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SUBCHAPTER S—SUBDIVISION AND STABILITY

PART 170—STABILITY REQUIREMENTS FOR ALL INSPECTED VESSELS

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AUTHORITY: 43 U.S.C. 1333; 46 U.S.C. 2103, 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

SOURCE: CGD 79–023, 48 FR 51010, Nov. 4, 1983, unless otherwise noted.

Subpart A—General Provisions

§ 170.001 Applicability.

(a) This subchapter applies to each vessel that is—

(1) Contracted for on or after March 11, 1996, except where specifically stated otherwise; and

(2) Either—

(i) Inspected under another subchapter of this chapter, or is a foreign vessel that must comply with the requirements in subchapter O of this chapter; or

(ii) Required by either subchapter C or subchapter E of this chapter to meet applicable requirements contained in this subchapter.

(b) Each vessel contracted for before March 11, 1996 may be constructed in

accordance with the regulations in effect at the time. However, any alterations or repairs must be done in accordance with § 170.005.

(c) Certain regulations in this subchapter apply only to limited categories of vessels. Specific applicability statements are provided at the beginning of those regulations.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 89–037, 57 FR 41825, Sept. 11, 1992; CGD 85–080, 61 FR 943, Jan. 10, 1996; USCG–2007–0030, 75 FR 78082, Dec. 14, 2010]

§ 170.003 Right of appeal.

Any person directly affected by a decision or action taken under this subchapter, by or on behalf of the Coast Guard, may appeal therefrom in accordance with subpart 1.03 of this chapter.

[CGD 88–033, 54 FR 50382, Dec. 6, 1989]

§ 170.005 Vessel alteration or repair.

(a) Alterations and repairs to inspected vessels must be done—

(1) Under the direction of the Officer in Charge, Marine Inspection; and

(2) Except as provided in paragraph (b) of this section, in accordance with the regulations in this subchapter, to the extent practicable.

(b) Minor alterations and repairs may be done in accordance with regulations in effect at the time the vessel was contracted for.

§ 170.010 Equivalents.

Substitutions for fittings, equipment, arrangements, calculations, information, or tests required in this subchapter may be approved by the Commandant, the Commanding Officer (MSC), Attn: Marine Safety Center, U.S. Coast Guard Stop 7430, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7430, or the Officer in Charge, Marine Inspection, if the substitution provides an equivalent level of safety.

[USCG–2007–29018, 72 FR 53968, Sept. 21, 2007, as amended by USCG–2009–0702, 74 FR 49239, Sept. 25, 2009; USCG–2013–0671, 78 FR 60163, Sept. 30, 2013; USCG–2016–0498, 82 FR 35093, July 28, 2017]

§ 170.015 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish a notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. It is also available for inspection at Coast Guard Headquarters. Contact Commandant (CG–ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509. The material is also available from the sources listed below.

(b) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

(1) ASTM F 1196–00, Standard Specification for Sliding Watertight Door Assemblies, 2008, incorporation by reference (IBR) approved for § 170.270.

(2) ASTM F 1197–00, Standard Specification for Sliding Watertight Door Control Systems, 2007, IBR approved for § 170.270.

(c) Military Specifications and Standards, Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111–5094, *https://assist.daps.dla.mil/quicksearch/*.

(1) MIL–P–21929B, Military Specification, Plastic Material, Cellular Polyurethane, Foam-in-Place, Rigid (2 Pounds per Cubic Foot), 15 January 1991, IBR approved for § 170.245.

(2) [Reserved]

(d) International Maritime Organization (IMO), Publications Section, 4 Albert Embankment, London SE1 7SR, United Kingdom, + 44 (0)20 7735 7611, *http://www.imo.org/*.

(1) Resolution MSC.216(82), Adoption of Amendments to the International Convention for the Safety of Life At Sea, 1974, As Amended (IMO Res.

MSC.216(82), Adopted on 8 December 2006, IBR approved for §§170.140 and 170.248.

(2) Resolution MSC 267(85), Adoption of the International Code on Intact Stability, 2008 (2008 IS Code), Adopted on 4 December 2008, IBR approved for §170.165.

[USCG–2007–0030, 75 FR 78082, Dec. 14, 2010, as amended by USCG–2012–0832, 77 FR 59788, Oct. 1, 2012; USCG–2013–0671, 78 FR 60163, Sept. 30, 2013]

§ 170.020 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

(a) *Purpose.* This section collects and displays the control numbers assigned to information collection and recordkeeping requirements in this subchapter by the Office of Management and Budget (OMB) pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). The Coast Guard intends that this section comply with the requirements of 44 U.S.C. 3507(f), which requires that agencies display a current control number assigned by the OMB for each approved agency information collection requirement.

(b) *Display.*

46 CFR part—	Current OMB control No.
§170.075	1625–0064
§170.080	1625–0064
§170.085	1625–0064
§170.090	1625–0064
§170.095	1625–0064
§170.100	1625–0064
§170.110	1625–0064
§170.120	1625–0064
§170.125	1625–0064
§170.135	1625–0064
§170.180	1625–0064

[CGD 89–037, 57 FR 41825, Sept. 11, 1992, as amended by USCG–2004–18884, 69 FR 58350, Sept. 30, 2004]

Subpart B—Definitions

§ 170.050 General terms.

(a) *Commanding Officer, Marine Safety Center (CO, MSC)* means a district commander described in 33 CFR part 3 whose command includes a merchant marine technical office or an authorized representative of the district commander.

(b) *Commandant* means the Commandant of the Coast Guard or an authorized representative of the Commandant.

(c) *Exposed waters* means waters more than 20 nautical miles (37 kilometers) from the mouth of a harbor of safe refuge and other waters which the Officer in Charge, Marine Inspection determines to present special hazards due to weather or other circumstances.

(d) *Great Lakes* includes both the waters of the Great Lakes and of the St. Lawrence River as far east as a straight line drawn from Cap de Rosiers to West Point, Anticosti Island, and west of a line along the 63rd meridian from Anticosti Island to the north shore of the St. Lawrence River.

(e) *Lakes, Bays, and Sounds* includes the waters of any lake, bay, or sound, except the Great Lakes.

(f) *Oceans* includes the waters of—

(1) Any ocean;

(2) The Gulf of Mexico;

(3) The Caribbean Sea;

(4) The Gulf of Alaska; and

(5) Any other waters designated as ''oceans'' by the Commandant.

(g) *Officer in Charge Marine Inspection (OCMI)* means an officer of the Coast Guard who commands a Marine Inspection Zone described in 33 CFR part 3 or an authorized representative of that officer.

