§ 28.875 Radar, depth sounding, and auto-pilot.

(a) Each vessel must be fitted with a general marine radar system for surface navigation with a radar screen mounted at the operating station, and facilities on the bridge for plotting radar readings.

(b) Each vessel must be fitted with a suitable echo depth sounding device.

(c) Except as provided in 33 CFR § 164.15, when the automatic pilot is used in areas of high traffic density, conditions of restricted visibility, and all other hazardous navigational situations, the master or person in charge shall ensure that:

(1) It is possible to immediately establish manual control of the unit's steering:

(2) A competent person is ready at all times to take over steering control; and

(3) The changeover from automatic to manual steering and vice versa is made by, or under the supervision of, the officer of the watch.

§ 28.880 Hydraulic equipment.

(a) Each hydraulic system must be so designed and installed that proper operation of the system is not affected by back pressure in the system.

(b) Piping and piping components must be designed with a burst pressure of not less than four times the system's maximum operating pressure.

(c) Each hydraulic system must be equipped with at least one pressure relieving device set to relieve at the system's maximum operating pressure.

(d) All material in a hydraulic system must be suitable for use with the hydraulic fluid used and must be of such chemical and physical properties as to remain ductile at the lowest operating temperature likely to be encountered by the vessel.

(e) Except for hydraulic steering equipment, controls for operating hydraulic equipment must be located where the operator has an unobstructed view of the controls for operating hydraulic equipment and the adjacent work area. Protection shall be afforded to the operator of hydraulic equipment against falling or swinging objects and/or cargo.

(f) Controls for hydraulic equipment must be so arranged that the operator is able to quickly disengage the equipment in an emergency.

(g) Hydraulically operated machinery must be fail-safe or equipped with a holding device to prevent uncontrolled movement or sudden loss of control due to loss of hydraulic system pressure. A system is considered to be fail-safe if a component failure results in a slow and controlled release of the load so as not to endanger personnel.

(h) Nonmetallic flexible hose assemblies must only be used between two points of relative motion, limited to the least amount of length that will afford maximum multidirectional movement of the equipment served.

(i) Hose end fittings must comply with SAE J1475, (Hydraulic Hose Fittings For Marine Applications). Field attachable fittings must be installed following the manufacturer's recommended practice (method).

(j) Nonmetallic flexible hose shall be marked with the manufacturer's name or trademark, type or catalog number and maximum allowable working pressure.

(k) Existing hydraulic piping, nonmetallic hose assemblies, and components may be continued in service so long as they are maintained in good condition to the satisfaction of the Coast Guard Representative, but all new installations, or replacements shall meet the applicable specifications or requirements of this section.

§ 28.885 Cargo gear.

(a) The safe working load (SWL) for the assembled gear shall be marked on the heel of each cargo boom, crane, or derrick. These letters and figures are to be in contrasting colors to the background and at least one inch in height. The SWL is construed to be the load the gear is approved to lift, excluding the weight of the gear itself.

(b) All wire rope, chains, rings, hooks, links, shackles, swivels, blocks, and any other loose gear used or intended to be used in cargo loading or unloading must be commensurable with the SWL rating in paragraph (a) of this section. This gear shall be visually inspected by the vessel's captain or his designee at frequent intervals,