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each of which can be operated from the pilothouse; except that it need not have separate steering wheels or steering levers;

(4) Arrange each system required by paragraph (f)(3) of this section so that, if the one in operation fails, the other can be operated from the pilothouse immediately; and

(5) Supply each system required by paragraph (f)(3) of this section, if electric, with power by a circuit that is—

(i) Used for no other purpose; and either—

(ii) Connected in the steering-gear compartment to the circuit supplying power to the power unit or units operated by that system; or

(iii) Connected directly to the busbars supplying the circuit for its steering-gear power unit or units at a point on the switchboard adjacent to that supply.

(g) Each tank vessel of 40,000 gross tons or over, constructed before, and with a steering-gear installation before, September 1, 1984, and on an international voyage, must have the steering gear arranged so that, in case of a single failure of the piping or of one of the power units, either steering capability equivalent to that required of the auxiliary steering gear by § 58.25–10(c)(2) can be maintained or the rudder's movement can be limited so that steering capability can be speedily regained in less than 10 minutes. This arrangement must be achieved by—

(1) An independent means of restraining the rudder;

(2) Fast-acting valves that may be manually operated to isolate the actuator or actuators from the external hydraulic piping, together with a means of directly refilling the actuators by a fixed, independent, power-operated pump and piping; or

(3) An arrangement such that, if hydraulic-power actuating systems are connected, loss of hydraulic fluid from one system must be detected and the defective system isolated either automatically or from within the pilothouse so that the other system remains fully operational.

NOTE: The term ''piping or * * * one of the power units'' in paragraph (g) of this section refers to the pressure-containing components in hydraulic or electro-hydraulic steering gear. It does not include rudder actuators or hydraulic-control servo piping and pumps used to stroke the pump or valves of the power unit, unless their failure would result in failure of the unit or of the piping to the actuator.

Subpart 58.30—Fluid Power and Control Systems

§ 58.30–1 Scope.

(a) This subpart contains requirements for fluid power transmission and control systems and appurtenances. Except as otherwise provided for in this section, these requirements are applicable to the following fluid power and control systems:

(1) Steering apparatus, main and auxiliary, including bow thruster systems.

(2) Cargo hatch operating systems unless fitted with an alternate mechanical means of operation and approved by the Commandant as hydraulically or pneumatically fail-safe. A system is considered to be fail-safe if a component failure will result in a slow and controlled release of the loading so as not to endanger personnel.

(3) Watertight door operating system.

(4) Automatic propulsion boiler system.

(5) Starting systems for internal combustion engines used for main propulsion, main or auxiliary power, as the prime mover for any required emergency apparatus, or as the source of propulsion power in ship maneuvering thruster systems.

(6) Centralized control system of main propulsion and auxiliary machinery.

(7) Lifeboat handling equipment.

(8) Controllable pitch propeller system.

(9) Installations used to remotely control components of piping systems listed in § 56.01–10(c)(1) of this subchapter.

(10) All systems containing a pneumatic or hydropneumatic accumulator. In the case of hydropneumatic accumulators where it can be shown to the satisfaction of the Commandant that due to friction losses, constriction, or other design features, the hazard of explosive rupture does not exist downstream of a certain point in the hydraulic system, the requirements of this subpart will

apply only to the accumulator and the system upstream of this point.

(11) Materials and/or personnel handling equipment systems, i.e. cranes, hydraulic elevators, etc., not approved by the Commandant as fail-safe as defined in paragraph (a)(2) of this section.

(12) Any fluid power or control system installed in the cargo area of pump rooms on a tank vessel, or in spaces in which cargo is handled on a liquefied flammable gas carrier.

(13) All pneumatic power and control systems having a maximum allowable working pressure in excess of 150 pounds per square inch.

(14) Any other hydraulic or pneumatic system on board that, in the judgment of the Commandant, constitutes a hazard to the seaworthiness of the ship or the safety of personnel either in normal operation or in case of failure.

(b) Other fluid power and control systems do not have to comply with the detailed requirements of this subpart but must meet the requirements of § 58.30–50.

[CGFR 68–82, 33 FR 18878, Dec. 18, 1968, as amended by CGD 73–254, 40 FR 40168, Sept. 2, 1975]

§ 58.30–5 Design requirements.

(a) The requirements of part 56 are also applicable to piping and fittings in fluid power and control systems listed in § 58.30–1 of this part, except as modified herein. The designer should consider the additional pressure due to hydraulic shock and should also consider the rate of pressure rise caused by hydraulic shock.

(b) The system shall be so designed that proper functioning of any unit shall not be affected by the back pressure in the system. The design shall be such that malfunctioning of any unit in the system will not render any other connected or emergency system inoperative because of back pressure.

(c) Pneumatic systems with a maximum allowable working pressure in excess of 150 pounds per square inch shall be designed with a surge tank or other acceptable means of pulsation dampening.

(d) Each pneumatic system must minimize the entry of oil into the system and must drain the system of liquids.

[CGFR 68–82, 33 FR 18878, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9980, June 17, 1970; CGD 73–254, 40 FR 40168, Sept. 2, 1975; CGD 83–043, 60 FR 24781, May 10, 1995; CGD 95–027, 61 FR 26001, May 23, 1996]

§ 58.30–10 Hydraulic fluid.

(a) The requirements of this section are applicable to all fluid power transmission and control systems installed on vessels subject to inspection.

(b) The fluid used in hydraulic power transmission systems shall have a flashpoint of not less than 200 °F. for pressures below 150 pounds per square inch and 315 °F. for pressures 150 pounds per square inch and above, as determined by ASTM D 92 (incorporated by reference, see § 58.03–1), Cleveland ''Open Cup'' test method.

(c) The chemical and physical properties of the hydraulic fluid shall be suitable for use with any materials in the system or components thereof.

(d) The hydraulic fluid shall be suitable for operation of the hydraulic system through the entire temperature range to which it may be subjected in service.

(e) The recommendations of the system component manufacturers and ANSI B93.5 (incorporated by reference; see 46 CFR 58.03–1) shall be considered in the selection and use of hydraulic fluid.

[CGFR 68–82, 33 FR 18878, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9980, June 17, 1970; USCG–1999–5151, 64 FR 67180, Dec. 1, 1999; USCG–2003–16630, 73 FR 65187, Oct. 31, 2008]

§ 58.30–15 Pipe, tubing, valves, fittings, pumps, and motors.

(a) The requirements of this section are applicable to those hydraulic and pneumatic systems listed in § 58.30–1.

(b) Materials used in the manufacture of tubing, pipes, valves, flanges, and fittings shall be selected from those specifications that appear in 46 CFR 56.60–1, Table 56.60–1(a) or 46 CFR 56.60–2, Table 56.60–2(a); or they may be selected from the material specifications of section I or section VIII of the ASME Boiler and Pressure Vessel Code (both incorporated by reference; see 46 CFR 58.03–1) if not prohibited by the section of this subchapter dealing with