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Subpart 36.10—Piping, Valves, Fittings, and Accessory Equipment

§ 36.10–1 Cargo pump relief valves—TB/ALL.

(a) Cargo pump relief valves and pressure gages may be omitted, however, a suitable device shall be fitted to stop the pumping before the designed pressure of the piping is exceeded.

(b) [Reserved]

Subpart 36.20—Vents and Ventilation

§ 36.20–1 Flame screens—TB/ALL.

(a) Flame screens may be omitted in the vent lines on cargo tanks.

(b) [Reserved]

§ 36.20–5 Ventilation of pumproom—TB/ALL.

(a) Where personnel are required to enter pumprooms located below the weather deck under normal circumstances of handling cargo, such pumprooms shall be equipped with power ventilation.

(b) [Reserved]

Subpart 36.30—Periodic Inspections

§ 36.30–1 Lagged tanks—TB/ALL.

(a) Lagged tanks shall have part of the lagging removed on the lower portion of the cargo tanks as directed by the marine inspector, at least once every eight years for external examination.

(b) [Reserved]

PART 38—LIQUEFIED FLAMMABLE GASES

Subpart 38.01—General

Sec.

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Subpart 38.10—Piping, Valves, Fittings, and Accessory Equipment

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38.10–5 Filling and discharge pipes—TB/ALL.
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38.10–15 Safety relief valves—TB/ALL.
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Subpart 38.15—Special Requirements

38.15–1 Filling of tanks—TB/ALL.
38.15–5 Cargo hose—TB/ALL.
38.15–10 Leak detection systems—T/ALL.
38.15–15 Electrical installations—TB/ALL.
38.15–20 Remote shutdowns—TB/ALL.

Subpart 38.20—Venting and Ventilation

38.20–1 Venting—T/ALL.
38.20–5 Venting—T/ALL.
38.20–10 Ventilation—T/ALL.

Subpart 38.25—Periodic Tests and Inspections

38.25–1 Tests and inspections—TB/ALL.
38.25–3 Nondestructive testing—TB/ALL.
38.25–5 Removal of defective tanks—TB/ALL.
38.25–10 Safety relief valves—TB/ALL.

AUTHORITY: 46 U.S.C. 2103, 3306, 3703; 49 U.S.C. 5101, 5106; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

SOURCE: CGFR 66–33, 31 FR 15269, Dec. 6, 1966, unless otherwise noted.

Subpart 38.01—General

§ 38.01–1 Scope of regulations—TB/ALL.

(a) The regulations in this part contain requirements for the transportation of liquefied or compressed gases, whose primary hazard is one of flammability.

(b) The transportation *on deck* of liquefied flammable gases in portable cylinders and tanks and the transportation of empty cylinders and portable tanks previously used shall be in accordance with the requirements of 49 CFR parts 171–179. The transportation of such containers *under deck* shall be in accordance with the requirements of § 38.01–2.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGD 86–033, 53 FR 36024, Sept. 16, 1988]

§ 38.01–2 Transportation of portable cylinders or portable tanks containing or having previously contained liquefied flammable gases in dry cargo spaces—TB/ALL.

(a) DOT cylinders, DOT Specification portable tanks or other approved portable tanks containing liquefied flammable gases may be transported under deck, provided the following requirements are met:

(1) The cargo space shall be provided with efficient means of ventilation, be protected from artificial heat, and be readily accessible from hatches.

(2) Containers shall be stored in such a position that the safety relief device is in communication with the vapor space of the container. They shall be properly stowed, dunnaged, and secured to prevent movement in any direction.

(3) Unless a method acceptable to the Commandant is used, the containers shall not be overstowed in the same dry cargo space with other liquefied flammable gas containers, nor with other cargo.

(4) The containers shall be suitably protected against physical damage from other cargo, ship's stores, or equipment in such spaces.

(5) Cylinders shall have their valves protected at all times by one of the following methods:

(i) By metal caps securely attached to the cylinders and of sufficient strength to protect the valves from injury.

(ii) By having the valves recessed into the cylinders or otherwise protected so that they will not be subject to a blow if the cylinder is dropped on a flat surface.

(6) Portable tanks shall have their valves protected at all times by a housing in accordance with the requirements under which they were manufactured.

(7) Electrical circuits in the cargo spaces must meet the hazardous area requirements in subchapter J (Electrical Engineering Regulations) of this chapter. If an electrical circuit does not meet those requirements, it must be deenergized by a positive means and not reenergized until the cargo has been removed and the space has been tested and found free of flammable vapor.

(8) During the stowage of portable cylinders or portable tanks in a hold or compartment that is not fitted with electrical fixtures meeting the hazardous area requirements of subchapter J (Electrical Engineering Regulations) of this chapter, portable lights must not be used within the space unless the portable lights are explosion-proof. Electrical connections for portable lights must be made from outlets on the weather deck. Hand flashlights used in the stowage area must be explosion-proof.

(9) The following dangerous cargoes shall not be stowed in the same hold or compartment with liquefied flammable gas containers:

(i) Division 1.1, 1.2, 1.3, or 1.4 (explosive) materials, as defined in 49 CFR 173.50.

(ii) Flammable solids.

(iii) Oxidizing materials.

(iv) Corrosive liquids.

(v) Poisonous articles.

(vi) Cotton and similar fibrous materials.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–32, 33 FR 5714, Apr. 12, 1968; CGD 74–125A, 47 FR 15231, Apr. 8, 1982; CGD 92–050, 59 FR 39666, Aug. 5, 1994]

§ 38.01–3 Incorporation by reference.

(a) Certain standards and specifications are incorporated by reference into this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a). To enforce any edition other than the ones listed in paragraph (b) of this section, notice of change must be published in the FEDERAL REGISTER and the material made available to the public. All

approved material is on file 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.* All material is available from the sources indicated in paragraph (b) of this section.

(b) The standards and specifications approved for incorporation by reference in this part, and the sections affected, are:

American Society for Nondestructive Testing (ASNT)

4153 Arlingate Road, Caller #28518, Columbus, OH, 43228–0518

ASNT ''Recommended Practice No. SNT-TC-1A (1988), Personnel Qualification and Certification in Nondestructive Testing''.....38.25–3(c)(2)

American Society of Mechanical Engineers (ASME) International

Three Park Avenue, New York, NY 10016–5990

ASME Boiler and Pressure Vessel Code Section V, Nondestructive Examination (1986) .....38.25–3(a)(1)

American Society for Testing and Materials (ASTM)

100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

ASTM D 4986–98, Standard Test Method for Horizontal Burning Characteristics of Cellular Polymeric Materials.....38.05–20

[CGD 85–061, 54 FR 50962, Dec. 11, 1989, as amended by USCG–1999–6216, 64 FR 53224, Oct. 1, 1999; USCG–1999–5151, 64 FR 67177, Dec. 1, 1999]

§ 38.01–5 Certificate of inspection—TB/ALL.