(h) *Oil* means oil of any kind or in any form, and includes but is not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

(i) *Partially protected waters* means—

(1) Waters within 20 nautical miles (37 kilometers) of the mouth of a harbor of safe refuge, unless determined by the OCMI to be exposed waters; and

(2) Those portions of rivers, harbors, lakes, etc. which the OCMI determines not to be sheltered.

(j) *Protected waters* means sheltered waters presenting no special hazards such as most rivers, harbors, lakes, etc.

(k) *Rivers* means any river, canal, or any other similar body of water designated by the OCMI.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 88–070, 53 FR 34537, Sept. 7, 1988]

§ 170.055 Definitions concerning a vessel.

(a) *Assumed average weight per person* means the weight calculated in accordance with § 170.090 of this part.

(b) *Auxiliary sailing vessel* means a vessel capable of being propelled both by mechanical means and by sails.

(c) *Barge* means a vessel not equipped with a means of self-propulsion.

(d) *Beam* or *B* means the maximum width of a vessel from—

(1) Outside of planking to outside of planking on wooden vessels; and

(2) Outside of frame to outside of frame on all other vessels.

(e) *Bulkhead deck* means the uppermost deck to which watertight bulkheads and the watertight shell extend.

(f) *Constructed* means the date—

(1) The vessel's keel was laid; or

(2) Construction identifiable with the vessel began and assembly of that vessel commenced comprising of 50 metric tons or at least 1 percent of the estimated mass of all structural material, whichever is less.

(g) *Downflooding* means, except as provided in § 174.035(b), the entry of seawater through any opening into the hull or superstructure of an undamaged vessel due to heel, trim, or submergence of the vessel.

(h) *Documented alterations* means changes to the vessel which are reflected in the approved stability information carried on board the vessel.

(i) *Downflooding angle* means, except as specified by §§ 171.055(f), 172.090(d), 173.095(e), 174.015(b), and 174.035(b)(2) of this chapter, the static angle from the intersection of the vessel's centerline and waterline in calm water to the first opening that cannot be closed watertight and through which downflooding can occur.

(j) *Draft* means the vertical distance from the molded baseline amidships to the waterline.

(k) *Length* means the distance between fore and aft points on a vessel. The following specific terms are used and correspond to specific fore and aft points:

(1) *Length between perpendiculars (LBP)* means the horizontal distance measured between perpendiculars taken at the forward-most and after-most points on the waterline corresponding to the deepest operating draft. For a small passenger vessel that has underwater projections extending forward of the forward-most point or aft of the after-most point on the deepest waterline of the vessel, the Commanding Officer, U.S. Coast Guard Marine Safety Center, may include the length or a portion of the length of the underwater projections in the value used for the LBP for the purposes of this subchapter. The length or a portion of the length of projections that contribute more than 2 percent of the underwater volume of the vessel is normally added to the actual LBP.

(2) *Length overall (LOA)* means the horizontal distance between the forward-most and after-most points on the hull.

(3) *Length on the waterline (LWL)* means the horizontal distance between the forward-most and after-most points on a vessel's waterline.

(4) *Length on deck (LOD)* means the length between the forward-most and after-most points on a specified deck measured along the deck, excluding sheer.

(5) *Load line length (LLL)* has the same meaning that is provided for the term *length* in § 42.13–15(a) of this chapter.

(6) *Mean length* is the average of the length between perpendiculars (LBP) and the length on deck (LOD).

(l) *Lightweight* means the displacement of a vessel with fixed ballast and with machinery liquids at operating levels but without any cargo, stores, consumable liquids, water ballast, or persons and their effects.

(m) *Main transverse watertight bulkhead* means a transverse bulkhead that must be maintained watertight in order for the vessel to meet the damage stability and subdivision requirements in this subchapter.

(n) *Major conversion*, as applied to Great Lakes bulk carriers, means a conversion of an existing vessel that substantially changes the dimensions or carrying capacity of the vessel or changes the type of vessel or substantially prolongs its life or that otherwise so changes the vessel that it is essentially a new vessel.

(o) *Permeability* is the percentage of the volume of a space that can be occupied by water.

(p) *Sailing vessel* means a vessel propelled only by sails.

(q) *Ship* means a self-propelled vessel.

(r) *Tank vessel* means a vessel that is specially constructed or converted to carry liquid bulk cargo in tanks.

(s) *Tank barge* means a tank vessel not equipped with a means of self-propulsion.

(t) *Tank ship* means a tank vessel propelled by mechanical means or sails.

(u) *Vessel* means any vessel and includes both ships and barges.

(v) *Weather deck* means the uppermost deck exposed to the weather.

(w) *Existing sailing school vessel* means a sailing vessel whose keel was laid prior to (January 9, 1986), which has an application for initial inspection for certification as a sailing school vessel on file with the Coast Guard prior to (January 9, 1987), and whose initial inspection for certification is completed prior to (January 9, 1988).

(x) *New sailing school vessel* means a sailing school vessel which is not an existing sailing school vessel.

(y) *Small passenger vessel* means a vessel of less than 100 gross tons—

(1) Carrying more than 6 passengers, including at least one passenger for hire;

(2) That is chartered with the crew provided or specified by the owner or owner's representative and carrying more than 6 passengers;

(3) That is chartered with no crew provided or specified by the owner or owner's representative and carrying more than 12 passengers; or

(4) That is a submersible vessel carrying at least one passenger for hire.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §170.055, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

Subpart C—Plan Approval

§ 170.070 Applicability.

(a) Except as provided in paragraph (b) of this section, this subpart applies to each vessel.

(b) This subpart does not apply to any of the following vessels unless the stability of the vessel is questioned by the OCMI, or regulations by which the vessel is inspected require their application:

(1) A passenger vessel that—

(i) Is less than 100 gross tons;

(ii) Is less than 65 feet (19.8 meters) LOD measured over the weather deck; and

(iii) Carries 49 or less passengers.

(2) A deck cargo barge that complies with the requirements in §174.020 of this chapter.

(3) A tank vessel that only carries a product listed in §30.25–1 of this chapter and that is less than 150 gross tons.

(4) A tank barge that—

(i) Operates only in rivers or lakes, bays, and sounds service;

(ii) Does not have to meet 33 CFR part 157, subpart B; and

(iii) Only carries a product listed in §30.25–1 of this chapter.

(5) A sailing school vessel that is an open boat that complies with the requirements in §173.063(e) of this subchapter.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 83–005, 51 FR 923, Jan. 9, 1986; USCG–2007–0030, 75 FR 78083, Dec. 14, 2010]

§ 170.075 Plans.

