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APPENDICES

Appendix A Description of Units and Streams of the GSP5

Table A-1 Description of heat exchanger units

Unit	Description
3503E01	DEMETHANIZER REBOILER
3503E02	WARM GAS/GAS EXCHANGER
3503E03	INLET GAS CHILLER
3503E04	COLD GAS/GAS EXCHANGER
3503E05	DEMETHANIZER SIDE REBOILER
3503E06	CONDENSER SUBCOOLER
3503E07	DEETHANIZER FEED SUBCOOLER
3503E08	DEETHANIZER REBOILER
3503E09	DEETHANIZER CONDENSER
3503E10	DEMETHANIZER TRIM REBOILER
3503E12	INLET/PRODUCT EXCHANGER
3504E01	DEPROPANIZER FEED/BOTTOM EXCHANGER
3504E02	DEPROPANIZER REBOILER
3504E03	DEPROPANIZER CONDENSER
3504E04	LPG PRODUCT AIR COOLER
3504E05	GASOLINE PRODUCT COOLER
3504E06	DEPROPANIZER PRODUCT RUNDOWN CHILLER
3506E01	SALES GAS COOLER
3506E02	INTERSTAGE COOLER

Table A-2 Description of the distillation columns

Unit	Description
3503T01	DEMETHANIZER
3503T02	DEETHANIZER
3504T01	DEPROPANIZER

Table A-3 Stream names of thermal data

Type of Stream	Stream Name	
	In	Out
H1	S-42	S-44
H2	S-39	S-38
H3	S-25	S-24
H4	S-26	S-27
H5	S-20	S-19
H6	S-13	S-16
H7	S-41	S-40
H8	S-99	S-8
H9	S-100	S-11
H10	DEPRO-BOTTOM	NGL
H11	S-69	LPG
H12	S-71	PROPANE
H13	REF3507D04	REF3507D03
C1	S-47	S-45
C2	S-49	S-50
C3	S-59	DEPRO-FEED
C4	S-35	S-36
C5	DEMET-TOP	S-3
C6	S-51	DEETH-FEED

Appendix B Data and Information of the GSP5 in the Design-Data Case

Table B-1 Thermal data of streams

Label	Tin (°C)	Tout (°C)	Flow Rate (MM KG/HR)
H1	22	-15.946	0.240134
H2	-19.192	-30.8	0.442236
H3	-30.8	-38.2	0.298952
H4	-30.8	-59.7	0.143285
H5	-46	-115.7	0.126543
H6	52	-115.7	0.037925
H7	22	-23	0.202102
H8	100.475	52	0.314972
H9	107.129	52	0.314972
H10	179.2	26	0.021162
H11	85.512	26	0.05359
H12	54.1	26	0.044823
H13	52	40.007	0.384401
C1	-21.09	-7.8	0.202301
C2	-6.758	15.339	0.17086
C3	82.2	83.717	0.119576
C4	-67.525	-42.204	0.199541
C5	-120.632	23.71	0.314999
C6	16.1	40	0.169529

Table B-2a Column summary of the demethanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	-120.6	10.98	2139.3		2326.4M	19322.6V	
2	-120.3	10.99	2041.9	19136			
3	-119.6	11.01	1783.7	19038			
4	-117.8	11.02	1317.9	18780			
5	-114.2	11.03	688.2	18314			
6	-108.4	11.04	4987.8	17684	4726.6L		
7	-102.8	11.06	4371.8	17257			
8	-96.1	11.07	4028.7	16641			
9	-91.6	11.08	4905.1	16298	14966.3M		
10	-91.2	11.09	4921.7	2208.4			
11	-90.9	11.11	4917.3	2225			
12	-89.9	11.12	4885.1	2220.6			
13	-85.3	11.13	5836.1	2188.4	1456.6M		
14	-84.5	11.14	5827.4	1682.8			
15	-80.9	11.16	5799	1674.1			
16	-67.5	11.17	219.8	1645.7	102.8M	5668.7L	
17	-40.3	11.18	5059.2	1632.4	5668.3M		
18	-32	11.19	5268.2	803.5			
19	-21.1	11.21	214.2	1012.5		5328.1L	
20	-8.2	11.22		1286.6	5328.2M	4255.8L	

Table B-2b Molar composition of the demethanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	0.00351	0.02066	0.00313	0.01873	0.00299	0.01877
CO2	0.00361	4.00E-04	0.00691	7.63E-04	0.00991	0.0011
METHANE	0.99136	0.9789	0.98279	0.9803	0.95909	0.97933
ETHANE	0.00152	4.31E-05	0.00717	2.05E-04	0.028	8.04E-04
PROPANE	6.26E-07	1.50E-09	8.07E-07	1.94E-09	7.67E-06	1.82E-08
IBUTANE	1.31E-13	5.94E-17	3.23E-11	1.46E-14	7.86E-09	3.46E-12
BUTANE	1.09E-15	1.73E-19	7.60E-13	1.21E-16	5.19E-10	8.15E-14
IPENTANE	4.16E-21	6.52E-26	2.96E-17	4.66E-22	2.06E-13	3.17E-18
PENTANE	1.55E-21	2.40E-26	1.13E-17	1.74E-22	8.13E-14	1.21E-18
HEXANE	1.05E-26	2.04E-32	6.12E-22	1.17E-27	3.73E-17	6.56E-23
HEPTANE	0	0	5.51E-27	6.87E-34	5.06E-21	5.91E-28
OCTANE	0	0	0	0	1.51E-24	2.22E-32
NONANE	0	0	0	0	1.43E-29	1.60E-38
H2S	4.65E-08	2.22E-09	1.52E-07	7.23E-09	3.95E-07	1.84E-08
COS	7.17E-13	3.57E-15	1.68E-11	8.34E-14	3.71E-10	1.81E-12
CH4S	2.17E-16	2.51E-19	2.16E-14	2.45E-17	2.15E-12	2.32E-15
ETSH	2.58E-19	4.16E-23	1.84E-16	2.89E-20	1.34E-13	1.97E-17
PN1THIOL	0	0	0	0	3.17E-27	4.50E-35
BU1THIOL	0	0	2.47E-26	3.44E-32	2.06E-21	2.65E-27
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2139.28	19322.6	2041.86	19135.48	1783.71	19038.06

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	0.00264	0.01897	0.0021	0.01935	0.00123	0.01992
CO2	0.01115	0.00131	0.00865	0.00118	0.0042	7.25E-04
METHANE	0.8943	0.97703	0.77534	0.97282	0.56598	0.97099
ETHANE	0.09162	0.00269	0.20494	0.00663	0.21151	0.00801
PROPANE	2.85E-04	6.59E-07	0.00849	2.04E-05	0.12758	3.30E-04
IBUTANE	1.81E-06	7.47E-10	3.25E-04	1.31E-07	0.03197	1.27E-05
BUTANE	3.21E-07	4.93E-11	1.42E-04	2.31E-08	0.03233	5.53E-06
IPENTANE	1.29E-09	1.95E-14	5.57E-06	9.27E-11	0.01056	2.17E-07
PENTANE	5.56E-10	7.72E-15	2.83E-06	4.00E-11	0.00701	1.10E-07
HEXANE	2.43E-12	3.54E-18	1.44E-07	1.75E-13	0.0056	5.59E-09
HEPTANE	4.73E-15	4.81E-22	3.57E-09	3.40E-16	0.00169	1.39E-10
OCTANE	1.12E-17	1.44E-25	6.64E-11	8.06E-19	3.03E-04	2.59E-12
NONANE	1.54E-21	1.36E-30	1.54E-13	1.11E-22	1.20E-05	6.00E-15
H2S	8.80E-07	3.96E-08	1.45E-06	6.54E-08	1.44E-06	5.87E-08
COS	7.22E-09	3.52E-11	9.84E-08	5.20E-10	6.65E-07	3.83E-09
CH4S	2.07E-10	2.04E-13	1.57E-08	1.49E-11	7.96E-07	6.09E-10
ETSH	9.77E-11	1.27E-14	5.80E-08	7.03E-12	1.93E-05	2.26E-09
PN1THIOL	2.52E-20	3.01E-28	1.61E-13	1.81E-21	6.64E-07	6.28E-15
BU1THIOL	1.71E-16	1.96E-22	1.11E-11	1.23E-17	5.33E-07	4.32E-13
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1317.85	18779.92	688.18	18314.05	4987.83	17684.39

Table B-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	9.24E-04	0.01799	8.19E-04	0.01853	7.87E-04	0.01888
CO2	0.00559	0.0013	0.00479	0.00156	0.00318	0.00128
METHANE	0.46003	0.96525	0.36926	0.95219	0.32456	0.94012
ETHANE	0.28413	0.01486	0.35273	0.02666	0.39943	0.0382
PROPANE	0.1471	5.64E-04	0.1614	9.88E-04	0.17378	0.00145
IBUTANE	0.03654	2.21E-05	0.0397	4.05E-05	0.03649	5.26E-05
BUTANE	0.03693	1.05E-05	0.0401	2.06E-05	0.03564	2.72E-05
IPENTANE	0.01205	4.54E-07	0.01308	9.98E-07	0.01105	1.34E-06
PENTANE	0.008	2.23E-07	0.00868	4.83E-07	0.0073	6.46E-07
HEXANE	0.00639	1.12E-08	0.00693	2.55E-08	0.00572	3.50E-08
HEPTANE	0.00193	3.24E-10	0.00209	8.60E-10	0.00172	1.30E-09
OCTANE	3.46E-04	6.46E-12	3.76E-04	1.88E-11	3.09E-04	3.07E-11
NONANE	1.37E-05	1.57E-14	1.49E-05	4.98E-14	1.22E-05	8.60E-14
H2S	1.90E-06	1.00E-07	2.34E-06	1.71E-07	2.64E-06	2.43E-07
COS	7.76E-07	6.52E-09	8.67E-07	1.14E-08	1.01E-06	1.77E-08
CH4S	9.11E-07	1.02E-09	9.91E-07	1.82E-09	9.43E-07	2.47E-09
ETSH	2.20E-05	3.99E-09	2.39E-05	7.63E-09	2.08E-05	9.85E-09
PN1THIOL	7.58E-07	1.58E-14	8.23E-07	4.66E-14	6.76E-07	7.60E-14
BU1THIOL	6.08E-07	9.13E-13	6.60E-07	2.19E-12	5.44E-07	3.12E-12
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4371.76	17257.4	4028.72	16641.33	4905.12	16298.3

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	1.35E-04	0.00324	7.42E-05	0.00178	6.78E-05	0.00165
CO2	0.00318	0.00131	0.00323	0.00134	0.0033	0.00143
METHANE	0.327	0.95488	0.32521	0.95558	0.31648	0.95286
ETHANE	0.39853	0.03899	0.40004	0.03969	0.40651	0.04233
PROPANE	0.17321	0.00149	0.17341	0.00152	0.17494	0.00164
IBUTANE	0.03637	5.46E-05	0.0364	5.59E-05	0.03666	6.05E-05
BUTANE	0.03552	2.83E-05	0.03556	2.91E-05	0.0358	3.18E-05
IPENTANE	0.01101	1.40E-06	0.01102	1.44E-06	0.01109	1.60E-06
PENTANE	0.00728	6.78E-07	0.00728	6.98E-07	0.00733	7.74E-07
HEXANE	0.0057	3.71E-08	0.00571	3.84E-08	0.00574	4.31E-08
HEPTANE	0.00171	1.40E-09	0.00171	1.45E-09	0.00173	1.66E-09
OCTANE	3.08E-04	3.30E-11	3.08E-04	3.45E-11	3.10E-04	3.99E-11
NONANE	1.22E-05	9.40E-14	1.22E-05	9.88E-14	1.23E-05	1.16E-13
H2S	2.63E-06	2.49E-07	2.64E-06	2.53E-07	2.68E-06	2.68E-07
COS	1.00E-06	1.82E-08	1.00E-06	1.85E-08	1.02E-06	1.99E-08
CH4S	9.40E-07	2.56E-09	9.41E-07	2.61E-09	9.48E-07	2.82E-09
ETSH	2.08E-05	1.03E-08	2.08E-05	1.05E-08	2.09E-05	1.15E-08
PN1THIOL	6.74E-07	8.20E-14	6.74E-07	8.57E-14	6.79E-07	9.93E-14
BU1THIOL	5.42E-07	3.32E-12	5.43E-07	3.43E-12	5.46E-07	3.86E-12
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4921.68	2208.42	4917.33	2224.98	4885.1	2220.63

Table B-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	6.22E-05	0.00166	1.13E-05	3.02E-04	4.54E-06	1.26E-04
CO2	0.00299	0.00157	0.00321	0.00174	0.00403	0.0025
METHANE	0.2755	0.94261	0.27049	0.9412	0.24667	0.92723
ETHANE	0.39686	0.05149	0.401	0.05394	0.4212	0.06659
PROPANE	0.2013	0.00252	0.20179	0.00265	0.20389	0.00332
IBUTANE	0.04511	1.04E-04	0.04519	1.10E-04	0.04547	1.43E-04
BUTANE	0.04466	5.66E-05	0.04473	6.04E-05	0.04499	8.00E-05
IPENTANE	0.01412	3.13E-06	0.01415	3.38E-06	0.01422	4.67E-06
PENTANE	0.00935	1.52E-06	0.00937	1.64E-06	0.00941	2.28E-06
HEXANE	0.00738	9.06E-08	0.00739	9.88E-08	0.00743	1.44E-07
HEPTANE	0.00222	3.72E-09	0.00222	4.11E-09	0.00224	6.37E-09
OCTANE	3.99E-04	9.22E-11	4.00E-04	1.03E-10	4.01E-04	1.68E-10
NONANE	1.58E-05	2.96E-13	1.58E-05	3.35E-13	1.59E-05	5.76E-13
H2S	2.64E-06	3.21E-07	2.67E-06	3.36E-07	2.79E-06	4.11E-07
COS	1.12E-06	2.86E-08	1.13E-06	3.00E-08	1.14E-06	3.72E-08
CH4S	1.15E-06	4.60E-09	1.15E-06	4.86E-09	1.16E-06	6.25E-09
ETSH	2.63E-05	2.09E-08	2.64E-05	2.22E-08	2.65E-05	2.94E-08
PN1THIOL	8.74E-07	2.36E-13	8.75E-07	2.64E-13	8.79E-07	4.29E-13
BU1THIOL	7.03E-07	7.88E-12	7.04E-07	8.60E-12	7.07E-07	1.27E-11
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	5836.13	2188.4	5827.39	1682.85	5799.01	1674.1

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	3.40E-06	1.04E-04	3.65E-07	1.23E-05	6.91E-08	2.29E-06
CO2	0.00542	0.00539	0.00511	0.01064	0.0058	0.01441
METHANE	0.17486	0.85464	0.08377	0.60444	0.06045	0.47139
ETHANE	0.47734	0.13198	0.51614	0.3521	0.54836	0.46916
PROPANE	0.20971	0.00729	0.24089	0.02952	0.23666	0.04023
IBUTANE	0.04652	3.54E-04	0.05396	0.00184	0.05221	0.00264
BUTANE	0.04635	2.16E-04	0.05384	0.00125	0.05199	0.00186
IPENTANE	0.01521	1.53E-05	0.01769	1.16E-04	0.01702	1.84E-04
PENTANE	0.01028	7.72E-06	0.01196	6.16E-05	0.01151	9.88E-05
HEXANE	0.00937	6.86E-07	0.0109	8.00E-06	0.01047	1.43E-05
HEPTANE	0.00374	4.92E-08	0.00435	7.83E-07	0.00418	1.53E-06
OCTANE	0.00108	2.46E-09	0.00126	5.20E-08	0.00121	1.11E-07
NONANE	7.98E-05	1.95E-11	9.29E-05	6.16E-10	8.92E-05	1.46E-09
H2S	3.14E-06	8.03E-07	3.42E-06	2.17E-06	3.61E-06	2.90E-06
COS	1.20E-06	7.85E-08	1.36E-06	2.83E-07	1.36E-06	3.80E-07
CH4S	1.19E-06	1.51E-08	1.38E-06	7.41E-08	1.34E-06	1.06E-07
ETSH	2.76E-05	8.10E-08	3.21E-05	5.04E-07	3.09E-05	7.57E-07
PN1THIOL	1.12E-06	3.00E-12	1.30E-06	6.44E-11	1.25E-06	1.37E-10
BU1THIOL	1.12E-06	7.78E-11	1.30E-06	9.06E-10	1.25E-06	1.64E-09
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	219.79	1645.72	5059.2	1632.39	5268.2	803.46

Table B-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	19		20	
COMPONENT	X	Y	X	Y
N2	1.10E-08	3.54E-07	1.33E-09	4.31E-08
CO2	0.00531	0.01609	0.00316	0.01176
METHANE	0.0319	0.27004	0.01088	0.10238
ETHANE	0.58097	0.64656	0.52512	0.76611
PROPANE	0.23814	0.05965	0.27864	0.10375
IBUTANE	0.05083	0.00413	0.06362	0.00842
BUTANE	0.05034	0.003	0.06362	0.00629
IPENTANE	0.0163	3.20E-04	0.02099	7.55E-04
PENTANE	0.01101	1.75E-04	0.0142	4.24E-04
HEXANE	0.00997	2.89E-05	0.01295	8.16E-05
HEPTANE	0.00398	3.45E-06	0.00517	1.06E-05
OCTANE	0.00115	2.79E-07	0.00149	9.34E-07
NONANE	8.48E-05	4.17E-09	1.10E-04	1.65E-08
H2S	3.82E-06	4.03E-06	3.51E-06	4.84E-06
COS	1.39E-06	5.55E-07	1.55E-06	8.76E-07
CH4S	1.32E-06	1.65E-07	1.62E-06	3.17E-07
ETSH	2.98E-05	1.25E-06	3.80E-05	2.75E-06
PN1THIOL	1.19E-06	3.43E-10	1.55E-06	1.16E-09
BU1THIOL	1.19E-06	3.37E-09	1.55E-06	9.14E-09
TEG	0	0	0	0
H2O	0	0	0	0
RATE, KG-MOL/HR	214.19	1012.46	4255.84	1286.58

Table B-3a Column summary of the deethanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	8.6	26.9	3406.6		3478.1L	5757.0V	
2	10.8	26.91	3293.1	5685.5			
3	13.4	26.92	3175.5	5572			
4	16.4	26.93	3070.3	5454.4			
5	19.3	26.94	2986.2	5349.2			
6	21.9	26.95	2923.4	5265.1			
7	24.1	26.96	2875.7	5202.3			
8	25.9	26.97	2833	5154.6			
9	27.5	26.98	2781	5111.9			
10	29.1	26.99	2694.8	5059.9			
11	31.4	27	2506.7	4973.7			
12	36	27.01	6295.2	4785.6	4211.4M		
13	36.5	27.02	6324.6	4362.7			
14	36.7	27.03	6335.5	4392.1			
15	36.9	27.04	6339.6	4403			
16	37.1	27.05	6341	4407.1			
17	37.4	27.06	6340.8	4408.5			
18	37.9	27.07	6339.2	4408.3			
19	38.6	27.08	6336.3	4406.7			
20	39.6	27.09	6332.5	4403.8			
21	41.2	27.11	6329.9	4400			
22	43.5	27.12	6332.8	4397.4			
23	46.5	27.13	6349.3	4400.3			
24	50.4	27.14	6391.1	4416.9			
25	55	27.15	6467.1	4458.6			
26	59.8	27.16	6580.7	4534.6			
27	64.6	27.17	6723.5	4648.2			
28	68.9	27.18	6880.3	4791			
29	72.5	27.19	7035	4947.9			
30	75.5	27.2	7174.8	5102.5			
31	77.7	27.21	7292.6	5242.3			
32	79.4	27.22	7386.6	5360.1			
33	80.7	27.23	7458	5454.1			
34	81.8	27.24	7508.7	5525.5			
35	82.6	27.25	7539.1	5576.2			
36	83.6	27.26	7546.7	5606.6			
37	84.7	27.27	7520.4	5614.2			
38	86.6	27.28	7425	5587.9			
39	90.1	27.29	7138	5492.6			
40R	97.9	27.3		5205.6		1932.5L	0.016

Table B-3b Molar composition of the deethanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0.00146	0.00291	0.00124	0.00253	0.00116	0.00243
METHANE	0.00322	0.01105	0.00275	0.00966	0.00264	0.00951
ETHANE	0.9269	0.95799	0.88572	0.94099	0.83547	0.91695
PROPANE	0.0684	0.02804	0.11024	0.0468	0.16062	0.07109
IBUTANE	1.05E-05	2.09E-06	3.15E-05	6.52E-06	8.71E-05	1.89E-05
BUTANE	1.94E-06	3.35E-07	6.68E-06	1.20E-06	2.13E-05	3.98E-06
IPENTANE	4.36E-10	3.64E-11	3.00E-09	2.63E-10	1.91E-08	1.77E-09
PENTANE	8.67E-11	6.28E-12	6.83E-10	5.23E-11	4.94E-09	4.04E-10
HEXANE	1.02E-15	2.52E-17	2.33E-14	6.12E-16	4.88E-13	1.38E-14
HEPTANE	2.17E-19	2.70E-21	9.87E-18	1.30E-19	4.11E-16	5.83E-18
OCTANE	1.79E-23	1.08E-25	1.68E-21	1.07E-23	1.46E-19	9.94E-22
NONANE	3.98E-29	8.19E-32	1.07E-26	2.38E-29	2.61E-24	6.34E-27
H2S	5.78E-06	6.15E-06	5.50E-06	5.99E-06	5.21E-06	5.83E-06
COS	1.79E-06	1.02E-06	2.31E-06	1.35E-06	2.73E-06	1.64E-06
CH4S	1.03E-08	3.04E-09	2.18E-08	6.64E-09	4.24E-08	1.34E-08
ETSH	1.39E-10	1.88E-11	5.99E-10	8.50E-11	2.37E-09	3.56E-10
PN1THIOL	8.00E-26	5.38E-28	6.73E-24	4.79E-26	5.20E-22	3.98E-24
BU1THIOL	1.35E-19	3.86E-21	2.72E-18	8.07E-20	5.19E-17	1.61E-18
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3406.58	5756.95	3293.09	5685.47	3175.54	5571.99

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0.00111	0.0024	0.00108	0.0024	0.00106	0.0024
METHANE	0.00259	0.00959	0.00256	0.0097	0.00254	0.00979
ETHANE	0.78127	0.88836	0.72925	0.85829	0.68418	0.83002
PROPANE	0.21474	0.09958	0.2664	0.12944	0.31058	0.15738
IBUTANE	2.23E-04	5.09E-05	5.30E-04	1.28E-04	0.00118	3.01E-04
BUTANE	6.28E-05	1.24E-05	1.73E-04	3.61E-05	4.49E-04	9.83E-05
IPENTANE	1.12E-07	1.11E-08	6.01E-07	6.41E-08	3.00E-06	3.41E-07
PENTANE	3.26E-08	2.88E-09	1.97E-07	1.87E-08	1.10E-06	1.12E-07
HEXANE	9.23E-12	2.84E-13	1.58E-10	5.30E-12	2.45E-09	8.94E-11
HEPTANE	1.55E-14	2.39E-16	5.26E-13	8.89E-15	1.62E-11	2.98E-13
OCTANE	1.15E-17	8.50E-20	8.25E-16	6.62E-18	5.36E-14	4.68E-16
NONANE	5.62E-22	1.52E-24	1.06E-19	3.23E-22	1.79E-17	6.04E-20
H2S	4.91E-06	5.66E-06	4.62E-06	5.50E-06	4.38E-06	5.35E-06
COS	3.02E-06	1.88E-06	3.14E-06	2.02E-06	3.12E-06	2.07E-06
CH4S	7.67E-08	2.52E-08	1.30E-07	4.45E-08	2.09E-07	7.43E-08
ETSH	8.63E-09	1.38E-09	2.90E-08	4.96E-09	9.07E-08	1.64E-08
PN1THIOL	3.63E-20	3.03E-22	2.27E-18	2.08E-20	1.29E-16	1.29E-18
BU1THIOL	9.26E-16	3.02E-17	1.53E-14	5.31E-16	2.37E-13	8.70E-15
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3070.28	5454.44	2986.2	5349.18	2923.41	5265.1