(a) The certificate of inspection shall be endorsed for the carriage of liquefied flammable gases as follows:

Inspected and approved for the carriage of liquefied flammable gases (1) at a pressure not to exceed ___ p.s.i., and (2) at temperatures not less than __ °F.

(b) Tanks approved to carry cargoes at below ambient temperatures shall have the applicable limiting temperatures indicated on the certificate. Tanks designed to carry cargoes only at ambient temperatures should have the word ''ambient'' entered in these spaces.

Subpart 38.05—Design and Installation

§ 38.05–1 Design and construction of vessels—general—TB/ALL.

(a) Vessels designed for the carriage of liquefied gases shall comply with the applicable requirements of this subchapter.

(b) Access and ventilation intakes to the machinery, accommodation and working spaces should be so arranged as to prevent the flow of cargo vapor from the weather deck into such spaces. In this respect openings in the forward or after ends of poops, forecastles, and deckhouses adjacent the cargo area shall be at least 24 inches above the cargo handling deck.

(c) Materials used in the fabrication of cargo tanks and piping shall have adequate notch toughness at the service temperature. Where a secondary barrier is required, the material of that barrier and of contiguous hull structure shall have sufficient notch toughness at the lowest temperature which may result during the containment of leakage cargo within the secondary barrier. Materials used in the fabrication of the cargo containment and handling system shall satisfy the requirements for toughness specified in subchapter F (Marine Engineering) of this chapter.

(d) Cargo tank spaces are to be isolated from the remainder of the vessel by cofferdams in accordance with § 32.60–10 of this subchapter. In a nonpressure vessel configuration, the void between the primary and secondary barriers shall not be acceptable as the required cofferdam between the tank spaces and the main machinery spaces.

(e) Compartments containing cargo tanks or pipes shall be accessible from the weather deck only. No openings from these compartments to other parts of the vessel are permitted.

(f) Barges utilized for the carriage of liquefied gases shall be of Type II barge hull as defined in § 32.63–5(b)(2) of this subchapter. The Commandant may, based on the properties of the liquefied gas to be carried, require a Type I barge hull, as defined in § 32.63–5(b)(1) of this subchapter, to ensure the hull is consistent with the degree and nature

of the hazard of the liquefied gas to be carried.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18806, Dec. 18, 1968; CGFR 68–65, 33 FR 19985, Dec. 28, 1968; CGFR 70–10, 35 FR 3709, Feb. 25, 1970]

§ 38.05–2 Design and construction of cargo tanks—general—TB/ALL.

(a) The maximum allowable temperature of the cargo is defined as the boiling temperature of the liquid at a pressure equal to the setting of the relief valve.

(b) The service temperature is the minimum temperature at which cargo is loaded and/or transported in the cargo tank. However, the service temperature shall in no case be taken higher than given by the following formula:

$$t_s = t_w - 0.25(t_w - t_b) \qquad (1)$$

where:

t_s = Service temperature.

t_w = Boiling temperature of gas at normal working pressure of tank but not higher than + 32 °F.

t_b = Boiling temperature of gas at atmospheric pressure.

(c) Heat transmission studies, where required, shall assume the minimum ambient temperatures of 0 °F. still air and 32 °F. still water, and maximum ambient temperatures of 115 °F. still air and 90 °F. still water.

(d) Cargo tanks in vessels in ocean; Great Lakes; lakes, bays, and sounds; or coastwise service shall be designed to withstand, simultaneously, the following dynamic loadings:

(1) Rolling 30° each side (120°) in 10 seconds.

(2) Pitching 6° half amplitude (24°) in 7 seconds.

(3) Heaving $L/80'$ half amplitude ($L/20'$) in 8 seconds.

(e) Cargo tanks on barges shall be designed in accordance with § 32.63–25 of this subchapter.

(f) Each liquefied flammable gas tank shall be provided with not less than a 15-inch by 23-inch or an 18-inch nominal diameter manhole fitted with a cover located above the maximum liquid level and as close to the top of the tank as possible. Where access trunks are fitted to the tanks, the nominal diameter of the trunks shall be not less than 30 inches.

(g) Cargo tanks vented above 10 pounds per square inch gage shall be of the pressure vessel type.

§ 38.05–3 Design and construction of pressure vessel type cargo tanks—TB/ALL.

(a) Cargo tanks of pressure vessel configuration (e.g. cylindrical, spherical, etc.) shall be designed, fabricated, inspected, and tested in accordance with the applicable requirements of part 54 of subchapter F (Marine Engineering) of this chapter, except as otherwise provided for in this part.

(b) The requirements of this section anticipate that cargo tanks constructed as pressure vessels will, by themselves, constitute the cargo containment system and usually will not require a secondary barrier.

(c) In the design of the tank, consideration shall be given to the possibility of the tank being subjected to external loads. Consideration shall also be given to excessive loads that can be imposed on the tanks by their support due to static and dynamic forces under operating conditions or during testing. The design shall show the manner in which the tanks are to be installed, supported, and secured, and shall be approved prior to tank installation.

(d) Tanks with a service temperature of minus 20 °F. or lower and fabricated of ferritic materials shall be stress relieved.

(e) Unlagged cargo tanks, where the cargo is transported, at or near ambient temperatures, shall be designed for the vapor pressure of the gas at 115 °F. The design shall also be based on the minimum internal pressure (maximum vacuum), plus the maximum external static head to which the tank may be subjected. Whenever surrounding cargo is at a greater temperature than the maximum allowable temperature of the liquefied flammable gas tanks, the liquefied flammable gas cargo is to be such that the design pressure of the liquefied flammable gas tank is not exceeded.

(f) Where cargo tanks, in which the cargo is transported at or near ambient temperature, are lagged with an insulation material of a thickness to provide a thermal conductance of not more

than 0.075 B.t.u. per square foot per degree Fahrenheit differential in temperature per hour, the tanks shall be designed for a pressure of not less than the vapor pressure of the gas at 105 °F. The insulation material shall conform to the requirements of § 38.05–20. The design shall also be based on the minimum internal pressure (maximum vacuum) plus the maximum external static head to which the tank may be subjected.

(g) Cargo tanks in which the temperature is maintained below the normal atmospheric temperature by refrigeration or other acceptable means shall be designed for a pressure of not less than 110 percent of the vapor pressure corresponding to the temperature of the liquid at which the system is maintained, or the pressure corresponding to the greatest dynamic and static loads expected to be encountered either in service or during testing. For mechanically stress relieved cargo tanks, additional factors relating design pressure and maximum allowable pressure shall be as specified by the Commandant. The material of the tank shall satisfy the requirements of subchapter F (Marine Engineering) of this chapter for the service temperature, and this temperature shall be permanently marked on the tank as prescribed in § 38.05–5.