(a) Except as provided in paragraph (b) of this section, each applicant for an original certificate of inspection and approval of plans must also submit three copies for plan review being conducted by the Coast Guard Marine Safety Center of each of the following plans:

(1) General arrangement plan of decks, holds, and inner bottoms including inboard and outboard profiles.

(2) Lines.

(3) Curves of form.

(4) Capacity plan showing capacities and vertical, longitudinal, and transverse centers of gravity of stowage spaces and tanks.

(5) Tank sounding tables showing—

(i) Capacities, vertical centers of gravity, and longitudinal centers of gravity in graduated intervals; and

(ii) Free surface data for each tank.

(6) Draft mark locations including longitudinal location and vertical reference points.

(b) Each small passenger vessel that is designed to comply with the alternate intact stability requirements in §178.320 of this subchapter and the simplified method of spacing main transverse watertight bulkheads in §179.220 of this subchapter does not have to submit the plans required by paragraph (a) of this section.

[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 51217, Sept. 30, 1997; USCG–2007–0030, 75 FR 78083, Dec. 14, 2010]

§ 170.080 Stability booklet.

Before issuing an original certificate of inspection, the following number of copies of the stability booklet required by §170.110 must be submitted for approval; three copies for plan review being conducted by the Coast Guard Marine Safety Center.

[CGD 95–028, 62 FR 51217, Sept. 30, 1997, as amended by USCG–2007–0030, 75 FR 78083, Dec. 14, 2010]

§ 170.085 Information required before a stability test.

If a stability test is to be performed, a stability test procedure that contains the information prescribed in §170.185(g) must be submitted to the Coast Guard Marine Safety Center at least two weeks before the test.

[CGD 95–028, 62 FR 51217, Sept. 30, 1997, as amended by USCG–2007–0030, 75 FR 78083, Dec. 14, 2010]

§ 170.090 Calculations.

(a) All calculations required by this subchapter must be submitted with the plans required by §170.075 of this subpart. Calculations must account for the weight of all loads carried aboard the vessel.

(b) If it is necessary to compute and plot any of the following curves as part of the calculations required in this subchapter, these plots must also be submitted:

(1) Righting arm or moment curves.

(2) Heeling arm or moment curves.

(3) Cross curves of stability.

(4) Floodable length curves.

(c) The assumed weight per person for calculations showing compliance with the regulations of this subchapter must be representative of the passengers and crew aboard the vessel while engaged in the service intended. Unless the Officer in Charge, Marine Inspection (OCMI) permits or requires the use of other values in writing, the assumed weight per person of passengers and crew must not be less than that the Assumed Average Weight per Person (AAWPP) calculated in accordance with paragraphs (d) and (e) of this section.

(d)(1) The AAWPP is 185 lb from December 1, 2011 until the AAWPP is first updated pursuant to the provisions of this section. As of the effective date of the first AAWPP update after December 1, 2011, this paragraph (d)(1) will be superseded and cease to be effective.

(2) The formula in paragraph (e) of this section will be used to determine an update to the AAWPP. It requires the use of data in the most recent report released by the Centers for Disease Control and Prevention (CDC) through the National Center for Health Statistics (NCHS), or any successors to those centers. This report can be found on the CDC's Web site.

(3) Each time the CDC releases a report containing mean weights of United States adult males and females, the Coast Guard will apply the formula in paragraph (e) of this section to that data. The resulting value will become the new AAWPP only if the sum equals or exceeds 10 pounds more than the AAWPP then in effect. The Coast Guard will notify the public of the new AAWPP in the FEDERAL REGISTER and other appropriate media.

(4) Updates to the AAWPP used in calculations showing compliance with this subchapter will be promulgated as interpretive rules and become effective in accordance with the provisions of this section without further rulemaking procedures.

(5) Notwithstanding any other provisions of this section, the Coast Guard may choose, in its discretion, to conduct further rulemaking procedures at any time to amend this subchapter, including updates of the AAWPP.

(6) Updates to the AAWPP used in calculations showing compliance with this subchapter will be published in a separate FEDERAL REGISTER notice and

other appropriate media, except when the Coast Guard conducts further rulemaking procedures under paragraph (d)(5) of this section.

(7) Notwithstanding any other provisions of this section, the Coast Guard may choose, in its discretion, to delay or dispense with any update of the AAWPP. In the event the Coast Guard elects to dispense with or delay an update that would otherwise issue as an interpretive rule pursuant to the provisions of this section, the Coast Guard will inform the public of the decision and explain the reasons in a FEDERAL REGISTER notice.

(e) To obtain an AAWPP update, add the mean weight of all U.S. males aged 20 years and older to the mean weight of all U.S. females aged 20 years and older, and divide the sum by 2. To this average of the mean weights, add 7.5 pounds of assumed clothing weight, and round the resulting sum to the nearest whole number in pounds.

(f) Updates to the AAWPP will become effective beginning one calendar year after publication in the FEDERAL REGISTER of a notice described in paragraphs (d)(3) and (d)(6) of this section, except the initial AAWPP issued pursuant to paragraph (d)(1) of this section will become effective on December 1, 2011. Notwithstanding any other provisions of this title, the Coast Guard may implement updates to the AAWPP at any time with less than one year of public notice when required for public safety reasons.

(g) The most recent FEDERAL REGISTER notice that publishes the AAWPP as determined by this section is also on file at the Coast Guard Headquarters. Contact Commandant (CG–ENG–2), Attn: Naval Architecture Division, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509, or go to: *http://www.uscg.mil/hq/cg5/cg5212*

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by USCG–2007–0030, 75 FR 78083, Dec. 14, 2010; 76 FR 16698, Mar. 25, 2011; USCG–2012–0832, 77 FR 59788, Oct. 1, 2012; USCG–2013–0671, 78 FR 60163, Sept. 30, 2013]

§ 170.093 Specific approvals.

Certain rules in this subchapter require specific approval of equipment or arrangements by the Commandant, OCMI, or Coast Guard Marine Safety Center. These approval determinations will be made as a part of the plan review process.

[CGD 95–028, 62 FR 51217, Sept. 30, 1997, as amended by USCG–2007–0030, 75 FR 78083, Dec. 14, 2010]

§ 170.095 Data submittal for a vessel equipped to lift.

The following data must be submitted with the plans required by §170.075 if the vessel is engaged in lifting and is required to comply with subpart B of part 173 of this chapter:

(a) A graph of maximum hook load versus maximum crane radius.

(b) A table of crane radius versus the maximum distance above the main deck to which the hook load can be raised.

(c) A table showing maximum vertical and transverse moments at which the crane is to operate.

§ 170.100 Addresses for submittal of plans and calculations.

