

Back Pressure Test Calculations:
 Stepwise Solution
 For 1st rate of flow:

$$L/H (F_r Q_m)^2 = 1.000 \times (.018231 \times 2.604)^2$$

$$= .0022537$$

$$T@H=0 = 71^\circ + 460 = 531^\circ R$$

$$T@H=5626.5 = \left(\frac{71+168}{2}\right) + 460 = 579.6^\circ R$$

$$T@H=11253 = 168 + 460 = 628^\circ R$$

$$P_c = 4638.2$$

$$P_r = \frac{4638.2}{669} = 6.93$$

$$T_r = \frac{531}{382} = 1.39$$

$$Z = .8956$$

First trial calculation for pressure at
 $H = 5626.5$

$$GH = .671 \times 5626.5 = 3775.45$$

$$37.5 GH = 141,583$$

$$\text{Est } M = 141,583 / 2 \times 100.168 = 706.7276$$

$$Z = .9924$$

$$\text{Calculate } M = \frac{141,583}{205.039} = 690.517$$

Recalculate assuming $M = 690$ checks out!

First trial calc. for P at $H = 11253$

$$GH = 7550.8 \quad 37.5 GH =$$

Estimate M :

$$M = \frac{290,655 - 141,492}{205.061} = 727.408$$

$$\text{Recalc. } M = \frac{290,655 - 141,492}{205.061} = 727.408$$