875—96.2 (89) Objects installed prior to July 1, 1983.

96.2(1) *Maximum allowable working pressure.*

a. The maximum allowable working pressure for code-stamped unfired steam pressure vessels shall be determined in accordance with the applicable provisions of the ASME Code or American Petroleum Institute Code under which they were constructed and stamped.

b. The maximum allowable working pressure on the shell of unfired steam pressure vessels without a code stamp shall be determined by the following equation.

$$\frac{TStE}{RFS}$$

= Maximum allowable working pressure, psig.

Where:

TS = Ultimate tensile strength of shell plate(s), psig. When the tensile strength of a steel plate(s) is unknown, it shall be taken as 55,000 psig for temperatures not exceeding 650 degrees F.

t = Minimum thickness of shell plates of the weakest course, in inches.

E = Efficiency of longitudinal joint. For riveted joints, use ASME Code, Section 1 (1971). For fusion-welded and brazed joints, use the following table:

Single lap welded	40
Double lap welded	60
Single butt welded	60
Double butt welded	75
Forge welded	70
Brazed steel	80

R = Inside radius of the weakest course of shell or drum in inches, provided the thickness does not exceed 10 percent of the radius. If the thickness is over 10 percent of the radius, the outer radius shall be used.

FS = Factor of safety shall be four.

c. The maximum allowable working pressure for unfired steam pressure vessels without an ASME stamp subjected to external or collapsing pressure shall be determined by the ASME Code, Section VIII.

96.2(2) *Factor of safety.* Rescinded IAB 9/5/12, effective 10/10/12.

96.2(3) *End closures.* The maximum allowable working pressure permitted for formed heads under pressure shall be determined by using the formulas in ASME Code, Section VIII.

96.2(4) *Safety appliances.* Each unfired steam pressure vessel shall be protected by such safety and relief valves and indicating and controlling devices as will ensure its safe operation. Valves shall not readily be rendered inoperative. The relieving capacity of safety valves shall be such as to prevent a rise of pressure in the vessel of more than 10 percent above maximum allowable working pressure, taking into account the effect of static head. Safety valve discharges shall be carried to a safe place.

[**ARC 8283B**, IAB 11/18/09, effective 1/1/10; **ARC 0319C**, IAB 9/5/12, effective 10/10/12]