(h) Where applicable, the design shall investigate the thermal stresses induced in the cargo tank at the service temperature.

(i) The shell and head thickness of liquefied gas cargo tanks shall not be less than five-sixteenths inch.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18806, Dec. 18, 1968]

§ 38.05–4 Design and construction of nonpressure vessel type cargo tanks—TB/ALL.

(a) The requirements in this section anticipate a cargo containment system consisting of a primary tank which is structurally self-supporting and, where required, a secondary barrier. Other vessel or cargo tank configurations, such as membrane type liners externally supported, will be considered upon submission of substantiating data, and based upon such additional tests as the Commandant may direct.

(b) A secondary barrier is an arrangement or structure designed to contain the cargo temporarily if leakage develops in the primary container. A secondary barrier shall be provided where leakage from the primary container may cause lowering of the temperature of the ship's structure to an unsafe level. The secondary barrier shall be constructed of material suitable to contain the cargo at the service temperature.

(c) The design of the cargo containment systems shall be such that under normal service conditions, or upon failure of the primary tank, the hull structure shall not be cooled down to a temperature which is unsafe for the materials involved. Structural members not suitable for the service temperatures of the cargo shall be protected by a secondary barrier consisting of suitable structural containment together with necessary associated insulation. Heat transmission studies and tests may be required to demonstrate that the arrangement is feasible and that the final material temperatures are acceptable.

(d) The design and construction of the cargo tanks shall be at least equivalent to the standards established by the American Bureau of Shipping or other recognized classification society. For special tanks, or designs not contemplated by standards of the classification society, a detailed analysis of the entire tank, or designated parts thereof, shall be made and submitted to the Commandant for approval.

(e) The cargo tank shall be designed for a head of cargo at least equal to the highest level the liquid cargo may attain plus the maximum venting pressure. In no case shall a head of cargo less than 4 feet above the cargo hatch or expansion trunk be used.

(f) The design shall investigate the thermal stresses induced in the cargo tank during loading. Where necessary, devices for spray loading or other methods of precooling or cooling during loading shall be included in the design.

(g) All weld intersections or crossings in joints of primary tank shells shall be radiographed for a distance of 10 thicknesses from the intersection. All

other welding in the primary tank and in the secondary barrier shall be spot radiographed in accordance with the requirements of part 54 of subchapter F (Marine Engineering) of this chapter.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18807, Dec. 18, 1968]

§ 38.05–5 Markings—TB/ALL.

(a)(1) Upon satisfactory completion of tests and inspection, pressure vessel and nonpressure vessel type cargo tanks, shall have markings as required by § 54.10–20 of subchapter F (Marine Engineering) of this chapter except that for nonpressure vessel type tanks, the Coast Guard number and pressure vessel class shall be omitted.

(2) Hydrostatic test for pressure vessel type tanks shall be that specified in § 38.25–1(b). In the case of nonpressure vessel type tanks, the hydrostatic test pressure shall mean the pressure specified in § 38.25–1(d), while the maximum allowable pressure shall mean the maximum venting pressure as used in § 38.05–4(e). Where it is not feasible to attach the nameplate to the tank, it shall be conspicuously displayed nearby.

(b) All tank inlet and outlet connections, except safety relief valves, liquid level gaging devices, and pressure gages, shall be labeled to designate whether they terminate in the vapor or liquid space. Labels of corrosion-resistant material may be attached to valves.

(c) All tank markings shall be permanently and legibly stamped in a readily visible position, and shall not be obscured by painting. If the tanks are lagged, the markings attached to the tank proper shall be duplicated on a corrosion-resistant plate secured to the outside jacket of the lagging.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18807, Dec. 18, 1968]

§ 38.05–10 Installation of cargo tanks—general—TB/ALL.

(a)(1) Cargo tanks shall be supported on foundations of steel or other suitable material and securely anchored in place to prevent the tanks from shifting when subjected to external forces. Each tank shall be so supported as to prevent the concentration of excessive loads on the supporting portions of the shell or head as prescribed under § 38.05–2(d).

(2) Cargo tanks installed in barges shall comply with the requirements of § 32.63–25 of this subchapter.

(b) Foundations, and stays where required, shall be designed for support and constraint of the weight of the full tank, and the dynamic loads imposed thereon. Thermal movement shall also be considered.

(c) Foundations and stays which may be exposed to the cargo shall be suitable for the temperatures involved and be impervious to the cargo.

(d) The design of the foundations and stays shall consider the resonance of the cargo tank, or parts thereof, and the vibratory forces, found in the tank vessel. If necessary, effective damping arrangements shall be provided.

(e) Independent containment systems shall be so arranged as to provide a minimum clearance of not less than 24 inches from the vessel's side and not less than 15 inches from the vessel's bottom to provide access for inspection of the hull. Clearances for collision protection, where required by other parts of the regulations in this subchapter, may increase the clearances specified here.

(1) For pressure vessel type tanks the distance between adjacent tanks and between tanks and vessel's structure shall be adequate to permit access for inspection and maintenance of all tank surfaces and hull structure as approved by the Commandant. Alternate provisions may be made for inspection and maintenance of the vessel's structure and tanks by moving such tanks or by providing equivalent acceptable means for remote inspection.

(2) For nonpressure vessel type containment systems, access shall be arranged to permit inspection of one side each of the primary tank and secondary barrier, under normal shipyard conditions. Containment systems which, because of their peculiar design, cannot be visually inspected to this degree, may be specially considered provided an equivalent degree of safety is attained.

(f) Cargo tanks may be installed *on deck, under deck,* or with the tanks protruding through the deck. All tanks shall be installed with the manhole openings located in the open above the weather deck. Provided an equivalent degree of safety is attained, the Commandant may approve cargo tanks installed with manhole openings located below the weather deck.

(g) For pressure vessel type cargo tanks, the following conditions apply:

(1) Liquefied flammable gas cargo tanks may be located in cargo tanks or in spaces which meet the requirements for cofferdams as defined in § 30.10–13 of this subchapter. When liquefied flammable gas cargo tanks are installed in cargo tanks, such cargo tanks may be used simultaneously or separately for the carriage of flammable or combustible liquids up to and including the grade for which the cargo tanks are otherwise certified in accordance with the requirements of this subchapter.

(2) Where the liquefied flammable gas tanks are installed in cargo tanks and a portion of the liquefied flammable gas tanks extend above the weather deck, the penetration shall be made gastight and watertight, and shall be such as to provide full compliance with the structural requirements including testing for the hull and integral tanks. In the application of the requirements for the hydrostatic test of the cargo tanks, the hydrostatic test shall in no case be less severe than the worst anticipated service condition of the cargo loading. In the design and testing of independent cargo tanks and integral cargo tanks consideration shall be given to the possibility of the independent tanks being subjected to external loads.

