Case N-855
SB-148 C95800 Valves for Class 3 Construction
Section III, Division 1

Inquiry: May SB-148 sand cast C95800 flanged valves with ANSI/AWWA C207 Class E end flange dimensions, NPS 24 (DN 600) and larger, be used for Section III, Division 1, Class 3 construction starting with 1995 Edition under the design rules of ND-3512?

Reply: It is the opinion of the Committee that SB-148 sand cast C95800 flanged valves with ANSI/AWWA C207 Class E end flange dimensions, NPS 24 (DN 600) and larger may be used for Section III, Division 1, Class 3 construction starting with 1995 Edition under the design rules of ND-3512 for service pressure up to 90 psig (620 kPa) and service temperatures up to 105°F (41°C) provided the following additional requirements are met:

(a) All other requirements of Subsection ND including ND-3521 are met.
(b) Welding is prohibited other than repair welding provided for in SB-148.
(c) External pressure loading is prohibited.
(d) The physical properties of the material are:
   (1) Thermal expansion coefficient is that listed in Section II, Part D, Table TE-3 for bronze alloys
   (2) Density: 0.276 lb/in.³ (7 640 kg/m³)
   (3) Modulus of elasticity: 16.5 x 10⁶ psi (114 GPa)
   (4) Poisson’s ratio: 0.32
(e) The maximum rated pressure for valves shall be 275 psig (1.9 MPa) for fluid temperatures from -20°F to 105°F (-29°C to -41°C) provided the following additional requirements are met:
   (f) The minimum wall thickness of the valve body, exclusive of corrosion allowance, shall not be less than that determined by the following equation:

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t_m = 1.5 \left[ \frac{P_c d}{2S_F - 1.2P_c} \right] + A
\]

where

\[
A = \text{additional allowance, use 0.2 in. (5.08 mm)}
\]

\[
P_c = \text{pressure class designation, use 150 psig (1.03 MPa) for ANSI/AWWA C207 Class E flanged bodies}
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S_F = \text{stress based constant equal to 7,000 psi (48.3 MPa)}
\]

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t_m = \text{minimum body wall thickness, in. (mm)}
\]

(g) Flanges shall be designed in accordance with the requirements of ANSI/AWWA C207 Class E.
(h) Valve body flanges shall be integral with the body.
(i) The valve body’s pressure boundary bolting, bolted bonnet/cover and bolting for other valve body joints exclusive of end flanges, shall meet ASME SB-150, alloys 614 (UNS S61400) or 630 (UNS S63000), or other bolting materials permitted by ND-2128.
(j) Bolting materials, if dissimilar from the body or bonnet materials, shall be appropriate for the service environment and prevent galvanic corrosion with the valve material.
(k) The minimum hydrostatic shell test pressure shall be conducted per ND-3531.1 at 425 psig (2 930 kPa) and shall be maintained for a minimum of 10 min.
(l) The minimum valve closure test pressure shall be conducted per ND-3531.2 at 305 psig (2 105 kPa) and shall be maintained for a minimum of 10 min. Acceptance leakage standard for seat leakage shall be defined by the Design Specification.
(m) The yield strength, tensile strength and allowable stress values for use in design shall be those listed for SB-148 C95400 in Section II, Part D, Tables Y-1, U, and 1B respectively.
(n) This Case number shall be referenced on the Manufacturer’s Data Report Form.

The Committee’s function is to establish rules of safety, relating only to pressure integrity, governing the construction of boilers, pressure vessels, transport tanks and nuclear components, and inservice inspection for pressure integrity of nuclear components and transport tanks, and to interpret these rules when questions arise regarding their intent. This Code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks and nuclear components, and the inservice inspection of nuclear components and transport tanks. The user of the Code should refer to other pertinent codes, standards, laws, regulations or other relevant documents.