The plans, information, and calculations required by this subpart must be submitted to one of the following:

(a) The Sector Office in the zone where the vessel is to be built or altered.

(b) By visitors to the Commanding Officer, Marine Safety Center, U.S. Coast Guard, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593, or by mail to: Commanding Officer (MSC), Attn: Marine Safety Center, U.S. Coast Guard Stop 7430, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7430, in a written or electronic format. Information for submitting the VSP electronically can be found at *http://www.uscg.mil/HQ/MSC*.

[CGD 95–028, 62 FR 51217, Sept. 30, 1997, as amended by USCG–2006–25556, 72 FR 36330, July 2, 2007; USCG–2007–29018, 72 FR 53968, Sept. 21, 2007; USCG–2009–0702, 74 FR 49239, Sept. 25, 2009; USCG–2007–0030, 75 FR 78083, Dec. 14, 2010; USCG–2013–0671, 78 FR 60163, Sept. 30, 2013; USCG–2016–0498, 82 FR 35093, July 28, 2017]

Subpart D—Stability Instructions for Operating Personnel

§ 170.105 Applicability.

(a) Except as provided in paragraph (b) of this section, this subpart applies to each vessel.

(b) This subpart does not apply to any of the following vessels unless the stability of the vessel is questioned by the OCMI:

(1) A deck cargo barge that complies with the requirements in §174.020 of this chapter.

(2) A tank vessel that only carries a product listed in §30.25–1 of this chapter and that is less than 150 gross tons.

(3) A tank barge that—

(i) Operates only in rivers or lakes, bays, and sounds service;

(ii) Does not have to meet 33 CFR part 157, subpart B; and

(iii) Only carries a product listed in §30.25–1 of this chapter.

(4) A sailing school vessel that is an open boat that complies with the requirements in §173.063(e) of this subchapter.

(5) A small passenger vessel inspected under subchapter T of this chapter if §178.210(c) of this chapter is applicable.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 83–005, 51 FR 923, Jan. 9, 1986; CGD 85–080, 61 FR 944, Jan. 10, 1996; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.110 Stability booklet.

(a) Except as provided in paragraph (e) of this section, a stability booklet must be prepared for each vessel, except for mobile offshore drilling units subject to the operating manual requirements of §109.121 of this chapter.

(b) Each stability booklet must be approved by the Coast Guard Marine Safety Center.

(c) Each stability book must contain sufficient information to enable the master to operate the vessel in compliance with applicable regulations in this subchapter. Information on loading restrictions used to determine compliance with applicable intact and damage stability criteria must encompass the entire range of operating drafts and the entire range of the operating trims. Information must include an effective procedure for supervision and reporting of the opening and closing of all loading doors, where applicable.

(d) The format of the stability booklet and the information included will vary dependent on the vessel type and operation. Units of measure used in the stability booklet must agree with the units of measure of the draft markings. In developing the stability booklet, consideration must be given to including the following information:

(1) A general description of the vessel, including lightweight data.

(2) Instructions on the use of the booklet.

(3) General arrangement plans showing watertight compartments, closures, vents, downflooding angles, and allowable deck loadings.

(4) Hydrostatic curves or tables.

(5) Capacity plan showing capacities and vertical, longitudinal, and transverse centers of gravity of stowage spaces and tanks.

(6) Tank sounding tables showing capacities, vertical centers of gravity, and longitudinal centers of gravity in graduated intervals and showing free surface data for each tank.

(7) Information on loading restrictions, such as a maximum KG or minimum GM curve that can be used to determine compliance with applicable intact and damage stability criteria.

(8) Examples of loading conditions.

(9) A rapid and simple means for evaluating other loading conditions.

(10) A brief description of the stability calculations done including assumptions.

(11) General precautions for preventing unintentional flooding.

(12) A table of contents and index for the booklet.

(13) Each ship condition which, if damage occurs, may require cross-flooding for survival and information concerning the use of any special cross-flooding fittings.

(14) The amount and location of fixed ballast.

(15) Any other necessary guidance for the safe operation of the vessel under normal and emergency conditions.

(16) For each self-propelled hopper dredge with a working freeboard, the maximum specific gravity allowed for dredge spoil.

(e) A stability booklet is not required if sufficient information to enable the master to operate the vessel in compliance with the applicable regulations in this subchapter can be placed on the Certificate of Inspection, Load Line Certificate, or in the stability letter required in §170.120.

(f) On board electronic stability computers may be used as an adjunct to the required booklet, but the required booklet must contain all necessary information to allow for the evaluation of the stability of any intact condition that can be evaluated by use of the computer.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 83–071, 52 FR 6979, Mar. 6, 1987; CGD 88–070, 53 FR 34537, Sept. 7, 1988; CGD 76–080, 54 FR 36977, Sept. 6, 1989; CGD 89–037, 57 FR 41825, Sept. 11, 1992; CGD 95–028, 62 FR 51217, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.120 Stability letter.

(a) Except as provided in paragraph (b) of this section, each vessel must have a stability letter issued by the Coast Guard before the vessel is placed into service. This letter sets forth conditions of operation.

(b) A stability letter is not required if the information can be placed on the Certificate of Inspection or the Load Line Certificate.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 95–028, 62 FR 51217, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.125 Operating information for a vessel engaged in lifting.

In addition to the information required in §170.110, the following information must be included in the stability booklet of a vessel that is required to comply with §173.005 of this subchapter:

(a) *Non-counterballasted vessel.* If a vessel is not counterballasted, stability information setting forth hook load limits corresponding to boom radii based on the intact stability criterion in §173.020 must be provided.

(b) *Counterballasted vessel.* If a vessel is counterballasted with water, the following information must be provided:

(1) Instructions on the effect of the free surface of the counterballast water.

(2) Instructions on the amounts of counterballast needed to compensate for hook load heeling moments.

(3) If a vessel has fixed counterballast, a table of draft versus maximum vertical moment of deck cargo and hook load combined.

(4) If a vessel has variable counterballast, a table of draft versus maximum vertical moment of deck cargo and hook load combined for each counterballasted condition.

§ 170.135 [Reserved]

§ 170.140 Operating information for a vessel constructed on or after January 1, 2009 and issued a SOLAS safety certificate.

(a) This section applies to each vessel that is—

(1) Constructed on or after January 1, 2009; and

(2) Issued either a SOLAS Passenger Ship Safety Certificate or a SOLAS Cargo Ship Safety Construction Certificate.

(b) In addition to the information required in §170.110 of this part, the stability booklet of each vessel to which this section applies must contain the information required by applicable regulations of IMO Res. MSC.216(82) (incorporated by reference, see §170.015).

