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REVIEW CRITERIA FOR STEEL WEIGHT COMPONENTS WRT U.S. BUILD AND FOREIGN REBUILD DETERMINATIONS

With respect to the definitions of “hull” and “superstructure” in 46 CFR 67.3, the USCG Naval Architecture Division (CG-ENG-2) reviews various steel components in accordance with the following criteria:

- a) *Steel weight component*: Those elements of the vessel’s hull, superstructure, and deckhouses that must be included in the steel weight calculations for U.S. build and foreign rebuild determinations. This includes components and assemblies that are essential to the vessel’s structural integrity and/or flotation envelope.

In general, standard steel stock as delivered from the steel mill (i.e., plates, bars, channels, angles, bulbs, etc) are basic construction materials of a vessel, and their weight is intrinsically included in the overall vessel weight. Steel acquired from foreign mills is not included in foreign component weight calculations *provided* that: (1) the steel is delivered from the mill in original (unworked) stock sizes, shapes, and lengths; and (2) all subsequent work on the steel (including marking, cutting, drilling, beveling, bending, shaping, etc) is done by the shipyard or an American fabricator.

For foreign rebuild determinations, the 7½ percent steel weight limit (per 46 CFR 67.177) is considered a service life cap for the vessel, based on its original (as-delivered) discounted steel weight. Thus, the allowable steel weight change for a foreign rebuild is reduced by the total cumulative weight changes of previous rebuilds. The 1½ percent “major component” threshold is also based on the original discounted steel weight, but stays constant for all rebuilds.

- b) *Main deck*: The vessel’s freeboard deck, as used for load line assignment, is taken to be the main deck.¹
- c) *Flotation envelope*: The outer surface of the hull, up to & including the freeboard deck. Any door, hatchway, superstructure or deckhouse is considered an essential part of the “flotation envelope” of the hull if load line regulations require it to be weathertight or watertight. In general, this includes, but is not limited to:
- Weather-exposed doors, hatch coamings & covers, and ventilator covers on the lower tiers of a superstructure or deckhouse (load line Positions 1 and 2) but excludes such doors and covers on higher tiers (above Position 2) and interior doors & hatchways;
 - Side scuttles, side ports, and vehicle doors in the exterior hull below the freeboard deck; and
 - Doghouses and companionways that protect openings in the freeboard deck.

However, cargo-bearing hatch covers are considered cargo-stowage components and are not included in steel weight calculations (because cargo load design requirements exceed the ICLL wave load design criteria; therefore, the resulting hatch cover scantlings—and weight—will be heavier than load line-only scantlings).

- d) *Thruster tunnels and seachests*: these are part of the flotation envelope (however, the associated thruster machinery, valves, piping, etc, are considered to be outfitting items).
- e) *Sponsons and floats*: Sponsons that are permanently attached to the hull are considered part of—and redefine—its flotation envelope. However, detachable buoyant floats that augment stability or lifting capacity for special operations are not included in the flotation envelope if they are not otherwise necessary for the vessel’s normal stability conditions (i.e., these are essentially part of the vessel’s cargo-handling arrangements).
- f) *Superstructure*: Includes portions of the hull extending above the freeboard deck, such as forecastles. Also includes deckhouses and pilothouses, but not breakwaters, crane or mast houses, or ventilation or exhaust trunks (these being outfitting components).

¹Although the term “main deck” is used in the definitions of “hull” and “superstructure,” it is not itself defined. Because load line assignment concerns both the structural integrity of a vessel as well as its watertight & weathertight integrity, the freeboard deck is an appropriate reference deck for these determinations.

g) *Structural integrity*: This refers to any component that is essential to the overall longitudinal/transverse strength of the hull, superstructure, and deckhouses. In general, this includes hull plating, exterior superstructure and deckhouse plating, decks, and attached structural elements required by class society rules (such as girders, web frames, stiffeners, etc). Also includes internal load-bearing bulkheads and columns.

However, non-load-bearing bulkheads that essentially only serve to partition interior spaces or tanks are not included (such as bulkheads that create new internal trunks, or fuel/ballast tanks, or that subdivide cargo holds, regardless of size).

h) *Machinery flats & pre-assembled modules*: Machinery flats within an engine room or machinery space that are designed and arranged only to support machinery or equipment are not considered hull structure; this includes pre-assembled machinery or equipment modules.

i) *Cargo handling & stowage arrangements*: winches & booms, kingposts, cranes,² etc, are outfitting items and not included as hull structure. This also applies to cargo stowage items, such as container racks/cell guides, lock-down or lash-down fittings, etc. On RO/RO vessels, adjustable vehicle decks and ramps are also considered cargo stowage components, not hull structure.

j) *Machinery & equipment foundations*: Foundations which directly support machinery, equipment, cargo gear, etc, are not considered hull structure. However, any structural reinforcement of hull, deck, or superstructure which transfers or distributes the weight or load is part of the vessel's structural integrity.

k) *Independent tanks*: Tanks such as prefabricated cargo or LNG tanks are not considered hull structure if they are structurally separate from the hull. This means that primary hull stresses are not transmitted to the tank structure, and the tank structure is designed only to meet the liquid loads (i.e., hydrostatic and hydrodynamic (sloshing)) and does not contribute to the overall strength of the hull. Brackets which brace the tanks against vessel motion are not part of the hull structure.

l) *Appendages*: Appendages and fairings are not considered part of a vessel's hull structure or flotation envelope.

m) *Hull castings*: Generally, castings that are an integral part of the hull are considered hull structure; this includes stern tubes, stem & stern frames, etc. However, castings that are external to the hull, such as struts and bosses, are not included. Hawse pipes are not included.

n) *Rudders*: Because of the variety of rudder designs and the manner in which they might interface with the hull structure, there is no universal rule. In principle, where the rudder is supported by an external structure such as a rudder horn, the horn is considered to be an appendage, along with the mounting plates that connect it to the internal hull structure. In designs where the rudder stock penetrates the hull in a tube casting built into the hull, the casting is considered to be part of the hull structure.

o) *Jack-up vessels (liftboats, windfarm support vessels, etc.)*: The legs are considered to be appendages, the jacking system as equipment outfitting, and the jacking towers (or similar structures that transfer leg loads to the hull) as equipment foundations. Accordingly, these are not considered to be hull structure. However, structural reinforcement of hull and deck to distribute the leg loads is part of the vessel's structural integrity.

Revision history:

Date	Notes
11 Jun 2013	Original
18 Sept 2013	Revised USCG mailing address in letterhead. Revised paragraph (c) to add discussion on cargo-bearing hatch covers.
15 Jan 2015	Revised paragraph (a) to add discussion on foreign-source steel stock.
28 Apr 2017	Revised paragraph (a) to add discussion on cumulative weight changes.
7 Mar 2019	Clarified paragraph (c) by adding references to LL Positions 1 and 2 in the first bullet. Added paragraph (o) regarding jack-up vessels.

²Includes gantry crane rails (although rail-supporting foundations are hull structure).