

# MSC Guidelines for the Review of Oceangoing Tank Barge; Structures and Longitudinal Strength

Procedure Number: C1-14

Revision Date: February 13, 2014

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## Purpose

To establish a process for reviewing structures and longitudinal strength calculations submitted for an Oceangoing Tank Barge regulated under Subchapter S, D, O, or I.

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## References

- a. American Bureau of Shipping Rules, "Steel Barges," 2009
  - b. 46 CFR Subchapter D
  - c. 46 CFR Subchapter I
  - d. 46 Subchapter O
  - e. NVIC 2-81, Coast Guard Inspection Guidance Regarding Integrated Tug Barge Combinations
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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 guidance. 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 Homeland Security expressly disclaim liability resulting from the use of this document.

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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 C1-15.

Email: [MSC@uscg.mil](mailto:MSC@uscg.mil)

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## General Review Procedures

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.

Is it clearly stated what is desired from the MSC? Are all plans requiring Coast Guard review and/or approval submitted in triplicate or electronically submitted? If submitted electronically, no stamp is required?

Is the vessel being reviewed under NVIC 10-82? If yes, then MSC review of structure and longitudinal strength is not required. Note: under NVIC 10-82, the MSC must review and approve general arrangement plans.

Is the vessel being classed by ABS? If yes, check the vessel file for ABS letter/drawings or request from submitter/ABS. As stated in 46 CFR 31.10-1(c) and 46 CFR 151.10-20(b), CG considers ABS structural review for class as acceptable for showing compliance with U.S. structural regulations.

Per 46 CFR 31.10-32, if the barge is constructed after September 6, 1977 and is greater than 300 feet in length, a loading manual must be submitted in accordance with 46 CFR 42.15-1(a) or 45.105(a). Review of this item is normally conducted as part of the final stability review.

Are there any special/unusual requests or a time critical element involved?

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## General Review Guidance

- Ensure the following drawings (items) have been received:
  - General Arrangements
  - Midship Section
  - Longitudinal Construction
  - Frame & Bulkhead Construction
  - Scantling plans, including deck bin scantling
  - Structural calculations
  
- Per 46 CFR 31.10-32, if the barge is constructed after September 6, 1977 and is greater than 300 feet in length, a loading manual must be submitted in accordance with 46 CFR 42.15-1(a) or 45.105(a). Review of this item is normally conducted as part of the final stability review.

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- Verify that the hull, structural bulkheads, and decks are constructed of steel.
- For a vessel that has independent tanks, see the Gas Carrier Structures work instruction for review guidance

\*Note: Use reference (a) for all requirements.

- For unclassified vessels:
  - Calculate the vessel definitions: Part 3.1.1
  - Check and validate the location of the collision bulkhead: Part 3.2.6/3.1
  - Calculate and check the construction of watertight bulkheads: Part 3.2.6/5
  - Calculate and check the construction of tank bulkheads: Part 3.2.7
  - Calculate and check side shell and bottom plating: Part 3.2.2/3.1 & 3.5
  - Calculate and check deck plating: Part 3.2.3/1.1
  - Verify the calculations for longitudinal hull girder strength: Part 3.2.1/3
  - For a vessel => 250 feet, verify still water bending moment and shear for calculations have been submitted: Part 3.2.1/7
  - Calculate and check trunk plating: Part 3.2.3/3
  - Check scantlings for any superstructure on deck: Part 3.2.8/3 & 7
  - Check main framing scantlings: Part 3.2.4/3
  - Check fore end scantlings: Part 3.2.5
  - Check scantlings for hatchway coamings: Part 3.2.9/5
  - For manned barges only, check bulwark and guard rail design: Part 3.2.
- For unclassified vessels carrying pollution category I oil cargo as listed in 46 CFR Table 30.25-1:
  - Calculate the vessel definitions: Part 3.1.1
  - Check and validate the minimum midship section modulus: 46 CFR 32.59-1(c)
  - Calculate and check the construction of watertight bulkheads: Part 3.2.6/5
  - Calculate and check the construction of tank bulkheads: Part 3.2.7
  - Calculate and check side shell and bottom plating: 46 CFR 32.59-1(e)(5)-(8)
  - Calculate and check deck plating: 46 CFR 32.59-1(e)(1)-(3)
  - Check scantlings for longitudinal stiffeners within 40% of midship length

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46 CFR 32.59-1(d)

- For an integrated tug-barge unit:
    - Determine type of unit, Pushing Mode or Dual Mode. (See reference (e) more details.)
    - Check the calculations for longitudinal strength: Part 5.3.1/7
    - Check the structure of the connection: Part 5.3.1/13 (Also, see reference (e) for more details on required calculations.)
    - Check scantling requirements for tug and barge: Part 5.3.1/9
    - Check calculations of still water bending moments and shear forces: Part 5.3.1/11
    - For units > 400 feet, verify and check loading manual: Part 5.3.1/15
  
  - For all vessels:
    - Create a complete GHS/HECSALV model, including structural details, analyzed and verify longitudinal strength requirements.
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## Definitions

- **Pushing Mode ITB:** ITBs where the tug remains in the combined configuration or has the capability to remain in the combined configuration under the environmental conditions which a ship of comparable size could anticipate on a comparable route. Pushing Mode ITB tugs, in general, are not equipped or capable of separating from the barge and towing on a hawser. Safety regulations and statutory requirements dependent on tonnage measurements are applicable to Pushing Mode ITBs as determined by the aggregate tonnage of the ITB Combination.
  
- **Dual Mode ITB:** ITBs where the tug is similar to a conventional tug and is equipped to tow by hawser. The Dual Mode ITB can operate in either the combined configuration or tow on a hawser. The Dual Mode ITB tug can separate safely from the barge and shift to the hawser towing configuration at designated sea states. For inspection purposes, the tug and barge of a Dual Mode ITB will be considered as separate vessels. The specially designed connection system will be considered as part of the barge for purposes of review and inspection.