

**Subpart B—Special Rules Pertaining to Deck Cargo Barges**

**Subpart C—Special Rules Pertaining to Mobile Offshore Drilling Units**

**§ 174.010 Specific applicability.**

Each barge that carries cargo above the weather deck must comply with this subpart.

**§ 174.015 Intact stability.**

(a) Except as provided in §174.020, in each condition of loading and operation, each barge must be shown by design calculations to have an area under the righting arm curve up to the angle of maximum righting arm, the downflooding angle, or 40 degrees, whichever angle is smallest, equal to or greater than—

(1) 15 foot-degrees (4.57 meter-degrees) for ocean and Great Lakes winter service; and

(2) 10 foot-degrees (3.05 meter-degrees) for lakes, bays, sounds, and Great Lakes summer service.

(b) For the purpose of this section, downflooding angle means the static angle from the intersection of the vessel's centerline and waterline in calm water to the first opening that does not close watertight automatically.

**§ 174.020 Alternate intact stability criterion.**

A barge need not comply with §174.015 and subparts C and E of part 170 of this chapter if it has the following characteristics:

(a) The weather deck is watertight.

(b) The barge's hull proportions fall within any one of the ratios in categories (A) through (D) in Table 174.020.

(c) The maximum cargo height is 30 feet (9.25 meters) or a value equal to the depth of the barge amidships, whichever is less.

TABLE 174.020

Category	Beam/depth ratio	Draft/depth ratio
A .....	3.00 to 3.74 .....	Equal to or less than 0.70.
B .....	3.75 to 3.99 .....	Equal to or less than 0.72.
C .....	4.00 to 4.49 .....	Equal to or less than 0.76.
D .....	4.50 to 6.00 .....	Equal to or less than 0.80.

**§ 174.030 Specific applicability.**

Each mobile offshore drilling unit (MODU) inspected under Subchapter IA of this chapter must comply with this subpart.

**§ 174.035 Definitions.**

(a) For the purpose of this subpart the following terms have the same definitions as given in subchapter IA of this chapter:

- (1) *Column stabilized unit.*
- (2) *Mobile offshore drilling unit.*
- (3) *Self-elevating unit.*
- (4) *Surface type unit.*

(b) For the purpose of this subpart—

(1) *Downflooding* means the entry of seawater through any opening that cannot be rapidly closed watertight, into the hull, superstructure, or columns of an undamaged unit due to heel, trim, or submergence of the unit.

(2) *Downflooding angle* means the static angle from the intersection of the unit's centerline and waterline in calm water to the first opening through which downflooding can occur when subjected to a wind heeling moment (Hm) calculated in accordance with §174.055.

(3) *Normal operating condition* means a condition of a unit when loaded or arranged for drilling, field transit, or ocean transit.

(4) *Severe storm condition* means a condition of a unit when loaded or arranged to withstand the passage of a severe storm.

**§ 174.040 Stability requirements: general.**

Each unit must be designed to have at least 2 inches (50mm) of positive metacentric height in the upright equilibrium position for the full range of drafts, whether at the operating draft for navigation, towing, or drilling afloat, or at a temporary draft when changing drafts.

**§ 174.045 Intact stability requirements.**

(a) Each unit must be designed so that the wind heeling moments (Hm) and righting moments calculated for each of its normal operating conditions

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and severe storm conditions, when plotted on GRAPH 174.045, define areas that satisfy the equation:

$$\text{Area(A)} \geq (K) \times (\text{Area (B)})$$

where—

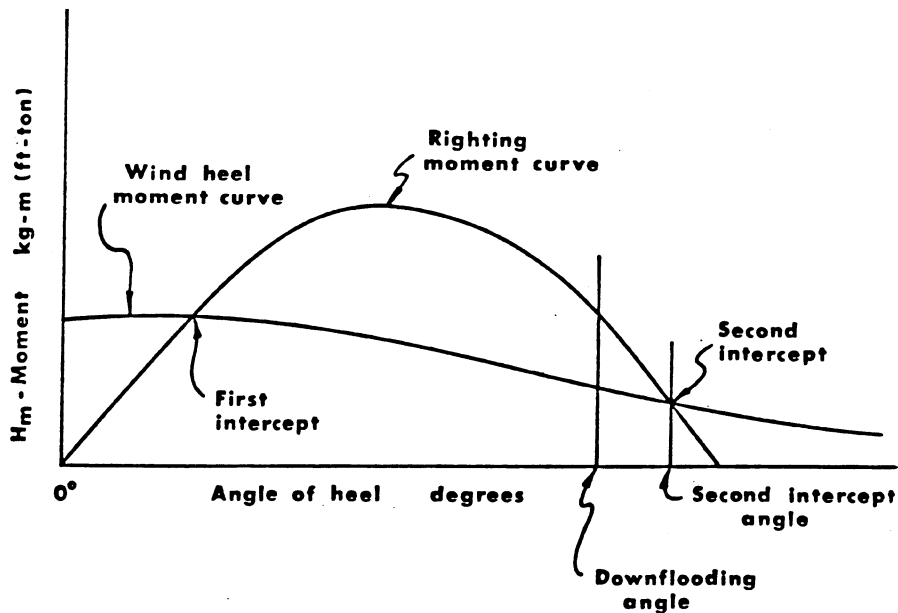
- (1) K = 1.4 except that if the unit is a column stabilized unit K = 1.3;
  - (2) Area (A) is the area on GRAPH 174.045 under the righting moment curve between 0 and the second intercept angle or the angle of heel at which downflooding would occur, whichever angle is less; and
  - (3) Area (B) is the area on GRAPH 174.045 under the wind heeling moment curve between 0 and the second intercept angle or the angle of heel at which downflooding of the unit would occur whichever angle is less.
- (b) Each righting moment on graph §174.045 must be positive for all angles greater than 0 and less than the second intercept angle.

(c) For the purposes of this section, openings fitted with the weathertight closing appliances specified in §174.100(b) are not considered as openings through which downflooding could occur if they can be rapidly closed and would not be submerged below the units' waterline prior to the first intercept angle, except that ventilation intakes and outlets for machinery spaces, crew spaces, and other spaces where ventilation is normally required are considered as openings through which downflooding could occur regardless of location.

(d) Each unit must be designed so that it can be changed from each of its normal operating conditions to a severe storm condition within a minimum period of time consistent with the operating manual required in §109.121 of this chapter.

GRAPH 174.045

Intact Stability Curves for a Given Normal Operating or Severe Storm Mode



[CGD 79-023, 48 FR 51048, Nov. 4, 1983, as amended by CGD 83-071, 52 FR 6979, Mar. 6, 1987]

**§ 174.050 Stability on bottom.**

Each bottom bearing unit must be designed so that, while supported on the sea bottom with footings or a mat, it continually exerts a downward force on each footing or the mat when subjected to the forces of wave and current and to wind blowing at the velocities described in § 174.055(b)(3).

**§ 174.055 Calculation of wind heeling moment (Hm).**

(a) The wind heeling moment (Hm) of a unit in a given normal operating condition or severe storm condition is the sum of the individual wind heeling moments (H) calculated for each of the ex-

posed surfaces on the unit; *i.e.*,  $H_m = \sum H$ .

(b) Each wind heeling moment (H) must be calculated using the equation:

$$H = k(v)^2(C_h)(C_s)(A)(h)$$

where—

- (1) H = wind heeling moment for an exposed surface on the unit in foot-pounds (kilogram-meters);
- (2)  $k = 0.00338 \text{ lb./ft.}^2\text{-knots}^2$  ( $0.0623 \text{ (kg-sec}^2\text{)/m}^4$ );
- (3)  $v$  = wind velocity of—
  - (i) 70 knots (36 meters per second) for normal operating conditions.
  - (ii) 100 knots (51.5 meters per second) for severe storm conditions.
  - (iii) 50 knots (25.8 meters per second) for damage conditions.