LIST OF SYMBOLS SECTION 3

 A_n , B_n = coefficients of materials in fatigue relations = the total number of components in a container; N also denotes the outermost N component = a specific component when numbered from inside out; i.e., n = 1, 2, ..., Nn = outside radius of component n, inches rn = inside radius of component n, inches rn-1 = bore radius of container, inches (inside radius of liner) ro = outer radius of container, inches r_N = wall ratio of component n, $k_n = r_n/r_{n-1}$ kn = over-all wall ratio of container, $K = r_N/r_0 = k_1k_2...k_N$ K = wall ratio of inner part of ring-fluid-segment container, $K' = r_3/r_0$ ĸ´ = modulus of elasticity of component n, psi E_n = pressure acting on component n at r_n when $p \neq 0$, psi pn = pressure acting on component n at r_{n-1} when p \neq 0, psi p_{n-1} = bore pressure, psi, po = p (internal pressure acting on the liner) p = residual interface pressure acting on component n at r_n when p = 0, psi q_n = residual interface pressure required at room temperature for a container q_r designed for use at elevated temperature = residual interface pressure acting on component n at r_{n-1} when p = 0, psi q_{n-1} = shear stress, psi S = semirange in shear stress for a cycle of bore pressure, psi S_r = mean shear stress for a cycle of bore pressure, psi Sm = minimum shear stress during a cycle of bore pressure, psi Smin = maximum shear stress during a cycle of bore pressure, psi Smax = design tensile stress of ductile steel, psi ($\sigma \leq \text{ultimate tensile strength}$) = design tensile stress of high-strength steel, psi ($\sigma_1 \leq \text{ultimate tensile}$ σ_1 strength) = semirange in tensile stress for a cycle of bore pressure, psi $(\sigma)_r$

хi

LIST OF SYMBOLS SECTION 3 (Continued)

= mean tensile stress for a cycle of bore pressure, psi (o)m = yield tensile stress, ps1 σ_{y} = ultimate tensile stress, psi $\sigma_{\mathbf{u}}$ = minimum tensile stress during a cycle of bore pressure, psi (o)min = maximum tensile stress during a cycle of bore pressure, psi (o)max = radial stress, psi σr = circumferential stress, psi σa = axial (longitudinal) stress, psi oz. = semirange stress parameter for high-strength steel, $\alpha_r = (\sigma)_r/\sigma_1$ α_r = mean stress parameter for a high-strength steel, $\alpha_{\rm m}$ = $(\sigma)_{\rm m}/\sigma_{\rm l}$ am = bending moment on ring segment M_1 M_2 = bending moment on pin segment = radial displacement, inches 11 = circumferential displacement, inches = Poisson's ratio = cylindrical coordinates for radial, circumferential, and axial directions, r, θ, z respectively = interference required (as manufactured) between cylinder, n, and cylinder, Δ_n n + 1, inches = interference required (as manufactured) between the liner, segments, and △12 cylinder, 3, of the ring-segment and ring-fluid-segment containers, inches = coefficient of thermal expansion of material comprising rings 1 and 2 α_1, α_2