(3) Where the liquefied flammable gas tanks are installed in nontank hull spaces and a portion of the tank extends above the weather deck, provision shall be made to maintain the weathertightness of the deck, except that the weathertightness of the upper deck need not be maintained on:

(i) Vessels operating on restricted routes which are sufficiently protected; or,

(ii) Open hopper type barges of acceptable design.

(h) No strength welding employed in the attachment of supports, lugs, fittings, etc., shall be done on tanks that require and have been stress relieved, unless authorized by the Commandant.

§ 38.05–20 Insulation—TB/ALL.

(a) Where used, tank insulation shall satisfy the following requirements for combustibility, installation, and arrangement:

(1) Insulation in a location exposed to possible high temperature or source of ignition shall be either:

(i) Incombustible, complying with the requirements of subpart 164.009 of subchapter Q (Specifications) of this chapter; or,

(ii) Self-extinguishing, as determined by ASTM D 4986, ''Standard Test Method for Horizontal Burning Characteristics of Cellular Polymeric Materials,'' (incorporated by reference, see § 38.01–3) and covered by a suitable steel cover.

(2) Insulation in a location protected against possible ignition by enclosure in a tight steel envelope in which inert conditions are maintained need satisfy no requirement for combustibility except chemical stability.

(3) Insulation in a location protected against possible high temperature or source of ignition by continuous surrounding structural voids or ballast tanks need satisfy no requirement for combustibility except chemical stability.

(b) All insulation shall be of a vapor-proof construction, or have a vapor-proof coating of a fire-retardant material acceptable to the Commandant. Unless the vapor barrier is inherently weather resistant, tanks exposed to the weather shall be fitted with a removable sheet metal jacket of not less than 0.083-inch thick over the vapor-proof coating and flashed around all openings so as to be weathertight. Weather resistant coatings shall have sheet metal over areas subject to mechanical damage.

(c) The insulation shall be adequately protected in areas of probable mechanical damage.

(d) Insulation which forms an integral part of the secondary barrier shall meet the following additional requirements:

(1) When the secondary barrier is called upon to contain the cargo, insulating material which is contacted shall not be affected by the cargo. Samples of the insulating material shall be tested in the cargo for solubility, absorption and shrinkage. The samples shall be checked for the above effects at intervals not exceeding 1 week, for a total test period of 6 weeks.

(2) Any adhesives, sealers, coatings, or vapor barrier compounds used in conjunction with the insulating material shall be similarly tested to insure suitable cargo resistive properties.

(3) The insulation shall have sufficient mechanical strength for the proposed design. Additionally, the thermal expansion of the insulation relative to the material to which it is affixed shall be considered in the design.

(e) The insulation for the piping systems shall be at least of the ''self-extinguishing'' type described in paragraph (a) of this section, and comply with the requirements contained in paragraphs (b) and (c) of this section.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by USCG–1999–5151, 64 FR 67177, Dec. 1, 1999]

§ 38.05–25 Refrigerated systems—TB/ALL.

(a) When a liquefied flammable gas is carried below atmospheric temperature under the requirements of § 38.05–3(f) or § 38.05–4, maintenance of the tank pressure below the maximum allowable pressure shall be provided by one or more of the following means:

(1) A refrigeration or liquefication system which regulates the pressure in the tanks. A standby compressor or equivalent equipment, of a capacity equal to one of the working units shall be provided.

(2) A system whereby the vapors are utilized as fuel for shipboard use.

(3) A system allowing the liquefied flammable gas to warm up and increase in pressure. The insulation and tank design pressure shall be adequate to provide for a suitable margin for the operating time and temperatures involved.

(4) Other systems acceptable to the Commandant.

(b) A system whereby the vapors are vented to the atmosphere at sea only may be employed in conjunction with paragraph (a)(1) of this section. The pressure control valves shall be independent of the safety relief valves. See § 38.20–1(j).

Subpart 38.10—Piping, Valves, Fittings, and Accessory Equipment

§ 38.10–1 Valves, fittings, and accessories—TB/ALL.

(a) All valves, flanges, fittings, and accessory equipment shall be of a type suitable for use with liquefied flammable gases, and shall be made of steel or grade A malleable iron, acceptable for the service temperature and pressure according to the requirements of part 56 of subchapter F (Marine Engineering) of this chapter. Other materials may be specially considered and approved by the Commandant.

(b) All valves, flanges, fittings, and accessory equipment shall have a pressure rating at operating temperatures not less than the maximum allowable pressure to which they may be subjected. Piping which is not protected by a relief valve or which can be isolated from its relief valve by other valves shall be designed for the greatest of the cargo vapor pressure at 115 °F., or the maximum allowable pressure of the cargo tank, or the requirements of § 38.10–10(a). Cargo liquid piping which may be subject to liquid full conditions shall be fitted with relief valves. The escape from piping systems relief valves shall be piped to a venting system or to a suitable vapor recovery system. Provision shall be made for the proper venting of all valves, fittings, etc., in which pressure buildup may occur, especially in refrigerated systems, because of an increase in product temperature.

(c) Welded connections shall be used wherever possible with the number of flanged joints kept to the minimum necessary for assembly and cleaning. Sockets in sizes 3 inches and smaller and slipon flanges in sizes 4 inches and smaller may be used. Threaded joints may be used in sizes of 1 inch and smaller. Where threaded joints are used, they shall be visible and accessible for inspection under all service conditions, and limited to instrument and control lines properly valved from

the main lines. Where threaded joints are sealed by brazing or welding, they need not be exposed.

(d) Valve seat material, packing, gaskets, etc., shall be resistant to the action of the liquefied flammable gas. All flange and manhole cover gaskets shall be compressed asbestos, spiral-wound metal asbestos, metal jacketed asbestos, solid aluminum, corrugated steel, solid steel, or iron, or other materials with equal or better resistance to fire exposure.

(e) Provisions shall be made by the use of offsets, loops, bands, expansion joints, etc., to protect the piping and tank from excessive stress due to thermal movement and/or movements of the tank and hull structure. Expansion joints shall be held to a minimum and where used shall be of the bellows type and subject to special approval by the Commandant.

(f) Low temperature piping shall be thermally isolated from the hull structure. Arrangements should provide for the protection of the hull structure from leaks in way of pumps, flanges, joints, etc.

