

D/L 102 X_b connection
to Phase Separator

3/5/03

According to ASME Boiler Code Sect. VIII
Division I, part UG-27

Max pressure (internal) for cylindrical shell:

$$\text{Circ Stress (long. jt)} \Rightarrow P_{\max} = \frac{SEt}{R + 0.6t} = \boxed{355 \text{ psi}} \quad \text{OK}$$

$$\text{Longitudinal Stress (circ. jt)} \Rightarrow P_{\max} = \frac{2SEt}{R - 0.4t} = 733 \text{ psi}$$

use: $P = 75 \text{ psi}$ internal

$R = \text{inside tube rad} = 0.935''$

$S = \text{Max allowable stress} = 18,800$ (304 SST tubing - seamless
Sect II table 1A)

$E = \text{joint eff.} = 0.6$ (Table UW-12 butt weld)

$t = \text{wall thickness:}$ assume entire pipe & joint
is ~~as thin~~ as thin as the defect.
 $\Rightarrow \text{use } 0.03''$

[Signature]