§ 56.95–10 Type and extent of examination required.

(a) General. The types and extent of nondestructive examinations required for piping must be in accordance with this section and Table 136.4 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2). In addition, a visual examination shall be made.

(1) 100 percent radiography is required for all Class I, I-L, and II-L piping with wall thickness equal to or greater than 10 mm (.375 in.).

(2) Nondestructive examination is required for all Class II piping equal to or greater than 18 inches nominal diameter regardless of wall thickness. Any test method acceptable to the Officer in Charge, Marine Inspection may be used.

(3) Appropriate nondestructive examinations of other piping systems are required only when deemed necessary by the Officer in Charge, Marine Inspection. In such cases a method of testing satisfactory to the Officer in Charge, Marine Inspection must be selected from those described in this section.

(b) Visual examination. Visual examination consists of observation by the marine inspector of whatever portions of a component or weld are exposed to such observation, either before, during, or after manufacture, fabrication, assembly or test. All welds, pipe and piping components shall be capable of complying with the limitations on imperfections specified in the product specification under which the pipe or component was purchased, or with the limitations on imperfections specified in § 56.70–15(b) (7) and (8), and (c), as applicable.

(c) Nondestructive types of examinations—(1) 100 Percent radiography. Where 100 percent radiography is required for welds in piping, each weld in the piping shall be completely radiographed. If a butt weld is examined by radiography, the method used shall be as follows:

(i) X-ray or gamma ray method of radiography may be used. The selection of the method shall be dependent upon its adaptability to the work being radiographed. The procedure to be followed shall be as indicated in PW–51 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2).

(ii) If a piping component or a weld other than a butt weld is radiographed, the method used shall be in accordance with UW–51 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2).

(2) Random radiography. Where random radiography is required, one or more welds may be completely or partially radiographed. Random radiography is considered to be a desirable means of spot checking welder performance, particularly in field welding where conditions such as position, ambient temperatures, and cleanliness are not as readily controlled as in shop welding. It is to be employed whenever an Officer in Charge, Marine Inspection questions a pipe weld not otherwise required to be tested. The standards of acceptance are the same as for 100 percent radiography.

(3) Ultrasonic. Where 100 percent ultrasonic testing is specified, the entire surface of the weld being inspected shall be covered using extreme care and careful methods to be sure that a true representation of the actual conditions is obtained. The procedures to be
§ 56.97–1 General (replaces 137).

(a) Scope. The requirements in this subpart apply to pressure tests of piping in lieu of 137 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2). Those paragraphs reproduced are so noted.

(b) Leak tightness. It is mandatory that the design, fabrication and erection of piping constructed under the regulations in this subchapter demonstrate leak tightness. Except where otherwise permitted in this subpart, 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.

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