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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 (G-MSO).

[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 de-

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signed 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 lesser 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 overflow 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 overflow 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