**Section 2120.300 Existing Installations of Power Boilers**

Maximum Allowable Working Pressure for Standard Boilers. The maximum allowable working pressure for standard boilers shall be determined in accordance with the applicable provisions of the edition of the ASME Code under which they were constructed and stamped. Existing installations of non-standard power boilers and miniature boilers shall comply with this Section.

a) Maximum Allowable Working Pressure for Nonstandard Boilers.

1) The maximum allowable working pressure on the shell of a nonstandard boiler shall be determined by the strength of the weakest section of the structure, computed from the thickness of the plate, the tensile strength of the plate, the efficiency of the longitudinal joint or tube ligaments, the inside diameter of the weakest course and the factor of safety permitted below.



Where:

TS = ultimate tensile strength of shell plates, psi.

t = minimum thickness of shell plate, in weakest course, inches.

E = efficiency of longitudinal joint:

For Fusion-Welded and Brazed Joints:

Single lap welded 40

Double lap welded 60

Single butt welded 60

Double butt welded 75

Forge welded 70

Brazed steel 80

For riveted construction, E shall be determined by the rules given in Section I, Part PR, of the 1971 Edition ASME Code.

For seamless construction, E shall be considered 100 percent.

R = inside radius of the weakest course of the shell, in inches.

FS = factor of safety permitted.

2) Tensile Strength. When the tensile strength of steel or wrought iron shell plates is not known, it shall be taken as 55,000 psi for steel and 45,000 psi for wrought iron.

3) Bearing Strength of Mild Steel. The resistance to crushing of mild steel shall be taken at 95,000 psi of cross-sectional area.

4) Factors of Safety. The following factors of safety shall be increased by the Inspector if the condition and safety of the boiler demand it: The lowest factor of safety permissible on existing installations shall be 5, except for horizontal return tubular boilers having continuous longitudinal lap seams more than 12 ft. in length, when the factor of safety shall be 8; when this latter type of boiler is removed from its existing setting, it shall not be reinstalled for pressures in excess of 15 psig. Reinstalled or second-hand boilers shall have a minimum factor of safety of 6 when the longitudinal seams are of lap riveted construction, and a minimum factor of safety of 5 when the longitudinal seams are of butt and double-strap construction.

b) Repairs and Renewals of Boiler Fittings and Appurtenances. Whenever repairs are made to fittings or appurtenances or it becomes necessary to replace them, including burners and all associated controls, the work shall comply with current ASME/National Board Code requirements or the requirement of the ASME Codes in effect at the time of construction.

c) Recommendations for Operation. It is recommended that the applicable Section of the ASME Code, Section VI, Recommended Rules for the Care of Heating Boilers or Section VII, Recommendations and Rules for the Care of Power Boilers be used as a guide for proper and safe operating practices.

d) Conditions not Covered by this Part. All cases not specifically covered by this Part shall be treated as new installations. Existing standard and non-standard boilers shall be governed by current ASME/National Board Code requirements or the requirement of the ASME Codes in effect at the time of construction. Questions concerning existing nonstandard boilers may be referred to the Chief Inspector. Appeal of a decision of the Chief Inspector may be made to the Board.

(Source: Amended at 17 Ill. Reg. 14917, effective September 1, 1993)