

MSC PLAN REVIEW GUIDELINE (PRG)



REVIEW OF INLAND TANK BARGE STABILITY

Procedure Number: C1-13

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Purpose

This Plan Review Guideline (PRG) provides guidance and information regarding the submission of stability calculations for Inland Tank Barges regulated under 46 CFR Subchapters D, I, and/or O.

Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center (MSC) by e-mail or phone. Please refer to Procedure Number **C1-13**.

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1. Applicability

This Plan Review Guideline (PRG) is applicable to all barges regulated under 46 CFR Subchapters D, I and/or O that operate on **Inland routes**. The definitions section provides further information regarding the specific meaning of Inland routes.

Subchapter D applies to **manned and unmanned** barges that carry cargoes listed in 46 CFR Table 30.25-1.

Subchapter I may apply to:

- (a) **Manned and unmanned** barges that carry bulk liquid cargoes that are not flammable or combustible (see 151.01-10 for more information).

Subchapter O, **Part 151** applies to **unmanned** tank barges that carry cargoes listed in 46 CFR Table 151.05.

- (a) If the cargoes to be carried **are flammable or combustible** as indicated by the fire protection requirement in the table (column “m”), then both Subchapters O and D apply (151.01-10(b)).
- (b) If the cargoes to be carried **are not flammable or combustible** as indicated by the fire protection requirement in the table (column “m”), then Subchapters O and D or O and I apply. The option for applying D or I is left up to the barge owner. The owner must request I/O certification on the Application for Inspection; otherwise the barge will be regulated under D/O (151.01-10(c)).
- (c) Part 151 may apply to **manned** barges which carry a cargo listed in 46 CFR Table 151.05. For these barges, Commandant (CG-ENG-5) will consider the case individually and determine which subchapters apply (151.01-10(e)).

2. References

- (a) [46 CFR Subchapter S](#)
- (b) [NVIC 17-91](#), Guidelines for Conducting Stability Tests
- (c) [ASTM F 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) Marine Safety Manual, Volume IV

3. Definitions

Inland Routes:

Inland routes include vessel service on lakes, bays, sounds, rivers, and certain coastwise routes, including “special service voyages” and “limited coastwise, fair weather only.” Operation on the Great Lakes is not considered an inland route, unless specified in fair weather definition.

Special Service Voyages (MSM, Volume IV, Chapter 6, Part F.3.g):

This is a voyage between ports, in the trades, and under conditions of operation as specified in the Special Service Load Line regulations. Special service load lines and their certificates are valid only for coastwise (20 mile offshore limit) voyages within limited areas of trade as specified in 46 CFR Part 44. Special service freeboards are not applicable to the Great Lakes.

Fair Weather Voyages (MSM, Volume IV, Chapter 6, Part F.3.i):

Load lines may be authorized for unmanned inland barges on certain specific routes "in fair weather only." The route between St. Marks, Florida, and Carrabelle, Florida, may be considered an extension of lakes, bays, and sounds service for stability purposes. The barge will be restricted to unmanned fair weather voyages only, not to exceed 20 miles from shore. The Great Lakes route between Chicago, Illinois, and Gary or Burns Harbor, Indiana, may be considered an extension of river service for stability purposes. The barge will be restricted to unmanned fair weather voyages only, not more than 5 miles from a harbor of safe refuge. Hopper barges may be permitted to travel beyond Burns Harbor to Michigan City, Indiana, provided they are fitted with weathertight hatch covers. Barges built to inland structural standards may operate on these routes, within 5 miles from shore, without structural modification.

Additional definitions can be found here:

- (a) [46 CFR 30.10](#) (Subchapter D)
- (b) [46 CFR 151.03](#) (Subchapter O, Part 151)
- (c) [46 CFR 153.2](#) (Subchapter O, Part 153)

4. General Guidance

Using applicable portions of references (a) through (d), 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. At a minimum, the submission should include:

- (a) General Arrangements,
- (b) Lines, offsets, or computerized hull model,
- (c) Tank Capacity Tables/Plans,
- (d) Hydrostatic Tables,
- (e) Stability Calculations (intact and damage, as applicable),
- (f) A statement clearly identifying what is desired from MSC, and
- (g) Any special/unusual requests.

