(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]

### §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

## Subpart 39.10—General

Sec.

AUTHORITY: 33 U.S.C. 1231; 46 U.S.C. 3306, 3703, 3715(b); 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

EDITORIAL NOTE: Nomenclature changes to part 39 appear at 74 FR 49227, Sept. 25, 2009.

SOURCE: CGD 88–102, 55 FR 25446, June 21, 1990, unless otherwise noted.

## Subpart 39.10—General

### § 39.10–1 Applicability—TB/ALL.

(a) Except as specified by paragraph (c) of this section, this part applies to each tank vessel operating in the navigable waters of the United States, when collecting vapors of crude oil, gasoline blends, or benzene emitted from a vessel's cargo tanks through a vapor control system.

(b) A tank vessel which transfers vapors of flammable or combustible cargoes other than crude oil, gasoline blends, or benzene, to a facility covered by 33 CFR part 154 must meet the requirements prescribed by the Commandant (CG–522).

(c) A tank vessel with an existing vapor collection system specifically approved by the Coast Guard for the collection of cargo vapor which was operating prior to July 23, 1990, is subject only to § 39.30–1 and § 39.40–5 of this part as long as it transfers cargo vapor only to the specific facilities for which it was approved.

(d) This part does not apply to the collection of vapors of liquefied flammable gases as defined in § 30.10–39 of this subchapter.

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996]

### § 39.10–3 Definitions—TB/ALL.

As used in this part:

*Cargo deck area* means that part of the weather deck that is directly over the cargo tanks.

*Existing vapor collection system* means a vapor collection system which was operating prior to July 23, 1990.

*Facility vapor connection* means the point in a facility's fixed vapor collection system where it connects with the vapor collection hose or the base of the vapor collection arm.

*Independent* as applied to two systems means that one system will operate with a failure of any part of the other system except power sources and electrical feeder panels.

*Inerted* means the oxygen content of the vapor space in a cargo tank is reduced to 8 percent by volume or less in accordance with the inert gas requirements of § 32.53 or § 153.500 of this chapter.

*Lightering* or *lightering operation* means the transfer of a bulk liquid cargo from a tank vessel to a service vessel.

*Marine Safety Center* means the Commanding Officer, U.S. Coast Guard Marine Safety Center, 1900 Half Street, SW, Suite 1000, Room 525, Washington, DC 20024 for visitors. Send all mail to Commanding Officer, U.S. Coast Guard Marine Safety Center, 2100 2nd St. SW., Stop 7102, Washington, DC 20593–7102, in a written or electronic format. Information for submitting the VSP electronically can be found at *http://www.uscg.mil/HQ/MSC*.

*Maximum allowable transfer rate* means the maximum volumetric rate at which a vessel may receive cargo or ballast.

*New vapor collection system* means a vapor collection system which is not an existing vapor collection system.

*Service vessel* means a vessel which transports bulk liquid cargo between a facility and another vessel.

*Topping-off operation* means the transfer of a bulk liquid cargo from a service vessel to another vessel in order to load the receiving vessel to a deeper draft.

*Vapor balancing* means the transfer of vapor displaced by incoming cargo from the tank of a vessel receiving cargo into a tank of the vessel or facility delivering cargo via a vapor collection system.

*Vapor collection system* means an arrangement of piping and hoses used to collect vapor emitted from a vessel's cargo tanks and to transport the vapor to a vapor processing unit.

*Vapor control system* means an arrangement of piping and equipment used to control vapor emissions collected from a vessel. It includes the vapor collection system and vapor processing unit.

*Vapor processing unit* means the components of a vapor control system that recovers, destroys, or disperses vapor collected from a vessel.

*Vessel vapor connection* means the point in a vessel's fixed vapor collection system where it connects with the vapor collection hose or arm.