(c) As used in SOLAS chapter II–1, *Administration* means the Commandant, U.S. Coast Guard.

[USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

Subpart E—Intact Stability Criteria

§ 170.160 Specific applicability.

(a) Except as provided in paragraphs (b) through (d) of this section, this subpart applies to each vessel.

(b) This subpart does not apply to any of the following vessels unless the stability of the vessel is questioned by the OCMI:

(1) A deck cargo barge that complies with the requirements in §174.020 of this chapter.

(2) A tank vessel that only carries a product listed in §30.25–1 of this chapter and that is—

(i) Less than 150 gross tons; or

(ii) A tank barge that operates only in river or lakes, bays, and sounds service.

(3) A sailing school vessel that is an open boat that complies with the requirements in §173.063(e) of this subchapter.

(c) This subpart does not apply to the following vessels:

(1) A tank barge that carries a product listed in Table 151.05 of this chapter.

(2) A mobile offshore drilling unit.

(3) A vessel that performs one of the simplified stability proof tests described in subpart C of part 178 of this chapter.

(d) A vessel that complies with §170.165 of this part need not comply with §§170.170 and 170.173 of this part.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 83–005, 51 FR 923, Jan. 9, 1986; CGD 85–080, 61 FR 944, Jan. 10, 1996; USCG–2007–29018, 72 FR 53968, Sept. 21, 2007; USCG–2009–0702, 74 FR 49239, Sept. 25, 2009; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.165 International Code on Intact Stability.

(a) Each vessel issued one or more of the certificates listed in paragraphs (a)(1) through (4) of this section, must comply with the Introduction and Part A of the International Code on Intact Stability, 2008 (2008 IS Code), unless permitted otherwise (incorporated by reference, see §170.015).

(1) International Load Line Certificate.

(2) SOLAS Passenger Ship Safety Certificate.

(3) SOLAS Cargo Ship Safety Construction Certificate.

(4) High-speed Craft Safety Certificate.

(b) A vessel not subject to the requirements of paragraph (a) of this section is permitted to comply with the applicable criteria contained in the 2008 IS Code as an alternative to the requirements of §§170.170 and 170.173 of this part.

[USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.170 Weather criteria.

(a) Each vessel must be shown by design calculations to have a metacentric height (GM) that is equal to or greater than the following in each condition of loading and operation:

$$GM \geq \frac{PAH}{W \tan (T)}$$

Where—

P = .005 + $(L/14{,}200)^2$ tons/ft^2 . . . for ocean service, Great Lakes winter service, or service on exposed waters.

P = .055 + $(L/1309)^2$ metric tons/m^2 . . . for ocean service, Great Lakes winter service, or service on exposed waters.

P = .0033 + $(L/14{,}200)^2$ tons/ft^2 . . . for Great Lakes summer service or service on partially protected waters.

P = .036 + $(L/1309)^2$ metric tons/m^2 . . . for Great lakes summer service or service on partially protected waters.

P = .0025 + $(L/14{,}200)^2$ tons/ft^2 . . . for service on protected waters.

P = .028 + $(L/1309)^2$ metric tons/m^2 . . . for service on protected waters.

L = LBP in feet (meters).

A = projected lateral area in square feet (square meters) of the portion of the vessel and deck cargo above the waterline.

H = the vertical distance in feet (meters) from the center of A to the center of the underwater lateral area or approximately to the one-half draft point.

W = displacement in long (metric) tons.

T = either:

(1) the lesser of either 14 degrees heel or the angle of heel in degrees at which one-half the freeboard to the deck edge is immersed; or

(2) for a sailing vessel, T = the lesser of either 14 degrees or the angle of heel in degrees to the deck edge.

The deck edge is to be taken as the intersection of the sideshell and the uppermost continuous deck below which the sideshell is weathertight.

(b) If approved by the Coast Guard Marine Safety Center or the ABS, a larger value of T may be used for a vessel with a discontinuous weather deck or abnormal sheer.

(c) When doing the calculations required by paragraph (a) of this section for a sailing vessel or auxiliary sailing vessel, the vessel must be assumed—

(1) To be under bare poles; or

(2) If the vessel has no auxiliary propulsion, to have storm sails set and trimmed flat.

(d) The criterion specified in this section is generally limited in application to the conditions of loading and operation of flush deck, mechanically powered vessels of ordinary proportions and form 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). On other types of vessels, the Coast Guard Marine Safety Center requires calculations in addition to those in paragraph (a) of this section. On a mechanically powered vessel under 328 feet (100 meters) in length, other than a tugboat or a towboat, the requirements in §170.173 are applied.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983; 49 FR 37384, Sept. 24, 1984, as amended by CGD 88–070, 53 FR 34537, Sept. 7, 1988; CGD 85–080, 61 FR 944, Jan. 10, 1996; 61 FR 20556, May 7, 1996; CGD 95–028, 62 FR 51217, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.173 Criterion for vessels of unusual proportion and form.

(a) If required by the Coast Guard Marine Safety Center, each mechanically powered vessel less than 328 feet (100 meters) LLL, other than a tugboat or towboat, must be shown by design calculations to comply with—

(1) Paragraph (b) or (c) of this section if the maximum righting arm occurs at an angle of heel less than or equal to 30 degrees; or

(2) Paragraph (b) of this section if the maximum righting arm occurs at an angle of heel greater than 30 degrees.

(b) Each vessel must have—

(1) An initial metacentric height (GM) of at least 0.49 feet (0.15 meters);

(2) A righting arm (GZ) of at least 0.66 feet (0.20 meters) at an angle of heel equal to or greater than 30 degrees;

(3) A maximum righting arm that occurs at an angle of heel not less than 25 degrees;

(4) An area under each righting arm curve of at least 10.3 foot-degrees (3.15 meter-degrees) up to an angle of heel of 30 degrees;

(5) An area under each righting arm curve of at least 16.9 foot-degrees (5.15 meter-degrees) up to an angle of heel of 40 degrees or the downflooding angle, whichever is less; and

(6) An area under each righting arm curve between the angles of 30 degrees and 40 degrees, or between 30 degrees and the downflooding angle if this angle is less than 40 degrees, of not less than 5.6 foot-degrees (1.72 meter-degrees).

