Break σ (stress) into σ_x & σ_y
look at effects separately.

Because $J = \frac{\varepsilon}{\sigma} = \frac{\gamma}{\tau}$

σ_x

$\varepsilon_x(1\text{ month}) = \underline{J(1\text{ month})\sigma_x}$

$\varepsilon_y(1\text{ month}) = \varepsilon_z(1\text{ month}) = -\nu\varepsilon_x = -\underline{\nu J(1\text{ month})\sigma_x}$

radial dirxn

σ_y

$\varepsilon_y(1\text{ month}) = \underline{J(1\text{ mon})\sigma_y}$

$\varepsilon_x = \varepsilon_z(1\text{ mon}) = -\nu\varepsilon_y(1\text{ mon}) = -\underline{\nu J(1\text{ mon})\sigma_y}$

Stress is uniform $\Rightarrow \sigma_x = \sigma_y$

$\varepsilon_x(1\text{ mon}) = \varepsilon_y(1\text{ mon}) = [1-\nu]J(1\text{ mon})\sigma$

$\varepsilon_z(1\text{ mon}) = -2\nu J(1\text{ mon})\sigma$ ← adding 2 contributions together

$$\varepsilon_x = \varepsilon_y = (1-\nu)\,J\,\sigma = (1-0.41)(2\times10^{-9})(1.6\times10^{6})$$

$$= 1.89\times10^{-3}$$

$$\varepsilon_z = -(2\nu)J\sigma = -(2)(0.41)(2\times10^{-9})(1.6\times10^{6})$$

$$= -2.62\times10^{-3}$$

Δ Diameter $= (\text{ORIG})(\varepsilon_x) = (400)(1.89\times10^{-3}) = 0.756$ mm

Δ thickness $(5\text{ mm})(-2.62\times10^{-3}) = -1.31\times10^{-2}$ mm