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by USCG–2007–29018, 72 FR 53965, Sept. 21, 2007]

## § 39.10–5 Incorporation by reference—TB/ALL.

(a) Certain materials 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 one 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 U.S. Coast Guard, Office of Operating and Environmental Standards (CG–522), 2100 2nd St. SW., Stop 7126, Washington, DC 20593–7126, or 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 material approved for incorporation by reference in this part, and the sections affected are:

*American Petroleum Institute (API)*, 1220 L Street NW., Washington, DC 20005

API Standard 2000, Venting Atmospheric and Low-Pressure Storage Tanks (Nonrefrigerated and Refrigerated), Third Edition, January 1982 (reaffirmed December 1987) ..... 39.20–11

*American National Standards Institute (ANSI)*, 11 West 42nd Street, New York, NY 10036

ANSI B16.5, Steel Pipe Flanges and Flanged Fittings, 1981 ..... 39.20–1

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

ASTM F 1271–90 (1995)—Standard Specification for Spill Valves for Use in Marine Tank Liquid Overpressure Protection Applications ..... 39.20–9

*International Electrotechnical Commission (IEC)*, Bureau Central de la Commission Electrotechnique Internationale, 1 rue de Varembé, Geneva, Switzerland

IEC 309–1—Plugs, Socket-Outlets and Couplers for Industrial Purposes: Part 1, General Requirements, 1979 ..... 39.20–9

IEC 309–2—Plugs, Socket-Outlets and Couplers for Industrial Purposes: Part 2, Dimensional Interchangeability Requirements for Pin and Contact-tube Accessories, 1981 ..... 39.20–9

*National Electrical Manufacturers Association (NEMA)*, 2101 L St. NW., Washington, DC 20036

ANSI/NEMA WD6—Wiring Devices, Dimensional Requirements, 1988 ..... 39.20–9

*National Fire Protection Association (NFPA)*, 1 Batterymarch Park, Quincy, MA 02269

NFPA 70—National Electrical Code, 1987 ..... 39.20–9

*Oil Companies International Marine Forum (OCIMF)*, 15th Floor, 96 Victoria Street, London SWIE 5JW, England

International Safety Guide for Oil Tankers and Terminals, Third Edition, 1988 39.30–1

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996; CGD 97–057, 62 FR 51043, Sept. 30, 1997; USCG–1999–5151, 64 FR 67177, Dec. 1, 1999]

### § 39.10–9 Vessel vapor processing unit—TB/ALL.

Each vessel which has a vapor processing unit located on board must meet the requirements of 33 CFR part 154, subpart E to the satisfaction of the Commandant (CG–522) in addition to complying with the requirements of this part.

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996]

### § 39.10–11 Personnel training—TB/ALL.

(a) A person in charge of a transfer operation utilizing a vapor collection system must have completed a training program covering the particular system installed on the vessel. Training must include drills or demonstrations using the installed vapor control system covering normal operations and emergency procedures.

(b) The training program required by paragraph (a) of this section must cover the following subjects:

(1) Purpose of a vapor control system;

(2) Principles of the vapor control system;

(3) Components of the vapor control system;

(4) Hazards associated with the vapor control system;

(5) Coast Guard regulations in this part;

(6) Operating procedures, including:

(i) Testing and inspection requirements,

(ii) Pre-transfer procedures,

(iii) Connection sequence,

(iv) Start-up procedures, and

(v) Normal operations; and

(7) Emergency procedures.

[CGD 88–102, 55 FR 25446, June 21, 1990; 55 FR 39270, Sept. 26, 1990]

### § 39.10–13 Submission of vapor control system designs—TB/ALL.

(a) Plans, calculations, and specifications for a new vessel vapor collection system must be submitted to the Marine Safety Center for approval prior to installation.

(b) An existing vapor collection system installation that has been Coast Guard approved to transfer cargo vapor to specific facilities must be reviewed and approved by the Marine Safety Center prior to transferring vapors to other facilities.

(c) The owners/operators of a foreign flag vessel may submit certification by the classification society which classes the vessel that the vessel meets the requirements of this part as an alternative to meeting the requirements in paragraph (a) of this section.