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0.00104	0.00241	0.00102	0.00241	0.00101	0.00241
METHANE	0.00252	0.00987	0.00251	0.00993	0.00249	0.00998
ETHANE	0.64804	0.80591	0.62026	0.78688	0.59862	0.77264
PROPANE	0.34475	0.18089	0.36838	0.19875	0.38144	0.21063
IBUTANE	0.00251	6.65E-04	0.00511	0.0014	0.01004	0.00283
BUTANE	0.00111	2.52E-04	0.00261	6.17E-04	0.00597	0.00145
IPENTANE	1.41E-05	1.69E-06	6.31E-05	7.87E-06	2.71E-04	3.50E-05
PENTANE	5.72E-06	6.17E-07	2.83E-05	3.19E-06	1.34E-04	1.57E-05
HEXANE	3.53E-08	1.38E-09	4.77E-07	1.97E-08	6.13E-06	2.64E-07
HEPTANE	4.62E-10	9.12E-12	1.23E-08	2.58E-10	3.12E-07	6.83E-09
OCTANE	3.22E-12	3.01E-14	1.81E-10	1.79E-12	9.63E-09	1.00E-10
NONANE	2.73E-15	1.01E-17	3.83E-13	1.52E-15	5.04E-11	2.12E-13
H2S	4.18E-06	5.22E-06	4.02E-06	5.12E-06	3.90E-06	5.04E-06
COS	2.99E-06	2.05E-06	2.82E-06	1.97E-06	2.61E-06	1.86E-06
CH4S	3.20E-07	1.18E-07	4.73E-07	1.79E-07	6.79E-07	2.63E-07
ETSH	2.67E-07	5.10E-08	7.52E-07	1.49E-07	2.03E-06	4.17E-07
PN1THIOL	6.73E-15	7.25E-17	3.28E-13	3.76E-15	1.52E-11	1.82E-13
BU1THIOL	3.45E-12	1.33E-13	4.78E-11	1.92E-12	6.35E-10	2.65E-11
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2875.67	5202.31	2832.98	5154.57	2781.04	5111.88

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.97E-04	0.00242	9.78E-04	0.00244	9.40E-04	0.00248
METHANE	0.00247	0.01005	0.00244	0.01017	0.00235	0.01045
ETHANE	0.57983	0.76231	0.55898	0.75496	0.52499	0.75093
PROPANE	0.3827	0.21619	0.36756	0.214	0.32277	0.19944
IBUTANE	0.01902	0.00552	0.03421	0.01031	0.05558	0.01792
BUTANE	0.01317	0.00328	0.02769	0.00713	0.05319	0.0145
IPENTANE	0.00112	1.49E-04	0.0044	6.06E-04	0.01581	0.0023
PENTANE	6.11E-04	7.37E-05	0.00265	3.31E-04	0.01058	0.00139
HEXANE	7.52E-05	3.37E-06	8.70E-04	4.08E-05	0.00908	4.56E-04
HEPTANE	7.53E-06	1.72E-07	1.72E-04	4.08E-06	0.00356	8.99E-05
OCTANE	4.88E-07	5.29E-09	2.34E-05	2.65E-07	0.00102	1.22E-05
NONANE	6.25E-09	2.77E-11	7.22E-07	3.38E-09	7.49E-05	3.78E-07
H2S	3.80E-06	4.98E-06	3.70E-06	4.95E-06	3.55E-06	4.94E-06
COS	2.39E-06	1.74E-06	2.13E-06	1.60E-06	1.81E-06	1.44E-06
CH4S	9.43E-07	3.74E-07	1.26E-06	5.11E-07	1.56E-06	6.59E-07
ETSH	5.30E-06	1.12E-06	1.32E-05	2.87E-06	3.05E-05	6.92E-06
PN1THIOL	6.67E-10	8.34E-12	2.77E-08	3.61E-10	1.06E-06	1.45E-08
BU1THIOL	8.09E-09	3.49E-10	9.78E-08	4.38E-09	1.08E-06	5.12E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2694.83	5059.94	2506.7	4973.73	6295.17	4785.59

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	5.13E-04	0.00136	2.79E-04	7.39E-04	1.52E-04	4.02E-04
METHANE	7.66E-04	0.00339	2.49E-04	0.0011	8.09E-05	3.58E-04
ETHANE	0.5271	0.75684	0.52718	0.75831	0.52613	0.75787
PROPANE	0.32306	0.20133	0.3238	0.20256	0.32506	0.20391
IBUTANE	0.05547	0.0181	0.05546	0.01819	0.05551	0.01828
BUTANE	0.05307	0.01466	0.05305	0.01474	0.05309	0.01481
IPENTANE	0.01576	0.00233	0.01575	0.00235	0.01575	0.00236
PENTANE	0.01054	0.00141	0.01053	0.00142	0.01053	0.00142
HEXANE	0.00904	4.64E-04	0.00903	4.68E-04	0.00903	4.71E-04
HEPTANE	0.00355	9.19E-05	0.00354	9.29E-05	0.00354	9.35E-05
OCTANE	0.00101	1.26E-05	0.00101	1.27E-05	0.00101	1.28E-05
NONANE	7.46E-05	3.90E-07	7.45E-05	3.96E-07	7.44E-05	3.99E-07
H2S	3.66E-06	5.11E-06	3.75E-06	5.26E-06	3.85E-06	5.39E-06
COS	1.82E-06	1.46E-06	1.84E-06	1.47E-06	1.86E-06	1.49E-06
CH4S	1.56E-06	6.66E-07	1.56E-06	6.69E-07	1.56E-06	6.73E-07
ETSH	3.05E-05	7.00E-06	3.04E-05	7.04E-06	3.05E-05	7.08E-06
PN1THIOL	1.05E-06	1.49E-08	1.05E-06	1.51E-08	1.05E-06	1.52E-08
BU1THIOL	1.08E-06	5.22E-08	1.08E-06	5.27E-08	1.08E-06	5.30E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6324.63	4362.68	6335.45	4392.14	6339.61	4402.97

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	8.25E-05	2.19E-04	4.47E-05	1.19E-04	2.42E-05	6.43E-05
METHANE	2.63E-05	1.16E-04	8.54E-06	3.78E-05	2.77E-06	1.23E-05
ETHANE	0.52399	0.75613	0.52039	0.75298	0.51466	0.74782
PROPANE	0.32712	0.20584	0.3304	0.20884	0.33558	0.21355
IBUTANE	0.05562	0.01839	0.0558	0.01855	0.05609	0.01881
BUTANE	0.05317	0.0149	0.05331	0.01502	0.05353	0.01522
IPENTANE	0.01576	0.00238	0.01578	0.0024	0.01582	0.00243
PENTANE	0.01054	0.00143	0.01056	0.00145	0.01058	0.00147
HEXANE	0.00903	4.75E-04	0.00904	4.80E-04	0.00905	4.87E-04
HEPTANE	0.00354	9.43E-05	0.00354	9.54E-05	0.00354	9.70E-05
OCTANE	0.00101	1.29E-05	0.00101	1.31E-05	0.00101	1.33E-05
NONANE	7.44E-05	4.04E-07	7.44E-05	4.09E-07	7.45E-05	4.18E-07
H2S	3.93E-06	5.52E-06	4.01E-06	5.64E-06	4.07E-06	5.75E-06
COS	1.89E-06	1.52E-06	1.94E-06	1.57E-06	2.01E-06	1.64E-06
CH4S	1.56E-06	6.77E-07	1.57E-06	6.83E-07	1.58E-06	6.93E-07
ETSH	3.05E-05	7.12E-06	3.06E-05	7.19E-06	3.07E-05	7.29E-06
PN1THIOL	1.05E-06	1.53E-08	1.05E-06	1.55E-08	1.05E-06	1.58E-08
BU1THIOL	1.08E-06	5.34E-08	1.08E-06	5.39E-08	1.08E-06	5.46E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6340.99	4407.12	6340.77	4408.51	6339.17	4408.29

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	19		20		21	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.30E-05	3.48E-05	6.96E-06	1.87E-05	3.69E-06	1.00E-05
METHANE	8.97E-07	3.98E-06	2.90E-07	1.29E-06	9.32E-08	4.17E-07
ETHANE	0.50571	0.73965	0.4921	0.72693	0.47206	0.70753
PROPANE	0.34362	0.22096	0.35586	0.23246	0.37393	0.24998
IBUTANE	0.05653	0.01921	0.0572	0.01983	0.05817	0.02076
BUTANE	0.05388	0.01553	0.0544	0.01601	0.05516	0.01673
IPENTANE	0.01588	0.00248	0.01598	0.00256	0.01611	0.00268
PENTANE	0.01062	0.0015	0.01068	0.00155	0.01076	0.00163
HEXANE	0.00906	4.99E-04	0.00909	5.18E-04	0.00912	5.46E-04
HEPTANE	0.00355	9.96E-05	0.00355	1.04E-04	0.00356	1.10E-04
OCTANE	0.00101	1.37E-05	0.00101	1.43E-05	0.00102	1.51E-05
NONANE	7.45E-05	4.32E-07	7.46E-05	4.54E-07	7.46E-05	4.88E-07
H2S	4.11E-06	5.84E-06	4.10E-06	5.90E-06	4.05E-06	5.90E-06
COS	2.13E-06	1.75E-06	2.30E-06	1.92E-06	2.55E-06	2.16E-06
CH4S	1.60E-06	7.09E-07	1.62E-06	7.32E-07	1.66E-06	7.68E-07
ETSH	3.09E-05	7.45E-06	3.11E-05	7.69E-06	3.15E-05	8.07E-06
PN1THIOL	1.05E-06	1.62E-08	1.05E-06	1.69E-08	1.06E-06	1.80E-08
BU1THIOL	1.08E-06	5.58E-08	1.08E-06	5.76E-08	1.09E-06	6.03E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6336.25	4406.68	6332.53	4403.77	6329.86	4400.05

TRAY	22		23		24	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.93E-06	5.31E-06	9.95E-07	2.78E-06	5.03E-07	1.43E-06
METHANE	2.99E-08	1.34E-07	9.53E-09	4.30E-08	3.03E-09	1.37E-08
ETHANE	0.44382	0.67881	0.40633	0.63804	0.36007	0.58342
PROPANE	0.39951	0.27593	0.43368	0.3128	0.47619	0.36224
IBUTANE	0.05949	0.02213	0.06116	0.02405	0.0631	0.02658
BUTANE	0.05618	0.01779	0.05745	0.01928	0.05891	0.02126
IPENTANE	0.01628	0.00286	0.01648	0.00311	0.01669	0.00345
PENTANE	0.01087	0.00174	0.011	0.0019	0.01113	0.00212
HEXANE	0.00916	5.89E-04	0.0092	6.51E-04	0.00922	7.36E-04
HEPTANE	0.00357	1.19E-04	0.00357	1.32E-04	0.00357	1.51E-04
OCTANE	0.00102	1.65E-05	0.00102	1.85E-05	0.00101	2.14E-05
NONANE	7.47E-05	5.41E-07	7.46E-05	6.20E-07	7.42E-05	7.36E-07
H2S	3.91E-06	5.81E-06	3.68E-06	5.62E-06	3.36E-06	5.28E-06
COS	2.89E-06	2.52E-06	3.34E-06	3.02E-06	3.88E-06	3.66E-06
CH4S	1.71E-06	8.21E-07	1.78E-06	8.96E-07	1.86E-06	9.95E-07
ETSH	3.21E-05	8.61E-06	3.27E-05	9.39E-06	3.35E-05	1.04E-05
PN1THIOL	1.06E-06	1.97E-08	1.06E-06	2.21E-08	1.05E-06	2.56E-08
BU1THIOL	1.09E-06	6.45E-08	1.09E-06	7.05E-08	1.10E-06	7.87E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6332.79	4397.38	6349.34	4400.3	6391.09	4416.86

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	25		26		27	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.49E-07	7.21E-07	1.21E-07	3.55E-07	5.79E-08	1.71E-07
METHANE	9.58E-10	4.34E-09	3.04E-10	1.37E-09	9.64E-11	4.30E-10
ETHANE	0.30759	0.51545	0.25306	0.43799	0.20096	0.3576
PROPANE	0.52485	0.42384	0.5759	0.49413	0.62509	0.56715
IBUTANE	0.06515	0.02969	0.06711	0.03317	0.06885	0.03673
BUTANE	0.06041	0.02369	0.06181	0.02642	0.063	0.02922
IPENTANE	0.01687	0.00387	0.01701	0.00436	0.01709	0.00486
PENTANE	0.01124	0.00239	0.01132	0.0027	0.01137	0.00302
HEXANE	0.00921	8.45E-04	0.00917	9.74E-04	0.00909	0.00111
HEPTANE	0.00355	1.76E-04	0.00352	2.06E-04	0.00347	2.39E-04
OCTANE	0.001	2.52E-05	9.91E-04	3.00E-05	9.74E-04	3.54E-05
NONANE	7.35E-05	8.97E-07	7.24E-05	1.10E-06	7.11E-05	1.34E-06
H2S	2.95E-06	4.80E-06	2.49E-06	4.20E-06	2.03E-06	3.52E-06
COS	4.46E-06	4.43E-06	5.04E-06	5.25E-06	5.54E-06	6.04E-06
CH4S	1.95E-06	1.12E-06	2.04E-06	1.26E-06	2.12E-06	1.40E-06
ETSH	3.42E-05	1.17E-05	3.49E-05	1.32E-05	3.55E-05	1.47E-05
PN1THIOL	1.05E-06	3.03E-08	1.03E-06	3.61E-08	1.02E-06	4.26E-08
BU1THIOL	1.09E-06	8.93E-08	1.08E-06	1.02E-07	1.07E-06	1.15E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6467.1	4458.61	6580.69	4534.61	6723.47	4648.21

TRAY	28		29		30	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.73E-08	8.12E-08	1.27E-08	3.79E-08	5.90E-09	1.75E-08
METHANE	3.07E-11	1.35E-10	9.86E-12	4.28E-11	3.18E-12	1.36E-11
ETHANE	0.15475	0.28137	0.11619	0.21456	0.08551	0.15959
PROPANE	0.66903	0.63644	0.70586	0.69718	0.73517	0.7471
IBUTANE	0.0703	0.04008	0.07147	0.043	0.07243	0.04544
BUTANE	0.06394	0.03186	0.06467	0.03416	0.06524	0.03607
IPENTANE	0.01712	0.00533	0.01712	0.00575	0.01711	0.00609
PENTANE	0.01138	0.00333	0.01137	0.0036	0.01135	0.00383
HEXANE	0.009	0.00125	0.00891	0.00137	0.00882	0.00147
HEPTANE	0.00342	2.72E-04	0.00337	3.02E-04	0.00333	3.28E-04
OCTANE	9.57E-04	4.09E-05	9.40E-04	4.62E-05	9.26E-04	5.08E-05
NONANE	6.97E-05	1.60E-06	6.83E-05	1.84E-06	6.72E-05	2.06E-06
H2S	1.61E-06	2.85E-06	1.24E-06	2.23E-06	9.32E-07	1.70E-06
COS	5.92E-06	6.71E-06	6.17E-06	7.21E-06	6.28E-06	7.51E-06
CH4S	2.19E-06	1.54E-06	2.26E-06	1.66E-06	2.31E-06	1.76E-06
ETSH	3.59E-05	1.61E-05	3.63E-05	1.73E-05	3.65E-05	1.83E-05
PN1THIOL	9.99E-07	4.93E-08	9.83E-07	5.56E-08	9.68E-07	6.11E-08
BU1THIOL	1.06E-06	1.29E-07	1.05E-06	1.41E-07	1.04E-06	1.51E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6880.34	4790.99	7034.99	4947.86	7174.76	5102.5

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	31		32		33	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.72E-09	8.07E-09	1.25E-09	3.70E-09	5.73E-10	1.69E-09
METHANE	1.03E-12	4.35E-12	3.34E-13	1.40E-12	1.09E-13	4.53E-13
ETHANE	0.06196	0.11644	0.04434	0.08372	0.03141	0.05949
PROPANE	0.75752	0.78613	0.77383	0.81541	0.78498	0.8365
IBUTANE	0.07329	0.04746	0.0742	0.04918	0.07535	0.05082
BUTANE	0.06573	0.03761	0.06623	0.03888	0.06691	0.04003
IPENTANE	0.01709	0.00636	0.01708	0.00658	0.0171	0.00675
PENTANE	0.01134	0.00401	0.01133	0.00414	0.01133	0.00426
HEXANE	0.00875	0.00156	0.0087	0.00162	0.00867	0.00167
HEPTANE	0.00329	3.50E-04	0.00326	3.67E-04	0.00324	3.80E-04
OCTANE	9.14E-04	5.47E-05	9.05E-04	5.77E-05	8.98E-04	6.02E-05
NONANE	6.62E-05	2.25E-06	6.55E-05	2.40E-06	6.50E-05	2.52E-06
H2S	6.91E-07	1.27E-06	5.06E-07	9.32E-07	3.66E-07	6.77E-07
COS	6.28E-06	7.63E-06	6.17E-06	7.60E-06	5.99E-06	7.43E-06
CH4S	2.36E-06	1.85E-06	2.41E-06	1.93E-06	2.47E-06	2.00E-06
ETSH	3.67E-05	1.91E-05	3.69E-05	1.98E-05	3.72E-05	2.04E-05
PN1THIOL	9.56E-07	6.57E-08	9.47E-07	6.94E-08	9.40E-07	7.23E-08
BU1THIOL	1.03E-06	1.60E-07	1.02E-06	1.66E-07	1.02E-06	1.71E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7292.59	5242.28	7386.63	5360.11	7458	5454.15

TRAY	34		35		36	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.62E-10	7.73E-10	1.20E-10	3.53E-10	5.44E-11	1.60E-10
METHANE	3.56E-14	1.47E-13	1.17E-14	4.80E-14	3.82E-15	1.57E-14
ETHANE	0.02204	0.04184	0.0153	0.02912	0.01049	0.02002
PROPANE	0.79151	0.85074	0.79331	0.85893	0.78928	0.86099
IBUTANE	0.07706	0.05268	0.07982	0.05519	0.0844	0.05901
BUTANE	0.06798	0.04128	0.0699	0.04296	0.07343	0.04567
IPENTANE	0.01716	0.00691	0.01733	0.00708	0.01775	0.00736
PENTANE	0.01136	0.00435	0.01146	0.00446	0.0117	0.00462
HEXANE	0.00865	0.00171	0.00865	0.00175	0.00871	0.0018
HEPTANE	0.00323	3.91E-04	0.00323	4.01E-04	0.00324	4.12E-04
OCTANE	8.94E-04	6.22E-05	8.92E-04	6.40E-05	8.93E-04	6.59E-05
NONANE	6.46E-05	2.62E-06	6.44E-05	2.71E-06	6.45E-05	2.80E-06
H2S	2.62E-07	4.86E-07	1.86E-07	3.45E-07	1.30E-07	2.42E-07
COS	5.73E-06	7.17E-06	5.41E-06	6.81E-06	5.04E-06	6.38E-06
CH4S	2.54E-06	2.09E-06	2.64E-06	2.19E-06	2.78E-06	2.32E-06
ETSH	3.76E-05	2.10E-05	3.85E-05	2.17E-05	4.01E-05	2.29E-05
PN1THIOL	9.36E-07	7.46E-08	9.34E-07	7.67E-08	9.36E-07	7.89E-08
BU1THIOL	1.01E-06	1.76E-07	1.01E-06	1.80E-07	1.02E-06	1.85E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7508.66	5525.52	7539.13	5576.18	7546.72	5606.64

Table B-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	37		38		39	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.46E-11	7.26E-11	1.09E-11	3.24E-11	4.66E-12	1.41E-11
METHANE	1.25E-15	5.13E-15	4.06E-16	1.67E-15	1.29E-16	5.36E-16
ETHANE	0.00706	0.01355	0.00461	0.00894	0.00286	0.00567
PROPANE	0.77665	0.85548	0.74979	0.8388	0.69757	0.80356
IBUTANE	0.09194	0.06519	0.10389	0.07525	0.12115	0.09112
BUTANE	0.07997	0.05046	0.09179	0.05915	0.11178	0.07476
IPENTANE	0.01883	0.00794	0.02166	0.00935	0.02895	0.01301
PENTANE	0.01236	0.00496	0.01414	0.00581	0.01898	0.0081
HEXANE	0.0089	0.00188	0.00964	0.00211	0.01302	0.003
HEPTANE	0.00327	4.28E-04	0.00344	4.65E-04	0.00442	6.34E-04
OCTANE	9.00E-04	6.85E-05	9.26E-04	7.35E-05	0.00112	9.52E-05
NONANE	6.48E-05	2.92E-06	6.62E-05	3.13E-06	7.63E-05	3.89E-06
H2S	8.92E-08	1.67E-07	5.95E-08	1.13E-07	3.78E-08	7.28E-08
COS	4.59E-06	5.87E-06	4.06E-06	5.27E-06	3.42E-06	4.57E-06
CH4S	2.96E-06	2.50E-06	3.18E-06	2.75E-06	3.43E-06	3.05E-06
ETSH	4.34E-05	2.51E-05	4.98E-05	2.94E-05	6.22E-05	3.79E-05
PN1THIOL	9.43E-07	8.19E-08	9.74E-07	8.81E-08	1.19E-06	1.15E-07
BU1THIOL	1.04E-06	1.93E-07	1.11E-06	2.14E-07	1.49E-06	3.03E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7520.37	5614.24	7425.04	5587.88	7138.04	5492.55

TRAY	40	
COMPONENT	X	Y
N2	0	0
CO2	1.80E-12	5.72E-12
METHANE	3.76E-17	1.63E-16
ETHANE	0.00159	0.00333
PROPANE	0.59694	0.73492
IBUTANE	0.14018	0.11409
BUTANE	0.14018	0.10123
IPENTANE	0.04625	0.02253
PENTANE	0.03128	0.01441
HEXANE	0.02854	0.00726
HEPTANE	0.0114	0.00182
OCTANE	0.00329	3.17E-04
NONANE	2.43E-04	1.43E-05
H2S	2.17E-08	4.38E-08
COS	2.61E-06	3.72E-06
CH4S	3.57E-06	3.38E-06
ETSH	8.37E-05	5.42E-05
PN1THIOL	3.42E-06	3.68E-07
BU1THIOL	3.42E-06	7.73E-07
TEG	0	0
H2O	0	0
RATE, KG-MOL/HR	1932.48	5205.56

Table B-4a Column summary of the depropanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	54.9	18.3	4798.2		4768.7L	5721.2V	
2	54.9	18.3	4798.2	5750.7			
3	54.9	18.31	4795.4	5750.7			
4	54.9	18.31	4797.4	5747.9			
5	55	18.32	4797.8	5750			
6	55	18.32	4798.2	5750.3			
7	55	18.32	4797.7	5750.7			
8	55.1	18.33	4795.5	5750.2			
9	55.2	18.33	4790.5	5748			
10	55.4	18.34	4781.7	5743.1			
11	55.6	18.34	4767.7	5734.3			
12	56	18.35	4746.3	5720.2			
13	56.6	18.35	4714.8	5698.8			
14	57.6	18.35	4670.4	5667.3			
15	58.9	18.36	4611.6	5622.9			
16	60.8	18.36	4540.1	5564.2			
17	63.2	18.37	4462	5492.6			
18	66.2	18.37	4386.2	5414.5			
19	69.5	18.37	4321.2	5338.8			
20	72.9	18.38	4270.8	5273.7			
21	76.1	18.38	4234.8	5223.3			
22	78.9	18.39	4209.3	5187.3			
23	81.3	18.39	3191.1	5161.8		999.6L	
24	83.3	18.39	3179.5	5143.2			
25	84.6	18.4	3171.3	5131.6			
26	85.3	18.4	3165	5123.4			
27	85.8	18.41	3160.1	5117.1			
28	86.2	18.41	3156.3	5112.2			
29	86.4	18.42	3153.3	5108.4			
30	86.6	18.42	3151.1	5105.4			
31	86.7	18.42	3149.4	5103.2			
32	86.8	18.43	3148.2	5101.6			
33	86.8	18.43	3147.4	5100.3			
34	86.9	18.44	3146.7	5099.5			
35	86.9	18.44	3146.2	5098.9			
36	87	18.44	3145.8	5098.3			
37	87	18.45	3145.3	5097.9			
38	87.1	18.45	3144.6	5097.4			
39	87.1	18.46	3143.7	5096.7			
40	87.1	18.46	3142.3	5095.8			
41	87.2	18.46	3140.3	5094.4			
42	87.3	18.47	3137.5	5092.5			
43	87.4	18.47	3133.5	5089.6			
44	87.5	18.48	3127.8	5085.6			
45	87.6	18.48	3119.8	5079.9			
46	87.9	18.49	3108.6	5072			
47	88.2	18.49	3092.5	5060.8			
48	88.6	18.49	3068	5044.7			
49	89.3	18.5	3025	5020.1			

