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(e) If a spill valve is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of 46 CFR 39.2009(c).

(f) If a rupture disk is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of 46 CFR 39.2009(d).

§ 39.2009 Tank barge liquid overfill protection—B/ALL.

(a) Each cargo tank of a tank barge must have one of the following liquid overfill protection arrangements:

(1) A system meeting the requirements of 46 CFR 39.2007 that—

(i) Includes a self-contained power supply;

(ii) Is powered by generators on the barge; or

(iii) Receives power from a facility and is fitted with a shore tie cable and a 120-volt, 20-ampere explosion-proof plug that meets—

(A) ANSI NEMA WD–6 (incorporated by reference, see 46 CFR 39.1005);

(B) NFPA 70, Articles 406.9 and 501–145 (incorporated by reference, see 46 CFR 39.1005); and

(C) 46 CFR 111.105–9;

(2) An intrinsically safe overfill control system that—

(i) Is independent of the cargo-gauging device required by 46 CFR 39.2003(a);

(ii) Activates an alarm and automatic shutdown system at the facility overfill control panel 60 seconds before the tank is 100 percent liquid-full during a facility-to-vessel cargo transfer;

(iii) Activates an alarm and automatic shutdown system on the vessel discharging cargo 60 seconds before the tank is 100 percent liquid-full during a vessel-to-vessel cargo transfer;

(iv) Can be inspected at the tank for proper operation prior to each loading;

(v) Consists of components that, individually or in series, will not generate or store a total of more than 1.2 volts (V), 0.1 amperes (A), 25 megawatts (MW), or 20 microJoules (μJ);

(vi) Has at least one tank overfill sensor switch per cargo tank that is designed to activate an alarm when its normally closed contacts are open;

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

(viii) Has interconnecting cabling that meets 46 CFR 111.105–11(b) and (d), and 46 CFR 111.105–17(a); and

(ix) Has a male plug with a five-wire, 16–A connector body meeting IEC 60309–1 and IEC 60309–2 (both incorporated by reference, see 46 CFR 39.1005), that is—

(A) 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

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

(3) A spill valve that meets ASTM F1271 requirements (incorporated by reference, see 46 CFR 39.1005), and—

(i) Relieves at a predetermined pressure higher than the pressure at which the pressure relief valves meeting the requirements of 46 CFR 39.2011 operate;

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

(iii) Has a means to prevent opening due to cargo sloshing while the vessel is in ocean or coastwise service; or

(4) A rupture disk arrangement that meets paragraphs (a)(3)(i), (ii), and (iii) of this section and is approved by the Commandant.

(b) A tank barge authorized to carry a cargo having toxic properties, meaning they are listed in 46 CFR Table 151.05 with the ''Special requirements'' column referring to 46 CFR 151.50–5, must comply with the requirements of 46 CFR 39.2001(m).

§ 39.2011 Vapor overpressure and vacuum protection—TB/ALL.

(a) The cargo tank venting system required by 46 CFR 32.55 must—

(1) Be capable of discharging cargo vapor at the maximum transfer rate plus the vapor growth for the cargo such that the pressure in the vapor space of each tank connected to the vapor control system (VCS) 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) Relieve at a pressure corresponding to a pressure in the cargo tank vapor space not less than 1.0 pounds per square inch gauge (psig);

(3) Prevent a vacuum, which generates in any tank connected to the vapor collection system during the withdrawal of cargo or vapor at maximum rates, in a cargo tank vapor space from exceeding the maximum design vacuum; and

(4) Not relieve at a vacuum corresponding to a vacuum in the cargo tank vapor space between 14.7 pounds per square inch absolute (psia) (0 psig) and 14.2 psia (−0.5 psig).

(b) Each pressure-vacuum relief valve must—

(1) Be of a type approved under 46 CFR 162.017, for the pressure and vacuum relief setting desired;

(2) Be tested for venting capacity in accordance with paragraph 1.5.1.3 of API 2000 (incorporated by reference, see 46 CFR 39.1005). The test 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 feet) per second; and

(3) If installed after July 23, 1991, have a mechanism to check that it operates freely and does not remain in the open position.

(c) A liquid filled pressure-vacuum breaker may be used for vapor overpressure and vacuum protection if the vessel owner or operator obtains the prior written approval of the Commandant.

(d) Vapor growth must be calculated following the Marine Safety Center guidelines available in Coast Guard VCS guidance at *http://homeport.uscg.mil*, or as specifically approved in writing by the Commandant after consultation with the Marine Safety Center.

§ 39.2013 High and low vapor pressure protection for tankships—T/ALL.

Each tankship with a vapor collection system must be fitted with a pressure-sensing device, located as close as practicable to the vessel vapor connection, that measures the pressure in the main vapor collection line, which—

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

(b) Has a high-pressure and a low-pressure alarm that—

(1) Gives an audible and a visible warning on the vessel where the cargo transfer is controlled;

(2) Activates an alarm when the pressure-sensing device measures a high pressure of not more than 90 percent of the lowest pressure relief valve setting in the cargo tank venting system; and

(3) Activates an alarm when the pressure-sensing device measures a low pressure of not less than 0.144 pounds per square inch gauge (psig) for an inerted tankship, or the lowest vacuum relief valve setting in the cargo tank venting system for a non-inerted tankship.

§ 39.2014 Polymerizing cargoes safety—TB/ALL.

(a) Common vapor headers for polymerizing cargoes must be constructed with adequate means to permit internal examination of vent headers.

(b) Vapor piping systems and pressure-vacuum valves that are used for polymerizing cargoes must be inspected internally at least annually.

(c) Pressure-vacuum valves and spill valves which are used for polymerizing cargoes must be tested for proper movement prior to each transfer.

§ 39.2015 Tank barge pressure-vacuum indicating device—B/ALL.

A fixed pressure-sensing device must be installed as close as practicable to the vessel vapor connection on a tank barge with a vapor collection system. The pressure-sensing device must measure the pressure vacuum in the main vapor collection line and have a pressure indicator located where the cargo transfer is controlled.