

PRESSURE LOCKING EVALUATION FOR REQUIRED PULLOUT FORCE (for Double Disc Split Wedge)

= INPUTS

MOV

2-FCV-63-26

Valve type =

DD Split Wedge

ARK No. 8801B

VALVE DWG

93-12859

EPRI NP-6516 Calc Meth

VALVE DESIGN DATA $\mu = 0.4$ 

theta (A) = 0 deg

a = 1.8438 inches

ro = 0.625 inches

b = 0.625 inches

v = 0.3

(D) Mean Seat Dia  $(D1+E1)/2 =$ 

3.6875 in

(d) Stem Dia =

1.625 in

(S2) Valve Seat Area  $((D)^2 \cdot \pi / 4 =$ 10.68 (in)<sup>2</sup>(Vf)  $\mu / (\cos A + \mu \sin A) =$ 

0.4000

(St3) Stem Area  $((d)^2 \cdot \pi / 4 =$ 2.07 (in)<sup>2</sup>

(PI) Packing Load (Calculated) =

1625 lbs

(PI) Packing Load (Actual, average) =

0 lbs

EPRI MOV PPP INTERNAL DESIGN INFO, Ref. \_\_\_\_\_

D1 E1 M1

4.5 2.875 1.25

a =  $((D1 + E1) / 2) / 2 = 1.84375$ b =  $M1 / 2 = 0.625 = ro$ 

v = Poisson's Ratio = 0.3

 $\mu$  = seating surfaces friction coef  
based on Calc method. & EPRI resultstheta = 1/2 total valve  
disk angleValve Seat Area Based on :  
D1, E1PRESSURE and TEMPERATURE DATA

(Pb) Pbon =

2735 psi

(Pu) P up =

2600 psi

(Pd) P down =

0 psi

DP =

2600 psid

PRESSURE INDUCED, PRESSURE LOCKING THRUST REQUIREMENT:

$$\text{THRUST} = [ \{ (Pb - Pu) + (Pb - Pd) \} \cdot \{ S2 \} \cdot \{ Vf \} ] - \{ (ST3) \cdot (Pb) \} + PI + \text{UNWEDGING}$$

WHERE: Pb = Pressure in valve Bonnet  
Pu = Pressure upstream of Valve  
Pd = Pressure downstream of Valve

UNWEDGING = 0 lbs

S2 = Valve Seat Area  
Vf = Valve Friction Factor  
St3 = Stem Area  
PI = Packing load (maximum value)

THRUST = 8213 lbs

PRESSURE INDUCED, P L - MAXIMUM BONNET PRESSURE @ ACT/VALVE LIMITING CAP

$$\text{PRESSURE} = \{ A/VLIMTH + (S2 \cdot Vf \cdot (Pu + Pd)) - PI \} / \{ (2 \cdot S2 \cdot Vf) - St3 \}$$

PRESSURE = 4099 psi

Prepared: Checked: 