Table B-4a (Continued) Column Summary of Depropanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
50	90.4	18.5	2931	4977.1			
51	92.6	18.51	4162.4	4883.2	2279.8M		
52	99.3	18.51	4218.3	3834.7			
53	104.4	18.51	4282.7	3890.6			
54	108.2	18.52	4338.6	3955			
55	110.7	18.52	4379.6	4010.9			
56	112.5	18.53	4407.1	4051.9			
57	113.7	18.53	4424.1	4079.4			
58	114.6	18.54	4434	4096.4			
59	115.2	18.54	4439.2	4106.3			
60	115.7	18.54	4441.8	4111.6			
61	116	18.55	4442.7	4114.1			
62	116.4	18.55	4442.8	4115			
63	116.6	18.56	4442.5	4115.1			
64	116.8	18.56	4441.9	4114.8			
65	117	18.56	4441.4	4114.2			
66	117.2	18.57	4440.8	4113.7			
67	117.4	18.57	4440.4	4113.2			
68	117.5	18.58	4440	4112.7			
69	117.6	18.58	4439.8	4112.4			
70	117.7	18.58	4439.6	4112.1			
71	117.8	18.59	4439.4	4111.9			
72	117.9	18.59	4439.3	4111.7			
73	118	18.6	4439.1	4111.6			
74	118.1	18.6	4438.9	4111.4			
75	118.2	18.61	4438.5	4111.2			
76	118.3	18.61	4437.9	4110.8			
77	118.4	18.61	4436.8	4110.2			
78	118.5	18.62	4435.2	4109.2			
79	118.7	18.62	4432.6	4107.5			
80	118.9	18.63	4428.7	4104.9			
81	119.1	18.63	4422.8	4101			
82	119.5	18.63	4414.1	4095.1			
83	120.1	18.64	4401.9	4086.5			
84	120.8	18.64	4384.8	4074.2			
85	121.9	18.65	4362.3	4057.2			
86	123.4	18.65	4334	4034.6			
87	125.4	18.65	4301.4	4006.3			
88	128	18.66	4270.9	3973.7			
89	131.2	18.66	4177.7	3943.2		60.2L	
90	134.9	18.67	4165.3	3910.2			
91	138.9	18.67	4159.6	3897.8			
92	143	18.68	4162.6	3892.1			
93	147	18.68	4165.5	3895.1			
94	151	18.68	4154.6	3898			
95	155.2	18.69	4111.6	3887.1			
96	160.1	18.69	4014.4	3844.1			
97	166.6	18.7	3845.5	3746.9			
98R	176	18.7		3578		267.5L	0.0164

Table B-4b Molar composition of the depropanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	2.94E-04	6.50E-04	1.59E-04	3.53E-04	1.09E-04	2.41E-04
PROPANE	0.99958	0.99928	0.99961	0.99953	0.99951	0.99956
IBUTANE	1.23E-04	6.46E-05	2.17E-04	1.14E-04	3.66E-04	1.92E-04
BUTANE	3.18E-06	1.43E-06	6.46E-06	2.89E-06	1.26E-05	5.63E-06
IPENTANE	2.71E-16	6.98E-17	9.25E-16	2.38E-16	3.04E-15	7.84E-16
PENTANE	9.85E-18	2.40E-18	3.54E-17	8.62E-18	1.23E-16	2.99E-17
HEXANE	0	0	0	0	0	0
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	3.82E-08	8.33E-08	2.10E-08	4.57E-08	1.44E-08	3.13E-08
COS	4.20E-06	5.10E-06	3.58E-06	4.35E-06	3.15E-06	3.83E-06
CH4S	4.74E-07	3.23E-07	6.59E-07	4.50E-07	8.86E-07	6.04E-07
ETSH	8.06E-11	3.30E-11	1.78E-10	7.28E-11	3.75E-10	1.54E-10
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4798.22	5721.22	4798.17	5750.74	4795.43	5750.69

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	8.96E-05	1.98E-04	8.24E-05	1.82E-04	7.97E-05	1.76E-04
PROPANE	0.99928	0.99947	0.99889	0.99928	0.99825	0.99895
IBUTANE	6.04E-04	3.17E-04	9.81E-04	5.15E-04	0.00158	8.30E-04
BUTANE	2.39E-05	1.07E-05	4.49E-05	2.02E-05	8.40E-05	3.77E-05
IPENTANE	9.90E-15	2.55E-15	3.21E-14	8.27E-15	1.04E-13	2.68E-14
PENTANE	4.21E-16	1.03E-16	1.44E-15	3.51E-16	4.92E-15	1.20E-15
HEXANE	0	0	0	0	0	0
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.18E-08	2.58E-08	1.09E-08	2.37E-08	1.05E-08	2.29E-08
COS	2.85E-06	3.47E-06	2.65E-06	3.23E-06	2.51E-06	3.06E-06
CH4S	1.16E-06	7.93E-07	1.50E-06	1.02E-06	1.91E-06	1.31E-06
ETSH	7.75E-10	3.18E-10	1.59E-09	6.52E-10	3.24E-09	1.33E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4797.43	5747.95	4797.83	5749.95	4798.17	5750.35

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	7.86E-05	1.74E-04	7.82E-05	1.73E-04	7.80E-05	1.73E-04
PROPANE	0.99723	0.99842	0.99559	0.99757	0.99296	0.9962
IBUTANE	0.00253	0.00133	0.00404	0.00212	0.00641	0.00338
BUTANE	1.57E-04	7.03E-05	2.91E-04	1.31E-04	5.39E-04	2.43E-04
IPENTANE	3.35E-13	8.66E-14	1.08E-12	2.80E-13	3.48E-12	9.03E-13
PENTANE	1.68E-14	4.10E-15	5.72E-14	1.40E-14	1.95E-13	4.77E-14
HEXANE	3.94E-30	3.73E-31	3.46E-29	3.28E-30	3.04E-28	2.89E-29
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.03E-08	2.25E-08	1.03E-08	2.24E-08	1.03E-08	2.24E-08
COS	2.42E-06	2.94E-06	2.35E-06	2.86E-06	2.30E-06	2.80E-06
CH4S	2.41E-06	1.65E-06	3.02E-06	2.07E-06	3.75E-06	2.57E-06
ETSH	6.59E-09	2.71E-09	1.34E-08	5.51E-09	2.71E-08	1.12E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4797.71	5750.69	4795.49	5750.23	4790.54	5748.01

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	7.79E-05	1.73E-04	7.77E-05	1.73E-04	7.74E-05	1.73E-04
PROPANE	0.98878	0.99401	0.98216	0.99053	0.97177	0.98501
IBUTANE	0.01014	0.00536	0.01593	0.00847	0.02482	0.01329
BUTANE	9.94E-04	4.50E-04	0.00183	8.29E-04	0.00332	0.00152
IPENTANE	1.12E-11	2.91E-12	3.57E-11	9.32E-12	1.13E-10	2.97E-11
PENTANE	6.60E-13	1.62E-13	2.23E-12	5.50E-13	7.47E-12	1.86E-12
HEXANE	2.65E-27	2.53E-28	2.30E-26	2.21E-27	1.97E-25	1.91E-26
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.02E-08	2.24E-08	1.02E-08	2.24E-08	1.02E-08	2.24E-08
COS	2.26E-06	2.76E-06	2.22E-06	2.73E-06	2.18E-06	2.70E-06
CH4S	4.63E-06	3.18E-06	5.66E-06	3.91E-06	6.86E-06	4.78E-06
ETSH	5.46E-08	2.26E-08	1.10E-07	4.55E-08	2.18E-07	9.13E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4781.74	5743.05	4767.66	5734.25	4746.25	5720.18

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	7.71E-05	1.73E-04	7.65E-05	1.73E-04	7.57E-05	1.74E-04
PROPANE	0.95576	0.97637	0.93173	0.96307	0.8971	0.94317
IBUTANE	0.03817	0.02068	0.05761	0.03177	0.08461	0.04786
BUTANE	0.00598	0.00277	0.01057	0.00498	0.0182	0.00878
IPENTANE	3.53E-10	9.41E-11	1.08E-09	2.94E-10	3.23E-09	9.00E-10
PENTANE	2.48E-11	6.22E-12	8.08E-11	2.06E-11	2.57E-10	6.71E-11
HEXANE	1.66E-24	1.64E-25	1.36E-23	1.38E-24	1.08E-22	1.13E-23
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.02E-08	2.24E-08	1.01E-08	2.25E-08	1.00E-08	2.25E-08
COS	2.14E-06	2.67E-06	2.08E-06	2.64E-06	2.01E-06	2.60E-06
CH4S	8.21E-06	5.77E-06	9.63E-06	6.88E-06	1.10E-05	8.05E-06
ETSH	4.29E-07	1.82E-07	8.30E-07	3.57E-07	1.57E-06	6.90E-07
PN1THIOL	0	0	0	0	0	0
BU1THIOL	2.52E-30	2.03E-31	2.53E-29	2.10E-30	2.43E-28	2.10E-29
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4714.78	5698.77	4670.38	5667.3	4611.65	5622.9

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	7.46E-05	1.74E-04	7.31E-05	1.74E-04	7.15E-05	1.75E-04
PROPANE	0.84985	0.91459	0.78989	0.87577	0.71998	0.82672
IBUTANE	0.1198	0.07014	0.16193	0.09903	0.20742	0.13346
BUTANE	0.03026	0.01509	0.04809	0.02501	0.07251	0.03963
IPENTANE	9.30E-09	2.68E-09	2.55E-08	7.69E-09	6.61E-08	2.10E-08
PENTANE	7.91E-10	2.13E-10	2.33E-09	6.54E-10	6.49E-09	1.92E-09
HEXANE	8.10E-22	8.91E-23	5.72E-21	6.69E-22	3.75E-20	4.71E-21
HEPTANE	0	0	5.39E-30	3.24E-31	6.82E-29	4.45E-30
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	9.92E-09	2.26E-08	9.78E-09	2.26E-08	9.60E-09	2.27E-08
COS	1.91E-06	2.54E-06	1.79E-06	2.46E-06	1.66E-06	2.38E-06
CH4S	1.21E-05	9.18E-06	1.28E-05	1.01E-05	1.29E-05	1.06E-05
ETSH	2.85E-06	1.30E-06	4.96E-06	2.36E-06	8.20E-06	4.09E-06
PN1THIOL	0	0	0	0	0	0
BU1THIOL	2.21E-27	2.02E-28	1.86E-26	1.83E-27	1.44E-25	1.53E-26
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4540.05	5564.17	4461.96	5492.57	4386.25	5414.47

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	19		20		21	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.97E-05	1.75E-04	6.79E-05	1.74E-04	6.61E-05	1.74E-04
PROPANE	0.64561	0.76981	0.57327	0.70949	0.50828	0.65096
IBUTANE	0.25093	0.17042	0.28718	0.20562	0.31263	0.23482
BUTANE	0.10336	0.05957	0.13945	0.08469	0.17898	0.11402
IPENTANE	1.61E-07	5.43E-08	3.69E-07	1.32E-07	8.02E-07	3.02E-07
PENTANE	1.71E-08	5.33E-09	4.22E-08	1.40E-08	9.87E-08	3.45E-08
HEXANE	2.26E-19	3.08E-20	1.26E-18	1.86E-19	6.56E-18	1.03E-18
HEPTANE	7.86E-28	5.60E-29	8.27E-27	6.44E-28	8.00E-26	6.76E-27
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	9.41E-09	2.27E-08	9.21E-09	2.28E-08	9.03E-09	2.27E-08
COS	1.53E-06	2.28E-06	1.40E-06	2.17E-06	1.29E-06	2.08E-06
CH4S	1.23E-05	1.07E-05	1.11E-05	1.01E-05	9.64E-06	9.17E-06
ETSH	1.28E-05	6.74E-06	1.89E-05	1.05E-05	2.66E-05	1.55E-05
PN1THIOL	0	0	0	0	0	0
BU1THIOL	1.01E-24	1.18E-25	6.47E-24	8.27E-25	3.81E-23	5.29E-24
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4321.21	5338.76	4270.82	5273.73	4234.75	5223.34

TRAY	22		23		24	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.46E-05	1.73E-04	6.33E-05	1.73E-04	6.21E-05	1.72E-04
PROPANE	0.45359	0.59844	0.40978	0.55429	0.37586	0.51895
IBUTANE	0.32616	0.25524	0.32864	0.26599	0.32203	0.26779
BUTANE	0.22014	0.14612	0.26146	0.17952	0.30197	0.21304
IPENTANE	1.66E-06	6.54E-07	3.29E-06	1.35E-06	6.34E-06	2.68E-06
PENTANE	2.20E-07	8.06E-08	4.69E-07	1.79E-07	9.65E-07	3.82E-07
HEXANE	3.20E-17	5.36E-18	1.49E-16	2.61E-17	6.63E-16	1.21E-16
HEPTANE	7.20E-25	6.53E-26	6.10E-24	5.87E-25	4.92E-23	4.97E-24
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	8.85E-09	2.27E-08	8.71E-09	2.26E-08	8.58E-09	2.25E-08
COS	1.20E-06	1.99E-06	1.13E-06	1.92E-06	1.08E-06	1.87E-06
CH4S	8.03E-06	7.93E-06	6.49E-06	6.61E-06	5.12E-06	5.35E-06
ETSH	3.59E-05	2.17E-05	4.67E-05	2.93E-05	5.91E-05	3.80E-05
PN1THIOL	0	0	0	0	0	0
BU1THIOL	2.09E-22	3.11E-23	1.08E-21	1.70E-22	5.35E-21	8.82E-22
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4209.3	5187.27	3191.09	5161.82	3179.45	5143.21

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	25		26		27	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.14E-05	1.71E-04	6.10E-05	1.71E-04	6.07E-05	1.71E-04
PROPANE	0.35622	0.49819	0.34483	0.48622	0.33814	0.47934
IBUTANE	0.31176	0.26355	0.30107	0.25711	0.29137	0.25042
BUTANE	0.33187	0.23803	0.35394	0.25644	0.3703	0.26999
IPENTANE	1.06E-05	4.57E-06	1.65E-05	7.20E-06	2.47E-05	1.09E-05
PENTANE	1.70E-06	6.89E-07	2.80E-06	1.15E-06	4.40E-06	1.82E-06
HEXANE	2.35E-15	4.40E-16	7.83E-15	1.48E-15	2.55E-14	4.87E-15
HEPTANE	3.05E-22	3.17E-23	1.80E-21	1.90E-22	1.04E-20	1.11E-21
OCTANE	6.01E-30	3.28E-31	6.68E-29	3.72E-30	7.31E-28	4.13E-29
NONANE	0	0	0	0	0	0
H2S	8.51E-09	2.25E-08	8.46E-09	2.24E-08	8.43E-09	2.24E-08
COS	1.05E-06	1.84E-06	1.03E-06	1.82E-06	1.02E-06	1.81E-06
CH4S	4.25E-06	4.50E-06	3.70E-06	3.96E-06	3.37E-06	3.62E-06
ETSH	6.98E-05	4.57E-05	7.91E-05	5.23E-05	8.73E-05	5.81E-05
PN1THIOL	0	0	1.49E-30	9.70E-32	1.41E-29	9.24E-31
BU1THIOL	2.08E-20	3.52E-21	7.60E-20	1.31E-20	2.71E-19	4.72E-20
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3171.29	5131.57	3165.02	5123.41	3160.1	5117.14

TRAY	28		29		30	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.05E-05	1.71E-04	6.03E-05	1.71E-04	6.03E-05	1.71E-04
PROPANE	0.33412	0.47533	0.33164	0.47295	0.33006	0.4715
IBUTANE	0.28317	0.24438	0.27649	0.23928	0.27117	0.23513
BUTANE	0.3825	0.28003	0.39164	0.2875	0.39852	0.29309
IPENTANE	3.60E-05	1.59E-05	5.17E-05	2.29E-05	7.34E-05	3.26E-05
PENTANE	6.76E-06	2.81E-06	1.02E-05	4.27E-06	1.53E-05	6.40E-06
HEXANE	8.22E-14	1.58E-14	2.64E-13	5.08E-14	8.44E-13	1.63E-13
HEPTANE	5.99E-20	6.44E-21	3.43E-19	3.70E-20	1.95E-18	2.12E-19
OCTANE	7.94E-27	4.52E-28	8.57E-26	4.90E-27	9.21E-25	5.29E-26
NONANE	0	0	0	0	0	0
H2S	8.41E-09	2.24E-08	8.40E-09	2.24E-08	8.39E-09	2.24E-08
COS	1.01E-06	1.80E-06	1.01E-06	1.80E-06	1.01E-06	1.80E-06
CH4S	3.16E-06	3.41E-06	3.04E-06	3.28E-06	2.96E-06	3.21E-06
ETSH	9.44E-05	6.31E-05	1.01E-04	6.75E-05	1.06E-04	7.14E-05
PN1THIOL	1.31E-28	8.70E-30	1.22E-27	8.12E-29	1.13E-26	7.54E-28
BU1THIOL	9.60E-19	1.68E-19	3.38E-18	5.93E-19	1.18E-17	2.09E-18
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3156.26	5112.22	3153.32	5108.38	3151.09	5105.44

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	31		32		33	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.02E-05	1.71E-04	6.02E-05	1.71E-04	6.01E-05	1.71E-04
PROPANE	0.32901	0.47058	0.32829	0.46998	0.32779	0.46957
IBUTANE	0.267	0.23182	0.26376	0.22924	0.26125	0.22723
BUTANE	0.40369	0.29729	0.40759	0.30045	0.41052	0.30283
IPENTANE	1.03E-04	4.60E-05	1.45E-04	6.44E-05	2.02E-04	9.00E-05
PENTANE	2.27E-05	9.52E-06	3.35E-05	1.41E-05	4.93E-05	2.08E-05
HEXANE	2.69E-12	5.21E-13	8.59E-12	1.66E-12	2.73E-11	5.30E-12
HEPTANE	1.11E-17	1.21E-18	6.30E-17	6.86E-18	3.57E-16	3.89E-17
OCTANE	9.87E-24	5.69E-25	1.06E-22	6.09E-24	1.13E-21	6.52E-23
NONANE	2.43E-30	7.43E-32	4.88E-29	1.50E-30	9.79E-28	3.01E-29
H2S	8.39E-09	2.24E-08	8.39E-09	2.24E-08	8.38E-09	2.24E-08
COS	1.01E-06	1.80E-06	1.01E-06	1.80E-06	1.01E-06	1.80E-06
CH4S	2.92E-06	3.16E-06	2.89E-06	3.13E-06	2.87E-06	3.12E-06
ETSH	1.11E-04	7.49E-05	1.16E-04	7.80E-05	1.20E-04	8.07E-05
PN1THIOL	1.04E-25	6.98E-27	9.63E-25	6.45E-26	8.86E-24	5.94E-25
BU1THIOL	4.14E-17	7.31E-18	1.44E-16	2.56E-17	5.04E-16	8.92E-17
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3149.44	5103.21	3148.23	5101.56	3147.36	5100.35

TRAY	34		35		36	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.01E-05	1.71E-04	6.01E-05	1.71E-04	6.01E-05	1.71E-04
PROPANE	0.32743	0.46929	0.32715	0.46908	0.32694	0.46892
IBUTANE	0.25932	0.22568	0.25783	0.22448	0.25667	0.22355
BUTANE	0.41271	0.30462	0.41433	0.30596	0.41551	0.30695
IPENTANE	2.81E-04	1.25E-04	3.90E-04	1.74E-04	5.41E-04	2.42E-04
PENTANE	7.23E-05	3.05E-05	1.06E-04	4.47E-05	1.55E-04	6.55E-05
HEXANE	8.70E-11	1.69E-11	2.77E-10	5.37E-11	8.79E-10	1.71E-10
HEPTANE	2.02E-15	2.20E-16	1.14E-14	1.25E-15	6.46E-14	7.05E-15
OCTANE	1.20E-20	6.96E-22	1.28E-19	7.42E-21	1.36E-18	7.90E-20
NONANE	1.96E-26	6.04E-28	3.92E-25	1.21E-26	7.84E-24	2.42E-25
H2S	8.38E-09	2.24E-08	8.38E-09	2.24E-08	8.38E-09	2.24E-08
COS	1.00E-06	1.80E-06	1.00E-06	1.80E-06	1.00E-06	1.80E-06
CH4S	2.86E-06	3.10E-06	2.85E-06	3.10E-06	2.85E-06	3.09E-06
ETSH	1.24E-04	8.32E-05	1.27E-04	8.55E-05	1.30E-04	8.75E-05
PN1THIOL	8.15E-23	5.47E-24	7.48E-22	5.03E-23	6.87E-21	4.62E-22
BU1THIOL	1.75E-15	3.11E-16	6.11E-15	1.08E-15	2.12E-14	3.77E-15
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3146.75	5099.48	3146.23	5098.87	3145.78	5098.35

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	37		38		39	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.01E-05	1.71E-04	6.01E-05	1.71E-04	6.01E-05	1.71E-04
PROPANE	0.32676	0.46881	0.3266	0.46871	0.32644	0.46863
IBUTANE	0.25575	0.22283	0.25501	0.22227	0.25439	0.2218
BUTANE	0.41632	0.30767	0.41682	0.30816	0.41705	0.30845
IPENTANE	7.50E-04	3.35E-04	0.00104	4.63E-04	0.00143	6.40E-04
PENTANE	2.27E-04	9.58E-05	3.31E-04	1.40E-04	4.83E-04	2.04E-04
HEXANE	2.79E-09	5.42E-10	8.85E-09	1.72E-09	2.81E-08	5.46E-09
HEPTANE	3.64E-13	3.98E-14	2.06E-12	2.25E-13	1.16E-11	1.27E-12
OCTANE	1.45E-17	8.41E-19	1.54E-16	8.94E-18	1.63E-15	9.49E-17
NONANE	1.56E-22	4.84E-24	3.12E-21	9.66E-23	6.21E-20	1.92E-21
H2S	8.38E-09	2.24E-08	8.38E-09	2.24E-08	8.38E-09	2.24E-08
COS	1.00E-06	1.80E-06	1.00E-06	1.80E-06	1.00E-06	1.80E-06
CH4S	2.84E-06	3.09E-06	2.84E-06	3.09E-06	2.84E-06	3.09E-06
ETSH	1.33E-04	8.93E-05	1.35E-04	9.10E-05	1.37E-04	9.24E-05
PN1THIOL	6.29E-20	4.24E-21	5.76E-19	3.88E-20	5.27E-18	3.56E-19
BU1THIOL	7.38E-14	1.31E-14	2.56E-13	4.55E-14	8.89E-13	1.58E-13
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3145.27	5097.9	3144.61	5097.39	3143.67	5096.73

TRAY	40		41		42	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.01E-05	1.71E-04	6.01E-05	1.71E-04	6.01E-05	1.71E-04
PROPANE	0.32627	0.46856	0.32606	0.46849	0.3258	0.46842
IBUTANE	0.25383	0.22142	0.25329	0.22106	0.25272	0.22072
BUTANE	0.41701	0.30857	0.41668	0.30852	0.41602	0.30827
IPENTANE	0.00198	8.85E-04	0.00273	0.00122	0.00376	0.00168
PENTANE	7.05E-04	2.98E-04	0.00103	4.35E-04	0.00149	6.33E-04
HEXANE	8.89E-08	1.73E-08	2.81E-07	5.48E-08	8.89E-07	1.73E-07
HEPTANE	6.52E-11	7.15E-12	3.67E-10	4.02E-11	2.06E-09	2.26E-10
OCTANE	1.73E-14	1.01E-15	1.83E-13	1.07E-14	1.93E-12	1.13E-13
NONANE	1.24E-18	3.83E-20	2.45E-17	7.62E-19	4.86E-16	1.51E-17
H2S	8.38E-09	2.24E-08	8.38E-09	2.24E-08	8.38E-09	2.25E-08
COS	1.00E-06	1.80E-06	1.00E-06	1.80E-06	1.00E-06	1.80E-06
CH4S	2.84E-06	3.09E-06	2.84E-06	3.08E-06	2.83E-06	3.08E-06
ETSH	1.39E-04	9.38E-05	1.41E-04	9.49E-05	1.42E-04	9.60E-05
PN1THIOL	4.82E-17	3.25E-18	4.40E-16	2.97E-17	4.01E-15	2.71E-16
BU1THIOL	3.08E-12	5.49E-13	1.07E-11	1.90E-12	3.69E-11	6.59E-12
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3142.32	5095.79	3140.35	5094.44	3137.52	5092.47