(g) Each tank shall be provided with the necessary fill and discharge liquid and vapor shutoff valves, safety relief valve connections, refrigeration connections where necessary, liquid level gaging devices, thermometer well and pressure gage, and shall be provided with suitable access for convenient operation. Piping shall enter the cargo tanks above weather deck and as close to the top of the tank or dome as possible, except as otherwise permitted in this section. Connections to the tanks shall be protected against mechanical damage and tampering. No underdeck cargo piping shall be installed between the outboard side of the cargo containment system and the shell of the vessel, unless provision is made to maintain the minimum inspection and collision protection clearances of § 38.05–10(e) between the piping and the shell. Other openings in the tanks, except as specifically permitted by the Commandant, are prohibited.

(h) Cargo loading and discharge piping may be connected to the tanks below the weather deck or below the liquid level subject to approval by the Commandant, provided:

(1) A remotely controlled quick-closing shutoff valve is flanged to the tank outlet connection. The control mechanism for this valve shall meet the requirements of § 38.10–5.

(2) The piping which is below the weather deck or liquid level shall be joined by welding except for a flanged connection to the quick-closing shutoff valve and a flanged connection to the cargo pump.

(3) The design and arrangement of this piping, including the flange bolting shall be such that excessive stresses will not be transmitted to the cargo tank outlet connection or the quick-closing valve, even in the event of abnormal displacement of the piping.

(4) Except for those vessels, the design of which permits the exclusion of a weathertight deck over the tanks, the space in which such piping is located shall be accessible only from the weather deck and shall be vented to a safe location above the weather deck.

(i) All connections to tanks, except safety relief valves and liquid level gaging devices, shall have manually operated shutoff valves located as close to the tank as possible. In addition, all liquid and vapor connections on pressure vessel type tanks except safety relief valves, liquid level gaging devices, and filling and discharge lines, shall be equipped with either an automatic excess flow valve or a remotely controlled quick-closing shutoff valve of the fail closed type. These valves, except when necessary for the operation of the system, shall remain closed. For pressure vessel type tanks operating at low pressure and with service temperature near the cargo atmospheric boiling point, the Commandant may approve individual installations where the liquid and vapor connections normally requiring automatic excess flow valves or remotely controlled quick-closing shutoff valves are fitted with manually operated shutoff valves only.

(j) The control system for quick-closing shutoff valves shall be provided with a remote control in at least two locations and be of a type acceptable to the Commandant. The control system shall also be provided with a fusible element designed to melt between 208 °F. and 220 °F., which will cause the

quick-closing shutoff valves to close in case of fire. The quick-closing shutoff valves shall be capable of local manual operation.

(k) Excess flow valves, where required by this subchapter, shall close automatically at the rated flow of vapor or liquid as specified by the manufacturer. The piping, including valves, fittings, and appurtenances protected by an excess flow valve, shall have a greater capacity than the rated flow of the excess flow valve.

(l) Liquid level gaging devices which are so constructed that outward flow of tank contents shall not exceed that passed by a No. 54 drill size (0.055-inch diameter) opening, need not be equipped with excess flow valves.

(m) Pressure gage connections need not be equipped with excess flow valves if the openings are not larger than No. 54 drill size (0.055-inch diameter).

(n) Excess flow valves may be designed with a bypass not to exceed a No. 60 drill size (0.040-inch diameter) opening to allow equalization of pressure.

(o) Suitable valves shall be installed on the cargo headers to relieve the pressure on the liquid and vapor lines to a safe location prior to disconnecting shore lines.

(p) A pressure gage shall be located at the highest practicable point. A thermometer well where installed on the tank proper shall be attached to the tank by welding.

(q) For nonpressure vessel type tanks, the following additional fittings are required:

(1) A liquid level gaging device shall be provided to determine the level of the liquid cargo without opening the tank. The gage shall be readable from the open deck, or from a control room or station when the loading or discharging is controlled from such a room or station. Tables shall be readily available for direct determination of volume of liquid in the tanks, with necessary corrections for trim, temperature, and density.

(2) An independent high level alarm shall be provided for each tank. The alarm indication shall register at the station where loading is controlled.

(3) Each tank shall be provided with remote reading temperature sensors located near both the cargo liquid level and the bottom of the tank. The temperature shall be read at the control station for loading and unloading cargo, if provided, otherwise near the cargo control valves.

(4) Each tank shall be fitted with a pressure and a vacuum gage which shall be read at the control station for loading and unloading cargo, is provided, otherwise near the cargo control valves. In addition, the liquid loading and discharge headers at the ship's shore connection station shall be fitted with pressure gages.

(r) Spaces surrounding cargo tanks shall be provided with suitable means for pumping out.

(1) Where pressure vessel type tanks are installed or in other cases where no secondary containment is required, this may consist of a bilge system independent of the bilge system for the rest of the vessel, and having no pipe connections between the cargo tank spaces and the engineroom or boilerroom, except that educators may be supplied from engineroom pumps.

(2) Secondary containment spaces of structurally self-supporting tanks shall be provided with suitable means for pumping out leaked cargo. These should be arranged so as to provide the following alternatives:

(i) Return of the cargo to the same primary tank or other tank.

(ii) Pumping the cargo off the ship either in port through a regular shore unloading connection or at sea overboard in a safe manner.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18807, Dec. 18, 1968]

§ 38.10–5 Filling and discharge pipes—TB/ALL.

(a) Filling and discharge connections shall be provided with the manually operated valve required by § 38.10–1(i) and with a positive acting remote controlled quick-closing valve. The remote controlled quick-closing valve shall satisfy the requirements of § 38.10–1(j).

(b) For pressure vessel type tanks the remote controlled quick-closing valves shall be located on the inside of the tank or on the outside where the piping enters the tank. For pressure vessel type tanks operating at low pressure

and with service temperature near the cargo atmospheric boiling point, the Commandant may approve individual installations where these valves are located at the loading and discharge headers.

(c) For nonpressure vessel type tanks the remote controlled quick-closing valves may be located at the loading and discharge headers.

§ 38.10–10 Cargo piping—TB/ALL.

(a) The piping shall be designed for a working pressure of not less than the maximum pressure to which it may be subjected but in no case less than the design pressure of the cargo tanks. In the case of piping on the discharge side of the liquid pumps or vapor compressors, the design pressure shall not be less than the pump or compressor discharge relief valve setting; or, provided the piping is not protected by relief valves, the design pressure shall not be less than the total discharge head of the pump or compressor.

(b) Piping subject to tank pressure shall be seamless drawn steel or electric resistance welded steel. Pipe used in refrigerated tank systems shall be of a material which is suitable for the minimum service temperature to which it may be subjected, according to the requirements of part 56 of subchapter F (Marine Engineering) of this chapter.

(c) Piping shall be provided with adequate support to take the weight of the piping off valves and fittings and to prevent excessive vibration and stresses on tank connections.

