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(c) Each stripping system must have at least one of the following devices for stripping oil from each cargo tank:

(1) A positive displacement pump.

(2) A self-priming centrifugal pump.

(3) An eductor

(4) Any other device accepted by the Commandant.

(d) There must be a means in the stripping system piping between the device under paragraph (c) of this section and each cargo tank to isolate each tank from the device.

(e) If the stripping system has a positive displacement pump or a self-priming centrifugal pump, the stripping system must have the following:

(1) In the stripping system piping:

(i) A pressure gauge at the inlet connection to the pump; and

(ii) A pressure gauge at the discharge connection to the pump.

(2) At least one of the following monitoring devices to indicate operation of the pump.

(i) Flow indicator.

(ii) Stroke counter.

(iii) Revolution counter.

(f) If the stripping system has an eductor, the stripping system must have:

(1) A pressure gauge at each driving fluid intake and at each discharge; and

(2) A pressure/vacuum gauge at each suction intake.

(g) The equipment required under paragraphs (e) and (f) of this section must have indicating devices in the cargo control room or another location that is accepted by the Commandant.

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11627, Mar. 22, 1985]

§ 157.130 Crude oil washing with more than one grade of crude oil.

If a tank vessel having a COW system under §§ 157.10(e), 157.10a(a)(2), or 157.10c(b)(2) carries more than one grade of crude oil, the COW system must be capable of washing the cargo tanks with the grades of crude oil that the vessel carries.

[CGD 82–28, 50 FR 11627, Mar. 22, 1985]

§ 157.132 Cargo tanks: Hydrocarbon vapor emissions.

Each tank vessel having a COW system under § 157.10a(a)(2) or § 157.10c(b)(2) without sufficient segregated ballast tanks or dedicated clean ballast tanks to allow the vessel to depart from any port in the United States without ballasting cargo tanks must have—

(a) A means to discharge hydrocarbon vapors from each cargo tank that is ballasted to a cargo tank that is discharging crude oil; or

(b) Any other means accepted by the Commandant that prevents hydrocarbon vapor emissions when the cargo tanks are ballasted in port.

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11628, Mar. 22, 1985]

§ 157.134 Cargo tank drainage.

Each cargo tank must be designed for longitudinal and transverse drainage of crude oil to allow the tank vessel to pass the inspections under § 157.140.

§ 157.136 Two-way voice communications.

Each tank vessel having a COW system under § 157.10(e), § 157.10a(a)(2), or § 157.10c(b)(2) must have a means that enables two-way voice communications between the main deck watch required under § 157.168 and each cargo discharge control station.

[CGD 82–28, 50 FR 11628, Mar. 22, 1985]

§ 157.138 Crude Oil Washing Operations and Equipment Manual.

(a) Each *Crude Oil Washing Operations and Equipment Manual* must include the following information:

(1) The text of the Annex of Resolution 15 of the MARPOL Protocol.

(2) A line drawing of the tank vessel's COW system showing the locations of pumps, piping, and COW machines.

(3) A description of the COW system.

(4) The procedure for the inspection of the COW system during COW operations.

(5) Design characteristic information of the COW system that includes the following:

(i) Pressure and flow of the crude oil pumped to the COW machines.

(ii) Revolutions, number of cycles, and length of cycles of each COW machine.

(iii) Pressure and flow of the stripping suction device.

(iv) Number and location of COW machines operating simultaneously in each cargo tank.

(6) The design oxygen content of the gas or mixture of gases that is supplied by the inert gas system to each cargo tank.

(7) The results of the inspections recorded when passing the inspections under § 157.140.

(8) Characteristics of the COW system recorded during the COW operations when passing the inspections under § 157.140 that includes the following:

(i) Pressure and flow of the crude oil pumped to the COW machines.

(ii) Revolutions, number of cycles, and length of cycles of each COW machine.

(iii) Pressure and flow of the stripping device.

(iv) Number and location of COW machines operating simultaneously in each cargo tank.

(9) The oxygen content of the gas or mixture of gases that is supplied by the inert gas system to each cargo tank recorded during COW operations when passing the inspections under § 157.140.

(10) The volume of water used for water rinsing recorded during COW operations when passing the inspections under § 157.140.

(11) The trim conditions of the tank vessel recorded during COW operations when passing the inspections under § 157.140.

(12) The procedure for stripping cargo tanks of crude oil.

(13) The procedure for draining and stripping the pumps and piping of the COW system, cargo system, and stripping system after each crude oil cargo discharge.

(14) The procedure for crude oil washing cargo tanks that includes the following:

(i) The tanks to be crude oil washed to meet § 157.160.

(ii) The order in which those tanks are washed.

(iii) The single-stage or multi-stage method of washing each tank.

(iv) The number of COW machines that operate simultaneously in each tank.

(v) The duration of the crude oil wash and water rinse.

(vi) The volume of water to be used for water rinse in each tank.

(15) The procedures and equipment needed to prevent leakage of crude oil from the COW system.

