

tutorial4	2010-03-31 19:03:07 -0600			
Variables				
dp				
	DeltaP	50 Kpa		
dt				
	DeltaT	5 C		
ggduty				
	Q	@salesgas - @lts.v		
splits	Stabilizer fractions going overhead			
	X	[1,1,.99,.95,.05,.01,0,0]		
stabduty	Stabilizer Duty			
	Q	@stabovhd + @stabbtms - #stabfeed		
Fluids				
feed				
	T	10 C		
	P	4000 kPa		
	F	10 mmscfd		
	X	[70,20,10,9,8,7,6,5]		
		Bulk	Vapour	Liquid
Vf		0.53454	0.53454	0.46546
T	C	10.00000	10.00000	10.00000
P	kPa	4000.00000	4000.00000	4000.00000
F	kgmole/h	498.04060	266.22212	231.81848
H	W-hr/kgmole	850.28512	2434.89588	-969.49404
S	kJ/kmol-K	160.02798	159.63944	160.47417
X				
METHANE		0.51852	0.80942	0.18444
ETHANE		0.14815	0.13855	0.15917
PROPANE		0.07407	0.03441	0.11962
n-BUTANE		0.06667	0.01195	0.12950
n-PENTANE		0.05926	4.06E-03	0.12265
n-HEXANE		0.05185	1.11E-03	0.11013
n-HEPTANE		0.04444	3.71E-04	0.09506
n-OCTANE		0.03704	1.19E-04	0.07943
lts				
	T	-10 C		
	P	@feed - 2 * \$dp		
	F	@feed.v		
	X	@feed.v		
		Bulk	Vapour	Liquid
Vf		0.98546	0.98546	0.01454
T	C	-10.00000	-10.00000	-10.00000
P	kPa	3900.00000	3900.00000	3900.00000
F	kgmole/h	266.22212	262.35119	3.87093
H	W-hr/kgmole	2116.84726	2164.22719	-1094.31101
S	kJ/kmol-K	155.61266	155.89926	136.18847
X				
METHANE		0.80942	0.81797	0.23002
ETHANE		0.13855	0.13737	0.21877
PROPANE		0.03441	0.03241	0.17011
n-BUTANE		0.01195	9.60E-03	0.17123
n-PENTANE		4.06E-03	2.32E-03	0.12220
n-HEXANE		1.11E-03	4.14E-04	0.05708
n-HEPTANE		3.71E-04	4.14E-05	0.02274
n-OCTANE		1.19E-04	5.03E-06	7.85E-03
dewpt				
	P	800 psig		
	Vf	1		
	F	@lts.v		
	X	@lts.v		
		Bulk	Vapour	Liquid
Vf		1.00000	1.00000	0.00000
T	C	-9.88043	-9.88043	-9.88043
P	kPa	5617.13060	5617.13060	5617.13060
F	kgmole/h	262.35119	262.35119	0.00000
H	W-hr/kgmole	1970.39562	1970.39562	-563.69897
S	kJ/kmol-K	150.92708	150.92708	133.47797
X				
METHANE		0.81797	0.81797	0.34086
ETHANE		0.13737	0.13737	0.24614
PROPANE		0.03241	0.03241	0.15980
n-BUTANE		9.60E-03	9.60E-03	0.13177
n-PENTANE		2.32E-03	2.32E-03	0.07838
n-HEXANE		2.81E-04	2.81E-04	0.03003
n-HEPTANE		4.14E-05	4.14E-05	0.01010
n-OCTANE		5.03E-06	5.03E-06	2.92E-03
salesgas				
	T	@feed - \$dt		
	P	@lts - \$dp		
	F	@lts.v		
	X	@lts.v		
		Bulk	Vapour	Liquid
Vf		1.00000	1.00000	0.00000
T	C	5.00000	5.00000	5.00000
P	kPa	3850.00000	3850.00000	3850.00000
F	kgmole/h	262.35119	262.35119	0.00000
H	W-hr/kgmole	2374.62300	2374.62300	-255.16775
S	kJ/kmol-K	158.78753	158.78753	140.60625
X				
METHANE		0.81797	0.81797	0.31292
ETHANE		0.13737	0.13737	0.23657
PROPANE		0.03241	0.03241	0.16242
n-BUTANE		9.60E-03	9.60E-03	0.14275
n-PENTANE		2.32E-03	2.32E-03	0.09125
n-HEXANE		2.81E-04	2.81E-04	0.03656