(d) For nonpressure vessel type tanks, the cargo handling arrangements and piping shall provide for emptying of a damaged tank, including cargo contained by a secondary barrier.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–82, 33 FR 18807, Dec. 18, 1968]

§ 38.10–15 Safety relief valves—TB/ALL.

(a) Each tank shall be fitted with or (subject to approval by the Commandant) connected to one or more safety relief valves designed, constructed and flow tested for capacity in conformance with subpart 162.017 or 162.018 of subchapter Q (Specifications) of this chapter.

(b) Safety relief valves conforming to subpart 162.017 of subchapter Q (Specifications) of this chapter may be used on tanks for a maximum pressure of 10 pounds per square inch gage. Safety relief valves conforming to subpart 162.018 of subchapter Q (Specifications) of this chapter may be used for any pressure.

(c) The safety relief valves shall have a combined relieving capacity to discharge the greater of the following with not more than 20 percent rise in pressure (in the tank) above the maximum allowable pressure:

(1) The vapors evaporated by an ambient air temperature of 115 °F. plus the maximum flow rate of the cargo filling pipes or,

(2) The vapors generated under fire exposure computed using the formulas of § 54.15–25(c) of subchapter F (Marine Engineering) of this chapter.

(d) The safety relief valves shall meet the arrangement and inspection requirements of § 54.15–25 of subchapter F (Marine Engineering) of this chapter.

(e) Means shall be provided to protect nonpressure vessel tanks from excessive external pressure.

(f) Void spaces between the primary and secondary barriers of nonpressure vessel type tanks shall be protected by relief devices. The relief setting shall not be higher than the void test pressure, and shall not exceed 90 percent of the setting of the safety relief valve protecting the primary tank.

[CGFR 68–82, 33 FR 18807, Dec. 18, 1968, as amended by USCG–2014–0688, 79 FR 58280, Sept. 29, 2014]

§ 38.10–20 Liquid level gaging devices—TB/ALL.

(a) Each tank shall be fitted with a liquid level gaging device of approved design to indicate the maximum level to which the tank may be filled with liquid:

(1) Between −20 °F. and 130 °F. for unrefrigerated service; or,

(2) Within the operating temperature range for tanks operating below atmospheric temperature.

(b) Liquid level gaging devices may be of the following types: Rotary tube, slip tube, magnetic, automatic float, or

similar types approved by the Commandant. Except as otherwise provided in this section, fixed tube devices are not acceptable as the primary gaging device.

(c) All gaging devices shall be arranged so that the maximum liquid level for product being carried, to which the tank may be filled is readily determinable. The maximum gallonage capacity as required by §38.15–1 shall be:

(1) Marked on the tank system nameplate or gaging device; or,

(2) Shown in the ullage tables.

(d) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube, and slip tube, shall be so designed that the bleed valve maximum opening is not larger than a No. 54 drill size (0.055-inch diameter), unless provided with an excess flow valve.

(e) For pressure vessel type tanks each automatic float, continuous reading tape or similar type gage not mounted directly on the tank or dome shall be fitted with a shutoff device located as close to the tank as practicable. When an automatic float gaging device, which gages the entire height of the tank is used, a fixed tube gage set in the range of 85 percent to 90 percent of the water capacity of the tank shall be provided in addition as a means of checking the accuracy of the automatic float, gage, or other alternate means acceptable to the Commandant may be used.

(f) A gaging device shall be designed for a pressure at least equal to the maximum allowable pressure of the tank on which it is installed.

(g) Gage glasses of the columnar type are prohibited.

(h) Flat sight glasses may be used in the design of automatic float continuous reading tape gages: *Provided*, That such glasses shall be made of high strength material suitable for the operating temperatures of not less than one-half inch in thickness and adequately protected by a metal cover.

Subpart 38.15—Special Requirements

§38.15–1 Filling of tanks—TB/ALL.

(a) Refrigerated and semirefrigerated tanks shall be filled so that there is an outage of at least 2 percent of the volume of the tank at the temperature corresponding to the vapor pressure of the cargo at the safety relief valve setting. A reduction in the required outage may be permitted by the Commandant when warranted by special design considerations. Normally then, the maximum volume to which a tank may be loaded is:

$$V_L = 0.98 d_r \, V/d_L$$

where:

V_L = maximum volume to which tank may be loaded.

V = volume of tank.

d_r = density of cargo at the temperature required for a cargo vapor pressure equal to the relief valve setting.

d_L = density of cargo at the loading temperature and pressure.

(b) Nonrefrigerated tanks shall be filled so that their filling densities shall not exceed the ratios indicated in table 38.15–1(b).

(c) The ''filling density'' is defined as the percent ratio of the weight of the gas in a tank to the weight of water the tank will hold at 60 °F.

TABLE 38.15–1(b)—MAXIMUM PERMISSIBLE FILLING DENSITIES FOR TANKS OPERATING AT OR NEAR AMBIENT TEMPERATURE

Specific gravity at 60 °F.	Maximum permitted filling density		
	Unlagged tanks—water capacity		Lagged tanks—all capacities
	1,200 gal. and under	Over 1,200 gal.	
0.473–0.480	38	41	42
0.481–0.488	39	42	43
0.489–0.495	40	43	44
0.496–0.503	41	44	45
0.504–0.510	42	45	46
0.511–0.519	43	46	47
0.520–0.527	44	47	48
0.528–0.536	45	48	49
0.537–0.544	46	49	50
0.545–0.552	47	50	51
0.553–0.560	48	51	52
0.561–0.568	49	52	53
0.569–0.576	50	53	54
0.577–0.584	51	54	55
0.585–0.592	52	55	56
0.593–0.600	53	56	57
0.601–0.608	54	57	58
0.609–0.617	55	58	59
0.618–0.626	56	59	60

TABLE 38.15–1(b)—MAXIMUM PERMISSIBLE FILLING DENSITIES FOR TANKS OPERATING AT OR NEAR AMBIENT TEMPERATURE—Continued

Specific gravity at 60 °F.	Maximum permitted filling density		
	Unlagged tanks—water capacity		Lagged tanks—all capacities
	1,200 gal. and under	Over 1,200 gal.	
0.627–0.634	57	60	61

NOTE: Increase in filling densities to provide for seasonal changes may be considered by the Commandant upon presentation of factual evidence that safe operation can be effected.

§ 38.15–5 Cargo hose—TB/ALL.

(a) When the liquid and vapor line hoses used for loading and discharging the cargo are carried on board the vessel, they shall be of flexible metal and fabricated of seamless steel pipe and flexible joints of steel or bronze, or of other suitable material resistant to the action of the cargo. Hose used in refrigerated systems shall be suitable for the minimum temperature to which it may be subjected and shall be acceptable to the Commandant.