(d) Upon satisfactory completion of plan review and inspection of the vapor collection system or receipt of the certification provided for in paragraph (c) of this section, the Officer in Charge, Marine Inspection, shall endorse the Certificate of Inspection for U.S. flag vessels, or the Certificate of Compliance for foreign flag vessels, that the vessel is acceptable for collecting the vapor from crude oil, gasoline blends, and benzene, or any other vapor it is found acceptable to collect.

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–028, 62 FR 51200, Sept. 30, 1997; USCG–2004–18884, 69 FR 58345, Sept. 30, 2004]

## Subpart 39.20—Design and Equipment

### § 39.20–1 Vapor collection system—TB/ALL.

(a) Each vapor collection system must meet the following requirements:

(1) Except as allowed by paragraph (a)(3) of this section or the Commandant (CG–522), vapor collection piping must be permanently installed, with the vessel's vapor connection located as close as practical to the loading manifold;

(2) If the vessel collects vapors from incompatible cargoes simultaneously, it must keep the incompatible vapors separate throughout the entire vapor collection system;

(3) A vessel certified to carry cargo listed in Table 151.05 of part 151 or Table 1 of part 153 of this chapter may have vapor connections located in the vicinity of each tank in order to preserve segregation of cargo systems, in lieu of common header piping;

(4) A means must be provided to eliminate liquid condensate which may collect in the system, such as draining and collecting liquid from each low point in the line;

(5) Vapor collection piping must be electrically bonded to the hull and must be electrically continuous; and

(6) An inerted tankship must have a means to isolate the inert gas supply from the vapor collection system. The inert gas main isolation valve required by SOLAS 74, as amended, chapter II–2, Regulation 62.10.8 may be used to satisfy this requirement.

(b) The vapor collection system must not interfere with the proper operation of the cargo tank venting system.

(c) An isolation valve capable of manual operation must be provided at the vessel vapor connection. The valve must have an indicator to show clearly whether the valve is in the open or closed position, unless the valve position can be readily determined from the valve handle or valve stem.

(d) The last 1.0 meter (3.3 feet) of vapor piping before the vessel vapor connection must be:

(1) Painted red/yellow/red with:

(i) The red bands 0.1 meter (0.33 feet) wide, and

(ii) The middle yellow band 0.8 meter (2.64 feet) wide; and

(2) Labeled ''VAPOR'' in black letters at least 50 millimeters (2 inches) high.

(e) Each vessel vapor connection flange must have a permanently attached 0.5 inch diameter stud at least 1.0 inch long projecting outward from the flange face. The stud must be located at the top of the flange, midway between bolt holes, and in line with the bolt hole pattern.

(f) Each hose used for transferring vapors must:

(1) Have a design burst pressure of at least 25 psig;

(2) Have a maximum allowable working pressure of at least 5 psig;

(3) Be capable of withstanding at least 2.0 psi vacuum without collapsing or constricting;

(4) Be electrically continuous with a maximum resistance of ten thousand (10,000) ohms;

(5) Have flanges with:

(i) A bolt hole arrangement complying with the requirements for 150 pound class ANSI B16.5 flanges, and

(ii) One or more 0.625 inch diameter holes in the flange located midway between bolt holes and in line with the bolt hole pattern;

(6) Be abrasion resistant and resistant to kinking; and

(7) Have the last 1.0 meter (3.3 feet) of each end of the vapor hose marked in accordance with paragraph (d) of this section.

(g) Vapor hose handling equipment must be provided with hose saddles which provide adequate support to prevent kinking or collapse of hoses.

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996]

### § 39.20–3 Cargo gauging system—TB/ALL.

(a) Each cargo tank of a tank vessel that is connected to a vapor collection system must be equipped with a cargo gauging device which:

(1) Provides a closed gauging arrangement as defined in §151.15.10 of this chapter that does not require opening the tank to the atmosphere during cargo transfer;

(2) Allows the operator to determine the liquid level in the tank for the full range of liquid levels in the tank;

(3) Indicates the liquid level in the tank at the location where cargo transfer is controlled; and

(4) If portable, is installed on the tank during the entire transfer operation.

