of a piping system which is not fabricated under an adopted industry standard.

(f) *Vital system.* A *vital system* is one which is essential to the safety of the vessel, its passengers and crew.

(g) *Plate flange.* The term *plate flange,* as used in this subchapter, means a flange made from plate material, and may have a raised face and/or a raised hub.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9978, June 17, 1970; CGD 77–140, 54 FR 40602, Oct. 2, 1989]

§56.07–10 Design conditions and criteria (modifies 101–104.7).

(a) *Maximum allowable working pressure* (*modifies 101.2*). (1) The maximum allowable working pressure of a piping system shall not be greater than the internal design pressure defined in 104.1.2 of ANSI-B31.1.

(2) Where the maximum allowable working pressure of a system component, such as a valve or a fitting, is less than that computed for the pipe or tubing, the system pressure shall be limited to the lowest of the component maximum allowable working pressures.

(b) *Relief valves* (*modifies 101.2*). (1) Every system which may be exposed to pressures higher than the system's maximum allowable working pressure shall be safeguarded by appropriate relief devices. (See §52.01–3 of this subchapter for definitions.) Relief valves are required at pump discharges except for centrifugal pumps so designed and applied that a pressure in excess of the maximum allowable working pressure for the system cannot be developed.

(2) The relief valve setting shall not exceed the maximum allowable working pressure of the system. Its relieving capacity shall be sufficient to prevent the pressure from rising more than 20 percent above the system maximum allowable working pressure. The rated relieving capacity of safety and relief valves used in the protection of piping systems only shall be based on actual flow test data and the capacity shall be certified by the manufacturer at 120 percent of the set pressure of the valve.

(3) Relief valves shall be certified as required in part 50 of this subchapter for valves, and shall also meet the requirements of §54.15–10 of this subchapter.

(c) *Ship motion dynamic effects* (*replaces 101.5.3*). Piping system designs shall account for the effects of ship motion and flexure, including weight, yaw, sway, roll, pitch, heave, and vibration.

(d) *Pressure temperature ratings* (*modifies 102.2*). The material in 102.2 of ANSI-B31.1 is applicable with the following exceptions:

(1) The details of components not having specific ratings as described in 102.2.2 of ANSI B31.1 must be furnished to the Marine Safety Center for approval.

(2) Boiler blowoff piping must be designed in accordance with §56.50–40 of this part.

(e) *Pressure design* (*modifies 102.3, 104.1.2 and 104.4*). (1) Materials for use in piping must be selected as described in §56.60–1(a) of this part. Tabulated allowable stress values for these materials shall be measured as indicated in 102.3.1 of ANSI-B31.1, Tables 56.60–1 and 56.60–2(a).

(2) Allowable stress values, as found in the ASME Code, which are restricted in application by footnote or are italicized shall not be used. Where multiple stresses are listed for a material, the lowest value of the listing shall be used unless otherwise approved by the Commandant. In all cases the temperature is understood to be the actual temperature of the component.

(3) Where the operator desires to use a material not listed, permission must be obtained from the Commandant. Requirements for testing found in §56.97–40(a)(2) and §56.97–40(a)(4) may affect design and should be considered. Special design limitations may be found for specific systems. Refer to subpart 56.50 for specific requirements.

(f) *Intersections* (*modifies 104.3*). The material of ANSI-B31.1 in 104.3 is applicable with the following additions:

(1) Reinforcement calculations where applicable shall be submitted.