(c) Each vessel must have—

(1) An initial metacentric height (GM) of at least 0.49 feet (0.15 meters);

(2) A maximum righting arm that occurs at an angle of heel not less than 15 degrees;

(3) An area under each righting arm curve of at least 16.9 foot-degrees (5.15 meter-degrees) up to an angle of heel of 40 degrees or the downflooding angle, whichever is less;

(4) An area under each righting arm curve between the angles of 30 degrees and 40 degrees, or between 30 degrees and the downflooding angle if this angle is less than 40 degrees, of not less than 5.6 foot-degrees (1.72 meter-degrees); and

(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:

$$A = 10.3 + 0.187\,(30 - Y) \text{ foot-degrees}$$

$$A = 3.15 + 0.057\,(30 - Y) \text{ meter-degrees}$$

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; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

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 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 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 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; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.180 Plans and information required at the stability test.

The owner of a vessel must provide the following Coast Guard approved plans and information to the authorized Coast Guard 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.

(h) The stability test procedure described in § 170.185(g).

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 95–028, 62 FR 51218, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.185 Stability test preparations.

The following preparations must be made before conducting a stability test:

(a) The vessel must be as complete as practicable at the time of the test.

(b) Each tank vessel must be empty and dry, except that a tank may be partially filled or full if the Coast Guard Marine Safety Center determines that empty and dry tanks are impracticable and that the effect of filling or partial filling on the location of the center of gravity and on the displacement can be accurately determined.

(c) All dunnage, tools, and other items extraneous to the vessel must be removed.

(d) The water depth at the mooring site must provide ample clearance against grounding.

(e) Each mooring line must be arranged so that it does not interfere with the inclination of the unit during the test.

(f) The draft and axis of rotation selected for testing a mobile offshore drilling unit must be those that result in acceptable accuracy in calculating the center of gravity and displacement of the unit.

(g) The stability test procedure required by §170.085 must include the following:

(1) Identification of the vessel to be tested.

(2) Date and location of the test.

(3) Inclining weight data.

(4) Pendulum locations and lengths.

(5) Approximate draft and trim of the vessel.

(6) Condition of each tank.

(7) Estimated items to be installed, removed, or relocated after the test, including the weight and location of each item.

(8) Schedule of events.

(9) Person or persons responsible for conducting the test.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 88–070, 53 FR 34537, Sept. 7, 1988; CGD 95–028, 62 FR 51218, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.190 Stability test procedure modifications.

The authorized Coast Guard representative present at a stability test may allow a deviation from the requirements of §§170.180 and 170.185 if the representative determines that the deviation would not decrease the accuracy of the test results.

[CGD 95–028, 62 FR 51218, Sept. 30, 1997, as amended by USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.200 Estimated lightweight vertical center of gravity.

(a) Each tank vessel that does not carry a material listed in either Table 1 of part 153 or Table 4 of part 154 of this chapter may comply with this section in lieu of §170.175 if it—

(1) Is 150 gross tons or greater;

(2) Is of ordinary proportions and form;

(3) Has a flush weather deck, one or more longitudinal bulkheads, and no independent tanks; and

(4) Is designed not to carry cargo above the freeboard deck.

(b) When doing the calculations required by §§170.170 and 172.065, the vertical center of gravity of a tank vessel in the lightweight condition must be assumed to be equal to the following percentage of the molded depth of the vessel measured from the keel amidship:

(1) For a tank ship—70%.

(2) For a tank barge—60%.

(c) As used in this section, *molded depth* has the same meaning that is provided for the term in §42.13–15(e) of this chapter.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 85–080, 61 FR 944, Jan. 10, 1996]

Subpart G—Special Installations

§ 170.235 Fixed ballast.

(a) Fixed ballast, if used, must be—

(1) Installed under the supervision of the OCMI; and

(2) Stowed in a manner that prevents shifting of position.

(b) Fixed ballast may not be removed from a vessel or relocated unless approved by the Coast Guard Marine Safety Center. However, ballast may be temporarily moved for vessel examination or repair if done under the supervision of the OCMI.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 88–070, 53 FR 34537, Sept. 7, 1988; CGD 95–028, 62 FR 51218, Sept. 30, 1997; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.245 Foam flotation material.

(a) Installation of foam must be approved by the OCMI.

(b) If foam is used to comply with §171.070(d), §171.095(c), or §173.063(e) of this subchapter, the following applies:

(1) Foam may be installed only in void spaces that are free of ignition sources.

(2) The foam must comply with NPFC MIL–P–21929B (incorporated by reference; see 46 CFR 170.015), including the requirements for fire resistance.

(3) A submergence test must be conducted for a period of at least 7 days to demonstrate whether the foam has adequate strength to withstand a hydrostatic head equivalent to that which would be imposed if the vessel were submerged to its margin line.

(4) The effective buoyancy at the end of the submergence test must be used as the buoyancy credit; however, in no

case will a credit greater than 55 lbs per cubic foot (881 kilograms per cubic meter) be allowed.

(5) The structure enclosing the foam must be strong enough to accommodate the buoyancy of the foam.

(6) Piping and cables must not pass through foamed spaces unless they are within piping and cable trunks accessible from both ends.

(7) Sample specimens must be prepared during installation and the density of the installed foam must be determined.

(8) Foam may be installed adjacent to fuel tanks if the boundary between the tank and space has double continuous fillet welds.

(9) MIL-P-21929B is incorporated by reference into this part.

(10) The results of all tests and calculations must be submitted to the OCMI.

(11) Blocked foam must—

(i) Be used in each area that may be exposed to water; and

(ii) Have a protective cover approved by the OCMI.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 83–005, 51 FR 923, Jan. 9, 1986; USCG–2003–16630, 73 FR 65203, Oct. 31, 2008]

Subpart H—Watertight Bulkhead Doors

§ 170.248 Applicability.

(a) Except as provided in paragraphs (b) through (d) of this section, this subpart applies to vessels with watertight doors in bulkheads that have been made watertight to comply with the flooding or damage stability regulations in this subchapter.

(b) A watertight door on a MODU must comply with § 174.100 of this subchapter.

(c) A watertight door on a self-propelled hopper dredge with a working freeboard must comply with § 174.335 of this subchapter.

(d) Unless permitted otherwise, each vessel constructed on or after January 1, 2009 and issued a SOLAS Passenger Ship Safety Certificate or a SOLAS Cargo Ship Safety Construction Certificate must comply with the applicable regulations of IMO Res. MSC.216(82) in addition to the requirements of this subpart (IMO Res. MSC.216(82) incorporated by reference, see § 170.015).

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 76–080, 54 FR 36977, Sept. 6, 1989; USCG–2007–0030, 75 FR 78084, Dec. 14, 2010]

§ 170.250 Types and classes.

(a) Watertight doors, except doors between cargo spaces, are classed as follows:

(1) Class 1—Hinged door.

(2) Class 2—Sliding door, operated by hand gear only.

(3) Class 3—Sliding door, operated by power and by hand gear.