(b) Except when a tank barge complies with §39.20–9(a) of this part, each cargo tank of a barge must have a high level indicating device that:

(1) Provides a visual indication of the liquid level in the cargo tank when the cargo level is within 1.0 meter (3.28 feet) of the tank top;

(2) Has the maximum liquid level permitted under §39.30–1(e) of this part at even keel conditions conspicuously and

permanently marked on the indicating device; and

(3) Is visible from all cargo control areas on the tank barge.

### § 39.20–7 Tankship liquid overfill protection—T/ALL.

(a) Each cargo tank of a tankship must be equipped with an intrinsically safe high level alarm and a tank overfill alarm.

(b) The high level alarm and tank overfill alarm required by paragraph (a) of this section, if installed after July 23, 1990 must:

(1) Be independent of each other;

(2) Alarm in the event of loss of power to the alarm system or failure of electrical circuitry to the tank level sensor; and

(3) Be able to be checked at the tank for proper operation prior to each transfer or contain an electronic self-testing feature which monitors the condition of the alarm circuitry and sensor.

(c) The high level alarm required by paragraph (a) of this section must:

(1) Alarm before the tank overfill alarm, but no lower than 95 percent of tank capacity;

(2) Be identified with the legend ''High Level Alarm'' in black letters at least 50 millimeters (2 inches) high on a white background; and

(3) Have audible and visible alarm indications that can be seen and heard on the vessel where cargo transfer is controlled.

(d) The tank overfill alarm required by paragraph (a) of this section must:

(1) Be independent of the cargo gauging system;

(2) Have audible and visible alarm indications that can be seen and heard on the vessel where cargo transfer is controlled and in the cargo deck area;

(3) Be identified with the legend ''TANK OVERFILL ALARM'' in black letters at least 50 millimeters (2 inches) high on a white background; and

(4) Alarm early enough to allow the person in charge of transfer operations to stop the transfer operation before the cargo tank overflows.

(e) If a spill valve is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of § 39.20–9(c) of this part.

(f) If a rupture disk is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of § 39.20–9(d) of this part.

### § 39.20–9 Tank barge liquid overfill protection—B/ALL.

Each cargo tank of a tank barge must have one of the following liquid overfill protection arrangements.

(a) A system meeting the requirements of § 39.20–7 of this part which:

(1) Includes a self-contained power supply;

(2) Is powered by generators installed on the barge; or

(3) Receives power from a facility and is fitted with a shore tie cable and a 120 volt 20 amp explosion-proof plug which meets:

(i) ANSI/NEMA WD6;

(ii) NFPA 70, Articles 410–57 and 501–12; and

(iii) § 111.105–9 of this chapter.

(b) An intrinsically safe overfill control system which:

(1) Is independent of the cargo gauging device required by § 39.20–3(a) of this part;

(2) Actuates an alarm and automatic shutdown system at the facility overfill control panel, or on the vessel to be lightered if a lightering operation, 60 seconds before the tank becomes 100 percent liquid full;

(3) Is able to be checked at the tank for proper operation prior to each loading;

(4) Consists of components which, individually or in series, will not generate or store a total of more than 1.2 V, 0.1 A, 25 mW, or 20 microjoules;

(5) Has at least one tank overfill sensor switch with normally closed contacts per cargo tank;

(6) Has all tank overfill sensor switches connected in series;

(7) Has interconnecting cabling that meets § 111.105–15(b) of this chapter; and

(8) Has a male plug with a 5 wire, 16 amp connector body meeting IEC 309–1/309–2 which is:

(i) Configured with pins S2 and R1 for the tank overfill sensor circuit, pin G connected to the cabling shield, and pins N and T3 reserved for an optional

high level alarm circuit meeting the requirements of this paragraph; and

(ii) Labeled ''Connector for Barge Overflow Control System'' and with the total inductance and capacitance of the connected switches and cabling.