(16) The procedures and equipment needed if leakage of crude oil from the COW system occurs.

(17) The procedures for testing and inspecting the COW system for leakage of crude oil before operating the system.

(18) The procedures and equipment needed to prevent leakage of crude oil from the steam heater under § 157.122(i) to the engine room.

(19) The number of crew members needed to conduct the following:

(i) The discharge of cargo.

(ii) The crude oil washing of cargo tanks.

(iii) The simultaneous operations in paragraphs (a)(19) (i) and (ii) of this section.

(20) A description of the duties of each crew member under paragraph (a)(19) of this section.

(21) The procedures for ballasting and deballasting cargo tanks.

(22) The step by step procedure for the inspection of the COW system by vessel personnel before COW operations begin that includes the procedure for inspecting and calibrating each instrument. (Operational Checklist)

(23) The intervals for on board inspection and maintenance of the COW equipment. Informational references to technical manuals supplied by the manufacturers may be included in this part of the manual.

(24) A list of crude oils that are not to be used in COW operations.

(25) The procedure to meet § 157.155(a)(4).

(b) In addition to meeting paragraph (a) of this section, each *Crude Oil Washing Operations and Equipment Manual* on a tank vessel having a COW system under § 157.10a(a)(2) or § 157.10c(b)(2) must include the following:

(1) The procedure to meet § 157.166.

(2) The procedures to meet § 157.155(b).

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11628, Mar. 22, 1985]

INSPECTIONS

§157.140 Tank vessel inspections.

(a) Before issuing a letter under §157.142, the Coast Guard makes an initial inspection of each U.S. tank vessel having a COW system under §157.10(e), §157.10(a)(2), or §157.10c(b)(2) and each foreign tank vessel whose owner or operator submitted the plans under §157.102 to determine whether or not, when entering a port, the cargo tanks that carry crude oil meet the following:

(1) After each tank is crude oil washed but not water rinsed, except the bottom of the tank may be flushed with water and stripped, each tank is essentially free of oil clingage or deposits of oil, or both to a degree acceptable to the Coast Guard inspector.

(2) After the tanks that are to be used as ballast tanks when leaving the port are crude oil washed and stripped but not water rinsed or bottom flushed, they are filled with water and the total volume of crude oil floating on top of the water in these tanks is 0.085 percent or less of the total volume of these tanks.

(b) Except on a tank vessel under §157.10(e), if the initial inspection under paragraph (a) of this section has been passed and the vessel arrives at the first cargo loading port after completing a ballast voyage, the Coast Guard monitors the discharge of effluent from those tanks that have been crude oil washed, water rinsed, stripped, and filled with ballast water to determine whether or not the oil content of the effluent is 15 ppm or less.

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11628, Mar. 22, 1985]

§157.142 Letter of acceptance: Inspections.

If the inspections under §157.140 are passed, the Coast Guard issues to the tank vessel a letter that states that the vessel complies with this subpart.

§157.144 Tank vessels of the same class: Inspections.

(a) If more than one tank vessel is constructed from the same plans, the owner or operator may submit a written request to the Commandant (G–MOC), U.S. Coast Guard, Washington, D.C. 20593–0001, for only one of those tank vessels to be inspected under §157.140.

(b) Only one tank vessel of the class is inspected under §157.140, if the Commandant accepts the request submitted under paragraph (a) of this section.

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11630, Mar. 22, 1985; CGD 88–052, 53 FR 25122, July 1, 1988; CGD 96–026, 61 FR 33668, June 28, 1996]

§157.146 Similar tank design: Inspections on U.S. tank vessels.

(a) If a U.S. tank vessel has tanks similar in dimensions and internal structure, the owner or operator may submit a written request to the Officer in Charge, Marine Inspection, of the zone in which the COW system is inspected, for only one of those tanks to be inspected under §157.140(a)(1).

(b) Only one tank of a group of tanks similar in dimensions and internal structure is inspected under §157.140(a)(1), if the Officer in Charge, Marine Inspection, accepts the request submitted under paragraph (a) of this section.

§157.147 Similar tank design: Inspections on foreign tank vessels.

(a) If a foreign tank vessel has tanks similar in dimensions and internal structure, the owner or operator may submit a written request to the Commandant (G–MOC), U.S. Coast Guard, Washington, D.C. 20593–0001, for only one of those tanks to be inspected under §157.140(a)(1).

(b) Only one tank of a group of tanks similar in dimensions and internal structure is inspected under §157.140(a)(1), if the Commandant accepts the request submitted under paragraph (a) of this section.

[CGD 77–058b, 45 FR 43709, June 30, 1980, as amended by CGD 82–28, 50 FR 11630, Mar. 22, 1985; CGD 88–052, 53 FR 25122, July 1, 1988; CGD 96–026, 61 FR 33668, June 28, 1996]

§157.148 COW system: Evidence for inspections.

(a) Before the inspections under §157.140 are conducted by the Coast Guard, the owner or operator of a foreign tank vessel that is to be inspected