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	43		44		45	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.00E-05	1.71E-04	6.00E-05	1.71E-04	6.00E-05	1.71E-04
PROPANE	0.32545	0.46833	0.32497	0.46823	0.3243	0.46809
IBUTANE	0.25207	0.22035	0.25126	0.21992	0.25021	0.21938
BUTANE	0.41494	0.3078	0.41332	0.30705	0.41099	0.30594
IPENTANE	0.00517	0.00232	0.00709	0.00318	0.0097	0.00437
PENTANE	0.00217	9.22E-04	0.00315	0.00134	0.00456	0.00194
HEXANE	2.80E-06	5.48E-07	8.81E-06	1.73E-06	2.76E-05	5.42E-06
HEPTANE	1.15E-08	1.27E-09	6.43E-08	7.10E-09	3.58E-07	3.96E-08
OCTANE	2.04E-11	1.19E-12	2.14E-10	1.25E-11	2.24E-09	1.32E-10
NONANE	9.60E-15	3.00E-16	1.89E-13	5.92E-15	3.71E-12	1.16E-13
H2S	8.38E-09	2.25E-08	8.38E-09	2.25E-08	8.37E-09	2.25E-08
COS	1.00E-06	1.80E-06	1.00E-06	1.80E-06	1.00E-06	1.80E-06
CH4S	2.83E-06	3.08E-06	2.83E-06	3.08E-06	2.83E-06	3.08E-06
ETSH	1.44E-04	9.69E-05	1.45E-04	9.77E-05	1.45E-04	9.83E-05
PN1THIOL	3.64E-14	2.47E-15	3.30E-13	2.24E-14	2.98E-12	2.03E-13
BU1THIOL	1.28E-10	2.28E-11	4.39E-10	7.86E-11	1.51E-09	2.70E-10
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3133.49	5089.64	3127.8	5085.6	3119.84	5079.92

TRAY	46		47		48	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.00E-05	1.71E-04	5.99E-05	1.72E-04	5.99E-05	1.72E-04
PROPANE	0.32337	0.46791	0.32208	0.46766	0.32025	0.46733
IBUTANE	0.24882	0.21869	0.24694	0.21777	0.24432	0.21651
BUTANE	0.4077	0.30433	0.40311	0.30208	0.39671	0.29893
IPENTANE	0.01322	0.00597	0.01793	0.00812	0.02412	0.01099
PENTANE	0.00659	0.00281	0.00946	0.00405	0.0135	0.0058
HEXANE	8.60E-05	1.70E-05	2.66E-04	5.28E-05	8.17E-04	1.63E-04
HEPTANE	1.98E-06	2.20E-07	1.09E-05	1.22E-06	5.93E-05	6.68E-06
OCTANE	2.33E-08	1.38E-09	2.40E-07	1.43E-08	2.45E-06	1.47E-07
NONANE	7.22E-11	2.28E-12	1.39E-09	4.43E-11	2.66E-08	8.55E-10
H2S	8.37E-09	2.25E-08	8.36E-09	2.25E-08	8.35E-09	2.26E-08
COS	9.99E-07	1.80E-06	9.97E-07	1.80E-06	9.94E-07	1.80E-06
CH4S	2.82E-06	3.08E-06	2.82E-06	3.08E-06	2.81E-06	3.08E-06
ETSH	1.46E-04	9.87E-05	1.46E-04	9.89E-05	1.46E-04	9.88E-05
PN1THIOL	2.68E-11	1.83E-12	2.39E-10	1.64E-11	2.11E-09	1.46E-10
BU1THIOL	5.16E-09	9.28E-10	1.75E-08	3.17E-09	5.91E-08	1.07E-08
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3108.64	5071.96	3092.55	5060.76	3067.97	5044.67

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	49		50		51	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	5.97E-05	1.72E-04	5.95E-05	1.73E-04	5.89E-05	1.75E-04
PROPANE	0.31758	0.46692	0.3133	0.46656	0.30521	0.46686
IBUTANE	0.24057	0.21477	0.23472	0.21223	0.224	0.20817
BUTANE	0.38767	0.29451	0.37421	0.28813	0.35155	0.27814
IPENTANE	0.03208	0.01474	0.04185	0.0195	0.05236	0.02512
PENTANE	0.01908	0.00825	0.02652	0.0116	0.03551	0.01592
HEXANE	0.00247	4.99E-04	0.00728	0.0015	0.02047	0.00437
HEPTANE	3.18E-04	3.62E-05	0.00166	1.93E-04	0.0083	9.99E-04
OCTANE	2.46E-05	1.50E-06	2.41E-04	1.50E-05	0.00224	1.45E-04
NONANE	4.99E-07	1.63E-08	9.10E-06	3.03E-07	1.57E-04	5.46E-06
H2S	8.33E-09	2.26E-08	8.30E-09	2.28E-08	8.22E-09	2.30E-08
COS	9.89E-07	1.80E-06	9.83E-07	1.81E-06	9.70E-07	1.82E-06
CH4S	2.80E-06	3.07E-06	2.78E-06	3.07E-06	2.73E-06	3.06E-06
ETSH	1.45E-04	9.83E-05	1.42E-04	9.72E-05	1.37E-04	9.49E-05
PN1THIOL	1.83E-08	1.29E-09	1.56E-07	1.11E-08	1.26E-06	9.35E-08
BU1THIOL	1.97E-07	3.61E-08	6.41E-07	1.19E-07	2.00E-06	3.85E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3025.02	5020.09	2931.05	4977.14	4162.4	4883.16

TRAY	52		53		54	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	2.08E-05	6.39E-05	7.18E-06	2.26E-05	2.44E-06	7.78E-06
PROPANE	0.20431	0.33129	0.13103	0.22152	0.08158	0.14189
IBUTANE	0.24099	0.2431	0.24408	0.26125	0.23714	0.26427
BUTANE	0.43015	0.37087	0.49653	0.45581	0.5502	0.52727
IPENTANE	0.05537	0.02942	0.05756	0.03301	0.05913	0.03575
PENTANE	0.03745	0.01867	0.03889	0.02101	0.03996	0.02284
HEXANE	0.02081	0.00509	0.02099	0.00569	0.02109	0.00613
HEPTANE	0.00835	0.00118	0.00835	0.00134	0.00834	0.00145
OCTANE	0.00224	1.75E-04	0.00223	2.01E-04	0.00221	2.21E-04
NONANE	1.56E-04	6.75E-06	1.54E-04	7.89E-06	1.53E-04	8.78E-06
H2S	3.10E-09	8.93E-09	1.14E-09	3.36E-09	4.15E-10	1.24E-09
COS	5.32E-07	1.05E-06	2.81E-07	5.77E-07	1.44E-07	3.04E-07
CH4S	2.45E-06	2.96E-06	2.08E-06	2.66E-06	1.70E-06	2.26E-06
ETSH	1.54E-04	1.17E-04	1.68E-04	1.36E-04	1.79E-04	1.51E-04
PN1THIOL	1.26E-06	1.12E-07	1.26E-06	1.28E-07	1.25E-06	1.41E-07
BU1THIOL	2.04E-06	4.55E-07	2.05E-06	5.13E-07	2.06E-06	5.57E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4218.26	3834.71	4282.7	3890.57	4338.56	3955.02

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	55		56		57	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	8.23E-07	2.64E-06	2.75E-07	8.89E-07	9.14E-08	2.97E-07
PROPANE	0.04978	0.08825	0.02996	0.05381	0.01786	0.03237
IBUTANE	0.22406	0.25648	0.2078	0.24215	0.1903	0.22446
BUTANE	0.59309	0.5849	0.62766	0.63091	0.65606	0.668
IPENTANE	0.06027	0.03775	0.06111	0.0392	0.06176	0.04025
PENTANE	0.04076	0.02422	0.04138	0.02524	0.04188	0.02602
HEXANE	0.02116	0.00645	0.02121	0.00667	0.02125	0.00682
HEPTANE	0.00833	0.00154	0.00833	0.0016	0.00833	0.00164
OCTANE	0.0022	2.36E-04	0.0022	2.46E-04	0.0022	2.53E-04
NONANE	1.52E-04	9.44E-06	1.52E-04	9.90E-06	1.51E-04	1.02E-05
H2S	1.50E-10	4.49E-10	5.35E-11	1.62E-10	1.91E-11	5.78E-11
COS	7.30E-08	1.56E-07	3.65E-08	7.89E-08	1.81E-08	3.94E-08
CH4S	1.36E-06	1.84E-06	1.07E-06	1.47E-06	8.27E-07	1.15E-06
ETSH	1.87E-04	1.63E-04	1.94E-04	1.73E-04	2.00E-04	1.80E-04
PN1THIOL	1.25E-06	1.50E-07	1.24E-06	1.56E-07	1.24E-06	1.60E-07
BU1THIOL	2.07E-06	5.88E-07	2.08E-06	6.10E-07	2.08E-06	6.25E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4379.63	4010.88	4407.11	4051.94	4424.12	4079.43

TRAY	58		59		60	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	3.03E-08	9.88E-08	9.99E-09	3.27E-08	3.29E-09	1.08E-08
PROPANE	0.01057	0.01929	0.00623	0.01142	0.00365	0.00672
IBUTANE	0.17275	0.20549	0.15583	0.18651	0.1399	0.16822
BUTANE	0.67991	0.69851	0.70035	0.72416	0.71814	0.74617
IPENTANE	0.06228	0.04104	0.06271	0.04165	0.06307	0.04214
PENTANE	0.0423	0.02662	0.04265	0.02711	0.04296	0.02751
HEXANE	0.02129	0.00692	0.02133	0.007	0.02136	0.00706
HEPTANE	0.00834	0.00167	0.00834	0.00169	0.00835	0.00171
OCTANE	0.00219	2.58E-04	0.0022	2.62E-04	0.0022	2.65E-04
NONANE	1.51E-04	1.05E-05	1.51E-04	1.06E-05	1.51E-04	1.07E-05
H2S	6.77E-12	2.06E-11	2.40E-12	7.31E-12	8.48E-13	2.59E-12
COS	8.92E-09	1.95E-08	4.38E-09	9.63E-09	2.14E-09	4.73E-09
CH4S	6.37E-07	8.93E-07	4.88E-07	6.88E-07	3.72E-07	5.26E-07
ETSH	2.05E-04	1.86E-04	2.09E-04	1.91E-04	2.13E-04	1.96E-04
PN1THIOL	1.24E-06	1.63E-07	1.24E-06	1.65E-07	1.24E-06	1.67E-07
BU1THIOL	2.08E-06	6.36E-07	2.09E-06	6.44E-07	2.09E-06	6.50E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4433.96	4096.43	4439.25	4106.28	4441.78	4111.56

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	61		62		63	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.08E-09	3.55E-09	3.54E-10	1.17E-09	1.16E-10	3.82E-10
PROPANE	0.00213	0.00394	0.00124	0.0023	7.24E-04	0.00134
IBUTANE	0.12512	0.151	0.11156	0.13505	0.09922	0.12041
BUTANE	0.73381	0.76535	0.7477	0.78225	0.76006	0.79725
IPENTANE	0.06339	0.04254	0.06366	0.04289	0.06391	0.04319
PENTANE	0.04323	0.02785	0.04347	0.02814	0.04368	0.0284
HEXANE	0.0214	0.00711	0.02142	0.00714	0.02145	0.00718
HEPTANE	0.00836	0.00172	0.00837	0.00173	0.00838	0.00174
OCTANE	0.0022	2.67E-04	0.0022	2.69E-04	0.0022	2.71E-04
NONANE	1.51E-04	1.08E-05	1.51E-04	1.09E-05	1.51E-04	1.10E-05
H2S	2.99E-13	9.16E-13	1.05E-13	3.23E-13	3.71E-14	1.14E-13
COS	1.05E-09	2.31E-09	5.10E-10	1.13E-09	2.48E-10	5.51E-10
CH4S	2.83E-07	4.01E-07	2.14E-07	3.05E-07	1.62E-07	2.31E-07
ETSH	2.18E-04	2.01E-04	2.22E-04	2.06E-04	2.27E-04	2.11E-04
PN1THIOL	1.24E-06	1.68E-07	1.24E-06	1.70E-07	1.25E-06	1.70E-07
BU1THIOL	2.10E-06	6.55E-07	2.10E-06	6.59E-07	2.10E-06	6.62E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4442.69	4114.09	4442.81	4115.01	4442.46	4115.13

TRAY	64		65		66	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	3.78E-11	1.25E-10	1.23E-11	4.08E-11	4.01E-12	1.33E-11
PROPANE	4.20E-04	7.81E-04	2.43E-04	4.53E-04	1.41E-04	2.63E-04
IBUTANE	0.08805	0.10708	0.07799	0.09503	0.06896	0.08416
BUTANE	0.77109	0.8106	0.78092	0.82251	0.78968	0.83314
IPENTANE	0.06413	0.04345	0.06432	0.04368	0.0645	0.04389
PENTANE	0.04387	0.02863	0.04404	0.02884	0.0442	0.02902
HEXANE	0.02147	0.0072	0.0215	0.00723	0.02152	0.00725
HEPTANE	0.00839	0.00175	0.00839	0.00176	0.0084	0.00176
OCTANE	0.0022	2.72E-04	0.0022	2.73E-04	0.0022	2.74E-04
NONANE	1.51E-04	1.11E-05	1.51E-04	1.11E-05	1.52E-04	1.12E-05
H2S	1.30E-14	4.01E-14	4.58E-15	1.41E-14	1.61E-15	4.94E-15
COS	1.21E-10	2.68E-10	5.85E-11	1.30E-10	2.84E-11	6.32E-11
CH4S	1.23E-07	1.75E-07	9.25E-08	1.32E-07	6.97E-08	9.98E-08
ETSH	2.32E-04	2.16E-04	2.37E-04	2.21E-04	2.43E-04	2.27E-04
PN1THIOL	1.25E-06	1.71E-07	1.25E-06	1.72E-07	1.25E-06	1.72E-07
BU1THIOL	2.10E-06	6.65E-07	2.11E-06	6.68E-07	2.11E-06	6.70E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4441.93	4114.77	4441.36	4114.24	4440.84	4113.68

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	67		68		69	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.30E-12	4.33E-12	4.24E-13	1.41E-12	1.38E-13	4.58E-13
PROPANE	8.13E-05	1.52E-04	4.69E-05	8.78E-05	2.70E-05	5.06E-05
IBUTANE	0.06088	0.07442	0.05368	0.0657	0.04728	0.05793
BUTANE	0.79748	0.8426	0.8044	0.85103	0.81052	0.8585
IPENTANE	0.06467	0.04408	0.06483	0.04426	0.06498	0.04443
PENTANE	0.04434	0.02919	0.04447	0.02934	0.04459	0.02947
HEXANE	0.02153	0.00727	0.02155	0.00728	0.02156	0.0073
HEPTANE	0.0084	0.00177	0.00841	0.00177	0.00841	0.00178
OCTANE	0.0022	2.75E-04	0.00221	2.76E-04	0.00221	2.77E-04
NONANE	1.52E-04	1.12E-05	1.52E-04	1.12E-05	1.52E-04	1.13E-05
H2S	5.63E-16	1.73E-15	1.97E-16	6.08E-16	6.91E-17	2.13E-16
COS	1.37E-11	3.06E-11	6.65E-12	1.48E-11	3.22E-12	7.18E-12
CH4S	5.24E-08	7.52E-08	3.94E-08	5.66E-08	2.96E-08	4.25E-08
ETSH	2.49E-04	2.33E-04	2.56E-04	2.40E-04	2.64E-04	2.47E-04
PN1THIOL	1.25E-06	1.73E-07	1.25E-06	1.73E-07	1.25E-06	1.74E-07
BU1THIOL	2.11E-06	6.72E-07	2.11E-06	6.74E-07	2.11E-06	6.75E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4440.4	4113.16	4440.04	4112.71	4439.77	4112.36

TRAY	70		71		72	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	4.47E-14	1.49E-13	1.45E-14	4.82E-14	4.70E-15	1.56E-14
PROPANE	1.56E-05	2.92E-05	8.95E-06	1.68E-05	5.15E-06	9.66E-06
IBUTANE	0.04159	0.05101	0.03655	0.04487	0.0321	0.03943
BUTANE	0.81592	0.86512	0.82065	0.87095	0.82476	0.87606
IPENTANE	0.06514	0.0446	0.06532	0.04477	0.06553	0.04496
PENTANE	0.0447	0.0296	0.04481	0.02972	0.04493	0.02984
HEXANE	0.02157	0.00731	0.02159	0.00733	0.0216	0.00734
HEPTANE	0.00842	0.00178	0.00842	0.00179	0.00842	0.00179
OCTANE	0.00221	2.77E-04	0.00221	2.78E-04	0.00221	2.79E-04
NONANE	1.52E-04	1.13E-05	1.52E-04	1.13E-05	1.52E-04	1.13E-05
H2S	2.42E-17	7.46E-17	8.47E-18	2.61E-17	2.96E-18	9.14E-18
COS	1.55E-12	3.47E-12	7.50E-13	1.68E-12	3.62E-13	8.10E-13
CH4S	2.22E-08	3.20E-08	1.67E-08	2.40E-08	1.25E-08	1.80E-08
ETSH	2.73E-04	2.56E-04	2.83E-04	2.65E-04	2.94E-04	2.76E-04
PN1THIOL	1.25E-06	1.74E-07	1.25E-06	1.75E-07	1.25E-06	1.75E-07
BU1THIOL	2.11E-06	6.77E-07	2.12E-06	6.78E-07	2.12E-06	6.79E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4439.56	4112.08	4439.41	4111.88	4439.27	4111.72

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	73		74		75	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.52E-15	5.07E-15	4.93E-16	1.64E-15	1.60E-16	5.32E-16
PROPANE	2.96E-06	5.56E-06	1.70E-06	3.19E-06	9.73E-07	1.83E-06
IBUTANE	0.02816	0.03462	0.02468	0.03037	0.02161	0.02661
BUTANE	0.82828	0.8805	0.83122	0.8843	0.83357	0.88748
IPENTANE	0.06579	0.04518	0.06614	0.04547	0.06662	0.04584
PENTANE	0.04506	0.02997	0.04521	0.03011	0.04541	0.03028
HEXANE	0.02161	0.00735	0.02162	0.00736	0.02164	0.00738
HEPTANE	0.00843	0.00179	0.00843	0.0018	0.00843	0.0018
OCTANE	0.00221	2.79E-04	0.00221	2.80E-04	0.00221	2.80E-04
NONANE	1.52E-04	1.14E-05	1.52E-04	1.14E-05	1.52E-04	1.14E-05
H2S	1.04E-18	3.20E-18	3.62E-19	1.12E-18	1.27E-19	3.91E-19
COS	1.75E-13	3.91E-13	8.43E-14	1.89E-13	4.07E-14	9.10E-14
CH4S	9.35E-09	1.35E-08	7.00E-09	1.01E-08	5.24E-09	7.56E-09
ETSH	3.07E-04	2.88E-04	3.21E-04	3.02E-04	3.37E-04	3.17E-04
PN1THIOL	1.25E-06	1.75E-07	1.25E-06	1.76E-07	1.25E-06	1.76E-07
BU1THIOL	2.12E-06	6.81E-07	2.12E-06	6.82E-07	2.12E-06	6.83E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4439.12	4111.59	4438.89	4111.43	4438.51	4111.21

TRAY	76		77		78	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0 .
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	5.17E-17	1.72E-16	1.67E-17	5.58E-17	5.41E-18	1.81E-17
PROPANE	5.58E-07	1.05E-06	3.20E-07	6.03E-07	1.83E-07	3.45E-07
IBUTANE	0.01891	0.0233	0.01653	0.02038	0.01443	0.01781
BUTANE	0.83527	0.89002	0.83623	0.89187	0.83626	0.89291
IPENTANE	0.06731	0.04636	0.06831	0.0471	0.06977	0.04817
PENTANE	0.04568	0.03049	0.04605	0.03077	0.04658	0.03117
HEXANE	0.02166	0.00739	0.02169	0.00742	0.02173	0.00744
HEPTANE	0.00844	0.0018	0.00845	0.00181	0.00846	0.00181
OCTANE	0.00221	2.81E-04	0.00221	2.82E-04	0.00221	2.83E-04
NONANE	1.52E-04	1.15E-05	1.52E-04	1.15E-05	1.52E-04	1.15E-05
H2S	4.42E-20	1.37E-19	1.55E-20	4.78E-20	5.40E-21	1.67E-20
COS	1.96E-14	4.39E-14	9.44E-15	2.12E-14	4.55E-15	1.02E-14
CH4S	3.92E-09	5.66E-09	2.93E-09	4.23E-09	2.19E-09	3.16E-09
ETSH	3.55E-04	3.34E-04	3.76E-04	3.54E-04	4.00E-04	3.77E-04
PN1THIOL	1.25E-06	1.76E-07	1.25E-06	1.77E-07	1.25E-06	1.77E-07
BU1THIOL	2.12E-06	6.85E-07	2.12E-06	6.86E-07	2.13E-06	6.89E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4437.88	4110.83	4436.84	4110.19	4435.18	4109.16

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	79		80		81	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.75E-18	5.84E-18	5.65E-19	1.89E-18	1.82E-19	6.10E-19
PROPANE	1.05E-07	1.98E-07	5.98E-08	1.13E-07	3.40E-08	6.45E-08
IBUTANE	0.01258	0.01555	0.01094	0.01355	0.00949	0.01178
BUTANE	0.8351	0.89297	0.83231	0.89175	0.82726	0.88879
IPENTANE	0.07191	0.04974	0.07506	0.05204	0.07969	0.05542
PENTANE	0.04735	0.03174	0.04849	0.03256	0.05016	0.03377
HEXANE	0.02179	0.00748	0.02188	0.00754	0.022	0.00761
HEPTANE	0.00847	0.00182	0.00849	0.00183	0.00852	0.00185
OCTANE	0.00222	2.84E-04	0.00222	2.86E-04	0.00223	2.88E-04
NONANE	1.52E-04	1.16E-05	1.52E-04	1.17E-05	1.53E-04	1.18E-05
H2S	1.88E-21	5.83E-21	6.57E-22	2.03E-21	2.29E-22	7.09E-22
COS	2.19E-15	4.91E-15	1.05E-15	2.36E-15	5.05E-16	1.14E-15
CH4S	1.63E-09	2.36E-09	1.22E-09	1.76E-09	9.08E-10	1.32E-09
ETSH	4.26E-04	4.02E-04	4.56E-04	4.31E-04	4.90E-04	4.63E-04
PN1THIOL	1.25E-06	1.78E-07	1.26E-06	1.79E-07	1.26E-06	1.81E-07
BU1THIOL	2.13E-06	6.92E-07	2.14E-06	6.96E-07	2.15E-06	7.02E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4432.6	4107.5	4428.65	4104.91	4422.76	4100.97

TRAY	82		83		84	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	5.88E-20	1.97E-19	1.89E-20	6.35E-20	6.08E-21	2.05E-20
PROPANE	1.93E-08	3.68E-08	1.09E-08	2.09E-08	6.15E-09	1.18E-08
IBUTANE	0.00821	0.01022	0.00706	0.00883	0.00603	0.00759
BUTANE	0.81907	0.88343	0.80647	0.87469	0.78783	0.86125
IPENTANE	0.08644	0.06039	0.09621	0.06765	0.11012	0.07814
PENTANE	0.05262	0.03556	0.05622	0.03818	0.06144	0.04203
HEXANE	0.02218	0.00773	0.02245	0.00789	0.02283	0.00814
HEPTANE	0.00856	0.00187	0.00863	0.0019	0.00871	0.00195
OCTANE	0.00224	2.91E-04	0.00225	2.96E-04	0.00226	3.03E-04
NONANE	1.53E-04	1.19E-05	1.54E-04	1.21E-05	1.55E-04	1.24E-05
H2S	7.96E-23	2.47E-22	2.76E-23	8.60E-23	9.56E-24	2.99E-23
COS	2.42E-16	5.45E-16	1.15E-16	2.61E-16	5.49E-17	1.25E-16
CH4S	6.75E-10	9.79E-10	5.01E-10	7.28E-10	3.71E-10	5.40E-10
ETSH	5.27E-04	5.00E-04	5.68E-04	5.40E-04	6.13E-04	5.84E-04
PN1THIOL	1.27E-06	1.83E-07	1.27E-06	1.86E-07	1.28E-06	1.90E-07
BU1THIOL	2.16E-06	7.10E-07	2.18E-06	7.23E-07	2.21E-06	7.41E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4414.15	4095.08	4401.85	4086.46	4384.84	4074.17