For new construction, a Plan Review Information Sheet (PRIS) will be generated if:

- (a) The vessel carries any cargoes regulated under Subchapter O; or
- (b) The vessel carries LFGs regulated under Subchapter D.

For existing vessels, a new PRIS will be generated if a change is made to:

- (a) The maximum allowable cargo density;
- (b) The barge's hull type(s); or
- (c) The authorized route(s)

Submissions which will require a PRIS should include, as applicable:

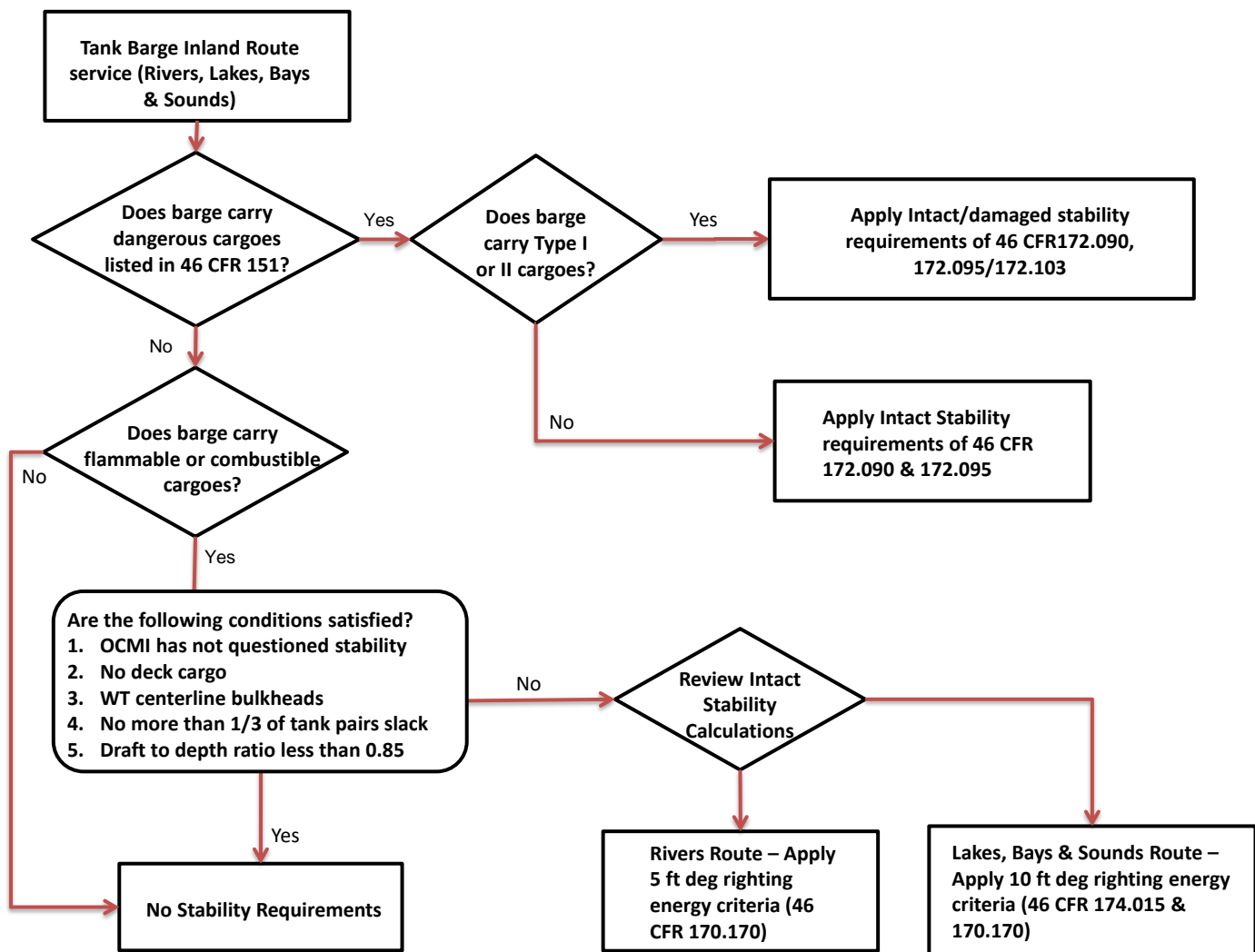
- (a) Maximum cargo weight (short tons) and density (lbs/gal).
- (b) Numbering (e.g. 1 P/S, 1 C), volume (ft³), and maximum capacity of each tank.
- (c) Loading cases (maximum load and draft) for each hull type and route with corresponding hydrostatic calculations.

