


PROJECT :			DATE :	3/4/2011
PROJ. NO.:			BY :	S.R
CLIENT :			REV :	A
UNIT :			DOC NO.:	0

Tube Rupture Relief Rate Calculation (Two Phase Flow)

Input Data		
Vapor Mass Flow Rate	kg/hr	500.0
Liquid Mass Flow Rate	kg/hr	500.0
Vapor Mass Density	kg/m ³	10.0
Liquid Mass Density	kg/m ³	900.0
Latent Heat of Vaporization	kJ/kg	125.0
Liquid Specific Heat	kJ/kgK	2.50
HP Side Operating Pressure	barg	20.00
LP Side PSV Set Pressure	barg	5.00
Relieving Temperature	°C	100.00
Exchanger Tube Length	m	2.00
Exchanger Tube Diameter	in	1.0000

Calculation Results		
Vapor Mass Fraction	----	0.5000
HP Side Operating Pressure	bara	21.00
LP Side Design Pressure	bara	6.00
ω	----	25.23
Pc/P	----	0.91
Critical Pressure	bara	19.03
Flow Regime	----	Critical
Actual ΔP across rupture	bar	2.0
Mass Flux Through Tubesheet	kg/m ² .sec	1162.7
Mass Flux Through Tube Side	kg/m ² .sec	4.2
Tube Discharge Area	m ²	0.00051
Relief Rate	kg/hr	2127.5

General Notes