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	85		86		87	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.95E-21	6.57E-21	6.20E-22	2.10E-21	1.96E-22	6.70E-22
PROPANE	3.43E-09	6.65E-09	1.89E-09	3.71E-09	1.03E-09	2.04E-09
IBUTANE	0.0051	0.00648	0.00425	0.00548	0.00349	0.00456
BUTANE	0.76114	0.84133	0.72419	0.81277	0.67511	0.77316
IPENTANE	0.12954	0.0931	0.15586	0.11401	0.19013	0.14237
PENTANE	0.06892	0.04762	0.07938	0.05562	0.09363	0.06685
HEXANE	0.02337	0.00849	0.02412	0.00899	0.02517	0.00971
HEPTANE	0.00884	0.00202	0.009	0.00211	0.00921	0.00224
OCTANE	0.00229	3.13E-04	0.00232	3.28E-04	0.00236	3.47E-04
NONANE	1.56E-04	1.28E-05	1.58E-04	1.34E-05	1.60E-04	1.43E-05
H2S	3.29E-24	1.03E-23	1.13E-24	3.56E-24	3.83E-25	1.22E-24
COS	2.60E-17	5.94E-17	1.22E-17	2.81E-17	5.66E-18	1.32E-17
CH4S	2.73E-10	3.99E-10	1.99E-10	2.94E-10	1.44E-10	2.14E-10
ETSH	6.59E-04	6.32E-04	7.06E-04	6.83E-04	7.51E-04	7.34E-04
PN1THIOL	1.30E-06	1.96E-07	1.31E-06	2.05E-07	1.34E-06	2.17E-07
BU1THIOL	2.26E-06	7.66E-07	2.31E-06	8.03E-07	2.39E-06	8.54E-07
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4362.28	4057.16	4334.03	4034.59	4301.36	4006.34

TRAY	88		89		90	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	6.16E-23	2.12E-22	1.91E-23	6.65E-23	5.83E-24	2.04E-23
PROPANE	5.47E-10	1.11E-09	2.84E-10	5.88E-10	1.43E-10	3.03E-10
IBUTANE	0.00279	0.00374	0.00217	0.00299	0.00164	0.00232
BUTANE	0.6131	0.72044	0.53928	0.65362	0.45732	0.57396
IPENTANE	0.23241	0.17935	0.28119	0.22506	0.33304	0.27787
PENTANE	0.11229	0.08217	0.13555	0.10229	0.16293	0.12742
HEXANE	0.02659	0.01072	0.02859	0.01215	0.03144	0.01419
HEPTANE	0.00947	0.00242	0.00978	0.00264	0.01013	0.00293
OCTANE	0.0024	3.74E-04	0.00246	4.08E-04	0.00251	4.49E-04
NONANE	1.62E-04	1.54E-05	1.65E-04	1.69E-05	1.68E-04	1.87E-05
H2S	1.29E-25	4.14E-25	4.26E-26	1.39E-25	1.38E-26	4.55E-26
COS	2.59E-18	6.11E-18	1.16E-18	2.78E-18	5.09E-19	1.24E-18
CH4S	1.03E-10	1.55E-10	7.24E-11	1.10E-10	4.97E-11	7.73E-11
ETSH	7.88E-04	7.82E-04	8.13E-04	8.23E-04	8.20E-04	8.50E-04
PN1THIOL	1.37E-06	2.34E-07	1.40E-06	2.55E-07	1.43E-06	2.80E-07
BU1THIOL	2.48E-06	9.23E-07	2.61E-06	1.02E-06	2.79E-06	1.14E-06
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4270.91	3973.67	4177.69	3943.22	4165.28	3910.19

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	91		92		93	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.76E-24	6.23E-24	5.28E-25	1.88E-24	1.57E-25	5.65E-25
PROPANE	7.01E-11	1.53E-10	3.37E-11	7.49E-11	1.58E-11	3.60E-11
IBUTANE	0.0012	0.00175	8.48E-04	0.00128	5.84E-04	9.03E-04
BUTANE	0.37388	0.48649	0.29482	0.39735	0.22461	0.31284
IPENTANE	0.38234	0.33326	0.42405	0.38596	0.45391	0.43052
PENTANE	0.19273	0.15665	0.22299	0.18849	0.25142	0.22082
HEXANE	0.03574	0.01719	0.04253	0.02178	0.05345	0.02904
HEPTANE	0.01056	0.00327	0.0112	0.00372	0.01241	0.00442
OCTANE	0.00256	4.98E-04	0.00262	5.53E-04	0.00272	6.21E-04
NONANE	1.70E-04	2.09E-05	1.72E-04	2.33E-05	1.75E-04	2.59E-05
H2S	4.43E-27	1.48E-26	1.40E-27	4.73E-27	4.41E-28	1.50E-27
COS	2.19E-19	5.43E-19	9.27E-20	2.34E-19	3.87E-20	9.90E-20
CH4S	3.35E-11	5.31E-11	2.21E-11	3.58E-11	1.43E-11	2.36E-11
ETSH	8.05E-04	8.57E-04	7.69E-04	8.42E-04	7.14E-04	8.04E-04
PN1THIOL	1.46E-06	3.10E-07	1.50E-06	3.45E-07	1.57E-06	3.88E-07
BU1THIOL	3.04E-06	1.32E-06	3.46E-06	1.60E-06	4.18E-06	2.04E-06
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4159.59	3897.78	4162.57	3892.09	4165.5	3895.07

TRAY	94		95		96	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	4.66E-26	1.68E-25	1.37E-26	4.98E-26	3.97E-27	1.46E-26
PROPANE	7.28E-12	1.69E-11	3.29E-12	7.77E-12	1.45E-12	3.50E-12
IBUTANE	3.90E-04	6.20E-04	2.53E-04	4.13E-04	1.58E-04	2.67E-04
BUTANE	0.16558	0.2378	0.11807	0.17475	0.08107	0.12404
IPENTANE	0.46878	0.46243	0.46615	0.47835	0.44346	0.47565
PENTANE	0.2755	0.25121	0.2922	0.27695	0.29753	0.29483
HEXANE	0.07089	0.04071	0.09777	0.05932	0.13656	0.08794
HEPTANE	0.01507	0.00571	0.02112	0.00853	0.0345	0.01494
OCTANE	0.00295	7.26E-04	0.00366	9.69E-04	0.00594	0.0017
NONANE	1.82E-04	2.92E-05	2.03E-04	3.55E-05	2.93E-04	5.63E-05
H2S	1.36E-28	4.68E-28	4.13E-29	1.43E-28	1.18E-29	4.15E-29
COS	1.59E-20	4.13E-20	6.47E-21	1.70E-20	2.58E-21	6.89E-21
CH4S	9.03E-12	1.52E-11	5.56E-12	9.58E-12	3.31E-12	5.88E-12
ETSH	6.43E-04	7.45E-04	5.59E-04	6.68E-04	4.67E-04	5.79E-04
PN1THIOL	1.72E-06	4.58E-07	2.18E-06	6.21E-07	3.56E-06	1.10E-06
BU1THIOL	5.47E-06	2.82E-06	7.71E-06	4.19E-06	1.14E-05	6.57E-06
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4154.64	3898	4111.6	3887.14	4014.38	3844.1

Table B-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	97		98	
COMPONENT	X	Y	X	Y
N2	0	0	0	0
CO2	0	0	0	0
METHANE	0	0	0	0
ETHANE	1.13E-27	4.24E-27	3.12E-28	1.19E-27
PROPANE	6.17E-13	1.53E-12	2.49E-13	6.44E-13
IBUTANE	9.42E-05	1.66E-04	5.23E-05	9.73E-05
BUTANE	0.053	0.08455	0.03231	0.05455
IPENTANE	0.39815	0.45158	0.32973	0.40326
PENTANE	0.28644	0.3006	0.25446	0.28884
HEXANE	0.18654	0.12925	0.239	0.18262
HEPTANE	0.06176	0.02911	0.11003	0.05815
OCTANE	0.01293	0.0041	0.03181	0.01152
NONANE	6.97E-04	1.50E-04	0.00231	5.76E-04
H2S	2.75E-30	9.83E-30	0	0
COS	1.01E-21	2.74E-21	3.76E-22	1.05E-21
CH4S	1.88E-12	3.47E-12	9.90E-13	1.94E-12
ETSH	3.68E-04	4.81E-04	2.68E-04	3.76E-04
PN1THIOL	7.55E-06	2.55E-06	1.77E-05	6.79E-06
BU1THIOL	1.69E-05	1.05E-05	2.41E-05	1.64E-05
TEG	0	0	0	0
H2O	0	0	0	0
RATE, KG-MOL/HR	3845.45	3746.89	267.5	3577.96

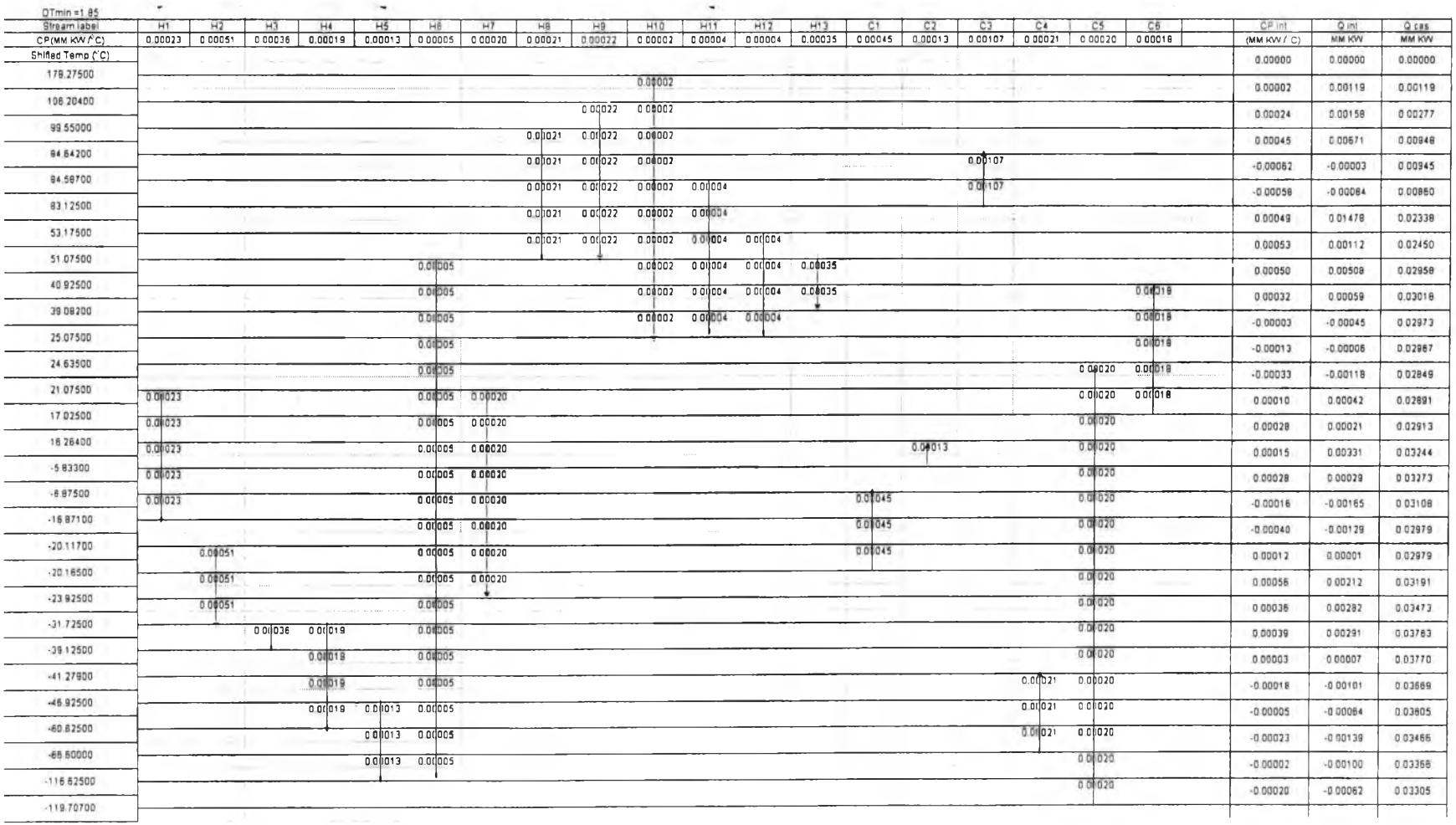

Figure B-1 Problem table algorithm for the ΔTmin = 1.85°C (the design-data case).

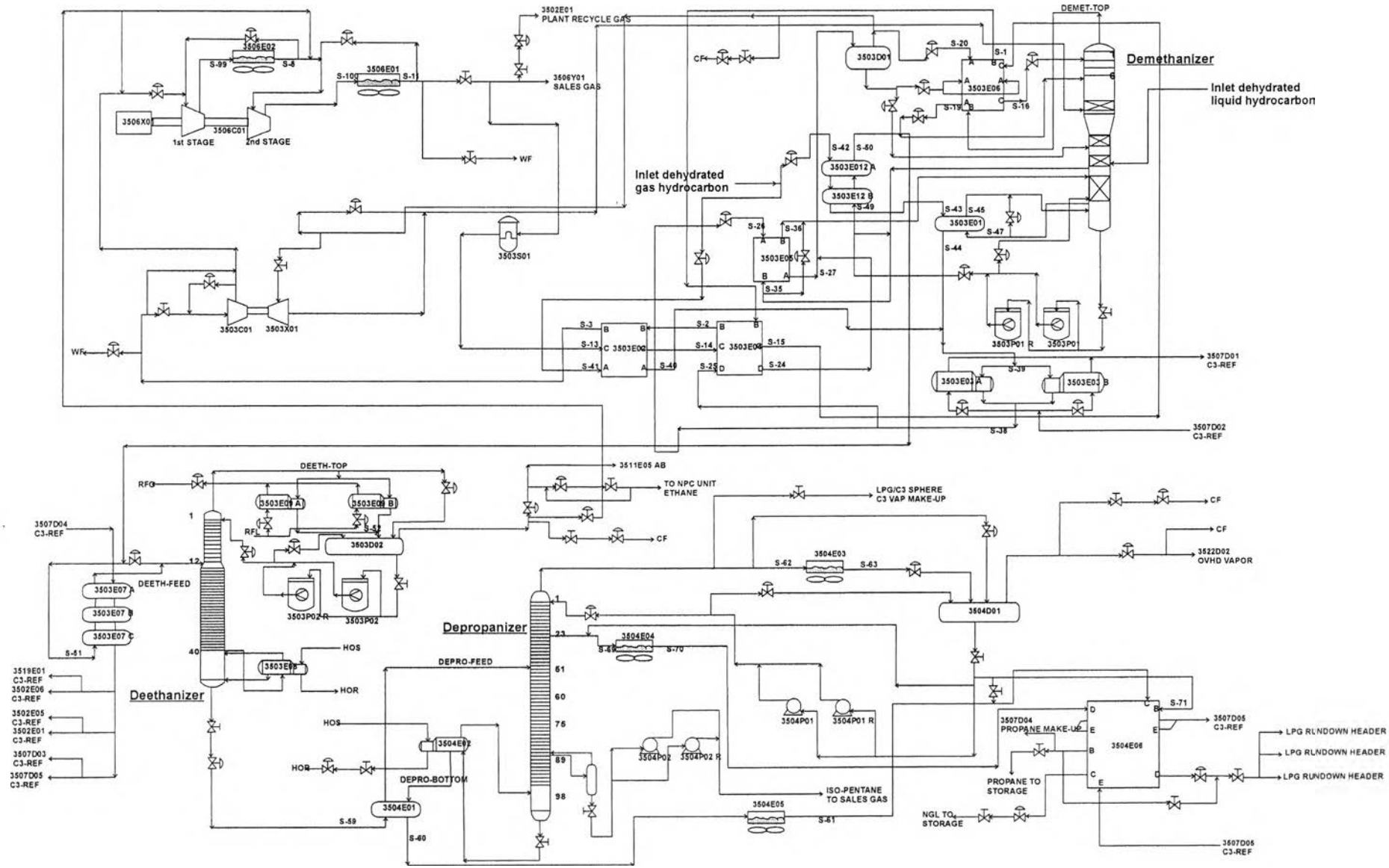

Figure B-2 The Gas Separation Plant 5 (GSP 5) of Design-Data Case.

Appendix C Data and Information of the GSP5 in the Actual-Data Case

Table C-1 Thermal data of streams

Type of Stream	Tin (°C)	Tout (°C)	Flow Rate (MM KG/HR)
H1	19.03	-1.797	0.255191
H2	-11.388	-30.8	0.431796
H3	-30.8	-39.6	0.291894
H4	-30.8	-55.6	0.139902
H5	-47.2	-116.7	0.123991
H6	43.594	-116.8	0.037179
H7	19.03	-24.2	0.176605
H8	98.84	41.4	0.31089
H9	100.057	43.8	0.31089
H10	171.809	17.9	0.009385
H11	72.678	18.51	0.06551
H12	54	19.02	0.017967
H13	52	33.795	0.226041
C1	-10.813	-4.5	0.093317
C2	-3.57	14.56	0.160637
C3	78.098	78.882	0.092934
C4	-60.723	-35.361	0.149159
C5	-120.645	18.878	0.309723
C6	14.467	37.7	0.160637

Table C-2a Column summary of the demethanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	-120.6	10.98	2124.3		2273.4M	18973.4V	
2	-120.4	10.99	2058.7	18824			
3	-119.9	11.01	1875.4	18759			
4	-118.6	11.02	1473.2	18575			
5	-115.5	11.03	788.8	18173			
6	-109.3	11.04	5147.1	17489	4698.7L		
7	-104.3	11.06	4490.8	17148			
8	-97.3	11.07	4070.8	16492			
9	-92	11.08	4830.6	16072	14577.4M		
10	-91.5	11.09	4848	2254.4			
11	-91.2	11.11	4841.2	2271.8			
12	-89.9	11.12	4801.8	2265			
13	-84.4	11.13	5747.8	2225.6	1469.8M		
14	-78.5	11.14	5727.9	1701.8			
15	-60.8	11.16	1602.8	1681.9		4300.0L	
16	-33.8	11.17	5359.7	1856.8	27.3M		
					4300.0M		
17	-22.9	11.18	5059.2	1632.4	5668.3M		
18	-16	11.19	5268.2	803.5			
19	-10.8	11.21	214.2	1012.5	2469.9M	2470.0L	
20	-5.1	11.22		1286.6		4073.3L	0.0048

Table C-2b Molar composition of the demethanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	0.00383	0.02261	0.00343	0.02049	0.00333	0.0205
CO2	0.00297	3.28E-04	0.00567	6.26E-04	0.00826	9.15E-04
METHANE	0.98989	0.97697	0.98395	0.97869	0.9679	0.978
ETHANE	0.0033	9.33E-05	0.00694	1.97E-04	0.02049	5.85E-04
PROPANE	9.41E-06	2.24E-08	9.82E-06	2.35E-08	1.52E-05	3.60E-08
IBUTANE	2.38E-10	1.07E-13	2.65E-10	1.20E-13	5.07E-09	2.24E-12
BUTANE	3.79E-11	5.98E-15	3.95E-11	6.28E-15	3.68E-10	5.78E-14
IPENTANE	8.41E-16	1.30E-20	8.76E-16	1.37E-20	6.58E-14	1.02E-18
PENTANE	2.52E-16	3.85E-21	2.69E-16	4.12E-21	6.50E-14	9.74E-19
HEXANE	1.90E-22	3.64E-28	5.72E-22	1.09E-27	2.29E-17	4.13E-23
HEPTANE	1.69E-27	2.11E-34	1.75E-27	2.17E-34	1.92E-27	2.28E-34
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.52E-09	7.23E-11	1.70E-09	8.08E-11	2.05E-09	9.60E-11
COS	4.68E-11	2.32E-13	4.85E-11	2.40E-13	5.40E-11	2.64E-13
CH4S	1.27E-14	1.47E-17	1.32E-14	1.49E-17	1.45E-14	1.58E-17
ETSH	5.88E-18	9.41E-22	6.07E-18	9.56E-22	6.67E-18	1.00E-21
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2124.27	18973.38	2058.71	18824.26	1875.37	18758.69

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	0.00304	0.02066	0.00247	0.02102	0.00141	0.0217
CO2	0.00988	0.00113	0.0086	0.0011	0.00426	7.02E-04
METHANE	0.92149	0.97632	0.81589	0.97274	0.58894	0.96998
ETHANE	0.06538	0.00189	0.16588	0.00512	0.2021	0.00729
PROPANE	2.08E-04	4.81E-07	0.0068	1.58E-05	0.12443	3.06E-04
IBUTANE	1.16E-06	4.85E-10	2.38E-04	9.38E-08	0.0287	1.07E-05
BUTANE	2.14E-07	3.28E-11	1.12E-04	1.74E-08	0.03152	5.06E-06
IPENTANE	4.35E-10	6.54E-15	2.26E-06	3.52E-11	0.00541	1.02E-07
PENTANE	4.64E-10	6.54E-15	2.77E-06	3.76E-11	0.00853	1.25E-07
HEXANE	1.49E-12	2.31E-18	9.75E-08	1.21E-13	0.0047	4.40E-09
HEPTANE	2.44E-27	2.58E-34	4.56E-27	4.25E-34	6.99E-28	5.30E-35
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	2.55E-09	1.16E-10	2.53E-09	1.12E-10	4.17E-10	1.65E-11
COS	7.20E-11	3.49E-13	1.23E-10	6.19E-13	1.90E-11	1.04E-13
CH4S	1.86E-14	1.89E-17	3.40E-14	3.20E-17	5.22E-15	3.86E-18
ETSH	8.49E-18	1.15E-21	1.58E-17	1.92E-21	2.43E-18	2.72E-22
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1473.23	18575.35	788.81	18173.22	5147.13	17488.8

Table C-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	0.00106	0.0195	9.22E-04	0.02012	8.71E-04	0.02059
CO2	0.00597	0.00129	0.00531	0.00164	0.00343	0.00136
METHANE	0.48612	0.96554	0.3844	0.95253	0.32878	0.93895
ETHANE	0.27233	0.01314	0.34863	0.02474	0.40113	0.0376
PROPANE	0.14404	5.01E-04	0.16084	9.10E-04	0.17521	0.00142
IBUTANE	0.03295	1.79E-05	0.0364	3.38E-05	0.03409	4.76E-05
BUTANE	0.03616	9.07E-06	0.03992	1.86E-05	0.03625	2.69E-05
IPENTANE	0.00621	2.01E-07	0.00685	4.64E-07	0.00592	6.91E-07
PENTANE	0.00978	2.38E-07	0.01079	5.37E-07	0.00929	7.96E-07
HEXANE	0.00539	8.18E-09	0.00595	1.92E-08	0.00503	2.94E-08
HEPTANE	8.02E-28	1.13E-34	8.84E-28	3.14E-34	7.45E-28	5.40E-34
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	5.21E-10	2.58E-11	5.52E-10	3.83E-11	3.69E-10	3.35E-11
COS	2.22E-11	1.70E-13	2.46E-11	3.00E-13	1.98E-11	3.40E-13
CH4S	6.00E-15	6.15E-18	6.63E-15	1.13E-17	5.55E-15	1.42E-17
ETSH	2.78E-18	4.55E-22	3.07E-18	8.96E-22	2.58E-18	1.19E-21
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4490.85	17148.38	4070.78	16492.1	4830.62	16072.03