n-HEPTANE		4.14E-05	4.14E-05	0.01336
n-OCTANE		5.03E-06	5.03E-06	4.18E-03
chillfeed	Chiller Feed			
	P	@feed - \$dp		
	H	(@feed.v.Q - \$ggduty) / @feed.v.F		
	F	@feed.v		
	X	@feed.v		
		Bulk	Vapour	Liquid
Vf		0.99290	0.99290	7.10E-03
T	C	-3.43129	-3.43129	-3.43129
P	kPa	3950.00000	3950.00000	3950.00000
F	kgmole/h	266.22212	264.33281	1.88931
H	W-hr/kgmole	2227.55926	2251.09675	-1065.57087
S	kJ/kmol-K	157.02371	157.12662	142.62556
X				
METHANE		0.80942	0.81368	0.21358
ETHANE		0.13855	0.13813	0.19776
PROPANE		0.03441	0.03357	0.15261
n-BUTANE		0.01195	0.01087	0.16315
n-PENTANE		4.06E-03	3.12E-03	0.13578
n-HEXANE		1.11E-03	5.23E-04	0.28823
n-HEPTANE		3.71E-04	9.32E-05	0.03930
n-OCTANE		1.19E-04	1.29E-05	0.01498
stabovhd	Stabilizer Overhead			
	P	700 kPa		
	Vf	1		
	F	{sum \$splits * #stabfeed.X * #stabfeed.F }		
	X	\$splits * #stabfeed		
		Bulk	Vapour	Liquid
Vf		1.00000	1.00000	0.00000
T	C	19.99772	19.99772	19.99772
P	kPa	700.00000	700.00000	700.00000
F	kgmole/h	140.34992	140.34992	0.00000
H	W-hr/kgmole	3455.32786	3455.32786	-961.35993
S	kJ/kmol-K	185.58763	185.58763	135.06378
X				
METHANE		0.31099	0.31099	0.01370
ETHANE		0.26893	0.26893	0.06524
PROPANE		0.20025	0.20025	0.16759
n-BUTANE		0.20769	0.20769	0.60844
n-PENTANE		0.01030	0.01030	0.08352
n-HEXANE		1.83E-03	1.83E-03	0.06151
n-HEPTANE		0.00000	0.00000	0.00000
n-OCTANE		0.00000	0.00000	0.00000
stabbtms	Stabilizer Bottoms			
	P	\$dp + @stabovhd		
	Vf	0		
	F	#stabfeed - @stabovhd		
	X	#stabfeed * (1 - \$splits)		
		Bulk	Vapour	Liquid
Vf		0.00000	0.00000	1.00000
T	C	146.43999	146.43999	146.43999
P	kPa	750.00000	750.00000	750.00000
F	kgmole/h	95.33949	0.00000	95.33949
H	W-hr/kgmole	6189.71292	11621.70884	6189.71292
S	kJ/kmol-K	277.91753	306.82279	277.91753
X				
METHANE		0.00000	0.00000	0.00000
ETHANE		0.00000	0.00000	0.00000
PROPANE		2.98E-03	0.01830	2.98E-03
n-BUTANE		0.01609	0.05143	0.01609
n-PENTANE		0.28802	0.49914	0.28802
n-HEXANE		0.26739	0.24889	0.26739
n-HEPTANE		0.23206	0.12331	0.23206
n-OCTANE		0.19346	0.05893	0.19346
vpcheck	Checl vapour pressure of stab liquids			
	P	1 atm		
	Vf	0		
	F	@stabbtms		
	X	@stabbtms		
		Bulk	Vapour	Liquid
Vf		0.00000	0.00000	1.00000
T	C	58.91076	58.91076	58.91076
P	kPa	101.32500	101.32500	101.32500
F	kgmole/h	95.33949	0.00000	95.33949
H	W-hr/kgmole	408.65588	7573.44393	408.65588
S	kJ/kmol-K	222.77662	274.98777	222.77662
X				
METHANE		0.00000	0.00000	0.00000
ETHANE		0.00000	0.00000	0.00000
PROPANE		2.98E-03	0.05014	2.98E-03
n-BUTANE		0.01609	0.09102	0.01609
n-PENTANE		0.28802	0.58425	0.28802
n-HEXANE		0.26739	0.18921	0.26739
n-HEPTANE		0.23206	0.06427	0.23206
n-OCTANE		0.19346	0.02111	0.19346