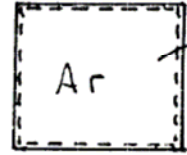PROBLEM 3.107

① Using the ideal gas model to determine the volume

$$V = \frac{n \bar{R} T}{P}$$

$$= \frac{(1\ lbmol)(1545\ \frac{ft \cdot lbf}{lbmol \cdot °R})(550\ °R)}{(100\ lbf/in^2)} \left| \frac{1\ ft^2}{144\ in^2} \right|$$

$$= 59.01\ ft^3 \longleftarrow \hspace{6cm} V$$

Ar

$n = 1\ lbmol$
$P = 100\ lbf/in^2$
$T = 550\ °R$

1. The applicability of the ideal gas model can be verified by referring to the compressibility chart.