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	1.48E-04	0.0035	8.17E-05	0.00194	7.46E-05	0.0018
CO2	0.00345	0.0014	0.00354	0.00146	0.00379	0.00165
METHANE	0.33127	0.95504	0.32867	0.95559	0.31709	0.9519
ETHANE	0.40026	0.03851	0.40239	0.03943	0.41104	0.0429
PROPANE	0.1746	0.00147	0.17492	0.00151	0.17682	0.00166
IBUTANE	0.03397	4.97E-05	0.03402	5.12E-05	0.03432	5.68E-05
BUTANE	0.03612	2.81E-05	0.03617	2.91E-05	0.03648	3.26E-05
IPENTANE	0.0059	7.29E-07	0.00591	7.58E-07	0.00596	8.65E-07
PENTANE	0.00926	8.41E-07	0.00927	8.74E-07	0.00935	9.98E-07
HEXANE	0.00502	3.15E-08	0.00502	3.29E-08	0.00506	3.82E-08
HEPTANE	7.43E-28	5.84E-34	7.44E-28	6.15E-34	3.90E-25	3.80E-31
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	3.69E-10	3.44E-11	3.70E-10	3.52E-11	3.74E-10	3.77E-11
COS	1.97E-11	3.50E-13	1.98E-11	3.59E-13	2.00E-11	3.92E-13
CH4S	5.53E-15	1.48E-17	5.54E-15	1.52E-17	5.59E-15	1.68E-17
ETSH	2.57E-18	1.25E-21	2.58E-18	1.29E-21	2.60E-18	1.44E-21
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	4847.96	2254.45	4841.16	2271.79	4801.8	2264.99

Table C-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	6.82E-05	0.00181	9.01E-06	2.53E-04	1.73E-06	5.35E-05
CO2	0.00395	0.00215	0.00642	0.00438	0.01046	0.0128
METHANE	0.26985	0.93795	0.23142	0.91319	0.14649	0.78996
ETHANE	0.40802	0.05521	0.44089	0.07799	0.52159	0.18599
PROPANE	0.20435	0.0027	0.20694	0.00392	0.20949	0.01036
IBUTANE	0.04227	1.04E-04	0.04251	1.59E-04	0.0418	4.80E-04
BUTANE	0.0455	6.23E-05	0.04573	9.91E-05	0.0448	3.31E-04
IPENTANE	0.00758	1.83E-06	0.00761	3.13E-06	0.00741	1.26E-05
PENTANE	0.01191	2.13E-06	0.01196	3.65E-06	0.01163	1.50E-05
HEXANE	0.0065	8.76E-08	0.00652	1.63E-07	0.00633	8.68E-07
HEPTANE	4.45E-19	8.39E-25	3.88E-13	1.50E-18	4.83E-08	1.32E-12
OCTANE	0	0	0	0	2.29E-26	1.20E-31
NONANE	0	0	0	0	0	0
H2S	3.18E-10	4.04E-11	4.36E-10	7.19E-11	1.41E-09	4.69E-10
COS	1.67E-11	4.48E-13	1.71E-11	6.39E-13	1.90E-11	1.73E-12
CH4S	4.67E-15	2.00E-17	4.72E-15	3.03E-17	7.07E-15	1.36E-16
ETSH	2.17E-18	1.86E-21	2.42E-18	3.27E-21	1.78E-16	8.35E-19
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	5747.85	2225.62	5727.89	1701.83	1602.84	1681.87

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	8.05E-07	2.61E-05	1.07E-07	3.35E-06	1.24E-08	3.78E-07
CO2	0.01049	0.02504	0.01098	0.03211	0.00906	0.02961
METHANE	0.06175	0.46735	0.03079	0.25285	0.01236	0.10557
ETHANE	0.57029	0.46656	0.61281	0.65517	0.63555	0.78921
PROPANE	0.23138	0.03699	0.22541	0.05349	0.22592	0.06724
IBUTANE	0.04647	0.00218	0.04437	0.00337	0.04347	0.00437
BUTANE	0.04989	0.00166	0.04751	0.00266	0.0464	0.00351
IPENTANE	0.00852	8.43E-05	0.00808	1.47E-04	0.00783	2.03E-04
PENTANE	0.01312	1.03E-04	0.01243	1.83E-04	0.01204	2.56E-04
HEXANE	0.0076	9.20E-06	0.00718	1.87E-05	0.00694	2.85E-05
HEPTANE	4.72E-04	1.53E-07	4.46E-04	3.49E-07	4.31E-04	5.67E-07
OCTANE	8.94E-22	7.29E-26	1.69E-17	3.72E-21	1.52E-13	6.00E-17
NONANE	0	0	0	0	0	0
H2S	4.60E-09	3.56E-09	8.76E-09	8.94E-09	1.91E-08	2.28E-08
COS	3.54E-11	9.39E-12	1.04E-10	3.97E-11	6.07E-10	2.84E-10
CH4S	1.08E-13	8.04E-15	2.87E-12	3.42E-13	6.43E-11	1.01E-11
ETSH	2.48E-14	5.61E-16	2.50E-12	9.76E-14	1.65E-10	8.85E-12
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	5359.75	1856.84	5674.07	1286.4	5874.84	1600.72

Table C-2b (Continued) Molar composition of the demethanizer from simulation

TRAY	19		20	
COMPONENT	X	Y	X	Y
N2	1.31E-09	4.00E-08	1.64E-10	5.15E-09
CO2	0.00601	0.02128	0.00362	0.014
METHANE	0.00417	0.03712	0.00142	0.01339
ETHANE	0.61111	0.8437	0.54347	0.83798
PROPANE	0.24848	0.08653	0.2876	0.11728
IBUTANE	0.04834	0.00589	0.06009	0.0089
BUTANE	0.0516	0.00478	0.06481	0.0073
IPENTANE	0.00871	2.88E-04	0.01117	4.68E-04
PENTANE	0.01339	3.67E-04	0.01721	6.04E-04
HEXANE	0.00771	4.32E-05	0.00999	7.61E-05
HEPTANE	4.79E-04	8.90E-07	6.21E-04	1.60E-06
OCTANE	8.65E-10	4.97E-13	1.12E-09	9.12E-13
NONANE	0	0	0	0
H2S	4.15E-08	5.50E-08	3.75E-08	5.50E-08
COS	3.55E-09	1.90E-09	3.89E-09	2.39E-09
CH4S	1.12E-09	2.10E-10	1.36E-09	3.01E-10
ETSH	7.98E-09	5.37E-10	1.01E-08	8.46E-10
PN1THIOL	0	0	0	0
BU1THIOL	0	0	0	0
TEG	0	0	0	0
H2O	0	0	0	0
RATE, KG-MOL/HR	5287.86	1801.49	4073.29	1214.57

Table C-3a Column summary of the deethanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	6.9	27	3853.9		3886.9L	6129.9V	
2	7.6	27	3797.9	6096.9			
3	8.7	27	3719.8	6040.9			
4	10.2	27	3620.7	5962.9			
5	12.2	27	3507	5863.8			
6	14.7	27	3390.3	5750.1			
7	17.5	27	3281.6	5633.3			
8	20.4	27	3185.2	5524.7			
9	23.2	27.01	3093.2	5428.2			
10	26	27.01	2982	5336.3			
11	29.1	27.01	2794.4	5225.1			
12	33.9	27.01	6606.9	5037.4	4073.3M		
13	34.7	27.01	6603.3	4776.7			
14	35.8	27.01	6591.6	4773.1			
15	37.4	27.01	6575.6	4761.4			
16	39.8	27.01	6561.5	4745.4			
17	43.1	27.01	6560.2	4731.2			
18	47.3	27.01	6586.7	4729.9			
19	52.3	27.01	6654.8	4756.5			
20	57.6	27.01	6768	4824.5			
21	62.7	27.01	6916.7	4937.8			
22	67.2	27.01	7081.5	5086.5			
23	70.9	27.02	7242	5251.3			
24	73.8	27.02	7383.6	5411.8			
25	76	27.02	7499.7	5553.4			
26	77.6	27.02	7590	5669.5			
27	78.8	27.02	7657.4	5759.7			
28	79.6	27.02	7706.8	5827.1			
29	80.2	27.02	7742	5876.5			
30	80.6	27.02	7766.6	5911.7			
31	80.9	27.02	7783.4	5936.4			
32	81.1	27.02	7794	5953.2			
33	81.3	27.02	7799	5963.7			
34	81.5	27.02	7798.1	5968.8			
35	81.8	27.02	7789	5967.9			
36	82.3	27.02	7766.3	5958.8			
37	83.1	27.03	7717.2	5936			
38	84.6	27.03	7611.6	5887			
39	87.6	27.03	7369	5781.4			
40R	93.9	27.03		5538.7		1830.2L	0.0165

Table C-3b Molar composition of the deethanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	1.87E-11	1.36E-10	1.66E-11	1.22E-10	1.63E-11	1.21E-10
CO2	0.00234	0.00453	0.00199	0.0039	0.00186	0.00369
METHANE	4.38E-04	0.00145	3.68E-04	0.00123	3.52E-04	0.00119
ETHANE	0.97742	0.98607	0.96313	0.98087	0.94153	0.97192
PROPANE	0.0198	0.00795	0.0345	0.014	0.05623	0.02319
IBUTANE	1.92E-06	3.76E-07	6.33E-06	1.25E-06	2.00E-05	4.02E-06
BUTANE	3.98E-07	6.78E-08	1.49E-06	2.57E-07	5.40E-06	9.45E-07
IPENTANE	3.66E-11	3.00E-12	2.79E-10	2.33E-11	2.07E-09	1.76E-10
PENTANE	1.47E-11	1.04E-12	1.30E-10	9.34E-12	1.11E-09	8.17E-11
HEXANE	9.31E-17	2.25E-18	2.39E-15	5.89E-17	5.94E-14	1.50E-15
HEPTANE	3.19E-21	3.93E-23	1.61E-19	2.02E-21	7.86E-18	1.01E-19
OCTANE	1.91E-30	1.17E-32	1.91E-28	1.18E-30	1.90E-26	1.20E-28
NONANE	0	0	0	0	0	0
H2S	2.84E-07	2.97E-07	1.95E-07	2.05E-07	1.39E-07	1.48E-07
COS	2.98E-08	1.67E-08	3.21E-08	1.82E-08	3.41E-08	1.95E-08
CH4S	1.13E-11	3.34E-12	1.46E-11	4.32E-12	2.10E-11	6.29E-12
ETSH	1.24E-14	1.64E-15	3.55E-14	4.76E-15	1.40E-13	1.92E-14
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3853.9	6129.94	3797.89	6096.95	3719.85	6040.93

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	1.62E-11	1.22E-10	1.61E-11	1.24E-10	1.60E-11	1.26E-10
CO2	0.0018	0.00364	0.00176	0.00363	0.00172	0.00364
METHANE	3.46E-04	0.00119	3.42E-04	0.0012	3.37E-04	0.00122
ETHANE	0.91107	0.95856	0.87119	0.94003	0.82349	0.91628
PROPANE	0.0867	0.0366	0.12647	0.05508	0.17378	0.07871
IBUTANE	6.05E-05	1.25E-05	1.75E-04	3.74E-05	4.77E-04	1.07E-04
BUTANE	1.88E-05	3.37E-06	6.28E-05	1.16E-05	1.98E-04	3.83E-05
IPENTANE	1.47E-08	1.29E-09	9.90E-08	9.07E-09	6.24E-07	6.04E-08
PENTANE	9.05E-09	6.91E-10	6.97E-08	5.59E-09	4.98E-07	4.25E-08
HEXANE	1.41E-12	3.70E-14	3.13E-11	8.69E-13	6.40E-10	1.91E-11
HEPTANE	3.68E-16	4.91E-18	1.62E-14	2.27E-16	6.57E-13	9.88E-15
OCTANE	1.82E-24	1.18E-26	1.65E-22	1.12E-24	1.39E-20	1.01E-22
NONANE	0	0	0	0	0	0
H2S	1.04E-07	1.12E-07	8.17E-08	9.01E-08	6.74E-08	7.63E-08
COS	3.54E-08	2.06E-08	3.56E-08	2.11E-08	3.43E-08	2.10E-08
CH4S	3.33E-11	1.02E-11	5.63E-11	1.76E-11	9.69E-11	3.13E-11
ETSH	5.97E-13	8.43E-14	2.48E-12	3.65E-13	9.70E-12	1.51E-12
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3620.73	5962.89	3507.04	5863.77	3390.28	5750.09

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	1.60E-11	1.28E-10	1.59E-11	1.31E-10	1.59E-11	1.33E-10
CO2	0.00168	0.00365	0.00164	0.00367	0.0016	0.00368
METHANE	3.33E-04	0.00123	3.29E-04	0.00125	3.25E-04	0.00126
ETHANE	0.77192	0.88851	0.7214	0.85916	0.67553	0.83106
PROPANE	0.22425	0.10619	0.27204	0.13485	0.31153	0.1613
IBUTANE	0.00122	2.87E-04	0.00292	7.26E-04	0.00656	0.00172
BUTANE	5.87E-04	1.19E-04	0.00163	3.49E-04	0.00424	9.55E-04
IPENTANE	3.64E-06	3.76E-07	1.96E-05	2.16E-06	9.79E-05	1.15E-05
PENTANE	3.27E-06	3.00E-07	1.97E-05	1.94E-06	1.10E-04	1.16E-05
HEXANE	1.19E-08	3.85E-10	2.01E-07	7.08E-09	3.09E-06	1.18E-07
HEPTANE	2.43E-11	3.96E-13	8.10E-10	1.44E-11	2.46E-08	4.75E-10
OCTANE	1.07E-18	8.38E-21	7.51E-17	6.37E-19	4.78E-15	4.41E-17
NONANE	0	0	0	0	0	0
H2S	5.80E-08	6.76E-08	5.16E-08	6.20E-08	4.72E-08	5.84E-08
COS	3.14E-08	1.99E-08	2.73E-08	1.79E-08	2.24E-08	1.52E-08
CH4S	1.65E-10	5.53E-11	2.70E-10	9.46E-11	4.27E-10	1.55E-10
ETSH	3.53E-11	5.84E-12	1.19E-10	2.10E-11	3.73E-10	6.98E-11
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	3281.64	5633.32	3185.18	5524.68	3093.22	5428.22

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	1.59E-11	1.35E-10	1.58E-11	1.37E-10	1.53E-11	1.42E-10
CO2	0.00157	0.00369	0.00153	0.00372	0.00147	0.00378
METHANE	3.22E-04	0.00128	3.17E-04	0.00129	3.07E-04	0.00133
ETHANE	0.63504	0.80636	0.59702	0.78604	0.55301	0.77058
PROPANE	0.33778	0.18228	0.34483	0.19451	0.32104	0.19309
IBUTANE	0.01383	0.0038	0.0272	0.00789	0.04823	0.01509
BUTANE	0.01039	0.00246	0.02385	0.00593	0.04975	0.01323
IPENTANE	4.55E-04	5.67E-05	0.00197	2.60E-04	0.0077	0.00109
PENTANE	5.65E-04	6.36E-05	0.0027	3.23E-04	0.01172	0.0015
HEXANE	4.34E-05	1.79E-06	5.59E-04	2.48E-05	0.00639	3.10E-04
HEPTANE	6.81E-07	1.42E-08	1.72E-05	3.89E-07	3.90E-04	9.57E-06
OCTANE	2.78E-13	2.77E-15	1.47E-11	1.58E-13	6.98E-10	8.18E-12
NONANE	0	0	0	0	0	0
H2S	4.41E-08	5.60E-08	4.16E-08	5.43E-08	3.91E-08	5.33E-08
COS	1.74E-08	1.22E-08	1.24E-08	9.10E-09	7.79E-09	6.05E-09
CH4S	6.43E-10	2.44E-10	9.20E-10	3.64E-10	1.22E-09	5.07E-10
ETSH	1.09E-09	2.16E-10	2.98E-09	6.23E-10	7.46E-09	1.65E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2982.02	5336.26	2794.38	5225.07	6606.92	5037.43

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	2.29E-12	2.12E-11	3.43E-13	3.17E-12	5.15E-14	4.75E-13
CO2	7.84E-04	0.00203	4.16E-04	0.00109	2.19E-04	5.76E-04
METHANE	9.83E-05	4.25E-04	3.13E-05	1.36E-04	9.94E-06	4.34E-05
ETHANE	0.54457	0.76485	0.53046	0.75333	0.50879	0.7343
PROPANE	0.32951	0.2007	0.34268	0.21233	0.36253	0.23028
IBUTANE	0.04864	0.01546	0.0493	0.01601	0.05027	0.01684
BUTANE	0.0501	0.01355	0.05066	0.01401	0.0515	0.0147
IPENTANE	0.00773	0.00112	0.00778	0.00116	0.00786	0.00122
PENTANE	0.01177	0.00154	0.01185	0.0016	0.01197	0.00168
HEXANE	0.0064	3.19E-04	0.00643	3.32E-04	0.00646	3.52E-04
HEPTANE	3.91E-04	9.87E-06	3.92E-04	1.03E-05	3.93E-04	1.10E-05
OCTANE	6.99E-10	8.45E-12	7.01E-10	8.83E-12	7.03E-10	9.42E-12
NONANE	0	0	0	0	0	0
H2S	3.93E-08	5.41E-08	3.91E-08	5.44E-08	3.84E-08	5.42E-08
COS	8.36E-09	6.56E-09	9.22E-09	7.34E-09	1.05E-08	8.54E-09
CH4S	1.23E-09	5.20E-10	1.26E-09	5.40E-10	1.29E-09	5.69E-10
ETSH	7.51E-09	1.70E-09	7.58E-09	1.76E-09	7.70E-09	1.85E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6603.33	4776.67	6591.6	4773.08	6575.61	4761.36

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	7.77E-15	7.14E-14	1.18E-15	1.08E-14	1.82E-16	1.64E-15
CO2	1.13E-04	3.03E-04	5.76E-05	1.57E-04	2.87E-05	7.99E-05
METHANE	3.13E-06	1.38E-05	9.81E-07	4.34E-06	3.05E-07	1.36E-06
ETHANE	0.47751	0.70497	0.43529	0.66217	0.38277	0.60367
PROPANE	0.39113	0.2574	0.42988	0.29674	0.47842	0.35047
IBUTANE	0.05161	0.01808	0.05333	0.01984	0.05532	0.02221
BUTANE	0.05264	0.01573	0.05408	0.01721	0.05573	0.0192
IPENTANE	0.00797	0.00131	0.0081	0.00144	0.00823	0.00161
PENTANE	0.01212	0.00181	0.01231	0.002	0.01251	0.00226
HEXANE	0.00651	3.82E-04	0.00655	4.26E-04	0.00659	4.89E-04
HEPTANE	3.95E-04	1.19E-05	3.97E-04	1.34E-05	3.97E-04	1.56E-05
OCTANE	7.05E-10	1.03E-11	7.07E-10	1.17E-11	7.06E-10	1.37E-11
NONANE	0	0	0	0	0	0
H2S	3.69E-08	5.32E-08	3.44E-08	5.11E-08	3.10E-08	4.77E-08
COS	1.23E-08	1.03E-08	1.48E-08	1.28E-08	1.77E-08	1.62E-08
CH4S	1.34E-09	6.12E-10	1.40E-09	6.75E-10	1.47E-09	7.59E-10
ETSH	7.86E-09	1.99E-09	8.06E-09	2.20E-09	8.28E-09	2.47E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6561.47	4745.36	6560.16	4731.23	6586.75	4729.91

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	19		20		21	
COMPONENT	X	Y	X	Y	X	Y
N2	2.85E-17	2.52E-16	4.59E-18	3.93E-17	7.62E-19	6.30E-18
CO2	1.39E-05	3.97E-05	6.64E-06	1.92E-05	3.11E-06	9.10E-06
METHANE	9.45E-08	4.22E-07	2.93E-08	1.30E-07	9.08E-09	4.01E-08
ETHANE	0.32329	0.53	0.26214	0.44587	0.20476	0.35924
PROPANE	0.53387	0.41813	0.59137	0.49547	0.64577	0.57516
IBUTANE	0.0574	0.02514	0.05935	0.02844	0.06103	0.03178
BUTANE	0.0574	0.02167	0.05893	0.02446	0.06018	0.02731
IPENTANE	0.00835	0.00183	0.00844	0.00209	0.00849	0.00235
PENTANE	0.01268	0.00258	0.0128	0.00296	0.01286	0.00335
HEXANE	0.0066	5.71E-04	0.00657	6.68E-04	0.00652	7.72E-04
HEPTANE	3.96E-04	1.84E-05	3.93E-04	2.19E-05	3.88E-04	2.57E-05
OCTANE	7.02E-10	1.64E-11	6.93E-10	1.99E-11	6.82E-10	2.38E-11
NONANE	0	0	0	0	0	0
H2S	2.69E-08	4.29E-08	2.23E-08	3.70E-08	1.79E-08	3.06E-08
COS	2.11E-08	2.03E-08	2.44E-08	2.49E-08	2.73E-08	2.93E-08
CH4S	1.55E-09	8.64E-10	1.63E-09	9.82E-10	1.70E-09	1.10E-09
ETSH	8.51E-09	2.81E-09	8.71E-09	3.20E-09	8.87E-09	3.60E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	6654.76	4756.5	6768.02	4824.51	6916.75	4937.77

TRAY	22		23		24	
COMPONENT	X	Y	X	Y	X	Y
N2	1.30E-19	1.04E-18	2.28E-20	1.76E-19	4.09E-21	3.05E-20
CO2	1.43E-06	4.22E-06	6.55E-07	1.93E-06	2.98E-07	8.77E-07
METHANE	2.83E-09	1.24E-08	8.90E-10	3.82E-09	2.81E-10	1.19E-09
ETHANE	0.15499	0.27839	0.11444	0.20896	0.08293	0.15309
PROPANE	0.69328	0.6496	0.7322	0.71356	0.76256	0.76504
IBUTANE	0.06236	0.03486	0.06337	0.03748	0.06412	0.03957
BUTANE	0.06113	0.02993	0.06183	0.03217	0.06233	0.03396
IPENTANE	0.00851	0.0026	0.00851	0.00281	0.0085	0.00298
PENTANE	0.01288	0.00371	0.01288	0.00403	0.01286	0.00428
HEXANE	0.00646	8.72E-04	0.00639	9.62E-04	0.00633	0.00104
HEPTANE	3.82E-04	2.96E-05	3.76E-04	3.30E-05	3.71E-04	3.59E-05
OCTANE	6.69E-10	2.77E-11	6.57E-10	3.15E-11	6.47E-10	3.47E-11
NONANE	0	0	0	0	0	0
H2S	1.38E-08	2.43E-08	1.04E-08	1.86E-08	7.73E-09	1.40E-08
COS	2.97E-08	3.32E-08	3.13E-08	3.62E-08	3.23E-08	3.82E-08
CH4S	1.76E-09	1.22E-09	1.81E-09	1.31E-09	1.85E-09	1.39E-09
ETSH	9.00E-09	3.98E-09	9.08E-09	4.29E-09	9.14E-09	4.55E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7081.55	5086.5	7242.03	5251.3	7383.62	5411.78

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	25		26		27	
COMPONENT	X	Y	X	Y	X	Y
N2	7.47E-22	5.44E-21	1.38E-22	9.88E-22	2.58E-23	1.82E-22
CO2	1.35E-07	3.96E-07	6.07E-08	1.78E-07	2.73E-08	7.99E-08
METHANE	8.91E-11	3.73E-10	2.84E-11	1.18E-10	9.07E-12	3.74E-11
ETHANE	0.05927	0.11021	0.04195	0.07836	0.02948	0.05523
PROPANE	0.7854	0.80457	0.80214	0.83392	0.81418	0.85522
IBUTANE	0.06466	0.04117	0.06506	0.04236	0.06536	0.04323
BUTANE	0.06268	0.03533	0.06293	0.03635	0.06311	0.03709
IPENTANE	0.0085	0.00311	0.00849	0.00321	0.00848	0.00328
PENTANE	0.01284	0.00448	0.01282	0.00462	0.01281	0.00473
HEXANE	0.00628	0.00109	0.00625	0.00114	0.00622	0.00117
HEPTANE	3.68E-04	3.82E-05	3.65E-04	4.00E-05	3.63E-04	4.13E-05
OCTANE	6.39E-10	3.72E-11	6.33E-10	3.92E-11	6.29E-10	4.07E-11
NONANE	0	0	0	0	0	0
H2S	5.64E-09	1.03E-08	4.08E-09	7.46E-09	2.92E-09	5.37E-09
COS	3.27E-08	3.93E-08	3.27E-08	3.98E-08	3.23E-08	3.96E-08
CH4S	1.87E-09	1.45E-09	1.89E-09	1.49E-09	1.91E-09	1.53E-09
ETSH	9.18E-09	4.74E-09	9.21E-09	4.89E-09	9.23E-09	4.99E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7499.72	5553.38	7589.97	5669.48	7657.39	5759.72