(c) A spill valve which:

(1) Meets ASTM F 1271 (incorporated by reference, see § 39.10–5);

(2) Relieves at a pressure higher than the pressure at which the pressure relief valves meeting the requirements of § 39.20–11 operate;

(3) Limits the maximum pressure at the cargo tank top during liquid overfill, at the maximum loading rate for the tank, to not more than the maximum design working pressure for the tank; and

(4) If the vessel is in ocean or coastwise service, has provisions to prevent opening due to cargo sloshing.

(d) A rupture disk arrangement which meets paragraphs (c)(2), (c)(3) and (c)(4) of this section and is approved by the Commandant (CG–522).

[CGD 88–102, 55 FR 25446, June 21, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996; USCG–2000–7790, 65 FR 58459, Sept. 29, 2000]

### § 39.20–11 Vapor overpressure and vacuum protection—TB/ALL.

(a) The cargo tank venting system required by § 32.55 of this chapter must:

(1) Be capable of discharging cargo vapor at 1.25 times the maximum transfer rate such that the pressure in the vapor space of each tank connected to the vapor collection system does not exceed:

(i) The maximum design working pressure for the tank, or

(ii) If a spill valve or rupture disk is fitted, the pressure at which the device operates;

(2) Not relieve at a pressure corresponding to a pressure in the cargo tank vapor space of less than 1.0 psig;

(3) Prevent a vacuum in the cargo tank vapor space, whether generated by withdrawal of cargo or vapor at maximum rates, that exceeds the maximum design vacuum for any tank connected to the vapor collection system; and

(4) Not relieve at a vacuum corresponding to a vacuum in the cargo tank vapor space of less than 0.5 psi below atmospheric pressure.

(b) Each pressure-vacuum relief valve must:

(1) Be tested for venting capacity in accordance with paragraph 1.5.1.3 of API 2000; and

(2) Have a means to check that the device operates freely and does not remain in the open position, if installed after July 23, 1991.

(c) The relieving capacity test required by paragraph (b)(1) of this section must be carried out with a flame screen fitted at the vacuum relief opening and at the discharge opening if the pressure-vacuum relief valve is not designed to ensure a minimum vapor discharge velocity of 30 meters (98.4 ft.) per second.

### § 39.20–13 High and low vapor pressure protection for tankships—T/ALL.

Each tankship vapor collection system must be fitted with a pressure sensing device that senses the pressure in the main vapor collection line, which:

(a) Has a pressure indicator located on the vessel where the cargo transfer is controlled; and

(b) Has a high pressure and a low pressure alarm that:

(1) Is audible and visible on the vessel where cargo transfer is controlled;

(2) Alarms at a high pressure of not more than 90 percent of the lowest pressure relief valve setting in the cargo tank venting system; and

(3) Alarms at a low pressure of not less than four inches water gauge (0.144 psig) for an inerted tankship, or the lowest vacuum relief valve setting in the cargo tank venting system for a non-inerted tankship.

## Subpart 39.30—Operations

### § 39.30–1 Operational requirements—TB/ALL.

(a) Vapor from a tank vessel may not be transferred to:

(1) A facility in the United States which does not have its letter of adequacy endorsed as meeting the requirements of 33 CFR part 154, subpart E; or

(2) In the case of a lightering or topping off operation, a vessel which does

not have its certificate of inspection or certificate of compliance endorsed as meeting the requirements of this part.

(b) The pressure drop through the vapor collection system from the most remote cargo tank to the vessel vapor connection must be:

(1) Determined for each cargo handled by the vapor collection system at the maximum transfer rate and at lessor transfer rates;

(2) Based on a 50 percent cargo vapor and air mixture, and a vapor growth rate appropriate for the cargo being loaded; and

(3) Included in the vessel's oil transfer procedures as a table or graph showing the liquid transfer rate versus the pressure drop.

