

Gas compressibility,  $c_g$ , is given by

$$c_g = -\frac{1}{V_g} \left( \frac{\partial V_g}{\partial p} \right)$$
$$= \frac{1}{p} - \frac{1}{Z} \left( \frac{\partial Z}{\partial p} \right)_T \dots \dots \dots (3.37)$$

For sweet natural gas (i.e., not containing H<sub>2</sub>S) at pressures less than  $\approx 1,000$  psia, the second term in Eq. 3.37 is negligible and  $c_g = 1/p$  is a reasonable approximation.