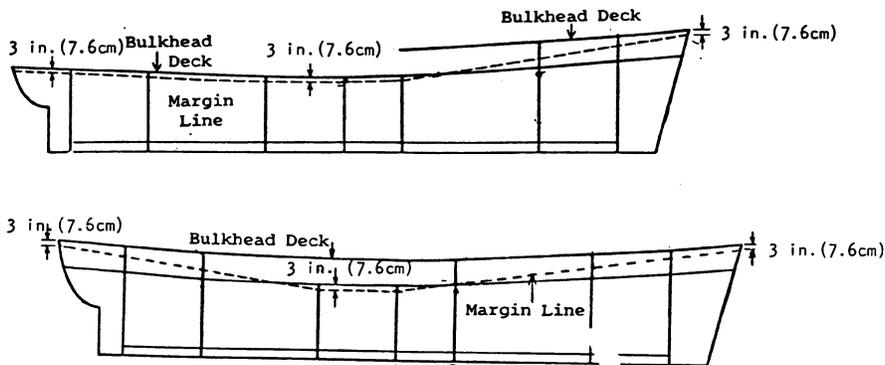(d) *A vessel with a discontinuous bulk-head deck where the side shell is carried watertight to a higher deck.* A contin- uous margin line must be drawn as il-lustrated in Figure 171.015(d).

Figure 171.015(d)

Margin Line for a Vessel With a Discontinuous Bulkhead Deck and With Side Shell Watertight to a Higher Deck

§ 171.017 One and two compartment standards of flooding.

(a) *One compartment standard of flood-ing.* A vessel is designed to a one com-partment standard of flooding if the margin line is not submerged when the total buoyancy between each set of two adjacent main transverse watertight bulkheads is lost.

(b) *Two compartment standard of flood-ing.* A vessel is designed to a two com-partment standard of flooding if the margin line is not submerged when the total buoyancy between each set of three adjacent main transverse water-tight bulkheads is lost.

Subpart B—Intact Stability

§ 171.045 Weight of passengers and crew.

(a) This section applies to each ves-sel, regardless of when constructed.

(b) Compliance with the intact sta-bility requirements applicable to each vessel, using a total weight of pas-sengers and crew carried, is based upon an Assumed Average Weight per Per-son, which is determined in accordance with § 170.090 of this chapter.

[USCG–2007–0030, 75 FR 78085, Dec. 14, 2010]

§ 171.050 Passenger heel requirements for a mechanically propelled or a non-self propelled vessel.

(a) Each mechanically propelled or non-self propelled vessel other than a pontoon vessel must be shown by de-sign calculations, in each condition of loading and operation, to have a metacentric height (GM) in feet (me-ters) of not less than the value given by the following equation:

GM = [(W/Δ)(⅔)(b)]/(tan(T))

Where—
Δ = displacement of the vessel in long (met-ric) tons.
W = total weight in long (metric) tons of per-sons other than required crew, including personal effects of those persons expected to be carried on the vessel.
T = 14 degrees or the angle of heel at which the deck edge is first submerged, which-ever is less; and
b = distance in feet (meters) from the center-line of the vessel to the geometric center of the passenger deck on one side of the centerline.

111

(b) The criteria specified in paragraph (a) of this section are limited in application to the conditions of loading and operation of vessels for which the righting arm (GZ) at the angle (T), calculated after the vessel is permitted to trim free until the trimming moment is zero, is not less than the minimum metacentric height (GM) calculated in paragraph (a) of this section multiplied by sin(T). In conditions not meeting this requirement, the Coast Guard Marine Safety Center requires calculations in addition to those in this section.

(c) A vessel that complies with the requirements for passenger ships contained in the International Code of Intact Stability, 2008 (2008 IS Code) (incorporated by reference, see § 171.012) need not comply with paragraphs (a) or (b) of this section. Vessels complying with the 2008 IS Code must use the Assumed Average Weight per Person obtained according to § 170.090 of this title to be exempt from the other requirements of this section.

[USCG–2007–0030, 75 FR 78085, Dec. 14, 2010]

§ 171.052 Passenger heel requirements for pontoon vessels.

(a) Each pontoon vessel, in each condition of loading and operation, must have an area under the righting arm curve from the angle of equilibrium to an angle of 40 degrees, the downflooding angle, or the angle of the maximum righting arm, whichever is less, of at least:

(1) For operation on exposed or partially protected waters—

(i) 10 foot-degrees with a crowding density of 5 square feet per person (2.15 persons per square meter); and

(ii) 7 foot-degrees with a crowding density of 2 square feet per person (5.38 persons per square meter); and

(2) For operation on protected waters—

(i) 5 foot-degrees with a crowding density of 5 square feet per person (2.15 persons per square meter); and

(ii) 2 foot-degrees with a crowding density of 2 square feet per person (5.38 persons per square meter).

(b) When assessing compliance with the criteria of this section, passengers are assumed to be distributed in all areas accessible to passengers so as to produce the most unfavorable combination of heel and trim.

[USCG–2007–0030, 75 FR 78085, Dec. 14, 2010]

§ 171.055 Intact stability requirements for a monohull sailing vessel or a monohull auxiliary sailing vessel.

(a) Except as specified in paragraph (b) of this section, each monohull sailing vessel and auxiliary sailing vessel must be shown by design calculations to meet the stability requirements in this section.

(b) Additional or different stability requirements may be needed for a vessel of unusual form, proportion, or rig. The additional requirements, if needed, will be prescribed by the Commandant.

(c) Each vessel must have positive righting arms in each condition of loading and operation from—

(1) 0 to at least 70 degrees of heel for service on protected or partially protected waters; and

(2) 0 to at least 90 degrees of heel for service on exposed waters.

(d) Each vessel must be designed to satisfy the following equations:

(1) For a vessel in service on protected or partially protected waters—

$$\frac{1000(W)HZA}{(A)(H)} \geq X$$

$$\frac{1000(W)HZB}{(A)(H)} \geq Y$$

$$\frac{1000(W)HZC}{(A)(H)} \geq Z$$

where—

X=1.0 long tons/sq. ft. (10.9 metric tons/sq. meter).

Y=1.1 long tons/sq. ft. (12.0 metric tons/sq. meter).

Z=1.25 long tons/sq. ft. (13.7 metric tons/sq. meter).

(2) For a vessel on exposed waters—