(b) Hose subject to tank pressure, or the discharge pressure of pumps or vapor compressors, shall be designed for a bursting pressure of not less than five times the maximum safety relief valve setting of the tank, pump, or compressor.

(c) Before being placed in service each new cargo hose, with all necessary fittings attached, shall be hydrostatically tested by its manufacturer to a pressure not less than twice its maximum working pressure nor more than two-fifth its bursting pressure. The hose shall be marked with its maximum working pressure, and if used in refrigerated service, its minimum temperature.

§ 38.15–10 Leak detection systems—T/ALL.

(a) A detection system shall be permanently installed to sense cargo leaks. The detectors shall be located within the space so as to permit the sensing of an initial leak and prevent an undetected gas accumulation. The sensitivity shall be in accordance with paragraph (b) of this section. The detectors shall be fitted in the following compartments:

(1) Between the primary and secondary barriers for nonpressure vessel type tanks.

(2) Cargo handling rooms and spaces containing cargo piping or cargo handling systems.

(3) All enclosed spaces, except tanks and cofferdams, which are separated from the cargo tanks by only the secondary barrier.

(4) Other spaces where gas concentrations might be expected.

(5) Cargo holds, containing pressure vessel type tanks and no cargo piping, are exempt from the requirements of this paragraph.

(b) The indicating instruments for the detection system shall be located on the bridge or at the cargo control station. An audio and visual warning shall be given before any gas concentration reaches 30 percent of the lower explosive limit. The alarm shall indicate both on the bridge and at the cargo control station. Sampling of each detector shall be at least once every half hour.

(c) Means shall be provided to measure the full range of cargo gas concentration in the spaces.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–65, 33 FR 19985, Dec. 28, 1968]

§ 38.15–15 Electrical installations—TB/ALL.

(a) All electrical installations shall comply with the requirements contained in this subchapter and in subchapter J (Electrical Engineering) of this chapter for tank vessels, except as otherwise specified in this part.

(b) Spaces containing cargo pumps, compressors, and piping are considered as equivalent to a tank vessel pumproom, and no electrical devices, except Coast Guard approved intrinsically safe devices, shall be installed in these spaces. Electric motors shall be segregated from these spaces by a gastight bulkhead. Electric lighting of the explosion-proof type may be installed in these spaces provided all switching is done from outside the space.

(c) All cargo tanks, piping, valves, etc., shall be effectively grounded to the vessel's hull. Tanks with an insulated inner shell (primary barrier) shall have an effective grounding bond

to the outer shell (secondary barrier) or to the vessel's hull.

(d) Electric submerged motor cargo pumps may be used, when in compliance with the following requirements and subject to approval by the Commandant.

(1) Design details of the submerged motor pump, with an evaluation of the cooling efficiency of the product being pumped, shall be submitted.

(2) Provisions shall be made to exclude air from the tanks containing cargo in either vapor or liquid phase. The pump motor shall be deenergized when this condition is not satisfied.

(3) A liquid level sensing device shall automatically shut down the motor and sound an alarm at a predetermined low liquid level. The alarm location may be the station from which cargo handling is controlled or such other location outside the cargo area as is acceptable to the Commandant.

(4) Details of the power cable, tank penetrations and pump connections shall be submitted.

(5) An auxiliary means of emptying the cargo tanks shall be provided in accordance with § 38.10–10(d).

(6) Means for positively disconnecting the power supply between the switchboard and the pump power panel shall be provided, i.e., disconnect links, lockable breakers, etc.

(7) All materials used in the fabrication of the submerged motor cargo pumps shall be suitable for use with the liquid cargo at the design pressures and temperatures.

§ 38.15–20 Remote shutdowns—TB/ALL.

(a) All machinery associated with cargo loading, unloading, or cooling shall be capable of being shut down from a remote location. This location may be the station from which the cargo handling is controlled or such other location outside the cargo area as is acceptable to the Commandant.

(b) [Reserved]

Subpart 38.20—Venting and Ventilation

§ 38.20–1 Venting—T/ALL.

(a) Each safety relief valve installed on a cargo tank shall be connected to a branch vent of a venting system which shall be constructed so that the discharge of gas will be directed vertically upward to a point which shall extend to a height above the weather deck equal to at least one-third the beam of the vessel and to a minimum of at least 10 feet, and shall terminate at a comparable distance from any other living or working space, ventilator inlet, or source of vapor ignition. When special conditions will prevent the vent line header outlets being permanently installed at a height above the deck of one-third the beam of the vessel, then an adjustable system shall be provided which, when extended vertically, shall be capable of reaching a height of one-third the beam of the vessel.

(b) The capacity of branch vents or vent headers shall depend upon the number of cargo tanks connected to such branch or header as provided for in the table 38.20–1(b), and upon the total safety relief valve discharge capacity.

TABLE 38.20–1(b)—CAPACITY OF BRANCH VENTS OR VENT HEADERS

Number of cargo tanks	Percent of total valve discharge
1 or 2	100
3	90
4	80
5	70
6 or more	60

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, the size of the branch vents or vent headers, shall be such that the back pressure in the relief valve discharge lines shall not be more than 10 percent of the safety relief valve setting. In nonpressure vessel vent systems, however, where the maximum back pressure of 10 percent of the relief valve setting is insufficient to move the gases through any but an extremely large diameter vent pipe, the back pressure may exceed 10 percent provided:

(1) The pressure in the tank during venting does not exceed 120 percent of the tank maximum allowable pressure; and,

(2) The safety relief valve is sized to discharge the required capacity with the tank pressure and vent back pressure actually used.

(d) Return bends and restrictive pipe fittings are not permitted.

(e) Vents and headers shall be so installed as to prevent excessive stresses on safety relief valve mountings.

(f) The vent discharge riser shall be so located as to provide protection against mechanical injury and such discharge pipes shall be fitted with loose raincaps or other suitable means to prevent entrance of rain or snow.

(g) No valve of any type shall be fitted in the vent pipe between the safety relief valve and the vent outlets.

(h) Provisions shall be made to drain condensate from the vent header piping. Special precautions shall insure that condensate does not accumulate at or near the relief valves.

(i) Relief valves discharging liquid cargo shall not be connected to the branch vent or vent header lines from the cargo tanks. They may, however, be connected to an accumulator, the vapor space of which, may in turn, be connected to the vent header system. Relief valves in the cargo piping system may discharge back to the cargo tanks.

(j) Vapor discharged to the atmosphere in accordance with §38.05–25(b) shall utilize valves separate from the safety relief valves.

§38.20–5 Venting—T/ALL.

(a) Safety relief valves on cargo tanks in barges may be connected to individual or common risers which shall extend to a reasonable height above the deck. An alternate arrangement consisting of a branch vent header system as required by §38.20–1 may be installed. In any case, the provisions of §38.20–1 (d) through (j) shall apply.

