this requirement must be met by a hydrostatic leak test prior to initial operations. Where a hydrostatic test is not practicable, a pneumatic test (§56.97–35) or initial service leak test (§56.97–38) may be substituted if approved by the Commandant.

(1) At no time during the hydrostatic test may any part of the piping system be subjected to a stress greater than 90 percent of its yield strength (0.2 percent offset) at test temperature.

(2) Pneumatic tests may be used in lieu of the required hydrostatic test (except as permitted in paragraph (b)(3) of this section), only when—

(i) Piping subassemblies or systems are so designed or supported that they cannot be safely filled with water;[1] or

(ii) Piping subassemblies or systems are to be used in services where traces of the testing medium cannot be tolerated and, whenever possible, the piping subassemblies or system have been previously hydrostatically tested to the pressure required in §56.97–30(e).

(3) A pneumatic test at a pressure not to exceed 25 psig may be applied before a hydrostatic or a pneumatic test as a means of locating major leaks. The preliminary pneumatic test must be carried out in accordance with the requirements of §56.97–35.

NOTE: Compressed gas is hazardous when used as a testing medium. It is, therefore, recommended that special precautions for protection of personnel be taken whenever gas under pressure is used as the test medium.

(4) The hydrostatic test of the piping system, when conducted in accordance with the requirements of this part, is acceptable as the test for piping subassemblies and may also be used in lieu of any such test required by the material specification for material used in the piping subassembly or system provided the minimum test pressure required for the piping system is met, except where the installation would prevent performing any nondestructive examination required by the material specification to be performed subsequent to the hydrostatic or pneumatic test.

[CGD 73–254, 40 FR 40167, Sept. 2, 1975]

§56.97–5 Pressure testing of nonstandard piping system components.

(a) All nonstandard piping system components such as welded valves and fittings, nonstandard fittings, manifolds, seacocks, and other appurtenances must be hydrostatically tested to twice the rated pressure stamped thereon, except that no component should be tested at a pressure causing stresses in excess of 90 percent of its yield strength.

(b) Items for which an accepted standard appears in Table 56.60–1(b) need not be tested as described in paragraph (a) of this section, but need only meet the test required in the applicable standard.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGD 77–140, 54 FR 40615, Oct. 2, 1989]

§56.97–25 Preparation for testing (reproduces 137.3).

(a) *Exposure of joints.* All joints including welds must be left uninsulated and exposed for examination during the test.

(b) *Addition of temporary supports.* Piping systems designed for vapor or gas may be provided with additional temporary supports, if necessary, to support the weight of the test liquid.

(c) *Restraint or isolation of expansion joints.* Expansion joints must be provided with temporary restraint, if required for the additional pressure load under test, or they must be isolated from the test.

(d) *Isolation of equipment not subjected to pressure test.* Equipment that is not to be subjected to the pressure test must be either disconnected from the piping subassembly or system or isolated by a blank flange or similar means. Valves may be used if the valve with its closure is suitable for the proposed test pressure.

(e) *Treatment of flanged joints containing blinds.* Flanged joints at which blinds are inserted to blank off other equipment during the test need not be tested.

[1] These tests may be made with the item being tested partially filled with water, if desired.