(b) The following types of watertight doors are not permitted:

(1) A plate door secured only by bolts; and

(2) A door required to be closed by dropping or by the action of dropping weights.

(c) Whenever a door of a particular class is prescribed by these regulations, a door of a class bearing a higher number may be used.

§ 170.255 Class 1 doors; permissible locations.

(a) Except as provided in paragraphs (b) and (c) of this section, Class 1 doors within passenger, crew, and working spaces are permitted only above a deck, the molded line of which, at its lowest point at side, is at least 7 feet (2.14 meters) above the deepest load line.

(b) Class 1 doors are permitted within passenger, crew, and working spaces, wherever located, if—

(1) In the judgment of the OCMI, the door is in a location where it will be closed at all times except when actually in use; and

(2) The vessel is less than 150 gross tons and will not proceed more than 20 nautical miles (37 kilometers) from shore; or

(3) The vessel is in rivers or lakes, bays, and sounds service.

(c) Class 1 doors are permitted in any location on a vessel that—

(1) Is less than 100 gross tons; and

(2) Will operate only in the offshore oil industry trade.

(d) Quick-acting Class 1 doors are permitted in any location on a vessel that operates on the Great Lakes and

is required to meet the damage stability standards of subpart H of part 172 of this chapter.

(e) For vessels required to meet the damage stability standards of subpart H of this chapter, when Class 1 doors are installed below a deck the molded line of which at its lowest point at side is less than 7 feet (2.14 meters) above the deepest load line, an indicator light for each door which warns when the door is open must be installed on the bridge.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 80–159, 51 FR 33059, Sept. 18, 1986]

§ 170.260 Class 2 doors; permissible locations.

(a) Except as provided in paragraphs (b) and (c) of this section, a Class 2 door is permitted only if—

(1) Its sill is above the deepest load line; and

(2) It is not a door described in §170.265(d).

(b) If passenger spaces are located below the bulkhead deck, Class 2 doors with sills below the deepest load line may be used if—

(1) The number of watertight doors located below the deepest load line that are used intermittently during operation of the vessel does not exceed two, and;

(2) The doors provide access to or are within spaces containing machinery.

(c) If no passenger spaces are located below the bulkhead deck, Class 2 doors may be used if the number of watertight doors located below the deepest load line that are used intermittently during operation of the vessel does not exceed five.

(d) In determining whether Class 2 doors are allowed under paragraph (c) of this section, the watertight doors at the entrance to shaft tunnels need not be counted. If Class 2 doors are allowed under paragraph (c) of this section, the doors at the entrance to shaft tunnels may also be Class 2.

§ 170.265 Class 3 doors; required locations.

The following doors must always be Class 3:

(a) Doors in all locations not addressed in §§170.255 and 170.260.

(b) Doors between coal bunkers below the bulkhead deck that must be opened at sea.

(c) Doors into trunkways that pass through more than one main transverse watertight bulkhead if the door sills are less than 2.14 meters above the deepest load line.

(d) Doors below a deck, the molded line of which, at its lowest point at side, is less than 2.14 meters (7 feet) above the deepest load line if—

(1) The vessel is engaged on a short international voyage as defined in §171.010 of this subchapter; and

(2) The vessel is required by §171.065 of this subchapter to have a factor of subdivision of 0.5 or less.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 85–080, 61 FR 944, Jan. 10, 1996; CGD 96–041, 61 FR 50734, Sept. 27, 1996]

§ 170.270 Door design, operation, installation, and testing.

(a) Each Class 1 door must have a quick action closing device operative from both sides of the door.

(b) Each Class 1 door on a vessel in ocean service must be designed to withstand a head of water equivalent to the depth from the sill of the door to the margin line but in no case less than 10 feet (3.05 meters).

(c) Each Class 2 and Class 3 door must—

(1) Be designed, constructed, tested, and marked in accordance with ASTM F 1196 (incorporated by reference, see §170.015);

(2) Have controls in accordance with ASTM F 1197 (incorporated by reference, see §170.015); and

(3) If installed in a subdivision bulkhead, meet Supplemental Requirements Nos. S1 and S3 of ASTM F 1196 (incorporated by reference, see §170.015), unless the watertight doors are built in accordance with plans previously approved by the Coast Guard, in which case, only Supplemental Requirements Nos. S1 and S3.1.4 of ASTM F 1196 (incorporated by reference, see §170.015) must be met. In either case, control systems for watertight doors must have power supplies, power sources, installation tests and inspection, and additional remote operating consoles in accordance with Supplemental Requirements Nos. S1 through

S4 of ASTM F 1197 (incorporated by reference, see §170.015).

(d) Installations of sliding watertight door assemblies must be in accordance with the following:

(1) Before a sliding watertight door assembly is installed in a vessel, the bulkhead in the vicinity of the door opening must be stiffened. Such bulkhead stiffeners, or deck reinforcement where flush deck door openings are desired, must not be less than 6 inches nor more than 12 inches from the door frame so that an unstiffened diaphragm of bulkhead plating 6 to 12 inches wide is provided completely around the door frame. Where such limits cannot be maintained, alternative installations will be considered by the Marine Safety Center. In determining the scantlings of these bulkhead stiffeners, the door frame should not be considered as contributing to the strength of the bulkhead. Provision must also be made to adequately support the thrust bearings and other equipment that may be mounted on the bulkhead or deck.

(2) Sliding watertight door frames must be either bolted or welded watertight to the bulkhead.

(i) If bolted, a suitable thin heat and fire resistant gasket or suitable compound must be used between the bulkhead and the frame for watertightness. The bulkhead plating must be worked to a plane surface in way of the frame when mounting.

(ii) If welded, caution must be exercised in the welding process so that the door frame is not distorted.

(e) For each watertight door which is in a required subdivision bulkhead, an indicator light must be installed in the pilothouse and at each other vessel operating station from which the door is not visible. The indicator must show whether the door is open or closed.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 88–032, 56 FR 35828, July 29, 1991; CGD 85–080, 61 FR 944, Jan. 10, 1996; USCG–2000–7790, 65 FR 58464, Sept. 29, 2000]

§ 170.275 Special requirements for cargo space watertight doors.

(a) A door between cargo spaces—

(1) Must not be designed for remote operation;

(2) Must be located as high as practicable; and

(3) Must be located as far inboard of the side shell as practicable but in no case closer to the side shell than one-fifth of the beam of the vessel where the beam is measured at right angles to the centerline of the vessel at the level of the deepest load line.

(b) If the door is accessible while the ship is in operation, it must have installed a lock or other device that prevents unauthorized opening.