(b) Arrangements providing for venting cargo tanks at sea on unmanned barges will be considered by the Commandant upon presentation of plans.

§38.20–10 Ventilation—T/ALL.

(a) A power ventilation system shall be provided for compartments containing pumps, compressors, pipes, control spaces, etc. connected with the cargo handling facilities. These compartments shall be ventilated in such a way as to remove vapors from points near the floor level or bilges, or other areas where vapor concentrations may be expected. The compartments shall be equipped with power ventilation of the exhaust type having capacity sufficient to effect a complete change of air in not more than 3 minutes equal to the volume of the compartment and associated trunks.

(b) The power ventilation units shall not produce a source of vapor ignition in either the compartment or the ventilation system associated with the compartment. Inlets to exhaust ducts shall be provided and located at points where concentrations of vapors may be expected. Ventilation from the weather deck shall be provided. Ventilation outlets shall terminate away from any openings to the interior part of the vessel a lateral distance at least equal to that specified in §38.20–1(a). These outlets shall be so located as to minimize the possibility of recirculating contaminated air through the compartment.

(c) Means shall be provided for purging the following spaces of cargo vapors:

(1) The space surrounding nonpressure vessel type tanks, i.e., within the secondary barrier.

(2) The space surrounding pressure-vessel type tanks whose piping connections are below the weather deck in accordance with §38.10–1(h).

(3) The space surrounding tanks whose manhole openings are below the weather deck in accordance with §38.05–10(f).

(d) Power ventilation shall be provided for each auxiliary machinery or working space located on and accessible from the cargo handling deck. Such ventilation systems shall be designed to preclude the entry of cargo vapors into the space via the open access or the ventilation system itself.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGFR 68–65, 33 FR 19985, Dec. 28, 1968]

Subpart 38.25—Periodic Tests and Inspections

§38.25–1 Tests and inspections—TB/ALL.

(a) Each tank shall be subjected to the tests and inspections described in this section in the presence of a marine

inspector, except as otherwise provided in this part.

(1) An internal inspection of the tank is conducted within—

(i) Ten years after the last internal inspection if the tank is a pressure vessel type cargo tank on an unmanned barge carrying cargo at temperatures of −67 °F (−55 °C) or warmer; or

(ii) Eight years after the last internal inspection if the tank is of a type other than that described in paragraph (a)(1)(i) of this section.

(2) An external examination of unlagged tanks and the visible parts of lagged tanks shall be made at each inspection for certification and at such other times as considered necessary.

(3) The owner shall ensure that the amount of insulation deemed necessary by the marine inspector is removed from insulated tanks during each internal inspection to allow spot external examination of the tanks and insulation, or the thickness of the tanks may be gauged by a nondestructive means accepted by the marine inspector without the removal of insulation.

(4) If required by the Officer in Charge, Marine Inspection, the owner shall conduct nondestructive testing of each tank in accordance with §38.25–3.

(5) If the tank is a pressure vessel type cargo tank with an internal inspection interval of 10 years, is 30 years old or older, determined from the date it was built, the owner shall conduct nondestructive testing of that tank, in accordance with §38.25–3, during each internal inspection.

(b) If the marine inspector considers a hydrostatic test necessary to determine the condition of the tank, the owner shall perform the test at a pressure of 1½ times the tank's—

(1) Maximum allowable pressure, as determined by the safety relief valve setting; or

(2) Design pressure, when cargo tanks operate at maximum allowable pressures reduced below the design pressure in order to satisfy special mechanical stress relief requirements.

NOTE: See the ASME Code, section VIII, appendix 3 for information on design pressure.

(c) For pressure vessels designed and/or supported such that they cannot safely be filled with water, the Commandant will consider a pneumatic test in lieu of the hydrostatic test. A leak test shall be performed in conjunction with the pneumatic test. Pneumatic testing shall be in accordance with subchapter F (Marine Engineering) of this chapter.

(d) Nonpressure vessel type tanks shall be tested to a pressure equal to the pressure on the bottom of the tank under the design conditions listed in §38.05–4(e).

(e) In the application of the requirements for testing of the cargo tanks, the test shall in no case be less severe than the worst anticipated service condition of the cargo loading.

(f) In the design and testing of the independent cargo tanks, consideration shall be given to the possibility of the independent tanks being subjected to external loads.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGD 85–061, 54 FR 50962, Dec. 11, 1989; USCG–2014–0688, 79 FR 58280, Sept. 29, 2014]

§38.25–3 Nondestructive testing—TB/ALL.

(a) Before nondestructive testing may be conducted to meet §38.25–1 (a)(4) and (a)(5), the owner shall submit a proposal to the Officer in Charge, Marine Inspection for acceptance that includes—

(1) The test methods and procedures to be used, all of which must meet section V of the ASME Boiler and Pressure Vessel Code (1986);

(2) Each location on the tank to be tested; and

(3) The test method and procedure to be conducted at each location on the tank.

(b) If the Officer in Charge, Marine Inspection rejects the proposal, the Officer in Charge, Marine Inspection informs the owner of the reasons why the proposal is rejected.

(c) If the Officer in Charge, Marine Inspection accepts the proposal, then the owner shall ensure that—

(1) The proposal is followed; and

(2) Nondestructive testing is performed by personnel meeting ASNT ''Recommended Practice No. SNT-TC-1A (1988), Personnel Qualification and Certification in Nondestructive Testing.''

(d) Within 30 days after completing the nondestructive test, the owner shall submit a written report of the results to the Officer in Charge, Marine Inspection.

[CGD 85–061, 54 FR 50963, Dec. 11, 1989]

§ 38.25–5 Removal of defective tanks—TB/ALL.

If a tank fails to pass the tests prescribed in this subpart, it shall be removed from service unless otherwise authorized by the Commandant.

§ 38.25–10 Safety relief valves—TB/ALL.

(a) The cargo tank safety relief valves shall be inspected at least once in every 2 years.

(b) The safety relief valve discs must be lifted from their seats in the presence of a marine inspector by either liquid, gas, or vapor pressure at least once every 5 years to determine the accuracy of adjustment and, if necessary, must be reset.

[CGFR 66–33, 31 FR 15269, Dec. 6, 1966, as amended by CGD 95–027, 61 FR 26000, May 23, 1996]

PART 39—VAPOR CONTROL SYSTEMS

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AUTHORITY: 42 U.S.C. 7511b(f)(2); 46 U.S.C. 3306, 3703, 3715(b), 70011, 70034; Executive Order 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; DHS Delegation No. 00170.1, Revision No. 01.4.

SOURCE: USCG–1999–5150, 78 FR 42642, July 16, 2013, unless otherwise noted.