


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

Liquid Thermal Expansion Final Pressure Calculation

Input Data			
Initial pressure	P1	kpa	10600
Initial temprature	T1	C	45
Final temprature	T2	C	47
Liquid cubical expansion coe.	α_v	1/C	2.07E-04
Metal linear expansion coe.	α_l	1/C	1.21E-05
Liquid isothermal compressibility	χ	1/kpa	4.59E-07
Pipe diameter	d	m	5.08E-02
Metal elasticity	E	kpa	2.07E+08
Pipe metal thickness	σ	m	6.25E-03
Poisson ratio	μ	-	0.3
Leakage rate	qll	m3/sec	0

Calulation Results			
Final pressure	P2	barg	111.88

Notes

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PROJ. NO.:			BY :	S.RAHIMI
CLIENT :			REV :	A
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RELIEF RATE CALCULATION FOR LIQUID THERMAL EXPANSION

Input Data		
PSV Tag No.	PSV-418	
P&ID No.	DWG-0400-FSO-068	
Protected Equipment	E-411 (Tube Side)	
Total Heat Transfer Rate	MBtu/hr	8000.00
Specific Gravity	----	1.00
Specific Heat (Cp)	Btu/(lb.°F)	1.20
Cubical Expansion Coefficient (B)	1/°F	0.00010

Calculation Results		
Relief Rate	gpm	1.333
Relief Rate	m ³ /hr	0.303
Relief Rate	kg/hr	302.84
Inlet Recommended Size	in	3/4
Outlet Recommended Size	in	1

General Notes