5. Review Guidance

- (a) For a barge regulated under **46 CFR Subchapter D** only, the stability requirements in 46 CFR Subchapter S do not apply if all of the following conditions are satisfied:
 - a. The barge does not have to meet 33 CFR Part 157, Subpart B,
 - b. The barge only carries a cargo listed in 46 CFR 30.25-1, and
 - i. Is less than 150 GT, or
 - ii. Operates only in rivers, or lakes, bays, and sounds service.
- (b) If all of the above requirements are met, then no stability review is required unless the stability is questioned by the OCMI. The OCMI will typically not require additional stability review if the following conditions from reference (d), section 6.E.5.b(2) are met:
 - a. All cargo is carried below the barge's main deck;
 - b. The barge has an oil tight or watertight centerline bulkhead;
 - c. The barge carries no more than 1/3 of its tank pairs slack; and
 - d. The barge's draft to depth ratio is not greater than 0.85.
- (c) If a stability review is required, the submitter must verify that lightship characteristics were (or are to be) determined using one of the following methods:
 - a. Acceptance as a sister vessel with known characteristics (reference (d), Section 6.D.2), or
 - b. Deadweight survey combined with a conservatively assumed vertical center of gravity (VCG) (references (b) and (c)).
 - i. In accordance with 46 CFR 170.085, a written stability test procedure must be sent to the MSC at least two weeks before the stability test. Reference (c) provides guidance on the required elements for the stability test procedure. The procedure shall be approved by the MSC prior to conducting the test or survey.
 - ii. In accordance with 46 CFR 170.175(b), arrangements should be made with the OCMI to have an acceptable Coast Guard representative to witness the stability test.
- (d) For a barge regulated under **46 CFR Subchapter D** only:
 - a. Unless the barge is exempted from a stability review, the requirements set forth in 46 CFR 174.015 will be applied as follows in accordance with reference (d):
 - i. The area under the righting arm curve must exceed 5 ft-degrees for river service and 10 ft-degrees for lakes, bays, and sounds service. [See reference (d) Section 6.E.5.b(1)]
 - ii. Note: 33 CFR 157.08(h) exempts inland barges from the OPA 90 damage stability requirements.
- (e) For a barge regulated under **46 CFR Subchapter O**:
 - a. Verify that the barge meets the intact transverse stability requirements found in 46 CFR 172.090.
 - b. Verify that the barge meets the survival conditions in 46 CFR 172.110 assuming the damage found in 46 CFR 172.104 according to the barge's hull type (Type I and II only).

- c. Verify the barge meets the intact longitudinal stability requirements found in 46 CFR 172.095.
 - d. Verify that the barge meets the weather tight weather deck integrity requirements found in 46 CFR 172.100 (Type I and II only).
- (f) Per 46 CFR 31.10-32, if the barge was constructed after September 6, 1977 and is greater than 300 feet in length, a loading manual which complements the conditions examined in the stability review shall be submitted for approval in accordance with 46 CFR 42.15-1(a) or 45.105(a).
- a. If a barge is seeking a one-time voyage Special Loading Authorization (SLA), submit calculations based on the current stability letter and restrictions which comply with applicable requirements.

6. Inland Tank Barge Stability Flowchart



7. 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 MSC, the unit responsible for implementing this guidance.