(c) If a vessel carries vapor hoses, the pressure drop through the hoses must be included in the pressure drop calculations required by paragraph (b) of this section.

(d) The rate of cargo transfer must not exceed the maximum allowable transfer rate as determined by the lesser of the following:

(1) Eighty (80) percent of the total venting capacity of the pressure relief valves in the cargo tank venting system when relieving at the set pressure required by § 39.20–11(a) of this part;

(2) The total vacuum relieving capacity of the vacuum relief valves in the cargo tank venting system when relieving at the set pressure required by § 39.20–11(a) of this part;

(3) The rate based on pressure drop calculations at which, for a given pressure at the facility vapor connection, or if lightering at the vapor connection of the vessel receiving cargo, the pressure in any cargo tank connected to the vapor collection system exceeds 80 percent of the setting of any pressure relief valve in the cargo tank venting system.

(e) A cargo tank must not be filled higher than:

(1) 98.5 percent of the cargo tank volume; or

(2) The level at which an overfill alarm complying with § 39.20–7 or § 39.20–9(b)(2) of this part is set.

(f) A cargo tank must not be opened to the atmosphere during cargo transfer operations except as provided in paragraph (g) of this section.

(g) A cargo tank may be opened to the atmosphere for gauging or sampling while a tank vessel is connected to a vapor control system if the following conditions are met:

(1) The cargo tank is not being filled;

(2) Except when the tank is inerted, any pressure in the cargo tank vapor space is first reduced to atmospheric pressure by the vapor control system;

(3) The cargo is not required to be closed or restricted gauged by Table 151.05 of part 151 or Table 1 in part 153 of this chapter; and

(4) For static accumulating cargo, all metallic equipment used in sampling or gauging is electrically bonded to the vessel before it is put into the tank, remains bonded to the vessel until it is removed from the tank, and if the tank is not inerted, a period of 30 minutes has elapsed since loading of the tank was completed.

(h) For static accumulating cargo the initial transfer rate must be controlled in accordance with Section 7.4 of the OCIMF, International Safety Guide for Oil Tankers and Terminals, in order to minimize the development of a static electrical charge.

(i) If cargo vapor is collected by a facility that requires the vapor from the vessel to be inerted in accordance with 33 CFR 154.820(a) or (b), the oxygen content in the vapor space of each cargo tank connected to the vapor collection system must not exceed 8 percent by volume at the start of cargo transfer. The oxygen content of each tank must be measured at a point one meter (3.28 feet) below the tanktop and at a point equal to one-half of the ullage. Where tanks have partial bulkheads, the oxygen content of each area of that tank formed by each partial bulkhead must be measured at a point one meter (3.28 feet) below the tanktop and at a point equal to one-half of the ullage.

(j) If the vessel is equipped with an inert gas system, the isolation valve required by § 39.20–1(a)(6) of this part must remain closed during vapor transfer.

(k) Unless equipped with an automatic self-test and circuit monitoring feature, each high level alarm and tank overfill alarm required by § 39.20–7 or § 39.20–9 of this part, on a cargo tank being loaded, must be tested at the

tank for proper operation within 24 hours prior to the start of cargo transfer.

[CGD 88–102, 55 FR 25446, June 21, 1990; 55 FR 39270, Sept. 26, 1990]

## Subpart 39.40—Lightering and Topping-Off Operations with Vapor Balancing

### § 39.40–1 General requirements for vapor balancing-TB/ALL.

(a) Except as provided in paragraph (b) of this section, each vessel which uses vapor balancing while conducting a lightering or topping-off operation must meet the requirements of this subpart in addition to the requirements of subparts 39.10, 39.20, and 39.30 of this part.

(b) An arrangement to control vapor emissions during a lightering or topping-off operation which does not use vapor balancing must receive approval from the Commandant (CG–522).

(c) A vapor balancing operation must not use a compressor or blower to assist vapor transfer without approval from the Commandant (CG–522).