(c) Before installing a watertight door in a cargo space, approval must be obtained from the Commanding Officer, Marine Safety Center.

[CGD 79–023, 48 FR 51010, Nov. 4, 1983, as amended by CGD 88–070, 53 FR 34537, Sept. 7, 1988]

Subpart I—Free Surface

§ 170.285 Free surface correction for intact stability calculations.

(a) When doing the intact stability calculations required by this subchapter, the virtual increase in the vessel's vertical center of gravity due to liquids in tanks must be determined by calculating—

(1) For each type of consumable liquid, the maximum free surface effect of at least one transverse pair of wing tanks or a single centerline tank; and

(2) The maximum free surface effect of each partially filled tank containing non-consumable liquids.

(b) For the purpose of paragraph (a)(1) of this section, the tank or combination of tanks selected must be those having the greatest free surface effect.

§ 170.290 Free surface correction for damage stability calculations.

(a) When doing the damage stability calculations required by this subchapter, the virtual increase in the vessel's vertical center of gravity due to liquids in tanks must be determined by calculating—

(1) For each type of consumable liquid, the free surface effect of at least one transverse pair of wing tanks or a single centerline tank; and

(2) The free surface effect of each partially filled tank containing other than consumable liquids.

(b) For the purpose of paragraph (a)(1) of this section, the tank or combination of tanks selected must be those having the greatest free surface effect.

(c) When doing the calculations in paragraph (a) of this section, the free surface effect of a liquid in a tank must be determined by—

(1) Assuming the vessel is heeled five degrees from the vertical; or

(2) Calculating the shift of the center of gravity of the liquid in the tank by the moment of transference method.

§ 170.295 Special consideration for free surface of passive roll stabilization tanks.

(a) The virtual increase in the vertical center of gravity due to a liquid in a roll stabilization tank may be calculated in accordance with paragraph (b) of this section if—

(1) The virtual increase in the vertical center of gravity of the vessel is calculated in accordance with §170.285(a); and

(2) The slack surface in the roll stabilization tank is reduced during vessel motions because of the shape of the tank or the amount of liquid in the tank.

(b) The virtual rise in the vertical center of gravity calculated in accordance with §170.285(a) for a stabilization tank may be reduced in accordance with the following equation:

$$E.F.S. = (K)(F.F.S.)$$

where—

E.F.S. = the effective free surface.

F.F.S. = the full free surface calculated in accordance with §170.285(a).

K = the reduction factor calculated in accordance with paragraph (c) of this section.

(c) The factor (K) must be calculated as follows:

(1) Plot (I/d)tan T on Graph 170.295 where—

(i) (I) is the moment of inertia of the free surface in the roll tank;

(ii) (d) is the density of the liquid in the roll tank; and

(iii) (T) is the angle of heel.

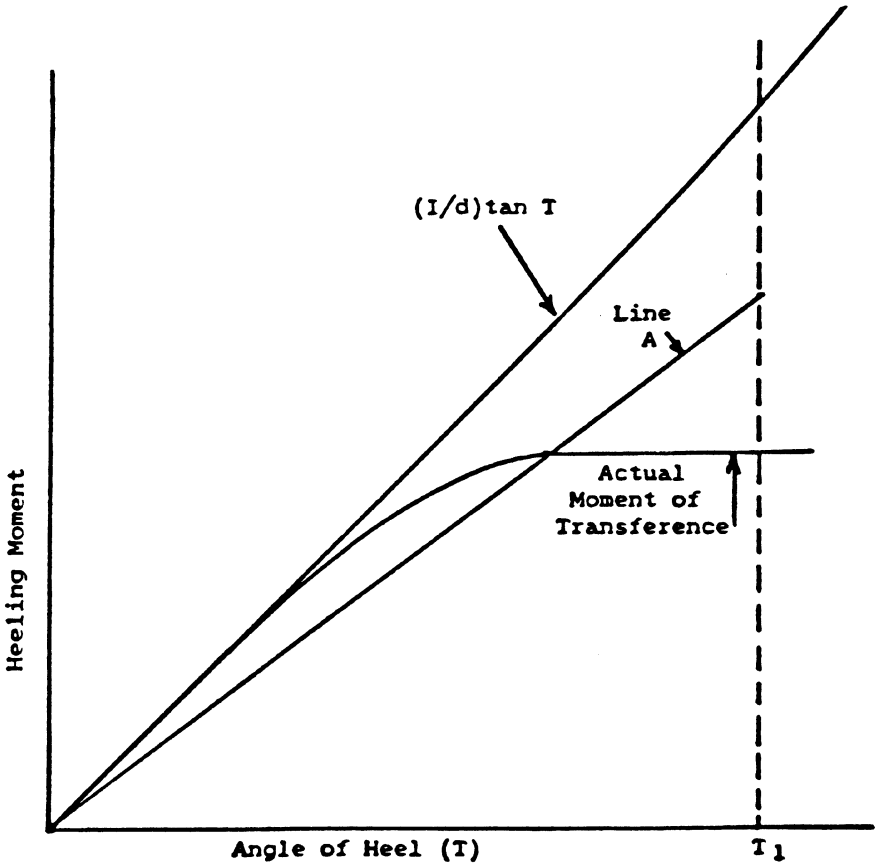
(2) Plot the moments of transference of the liquid in the roll tank on Graph 170.295.

(3) Construct a line A on Graph 170.295 so that the area under line A between T = 0 and the angle at which the deck edge is immersed or 28 degrees, whichever is smaller, is equal to the area under the curve of actual moments of transference between the same angles.

(4) The factor (K) is calculated by determining the ratio of the ordinate of line A to the ordinate of the curve of (I/d)tan T, both measured at the angle at which the deck edge is immersed or 28 degrees, whichever is smaller.

GRAPH 170.295

Special Free Surface Correction
for
Stabilization Tanks



T_1 = the angle at which the deck edge is immersed or 28 degrees, whichever is smaller.

§ 170.300 Special consideration for free surface of spoil in hopper dredge hoppers.

The calculations required by this subchapter for each self-propelled hopper dredge must include—

(a) The free surface effect of consumable liquids and the free surface effect of the dredged spoil in the hoppers; and

(b) Either of the following assumptions when performing the calculations required by §174.310(b) of this chapter:

(1) If the dredged spoil is assumed to be jettisoned, the free surface of the dredged spoil may be disregarded.

(2) If the dredged spoil is not assumed to be jettisoned. the free surface of the dredged spoil must be calculated.

[CGD 76–080, 54 FR 36977, Sept. 6, 1989]

PART 171—SPECIAL RULES PERTAINING TO VESSELS CARRYING PASSENGERS

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