TRAY	28		29		30	
COMPONENT	X	Y	X	Y	X	Y
N2	4.84E-24	3.38E-23	9.14E-25	6.35E-24	1.73E-25	1.20E-24
CO2	1.23E-08	3.59E-08	5.51E-09	1.61E-08	2.48E-09	7.22E-09
METHANE	2.90E-12	1.19E-11	9.31E-13	3.81E-12	2.99E-13	1.22E-12
ETHANE	0.02061	0.03869	0.01435	0.02698	0.00996	0.01875
PROPANE	0.8227	0.87042	0.82864	0.88113	0.83266	0.88856
IBUTANE	0.0656	0.04388	0.06581	0.04437	0.06605	0.04478
BUTANE	0.06326	0.03764	0.06338	0.03804	0.06352	0.03835
IPENTANE	0.00848	0.00333	0.00847	0.00337	0.00847	0.0034
PENTANE	0.0128	0.00481	0.0128	0.00486	0.01279	0.0049
HEXANE	0.0062	0.00119	0.00619	0.00121	0.00618	0.00122
HEPTANE	3.61E-04	4.23E-05	3.60E-04	4.29E-05	3.59E-04	4.34E-05
OCTANE	6.26E-10	4.18E-11	6.24E-10	4.26E-11	6.22E-10	4.32E-11
NONANE	0	0	0	0	0	0
H2S	2.09E-09	3.84E-09	1.48E-09	2.73E-09	1.05E-09	1.93E-09
COS	3.17E-08	3.91E-08	3.08E-08	3.81E-08	2.98E-08	3.70E-08
CH4S	1.93E-09	1.55E-09	1.94E-09	1.58E-09	1.95E-09	1.60E-09
ETSH	9.25E-09	5.07E-09	9.26E-09	5.13E-09	9.28E-09	5.17E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7706.79	5827.14	7741.99	5876.54	7766.62	5911.74

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	31		32		33	
COMPONENT	X	Y	X	Y	X	Y
N2	3.29E-26	2.27E-25	6.27E-27	4.31E-26	1.20E-27	8.19E-27
CO2	1.11E-09	3.24E-09	4.98E-10	1.45E-09	2.23E-10	6.51E-10
METHANE	9.61E-14	3.91E-13	3.09E-14	1.26E-13	9.95E-15	4.04E-14
ETHANE	0.0069	0.01299	0.00476	0.00897	0.00328	0.00618
PROPANE	0.83522	0.89357	0.83652	0.89674	0.83657	0.89834
IBUTANE	0.06638	0.04518	0.06689	0.04567	0.06774	0.04638
BUTANE	0.0637	0.03863	0.064	0.03894	0.06455	0.03938
IPENTANE	0.00848	0.00342	0.00848	0.00344	0.0085	0.00346
PENTANE	0.0128	0.00493	0.01281	0.00496	0.01283	0.00498
HEXANE	0.00617	0.00123	0.00617	0.00124	0.00617	0.00124
HEPTANE	3.59E-04	4.38E-05	3.59E-04	4.41E-05	3.59E-04	4.44E-05
OCTANE	6.21E-10	4.36E-11	6.21E-10	4.39E-11	6.20E-10	4.42E-11
NONANE	0	0	0	0	0	0
H2S	7.40E-10	1.37E-09	5.21E-10	9.62E-10	3.65E-10	6.75E-10
COS	2.87E-08	3.56E-08	2.74E-08	3.41E-08	2.60E-08	3.24E-08
CH4S	1.97E-09	1.62E-09	2.00E-09	1.64E-09	2.04E-09	1.68E-09
ETSH	9.30E-09	5.20E-09	9.33E-09	5.24E-09	9.38E-09	5.29E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7783.43	5936.37	7793.98	5953.19	7799.01	5963.73

TRAY	34		35		36	
COMPONENT	X	Y	X	Y	X	Y
N2	2.28E-28	1.56E-27	4.32E-29	2.96E-28	8.01E-30	5.49E-29
CO2	1.00E-10	2.92E-10	4.47E-11	1.31E-10	1.99E-11	5.83E-11
METHANE	3.20E-15	1.30E-14	1.03E-15	4.18E-15	3.31E-16	1.34E-15
ETHANE	0.00224	0.00423	0.00153	0.00288	0.00103	0.00195
PROPANE	0.83503	0.89834	0.83108	0.89634	0.8231	0.89128
IBUTANE	0.0692	0.04751	0.07171	0.04941	0.07601	0.05266
BUTANE	0.06556	0.04011	0.06747	0.04143	0.07107	0.04389
IPENTANE	0.00854	0.00349	0.00864	0.00354	0.00886	0.00365
PENTANE	0.01288	0.00502	0.01301	0.00509	0.01331	0.00524
HEXANE	0.00618	0.00125	0.00621	0.00126	0.00626	0.00128
HEPTANE	3.59E-04	4.46E-05	3.60E-04	4.50E-05	3.62E-04	4.57E-05
OCTANE	6.21E-10	4.45E-11	6.22E-10	4.49E-11	6.25E-10	4.56E-11
NONANE	0	0	0	0	0	0
H2S	2.55E-10	4.71E-10	1.77E-10	3.27E-10	1.21E-10	2.25E-10
COS	2.45E-08	3.06E-08	2.29E-08	2.87E-08	2.11E-08	2.65E-08
CH4S	2.09E-09	1.73E-09	2.17E-09	1.80E-09	2.28E-09	1.90E-09
ETSH	9.50E-09	5.37E-09	9.72E-09	5.51E-09	1.02E-08	5.79E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7798.11	5968.77	7789.03	5967.86	7766.25	5958.78

Table C-3b (Continued) Molar composition of the deethanizer from simulation

TRAY	37		38		39	
COMPONENT	X	Y	X	Y	X	Y
N2	1.29E-30	8.81E-30	0	0	0	0
CO2	8.82E-12	2.59E-11	3.84E-12	1.14E-11	1.62E-12	4.86E-12
METHANE	1.06E-16	4.32E-16	3.37E-17	1.38E-16	1.05E-17	4.34E-17
ETHANE	6.81E-04	0.0013	4.40E-04	8.46E-04	2.71E-04	5.31E-04
PROPANE	0.80797	0.88106	0.77998	0.86171	0.72866	0.82584
IBUTANE	0.08321	0.05821	0.09482	0.0675	0.11217	0.0825
BUTANE	0.07782	0.04851	0.09017	0.05718	0.11155	0.07305
IPENTANE	0.00944	0.00393	0.01096	0.00465	0.01494	0.00655
PENTANE	0.01411	0.00561	0.01629	0.00659	0.02233	0.00933
HEXANE	0.0064	0.00133	0.00696	0.00148	0.00957	0.00213
HEPTANE	3.67E-04	4.70E-05	3.85E-04	5.07E-05	5.01E-04	6.93E-05
OCTANE	6.31E-10	4.69E-11	6.50E-10	4.98E-11	7.91E-10	6.42E-11
NONANE	0	0	0	0	0	0
H2S	8.18E-11	1.52E-10	5.38E-11	1.01E-10	3.39E-11	6.47E-11
COS	1.91E-08	2.42E-08	1.69E-08	2.17E-08	1.42E-08	1.87E-08
CH4S	2.44E-09	2.05E-09	2.64E-09	2.25E-09	2.87E-09	2.51E-09
ETSH	1.11E-08	6.36E-09	1.28E-08	7.50E-09	1.63E-08	9.78E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	7717.23	5936.01	7611.62	5886.98	7368.96	5781.38

TRAY	40	
COMPONENT	X	Y
N2	0	0
CO2	6.25E-13	1.95E-12
METHANE	3.04E-18	1.29E-17
ETHANE	1.52E-04	3.10E-04
PROPANE	0.63511	0.75958
IBUTANE	0.13374	0.10504
BUTANE	0.14423	0.10075
IPENTANE	0.02486	0.01167
PENTANE	0.03829	0.01705
HEXANE	0.02223	0.00539
HEPTANE	0.00138	2.10E-04
OCTANE	2.50E-09	2.27E-10
NONANE	0	0
H2S	1.95E-11	3.86E-11
COS	1.10E-08	1.53E-08
CH4S	3.04E-09	2.81E-09
ETSH	2.25E-08	1.42E-08
PN1THIOL	0	0
BU1THIOL	0	0
TEG	0	0
H2O	0	0
RATE, KG-MOL/HR	1830.25	5538.71

Table C-4a Column summary of the depropanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
1	53.9	17.92	2454.1		2464.9M	2871.1V	
2	54	17.92	2454.3	2860.3			
3	54	17.92	2454	2860.5			
4	54	17.92	2454.1	2860.2			
5	54	17.92	2457.4	2860.3			
6	54	17.92	2459	2863.6			
7	54	17.92	2456.6	2865.2			
8	54	17.92	2455.8	2862.8			
9	54	17.92	2455.2	2862			
10	54	17.92	2454.4	2861.4			
11	54	17.92	2453.5	2860.6			
12	54.1	17.92	2452.1	2859.7			
13	54.1	17.92	2449.9	2858.3			
14	54.2	17.92	2446.2	2856.1			
15	54.4	17.92	2440	2852.4			
16	54.8	17.92	2430	2846.2			
17	55.3	17.92	2413.9	2836.2			
18	56.2	17.92	2388.9	2820.1			
19	57.7	17.92	2352	2795.1			
20	59.9	17.92	2302.1	2758.2			
21	63.1	17.93	2241.3	2708.3			
22	67.3	17.93	2174.1	2647.5			
23	72.6	17.93	802.9	2580.3		1300.9L	
24	78.6	17.93	773.9	2510.1			
25	81.2	17.93	759.2	2481			
26	82.4	17.93	750.2	2466.3			
27	83.1	17.93	744.3	2457.3			
28	83.5	17.93	740.4	2451.4			
29	83.7	17.93	737.8	2447.5			
30	83.9	17.93	736.1	2444.9			
31	84	17.93	735.1	2443.3			
32	84	17.93	734.5	2442.2			
33	84.1	17.93	734.2	2441.7			
34	84.1	17.93	734.1	2441.4			
35	84.2	17.93	734	2441.2			
36	84.2	17.93	733.8	2441.1			
37	84.2	17.93	733.6	2441			
38	84.2	17.93	733.3	2440.8			
39	84.2	17.93	733	2440.5			
40	84.2	17.93	732.6	2440.1			
41	84.2	17.93	732	2439.7			
42	84.2	17.93	731.6	2439.2			
43	84.2	17.93	731	2438.7			
44	84.2	17.93	730.2	2438.1			
45	84.3	17.93	729.1	2437.4			
46	84.3	17.93	727.2	2436.2			
47	84.4	17.93	724.3	2434.4			
48	84.6	17.93	719.3	2431.4			
49	84.8	17.93	711.2	2426.5			

Table C-4a (Continued) Column summary of the depropanizer from simulation

TRAY	TEMP DEG C	PRESSURE BAR(GA)	LIQUID	VAPOR	FEED	PRODUCT	DUTIES MM KW
			KG-MOL/HR				
50	85.2	17.93	698.3	2418.4			
51	85.8	17.93	1795.4	2405.5	1830.2M		
52	96.3	17.93	1776.9	1672.3			
53	106.7	17.93	1777.6	1653.8			
54	116	17.93	1788	1654.5			
55	124.1	17.93	1803.3	1664.9			
56	131	17.93	1822.2	1680.2			
57	136.8	17.93	1844	1699.1			
58	141.4	17.93	1866.8	1720.9			
59	145.1	17.93	1888.8	1743.7			
60	147.9	17.94	1908	1765.7			
61	150	17.94	1923.9	1784.9			
62	151.5	17.94	1936.4	1800.8			
63	152.6	17.94	1946	1813.3			
64	153.4	17.94	1953.2	1822.9			
65	153.9	17.94	1958.6	1830.1			
66	154.3	17.94	1962.7	1835.5			
67	154.6	17.94	1965.8	1839.6			
68	154.8	17.94	1968.1	1842.7			
69	155	17.94	1969.9	1845			
70	155.1	17.94	1971.2	1846.8			
71	155.3	17.94	1972.1	1848.1			
72	155.3	17.94	1972.7	1849			
73	155.4	17.94	1972.9	1849.6			
74	155.5	17.94	1973	1849.8			
75	155.6	17.94	1973	1849.9			
76	155.7	17.94	1972.8	1849.9			
77	155.8	17.94	1972.5	1849.7			
78	155.8	17.94	1972.1	1849.4			
79	155.9	17.94	1971.6	1849			
80	156	17.94	1971.1	1848.5			
81	156.1	17.94	1970.5	1848			
82	156.2	17.94	1969.9	1847.4			
83	156.3	17.94	1969.2	1846.8			
84	156.4	17.94	1968.4	1846.1			
85	156.6	17.94	1967.5	1845.3			
86	156.7	17.94	1966.4	1844.4			
87	156.9	17.94	1965.1	1843.3			
88	157	17.94	1963.3	1841.9			
89	157.3	17.94	1960.9	1840.2			
90	157.5	17.94	1957.6	1837.8			
91	157.9	17.94	1952.8	1834.5			
92	158.4	17.94	1945.8	1829.7			
93	159.2	17.94	1935.5	1822.6			
94	160.2	17.94	1920.8	1812.4			
95	161.8	17.94	1900.6	1797.7			
96	164.1	17.94	1874.4	1777.5			
97	167.2	17.94	1843.4	1751.3			
98R	171.5	17.94		1720.2		123.1L	0.0076

Table C-4b Molar composition of the depropanizer from simulation

TRAY	1		2		3	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	6.17E-13	2.52E-12	2.16E-13	8.83E-13	1.32E-13	5.39E-13
METHANE	1.88E-18	1.26E-17	5.08E-19	3.41E-18	3.33E-19	2.24E-18
ETHANE	2.41E-04	5.38E-04	1.26E-04	2.82E-04	8.23E-05	1.84E-04
PROPANE	0.99975	0.99946	0.99986	0.99971	0.99989	0.9998
IBUTANE	7.40E-06	3.85E-06	1.32E-05	6.88E-06	2.29E-05	1.19E-05
BUTANE	2.48E-07	1.10E-07	5.14E-07	2.28E-07	1.03E-06	4.56E-07
IPENTANE	8.99E-14	2.27E-14	3.17E-13	8.02E-14	1.09E-12	2.75E-13
PENTANE	2.13E-14	5.10E-15	7.93E-14	1.90E-14	2.87E-13	6.87E-14
HEXANE	4.02E-30	3.67E-31	3.82E-29	3.49E-30	3.59E-28	3.28E-29
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	1.89E-11	4.16E-11	1.17E-11	2.58E-11	8.93E-12	1.96E-11
COS	1.46E-08	1.78E-08	1.35E-08	1.64E-08	1.27E-08	1.54E-08
CH4S	3.03E-11	2.05E-11	4.75E-11	3.22E-11	6.92E-11	4.70E-11
ETSH	4.52E-15	1.83E-15	1.11E-14	4.49E-15	2.49E-14	1.01E-14
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2454.12	2871.11	2454.26	2860.32	2453.97	2860.47

TRAY	4		5		6	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.14E-13	4.67E-13	1.11E-13	4.51E-13	1.10E-13	4.48E-13
METHANE	3.11E-19	2.09E-18	3.08E-19	2.07E-18	3.07E-19	2.06E-18
ETHANE	6.54E-05	1.46E-04	5.89E-05	1.32E-04	5.64E-05	1.26E-04
PROPANE	0.99989	0.99983	0.99987	0.99983	0.99983	0.99981
IBUTANE	3.88E-05	2.01E-05	6.50E-05	3.38E-05	1.08E-04	5.63E-05
BUTANE	2.02E-06	8.98E-07	3.95E-06	1.75E-06	7.67E-06	3.40E-06
IPENTANE	3.70E-12	9.36E-13	1.26E-11	3.18E-12	4.26E-11	1.08E-11
PENTANE	1.03E-12	2.47E-13	3.69E-12	8.85E-13	1.32E-11	3.17E-12
HEXANE	3.37E-27	3.08E-28	3.16E-26	2.89E-27	2.97E-25	2.71E-26
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	7.83E-12	1.72E-11	7.41E-12	1.63E-11	7.24E-12	1.59E-11
COS	1.21E-08	1.48E-08	1.17E-08	1.43E-08	1.14E-08	1.39E-08
CH4S	9.67E-11	6.56E-11	1.31E-10	8.92E-11	1.75E-10	1.19E-10
ETSH	5.43E-14	2.20E-14	1.16E-13	4.72E-14	2.48E-13	1.00E-13
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2454.1	2860.17	2457.44	2860.3	2459.02	2863.65

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	7		8		9	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.09E-13	4.47E-13	1.10E-13	4.47E-13	1.10E-13	4.47E-13
METHANE	3.07E-19	2.06E-18	3.07E-19	2.06E-18	3.07E-19	2.07E-18
ETHANE	5.54E-05	1.24E-04	5.51E-05	1.23E-04	5.49E-05	1.23E-04
PROPANE	0.99975	0.99978	0.99962	0.99971	0.9994	0.9996
IBUTANE	1.80E-04	9.35E-05	2.98E-04	1.55E-04	4.93E-04	2.56E-04
BUTANE	1.49E-05	6.60E-06	2.88E-05	1.28E-05	5.57E-05	2.47E-05
IPENTANE	1.44E-10	3.66E-11	4.90E-10	1.24E-10	1.66E-09	4.20E-10
PENTANE	4.74E-11	1.14E-11	1.70E-10	4.07E-11	6.09E-10	1.46E-10
HEXANE	2.78E-24	2.55E-25	2.61E-23	2.39E-24	2.45E-22	2.24E-23
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	7.17E-12	1.58E-11	7.14E-12	1.57E-11	7.13E-12	1.57E-11
COS	1.12E-08	1.37E-08	1.11E-08	1.35E-08	1.10E-08	1.34E-08
CH4S	2.31E-10	1.57E-10	3.01E-10	2.04E-10	3.90E-10	2.65E-10
ETSH	5.26E-13	2.13E-13	1.11E-12	4.52E-13	2.36E-12	9.57E-13
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2456.57	2865.22	2455.84	2862.78	2455.2	2862.04

TRAY	10		11		12	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.10E-13	4.47E-13	1.10E-13	4.47E-13	1.10E-13	4.47E-13
METHANE	3.07E-19	2.07E-18	3.07E-19	2.07E-18	3.07E-19	2.07E-18
ETHANE	5.49E-05	1.23E-04	5.49E-05	1.23E-04	5.49E-05	1.23E-04
PROPANE	0.99902	0.99941	0.99839	0.99909	0.99733	0.99855
IBUTANE	8.14E-04	4.23E-04	0.00134	6.99E-04	0.00221	0.00115
BUTANE	1.08E-04	4.78E-05	2.08E-04	9.24E-05	4.01E-04	1.78E-04
IPENTANE	5.62E-09	1.42E-09	1.90E-08	4.83E-09	6.44E-08	1.63E-08
PENTANE	2.18E-09	5.22E-10	7.80E-09	1.87E-09	2.79E-08	6.69E-09
HEXANE	2.30E-21	2.10E-22	2.15E-20	1.97E-21	2.01E-19	1.85E-20
HEPTANE	0	0	0	0	0	0
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	7.13E-12	1.57E-11	7.13E-12	1.57E-11	7.13E-12	1.57E-11
COS	1.09E-08	1.33E-08	1.09E-08	1.33E-08	1.08E-08	1.32E-08
CH4S	5.02E-10	3.41E-10	6.43E-10	4.37E-10	8.21E-10	5.58E-10
ETSH	4.99E-12	2.02E-12	1.05E-11	4.28E-12	2.23E-11	9.05E-12
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2454.41	2861.41	2453.48	2860.61	2452.12	2859.68

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	13		14		15	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.10E-13	4.47E-13	1.09E-13	4.48E-13	1.09E-13	4.48E-13
METHANE	3.07E-19	2.07E-18	3.07E-19	2.07E-18	3.07E-19	2.07E-18
ETHANE	5.48E-05	1.23E-04	5.48E-05	1.23E-04	5.47E-05	1.23E-04
PROPANE	0.99553	0.99763	0.99248	0.99609	0.98731	0.99347
IBUTANE	0.00364	0.0019	0.00598	0.00313	0.00978	0.00513
BUTANE	7.74E-04	3.44E-04	0.00149	6.64E-04	0.00285	0.00128
IPENTANE	2.18E-07	5.53E-08	7.34E-07	1.87E-07	2.46E-06	6.30E-07
PENTANE	9.96E-08	2.39E-08	3.55E-07	8.54E-08	1.26E-06	3.04E-07
HEXANE	1.88E-18	1.73E-19	1.75E-17	1.61E-18	1.62E-16	1.50E-17
HEPTANE	5.94E-30	2.72E-31	1.11E-28	5.10E-30	2.06E-27	9.52E-29
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	7.13E-12	1.57E-11	7.12E-12	1.57E-11	7.11E-12	1.57E-11
COS	1.08E-08	1.32E-08	1.07E-08	1.31E-08	1.07E-08	1.31E-08
CH4S	1.04E-09	7.11E-10	1.32E-09	9.02E-10	1.67E-09	1.14E-09
ETSH	4.70E-11	1.91E-11	9.89E-11	4.03E-11	2.07E-10	8.49E-11
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2449.89	2858.32	2446.18	2856.09	2440.05	2852.38

TRAY	16		17		18	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.09E-13	4.49E-13	1.09E-13	4.50E-13	1.09E-13	4.52E-13
METHANE	3.07E-19	2.08E-18	3.07E-19	2.08E-18	3.07E-19	2.09E-18
ETHANE	5.45E-05	1.23E-04	5.43E-05	1.23E-04	5.38E-05	1.23E-04
PROPANE	0.97863	0.98905	0.9642	0.98162	0.94072	0.96928
IBUTANE	0.01587	0.00838	0.02548	0.0136	0.04016	0.02181
BUTANE	0.00543	0.00244	0.01022	0.00465	0.01892	0.00875
IPENTANE	8.22E-06	2.11E-06	2.71E-05	7.04E-06	8.79E-05	2.32E-05
PENTANE	4.45E-06	1.08E-06	1.56E-05	3.81E-06	5.35E-05	1.33E-05
HEXANE	1.49E-15	1.39E-16	1.35E-14	1.28E-15	1.19E-13	1.15E-14
HEPTANE	3.80E-26	1.77E-27	6.87E-25	3.25E-26	1.21E-23	5.88E-25
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	7.10E-12	1.57E-11	7.08E-12	1.57E-11	7.04E-12	1.58E-11
COS	1.06E-08	1.31E-08	1.04E-08	1.30E-08	1.02E-08	1.29E-08
CH4S	2.08E-09	1.43E-09	2.58E-09	1.79E-09	3.13E-09	2.21E-09
ETSH	4.32E-10	1.78E-10	8.92E-10	3.70E-10	1.81E-09	7.63E-10
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2430.03	2846.25	2413.93	2836.23	2388.87	2820.13

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	19		20		21	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.08E-13	4.54E-13	1.07E-13	4.58E-13	1.06E-13	4.64E-13
METHANE	3.07E-19	2.11E-18	3.07E-19	2.13E-18	3.07E-19	2.16E-18
ETHANE	5.32E-05	1.23E-04	5.22E-05	1.24E-04	5.08E-05	1.24E-04
PROPANE	0.90392	0.94926	0.84943	0.91799	0.775	0.87193
IBUTANE	0.06149	0.03432	0.0902	0.05244	0.12469	0.07667
BUTANE	0.03408	0.01617	0.05891	0.02906	0.09615	0.05007
IPENTANE	2.77E-04	7.51E-05	8.35E-04	2.36E-04	0.00237	7.10E-04
PENTANE	1.79E-04	4.57E-05	5.75E-04	1.53E-04	0.00174	4.89E-04
HEXANE	1.01E-12	1.02E-13	8.16E-12	8.65E-13	6.08E-11	6.94E-12
HEPTANE	2.05E-22	1.04E-23	3.26E-21	1.75E-22	4.75E-20	2.77E-21
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	6.98E-12	1.58E-11	6.88E-12	1.59E-11	6.76E-12	1.60E-11
COS	9.82E-09	1.27E-08	9.29E-09	1.24E-08	8.60E-09	1.20E-08
CH4S	3.71E-09	2.68E-09	4.21E-09	3.17E-09	4.54E-09	3.59E-09
ETSH	3.57E-09	1.55E-09	6.78E-09	3.05E-09	1.22E-08	5.76E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2351.99	2795.07	2302.1	2758.2	2241.28	2708.3

