(5) An area under each righting arm curve up to the angle of maximum righting arm of not less than the area determined by the following equation:

$A=10.3+0.187\ (30-Y)$ foot-degrees

$A=3.15+0.057\ (30-Y)$ meter-degrees

where—

A=area in foot-degrees (meter-degrees).
Y=angle of maximum righting arm, degrees.

(d) For the purpose of demonstrating compliance with paragraphs (b) and (c) of this section, at each angle of heel a vessel's righting arm is calculated after the vessel is permitted to trim free until the trimming moment is zero.

(e) For the purpose of demonstrating acceptable stability on the vessels described in §170.170(d) as having unusual proportion and form, compliance with paragraphs (a) through (d) of this section or the following criteria is required:

(1) For partially protected routes, there must be—

(i) Positive righting arms to at least 35 degrees of heel;

(ii) No down flooding point to at least 20 degrees; and

(iii) At least 15 foot-degrees of energy to the smallest of the following angles:

(A) Angle of maximum righting arm.

(B) Angle of down flooding.

(C) 40 degrees.

(2) For protected routes, there must be—

(i) Positive righting arms to at least 25 degrees of heel;

(ii) No down flooding point to at least 15 degrees; and

(iii) At least 10 foot-degrees of energy to the smallest of the following angles:

(A) Angle of maximum righting arm.

(B) Angle of down flooding.

(C) 40 degrees.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 85–080, 61 FR 944, Jan. 10, 1996; CGD 95–028, 62 FR 51218, Sept. 30, 1997; 62 FR 51353, Sept. 30, 1997]

Subpart F—Determination of Lightweight Displacement and Centers of Gravity

§ 170.174 Specific applicability.

This subpart applies to each vessel for which the lightweight displacement and centers of gravity must be determined in order to do the calculations required in this subchapter.

§ 170.175 Stability test: General.

(a) Except as provided in paragraphs (c) and (d) of this section and in §170.200, the owner of a vessel must conduct a stability test of the vessel and calculate its vertical and longitudinal centers of gravity and its lightweight displacement.

(b) An authorized Coast Guard or ABS representative must be present at each stability test conducted under this section.

(c) The stability test may be dispensed with, or a deadweight survey may be substituted for the stability test, if the Coast Guard or the ABS has a record of, or is provided with, the approved results of a stability test of a sister vessel.

(d) The stability test of a vessel may be dispensed with if the Coast Guard or the ABS determines that an accurate estimate of the vessel's lightweight characteristics can be made and that locating the precise position of the vessel's vertical center of gravity is not necessary to ensure that the vessel has adequate stability in all probable loading conditions.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 95–028, 62 FR 51218, Sept. 30, 1997; USCG–1998–4442, 63 FR 52192, Sept. 30, 1998]

§ 170.180 Plans and information required at the stability test.

The owner of a vessel must provide the following Coast Guard or ABS approved plans and information to the authorized Coast Guard or ABS representative at the time of the stability test:

(a) Lines.

(b) Curves of form.

(c) Capacity plans showing capacities and vertical and longitudinal centers of gravity of stowage spaces and tanks.

(d) Tank sounding tables.

(e) Draft mark locations.

(f) General arrangement plan of decks, holds, and inner bottoms.

(g) Inboard and outboard profiles.