LIST OF SYMBOLS

N = the total number of components in a container; N also denotes the outermost component

n = a specific component when numbered from inside out; i.e., $n = 1, 2, \ldots, N$

r_n = outside radius of component n, inches

r_{n-1} = inside radius of component n, inches

r_o = bore radius of container, inches

r_N = outer radius of container, inches

k_n = wall ratio of component n, $k_n = r_n/r_{n-1}$

K = over-all wall ratio of container, $K = r_N/r_o$

K' = wall ratio of inner part of ring-fluid-segment container, $K' = r_3/r_o$

E_n = modulus of elasticity of component n, psi

p_n = pressure acting on component n at r_n when $p \neq 0$, psi

p_{n-1} = pressure acting on component n at r_{n-1} when $p \neq 0$, psi

p = bore pressure, psi, $p_o = p$

q_n = residual interface pressure acting on component n at r_n when $p = 0$, psi

q_{n-1} = residual interface pressure acting on component n at r_{n-1} when $p = 0$, psi

S = shear stress, psi

S_r = semi-range in shear stress for a cycle of bore pressure, psi

S_m = mean shear stress for a cycle of bore pressure, psi

S_{min} = minimum shear stress during a cycle of bore pressure, psi

S_{max} = maximum shear stress during a cycle of bore pressure, psi

σ = design tensile stress of ductile steel, psi ($\sigma \leqq$ ultimate tensile strength)

σ_1 = design tensile stress of high-strength steel, psi ($\sigma_1 \leqq$ ultimate tensile strength)

$(\sigma)_r$ = semirange in tensile stress for a cycle of bore pressure, psi

$(\sigma)_m$ = mean tensile stress for a cycle of bore pressure, psi

LIST OF SYMBOLS
(Continued)

$(\sigma)_{min}$ = minimum tensile stress during a cycle of bore pressure, psi

$(\sigma)_{max}$ = maximum tensile stress during a cycle of bore pressure, psi

σ_r = radial stress, psi

σ_θ = circumferential stress, psi

σ_z = axial (longitudinal) stress, psi

α_r = semirange stress parameter for high-strength steel, $\alpha_r = (\sigma)_r/\sigma_1$

α_m = mean stress parameter for a high-strength steel, $\alpha_m = (\sigma)_m/\sigma_1$

M_1 = bending moment on ring segment

M_2 = bending moment on pin segment

u = radial displacement, inches

v = circumferential displacement, inches

ν = Poisson's ratio

r, θ, z = cylindrical coordinates for radial, circumferential, and axial directions, respectively

Δ_n = interference required (as manufactured) between cylinder, n, and cylinder, n + 1, inches

Δ_{12} = interference required (as manufactured) between the liner, segments, and cylinder, 3, of the ring-segment and ring-fluid-segment containers, inches