(d) Vapor balancing is prohibited when the cargo tanks on a vessel discharging cargo are inerted and the cargo tanks on a vessel receiving cargo are not inerted.

(e) A vessel which intends to engage in a lightering or topping-off operation while collecting cargo vapor from other than crude oil, gasoline, or benzene must receive specific approval from the Commandant (CG–522).

[CGD 88–102, 55 FR 25446, June 21, 1990; 55 FR 39270, Sept. 26, 1990, as amended by CGD 95–072, 60 FR 50462, Sept. 29, 1995; CGD 96–041, 61 FR 50727, Sept. 27, 1996]

### § 39.40–3 Design and equipment for vapor balancing—TB/ALL.

(a) If the cargo tanks on a vessel discharging cargo and a vessel receiving cargo are inerted, the service vessel must:

(1) Have a means to inert the vapor transfer hose prior to transferring cargo vapor; and

(2) Have an oxygen analyzer with a sensor or sampling connection fitted within 3 meters (9.74 ft.) of the vessel vapor connection which:

(i) Activates an audible and visible alarm at a location on the service vessel where cargo transfer is controlled when the oxygen content in the vapor collection system exceeds 8 percent by volume;

(ii) Has an oxygen concentration indicator located on the service vessel where the cargo transfer is controlled; and

(iii) Has a connection for injecting a span gas of known concentration for calibration and testing of the oxygen analyzer.

(b) If the cargo tanks on a vessel discharging cargo are not inerted, the vapor collection line on the service vessel must be fitted with a detonation arrester that meets the requirements of 33 CFR 154.822(a) located within 3 meters (9.74 ft.) of the vessel vapor connection.

(c) An electrical insulating flange or one length of non-conductive hose must be provided between the vessel vapor connection on the service vessel and the vapor connection on the vessel being lightered or topped-off.

### § 39.40–5 Operational requirements for vapor balancing—TB/ALL.

(a) During a lightering or topping-off operation each cargo tank being loaded must be connected by the vapor collection system to a cargo tank which is being discharged.

(b) If the cargo tanks on both the vessel discharging cargo and the vessel receiving cargo are inerted, the following requirements must be met:

(1) Each tank on a vessel receiving cargo which is connected to the vapor collection system must be tested prior to cargo transfer to ensure that the oxygen content in the vapor space does not exceed 8 percent by volume. The oxygen content of each tank must be measured at a point one meter (3.28 feet) below the tanktop and at a point equal to one-half of the ullage. Where tanks have partial bulkheads, the oxygen content of each area of that tank formed by each partial bulkhead must be measured at a point one meter (3.28 feet) below the tanktop and at a point equal to one-half of the ullage;

(2) The oxygen analyzer required by § 39.40–3(a) must be tested for proper operation prior to the start of each transfer operation;

(3) The oxygen content of vapors being transferred must be continuously monitored during the transfer operation;

(4) Cargo transfer must be terminated if the oxygen content exceeds 8 percent by volume and must not be restarted until the oxygen content in the tanks of the vessel receiving cargo is reduced to 8 percent by volume or less; and

(5) The vapor transfer hose must be purged of air and inerted prior to starting vapor transfer.

(c) The isolation valve, required by § 39.20–1(c) of this part, located on the service vessel must not be opened until the pressure in the vapor collection system on the vessel receiving cargo exceeds the pressure in the vapor collection system on the vessel discharging cargo.

(d) The cargo transfer rate must be controlled from the vessel discharging cargo, and must not exceed the maximum allowable transfer rate for the vessel receiving cargo.

(e) The pressure in the vapor space of any cargo tank connected to the vapor collection line on either the vessel receiving cargo or the vessel discharging cargo must not exceed 80 percent of the lowest setting of any pressure relief valve during ballasting or cargo transfer.

(f) All impressed current cathodic protection systems must be deenergized during cargo transfer operations.

(g) Tank washing is prohibited unless the cargo tanks on both the vessel discharging cargo and the vessel receiving cargo are inerted or the tank is isolated from the vapor collection line.

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