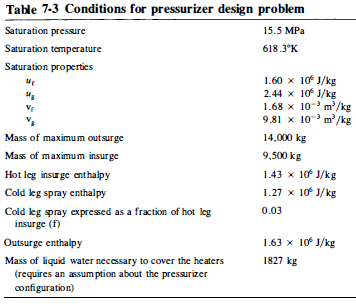
NUCL 402 HMWK 10

1. Pressurizer Size for Surge



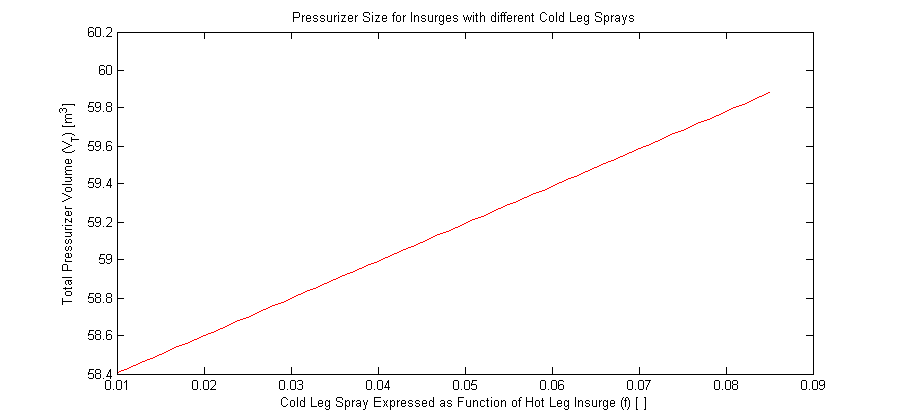


Figure 1 Pressurizer Size with Different Cold Leg Sprays

Code:

minsurge=9700; %maximum insurge mass in kg

f=0.01:0.001:0.085;

vf=1.68E-3; %saturation property for fluid in m^3/kg

vg=9.81E-3; %saturation property for gas in m^3/kg

mf2=1827; %mass of liquid water necessary to cover heaters in kg

moutsurge=17500; %maximum outsurge mass in kg

mg1=minsurge\*(1+f)\*vf/(vg-vf);

Vg1=mg1\*vg;

mf1=mf2+moutsurge\*vg/(vg-vf);

Vf1=mf1\*vf;

Vtotal=Vg1+Vf1;

plot(f,Vtotal,'r-');

xlabel('Cold Leg Spray Expressed as Function of Hot Leg Insurge (f) [ ]');

ylabel('Total Pressurizer Volume (V\_T) [m^3]');

title('Pressurizer Size for Insurges with different Cold Leg Sprays');