ONTARIO POWER GENERATION

File Notes

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REGULATOR MODEL 202	File no.
	Date MAR 1, 2013

FAIL-OPEN REGULATOR FLOW

$P_1 = 2000$ psig (N_2 CYLINDER)
$P_2 = 100$ psig (RV SET POINT)
$C_V = .2$ (MANUFACTURE LITERATURE) MODEL 202

USING CRANE 410

$$Q = 7.9\, C_V \sqrt{\frac{\Delta P}{\rho}} \qquad 2\text{-}27$$

$$= 7.9 \times .2 \sqrt{\frac{1900}{9.92}}$$

$$= 21.86 \text{ USGPM}$$

$$= 21.86 \times \frac{231}{12^3}$$

$$= 2.92 \text{ CFM}$$

SINCE $q_G = q_L Y$ 2-24 & 2-23

$$q_G = .8 \times 2.92$$
$$= 2.3 \text{ CFM}$$

$$q_{SCFM} = 2.3 \times \frac{9.92}{.0727}$$
$$= 314 \text{ SCFM}$$

$\therefore$ FAIL OPEN FLOW IS 314 SCFM.

$\Delta P = 2000 - 100$
$= 1900$ psi

ρ_{N_2} 2000 $= \frac{144(2000+14.7)}{55.2(460+70)}$
$= 9.92 \frac{lbm}{ft^3}$
A-10 + A-8

FOR $k = 1.4$

$\frac{\Delta P}{P_1} = \frac{1900}{2000+14.7}$
$= .94$

$\therefore Y = .8$ A-21

ρ_{N_2} 14.7 $= .0727 \frac{lbm}{ft^3}$