirements? At a minimum, submissions should include the following:
  - General Arrangements
  - Lines, offsets, or electronic hull model
  - Tank Capacity Tables
  - Free Surface Data
  - Draft Mark Locations
  - Crane Data
- Does the submission clearly state what is desired from MSC?
- Are all plans requiring Coast Guard review and/or approval submitted in triplicate (if submittal is in hard copy)?
- Are there any special/unusual requests or a time critical element involved?

Specific Topics:

- In accordance with 46 CFR 173.005, these guidelines apply only to those vessels that:
  - Are equipped to lift cargo or other objects; and
  - Have a maximum heeling moment due to a hook load greater than or equal to: (0.67)*(W)*(GM)*(F/B) where:
    - W is the displacement weight of the vessel;
    - GM is the metacentric height (with hook load);
    - F is the freeboard to the deck edge at midships; and
    - B is the beam of the vessel at amidships.
- Intact stability requirements (See Attachment (1)):
  - Non-counterballasted vessels must comply with the requirements of 46 CFR 173.020.
  - Counterballasted vessels must comply with the requirements of 46 CFR 173.025.
- When performing intact stability calculations, the hook load must be considered to be located at the head of the crane (46 CFR 173.007).

- Ensure that all downflooding points (on both sides of the vessel) are correctly accounted for in the stability calculations.

- If the vessel has multiple cranes, ensure that calculations have been performed for each crane independently, as well as each possible combination of cranes, and that all operating restrictions are noted.

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 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, the unit responsible for implementing this guidance.

Attachment:

(1) Crane lifting criteria flow chart

Crane Lifting Criteria