TRAY	22		23		24	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.04E-13	4.71E-13	1.02E-13	4.79E-13	1.01E-13	4.88E-13
METHANE	3.08E-19	2.21E-18	3.10E-19	2.26E-18	3.13E-19	2.31E-18
ETHANE	4.91E-05	1.25E-04	4.72E-05	1.25E-04	4.52E-05	1.26E-04
PROPANE	0.68306	0.80944	0.58144	0.73287	0.48045	0.64909
IBUTANE	0.15993	0.10556	0.18816	0.13475	0.20168	0.15771
BUTANE	0.14583	0.0814	0.20291	0.12288	0.25664	0.17008
IPENTANE	0.00623	0.00201	0.01491	0.00525	0.03219	0.01249
PENTANE	0.00489	0.00148	0.01253	0.00412	0.02899	0.0105
HEXANE	4.09E-10	5.14E-11	2.44E-09	3.45E-10	1.28E-08	2.05E-09
HEPTANE	6.17E-19	4.02E-20	6.99E-18	5.20E-19	6.81E-17	5.86E-18
OCTANE	0	0	0	0	0	0
NONANE	0	0	0	0	0	0
H2S	6.59E-12	1.61E-11	6.40E-12	1.62E-11	6.18E-12	1.63E-11
COS	7.78E-09	1.15E-08	6.91E-09	1.09E-08	6.08E-09	1.02E-08
CH4S	4.57E-09	3.85E-09	4.27E-09	3.86E-09	3.69E-09	3.59E-09
ETSH	2.04E-08	1.03E-08	3.16E-08	1.72E-08	4.50E-08	2.65E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	2174.07	2647.48	802.92	2580.27	773.91	2510.06

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	25		26		27	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.00E-13	4.92E-13	1.00E-13	4.95E-13	9.98E-14	4.96E-13
METHANE	3.14E-19	2.34E-18	3.14E-19	2.35E-18	3.15E-19	2.36E-18
ETHANE	4.44E-05	1.26E-04	4.41E-05	1.26E-04	4.40E-05	1.26E-04
PROPANE	0.44415	0.61838	0.43046	0.60803	0.42458	0.60445
IBUTANE	0.19933	0.16157	0.195	0.16061	0.19165	0.15914
BUTANE	0.27086	0.18645	0.27183	0.19041	0.26933	0.19041
IPENTANE	0.04418	0.01786	0.05215	0.02146	0.05732	0.02381
PENTANE	0.04143	0.01561	0.05052	0.01936	0.05707	0.02206
HEXANE	3.11E-08	5.26E-09	6.28E-08	1.09E-08	1.17E-07	2.05E-08
HEPTANE	2.72E-16	2.49E-17	9.32E-16	8.75E-17	3.03E-15	2.88E-16
OCTANE	1.41E-29	6.57E-31	9.16E-29	4.40E-30	5.76E-28	2.80E-29
NONANE	0	0	0	0	0	0
H2S	6.09E-12	1.63E-11	6.05E-12	1.64E-11	6.03E-12	1.64E-11
COS	5.79E-09	1.00E-08	5.69E-09	9.94E-09	5.64E-09	9.92E-09
CH4S	3.40E-09	3.40E-09	3.28E-09	3.31E-09	3.22E-09	3.27E-09
ETSH	5.06E-08	3.06E-08	5.26E-08	3.22E-08	5.33E-08	3.28E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	759.21	2481.04	750.16	2466.35	744.26	2457.3

TRAY	28		29		30	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.98E-14	4.97E-13	9.98E-14	4.97E-13	9.98E-14	4.98E-13
METHANE	3.15E-19	2.36E-18	3.15E-19	2.37E-18	3.15E-19	2.37E-18
ETHANE	4.39E-05	1.27E-04	4.38E-05	1.27E-04	4.38E-05	1.27E-04
PROPANE	0.42163	0.60309	0.41995	0.60248	0.41891	0.60216
IBUTANE	0.18943	0.15804	0.188	0.15731	0.1871	0.15685
BUTANE	0.26652	0.18945	0.26423	0.18848	0.26255	0.1877
IPENTANE	0.06061	0.02531	0.06267	0.02626	0.06393	0.02684
PENTANE	0.06176	0.02398	0.0651	0.02535	0.06747	0.02631
HEXANE	2.08E-07	3.68E-08	3.63E-07	6.43E-08	6.23E-07	1.11E-07
HEPTANE	9.64E-15	9.24E-16	3.03E-14	2.92E-15	9.47E-14	9.15E-15
OCTANE	3.56E-27	1.75E-28	2.18E-26	1.08E-27	1.33E-25	6.58E-27
NONANE	0	0	0	0	0	0
H2S	6.02E-12	1.64E-11	6.02E-12	1.64E-11	6.01E-12	1.64E-11
COS	5.62E-09	9.92E-09	5.61E-09	9.92E-09	5.60E-09	9.92E-09
CH4S	3.20E-09	3.25E-09	3.19E-09	3.24E-09	3.18E-09	3.24E-09
ETSH	5.34E-08	3.29E-08	5.33E-08	3.29E-08	5.32E-08	3.29E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	740.36	2451.4	737.79	2447.49	736.13	2444.92

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	31		32		33	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.98E-14	4.98E-13	9.98E-14	4.98E-13	9.98E-14	4.98E-13
METHANE	3.15E-19	2.37E-18	3.15E-19	2.37E-18	3.15E-19	2.37E-18
ETHANE	4.38E-05	1.27E-04	4.38E-05	1.27E-04	4.38E-05	1.27E-04
PROPANE	0.41824	0.60197	0.41778	0.60184	0.41747	0.60175
IBUTANE	0.18651	0.15656	0.18613	0.15637	0.18588	0.15625
BUTANE	0.26137	0.18715	0.26056	0.18676	0.26001	0.1865
IPENTANE	0.06468	0.0272	0.06512	0.02741	0.06537	0.02753
PENTANE	0.06916	0.027	0.07036	0.02749	0.07122	0.02784
HEXANE	1.06E-06	1.89E-07	1.80E-06	3.20E-07	3.03E-06	5.41E-07
HEPTANE	2.95E-13	2.85E-14	9.16E-13	8.88E-14	2.84E-12	2.75E-13
OCTANE	8.06E-25	4.00E-26	4.88E-24	2.43E-25	2.95E-23	1.47E-24
NONANE	0	0	0	0	0	0
H2S	6.01E-12	1.64E-11	6.01E-12	1.64E-11	6.01E-12	1.64E-11
COS	5.59E-09	9.92E-09	5.59E-09	9.92E-09	5.59E-09	9.92E-09
CH4S	3.18E-09	3.24E-09	3.18E-09	3.24E-09	3.18E-09	3.24E-09
ETSH	5.31E-08	3.29E-08	5.30E-08	3.28E-08	5.30E-08	3.28E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	735.11	2443.27	734.53	2442.25	734.22	2441.66

TRAY	34		35		36	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.98E-14	4.98E-13	9.98E-14	4.98E-13	9.98E-14	4.98E-13
METHANE	3.15E-19	2.37E-18	3.15E-19	2.37E-18	3.15E-19	2.37E-18
ETHANE	4.38E-05	1.27E-04	4.37E-05	1.27E-04	4.37E-05	1.27E-04
PROPANE	0.41725	0.60168	0.41708	0.60163	0.41696	0.60158
IBUTANE	0.18572	0.15617	0.1856	0.15612	0.18553	0.15608
BUTANE	0.25964	0.18632	0.25939	0.18621	0.25921	0.18613
IPENTANE	0.06551	0.0276	0.06558	0.02764	0.06561	0.02766
PENTANE	0.07184	0.0281	0.07229	0.02828	0.07263	0.02842
HEXANE	5.11E-06	9.13E-07	8.60E-06	1.54E-06	1.45E-05	2.59E-06
HEPTANE	8.79E-12	8.54E-13	2.72E-11	2.64E-12	8.42E-11	8.18E-12
OCTANE	1.78E-22	8.86E-24	1.07E-21	5.35E-23	6.47E-21	3.22E-22
NONANE	0	0	0	0	0	0
H2S	6.01E-12	1.64E-11	6.01E-12	1.64E-11	6.01E-12	1.64E-11
COS	5.59E-09	9.92E-09	5.58E-09	9.92E-09	5.58E-09	9.92E-09
CH4S	3.17E-09	3.24E-09	3.17E-09	3.24E-09	3.17E-09	3.24E-09
ETSH	5.29E-08	3.28E-08	5.29E-08	3.27E-08	5.29E-08	3.27E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	734.06	2441.36	733.95	2441.2	733.82	2441.09

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	37		38		39	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.97E-14	4.98E-13	9.97E-14	4.99E-13	9.97E-14	4.99E-13
METHANE	3.15E-19	2.37E-18	3.15E-19	2.37E-18	3.15E-19	2.37E-18
ETHANE	4.37E-05	1.27E-04	4.37E-05	1.27E-04	4.37E-05	1.27E-04
PROPANE	0.41688	0.60156	0.41682	0.60155	0.41679	0.60155
IBUTANE	0.18547	0.15606	0.18543	0.15604	0.1854	0.15602
BUTANE	0.25909	0.18607	0.259	0.18603	0.25894	0.18599
IPENTANE	0.06562	0.02767	0.06562	0.02767	0.0656	0.02766
PENTANE	0.07287	0.02851	0.07304	0.02858	0.07316	0.02863
HEXANE	2.43E-05	4.35E-06	4.09E-05	7.31E-06	6.87E-05	1.23E-05
HEPTANE	2.60E-10	2.53E-11	8.05E-10	7.82E-11	2.49E-09	2.42E-10
OCTANE	3.90E-20	1.94E-21	2.35E-19	1.17E-20	1.41E-18	7.06E-20
NONANE	0	0	0	0	0	0
H2S	6.01E-12	1.64E-11	6.01E-12	1.64E-11	6.01E-12	1.64E-11
COS	5.58E-09	9.92E-09	5.58E-09	9.92E-09	5.58E-09	9.92E-09
CH4S	3.17E-09	3.24E-09	3.17E-09	3.24E-09	3.17E-09	3.24E-09
ETSH	5.29E-08	3.27E-08	5.28E-08	3.27E-08	5.28E-08	3.27E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	733.62	2440.96	733.34	2440.76	733	2440.48

TRAY	40		41		42	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.97E-14	4.99E-13	9.97E-14	4.99E-13	9.98E-14	4.99E-13
METHANE	3.15E-19	2.37E-18	3.15E-19	2.37E-18	3.15E-19	2.37E-18
ETHANE	4.37E-05	1.27E-04	4.37E-05	1.27E-04	4.37E-05	1.27E-04
PROPANE	0.41677	0.60157	0.41676	0.6016	0.41676	0.60163
IBUTANE	0.18538	0.15601	0.18536	0.156	0.18533	0.15598
BUTANE	0.25888	0.18596	0.25883	0.18594	0.25878	0.18591
IPENTANE	0.06558	0.02765	0.06554	0.02764	0.06549	0.02762
PENTANE	0.07323	0.02866	0.07327	0.02867	0.07327	0.02867
HEXANE	1.15E-04	2.06E-05	1.94E-04	3.46E-05	3.25E-04	5.81E-05
HEPTANE	7.69E-09	7.47E-10	2.38E-08	2.31E-09	7.33E-08	7.13E-09
OCTANE	8.52E-18	4.25E-19	5.13E-17	2.56E-18	3.09E-16	1.54E-17
NONANE	0	0	0	0	0	0
H2S	6.01E-12	1.64E-11	6.01E-12	1.64E-11	6.01E-12	1.64E-11
COS	5.58E-09	9.92E-09	5.58E-09	9.92E-09	5.58E-09	9.92E-09
CH4S	3.17E-09	3.24E-09	3.17E-09	3.24E-09	3.17E-09	3.24E-09
ETSH	5.28E-08	3.27E-08	5.28E-08	3.27E-08	5.28E-08	3.27E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	732.57	2440.14	732.05	2439.71	731.56	2439.19

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	43		44		45	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.98E-14	4.99E-13	9.98E-14	4.99E-13	9.97E-14	4.99E-13
METHANE	3.15E-19	2.37E-18	3.15E-19	2.37E-18	3.15E-19	2.38E-18
ETHANE	4.37E-05	1.27E-04	4.37E-05	1.27E-04	4.37E-05	1.27E-04
PROPANE	0.41673	0.60167	0.41667	0.6017	0.41655	0.60174
IBUTANE	0.18529	0.15597	0.18522	0.15595	0.18511	0.15592
BUTANE	0.25871	0.18587	0.25862	0.18584	0.25846	0.18579
IPENTANE	0.06543	0.0276	0.06535	0.02757	0.06524	0.02754
PENTANE	0.07324	0.02867	0.07318	0.02865	0.07306	0.02861
HEXANE	5.45E-04	9.75E-05	9.13E-04	1.63E-04	0.00153	2.73E-04
HEPTANE	2.26E-07	2.20E-08	6.98E-07	6.78E-08	2.15E-06	2.09E-07
OCTANE	1.86E-15	9.26E-17	1.12E-14	5.56E-16	6.69E-14	3.34E-15
NONANE	0	0	0	0	0	0
H2S	6.01E-12	1.64E-11	6.01E-12	1.65E-11	6.01E-12	1.65E-11
COS	5.58E-09	9.92E-09	5.58E-09	9.93E-09	5.58E-09	9.93E-09
CH4S	3.17E-09	3.24E-09	3.17E-09	3.24E-09	3.17E-09	3.24E-09
ETSH	5.28E-08	3.27E-08	5.28E-08	3.27E-08	5.27E-08	3.27E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	730.98	2438.7	730.21	2438.12	729.07	2437.35

TRAY	46		47		48	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.97E-14	4.99E-13	9.97E-14	5.00E-13	9.97E-14	5.00E-13
METHANE	3.15E-19	2.38E-18	3.15E-19	2.38E-18	3.15E-19	2.38E-18
ETHANE	4.37E-05	1.27E-04	4.37E-05	1.27E-04	4.37E-05	1.27E-04
PROPANE	0.41632	0.60179	0.41594	0.60187	0.4153	0.60198
IBUTANE	0.18492	0.15587	0.1846	0.1558	0.18407	0.15566
BUTANE	0.2582	0.1857	0.25777	0.18557	0.25706	0.18536
IPENTANE	0.06507	0.02748	0.0648	0.02741	0.06437	0.02728
PENTANE	0.07288	0.02856	0.07257	0.02847	0.07206	0.02832
HEXANE	0.00255	4.57E-04	0.00425	7.62E-04	0.00703	0.00126
HEPTANE	6.60E-06	6.43E-07	2.02E-05	1.97E-06	6.17E-05	6.03E-06
OCTANE	4.01E-13	2.00E-14	2.39E-12	1.20E-13	1.42E-11	7.13E-13
NONANE	0	0	0	0	0	0
H2S	6.00E-12	1.65E-11	6.00E-12	1.65E-11	6.00E-12	1.65E-11
COS	5.58E-09	9.93E-09	5.58E-09	9.93E-09	5.57E-09	9.94E-09
CH4S	3.17E-09	3.24E-09	3.17E-09	3.24E-09	3.16E-09	3.24E-09
ETSH	5.27E-08	3.27E-08	5.26E-08	3.26E-08	5.24E-08	3.26E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	727.25	2436.21	724.26	2434.39	719.32	2431.39

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	49		50		51	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	9.96E-14	5.01E-13	9.95E-14	5.02E-13	9.93E-14	5.04E-13
METHANE	3.14E-19	2.38E-18	3.14E-19	2.39E-18	3.13E-19	2.40E-18
ETHANE	4.36E-05	1.27E-04	4.35E-05	1.28E-04	4.34E-05	1.28E-04
PROPANE	0.41425	0.60217	0.41255	0.60248	0.40984	0.603
IBUTANE	0.1832	0.15545	0.1818	0.1551	0.17958	0.15454
BUTANE	0.25588	0.185	0.25396	0.18441	0.2509	0.18347
IPENTANE	0.06367	0.02707	0.06254	0.02674	0.06077	0.02622
PENTANE	0.07123	0.02808	0.06989	0.02769	0.06778	0.02707
HEXANE	0.01154	0.00208	0.01866	0.00339	0.02947	0.00542
HEPTANE	1.86E-04	1.83E-05	5.55E-04	5.48E-05	0.00161	1.61E-04
OCTANE	8.35E-11	4.21E-12	4.83E-10	2.46E-11	2.73E-09	1.40E-10
NONANE	0	0	0	0	0	0
H2S	5.99E-12	1.65E-11	5.98E-12	1.65E-11	5.96E-12	1.66E-11
COS	5.57E-09	9.94E-09	5.55E-09	9.96E-09	5.54E-09	9.98E-09
CH4S	3.15E-09	3.23E-09	3.14E-09	3.23E-09	3.12E-09	3.23E-09
ETSH	5.22E-08	3.25E-08	5.18E-08	3.23E-08	5.11E-08	3.21E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	711.25	2426.45	698.34	2418.39	1795.4	2405.47

TRAY	52		53		54	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.02E-14	1.07E-13	4.01E-15	2.17E-14	7.83E-16	4.31E-15
METHANE	4.35E-20	3.36E-19	6.08E-21	4.67E-20	8.59E-22	6.53E-21
ETHANE	1.48E-05	4.66E-05	4.81E-06	1.59E-05	1.50E-06	5.16E-06
PROPANE	0.2692	0.44001	0.1613	0.28924	0.08959	0.1733
IBUTANE	0.19516	0.1928	0.18816	0.20968	0.16453	0.20216
BUTANE	0.31873	0.26937	0.3561	0.34246	0.35755	0.3826
IPENTANE	0.09734	0.04963	0.14952	0.0888	0.2146	0.14487
PENTANE	0.08597	0.04061	0.10877	0.05985	0.13499	0.08436
HEXANE	0.03189	0.00731	0.03438	0.00967	0.0369	0.01234
HEPTANE	0.00169	2.18E-04	0.00176	2.88E-04	0.00183	3.66E-04
OCTANE	2.82E-09	1.96E-10	2.89E-09	2.64E-10	2.95E-09	3.41E-10
NONANE	0	0	0	0	0	0
H2S	2.16E-12	6.39E-12	7.48E-13	2.32E-12	2.49E-13	8.04E-13
COS	2.99E-09	5.94E-09	1.49E-09	3.22E-09	7.00E-10	1.60E-09
CH4S	2.88E-09	3.35E-09	2.40E-09	3.09E-09	1.86E-09	2.58E-09
ETSH	7.63E-08	5.48E-08	1.01E-07	8.19E-08	1.22E-07	1.09E-07
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1776.92	1672.29	1777.63	1653.82	1788.04	1654.52

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	55		56		57	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.52E-16	8.41E-16	2.93E-17	1.63E-16	5.64E-18	3.14E-17
METHANE	1.23E-22	9.23E-22	1.78E-23	1.32E-22	2.61E-24	1.91E-23
ETHANE	4.55E-07	1.61E-06	1.35E-07	4.88E-07	3.96E-08	1.45E-07
PROPANE	0.04685	0.09622	0.02336	0.05028	0.01124	0.02506
IBUTANE	0.13312	0.17669	0.10134	0.14288	0.07358	0.10868
BUTANE	0.32937	0.38399	0.2833	0.3535	0.23094	0.30383
IPENTANE	0.28668	0.21479	0.35861	0.29214	0.42422	0.36923
PENTANE	0.16271	0.11267	0.18978	0.14262	0.21442	0.17187
HEXANE	0.03938	0.01519	0.04166	0.01805	0.04361	0.02073
HEPTANE	0.00189	4.46E-04	0.00195	5.25E-04	0.00199	5.97E-04
OCTANE	3.00E-09	4.21E-10	3.04E-09	4.98E-10	3.07E-09	5.70E-10
NONANE	0	0	0	0	0	0
H2S	8.01E-14	2.67E-13	2.52E-14	8.60E-14	7.82E-15	2.71E-14
COS	3.13E-10	7.52E-10	1.35E-10	3.36E-10	5.67E-11	1.45E-10
CH4S	1.35E-09	2.00E-09	9.43E-10	1.45E-09	6.34E-10	1.01E-09
ETSH	1.37E-07	1.31E-07	1.45E-07	1.47E-07	1.47E-07	1.56E-07
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1803.28	1664.93	1822.19	1680.17	1844	1699.08

TRAY	58		59		60	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	1.09E-18	6.05E-18	2.11E-19	1.17E-18	4.11E-20	2.26E-19
METHANE	3.88E-25	2.80E-24	5.83E-26	4.16E-25	8.84E-27	6.24E-26
ETHANE	1.15E-08	4.24E-08	3.31E-09	1.23E-08	9.53E-10	3.55E-09
PROPANE	0.00526	0.01204	0.00242	0.00563	0.00109	0.00259
IBUTANE	0.05153	0.07884	0.03514	0.05517	0.02349	0.03759
BUTANE	0.18065	0.24746	0.13703	0.19341	0.10161	0.14658
IPENTANE	0.47971	0.4394	0.52383	0.49861	0.55717	0.54556
PENTANE	0.23562	0.19851	0.25312	0.22141	0.26723	0.24031
HEXANE	0.0452	0.02309	0.04642	0.02506	0.04734	0.02661
HEPTANE	0.00202	6.60E-04	0.00204	7.12E-04	0.00206	7.53E-04
OCTANE	3.09E-09	6.33E-10	3.10E-09	6.85E-10	3.11E-09	7.26E-10
NONANE	0	0	0	0	0	0
H2S	2.39E-15	8.38E-15	7.28E-16	2.56E-15	2.20E-16	7.79E-16
COS	2.33E-11	6.07E-11	9.46E-12	2.50E-11	3.80E-12	1.01E-11
CH4S	4.15E-10	6.79E-10	2.67E-10	4.45E-10	1.69E-10	2.85E-10
ETSH	1.43E-07	1.57E-07	1.36E-07	1.53E-07	1.26E-07	1.45E-07
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1866.84	1720.89	1888.78	1743.73	1908	1765.67

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	61		62		63	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	8.01E-21	4.39E-20	1.57E-21	8.56E-21	3.07E-22	1.67E-21
METHANE	1.35E-27	9.44E-27	2.07E-28	1.44E-27	3.12E-29	2.16E-28
ETHANE	2.73E-10	1.02E-09	7.82E-11	2.92E-10	2.24E-11	8.36E-11
PROPANE	4.91E-04	0.00117	2.19E-04	5.25E-04	9.69E-05	2.34E-04
IBUTANE	0.01549	0.02511	0.01011	0.01655	0.00655	0.0108
BUTANE	0.07413	0.10862	0.05345	0.07919	0.03821	0.05707
IPENTANE	0.58131	0.58097	0.59807	0.60655	0.60916	0.62427
PENTANE	0.2785	0.25553	0.28758	0.26768	0.29504	0.27744
HEXANE	0.04801	0.02781	0.0485	0.0287	0.04885	0.02936
HEPTANE	0.00207	7.84E-04	0.00208	8.07E-04	0.00208	8.24E-04
OCTANE	3.11E-09	7.57E-10	3.11E-09	7.80E-10	3.11E-09	7.97E-10
NONANE	0	0	0	0	0	0
H2S	6.64E-17	2.35E-16	2.00E-17	7.09E-17	6.00E-18	2.13E-17
COS	1.52E-12	4.07E-12	6.03E-13	1.62E-12	2.39E-13	6.44E-13
CH4S	1.06E-10	1.80E-10	6.57E-11	1.13E-10	4.06E-11	7.02E-11
ETSH	1.16E-07	1.35E-07	1.05E-07	1.24E-07	9.45E-08	1.12E-07
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1923.87	1784.89	1936.39	1800.76	1945.98	1813.28

TRAY	64		65		66	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	6.02E-23	3.27E-22	1.18E-23	6.42E-23	2.32E-24	1.26E-23
METHANE	4.18E-30	2.88E-29	0	0	0	0
ETHANE	6.41E-12	2.39E-11	1.83E-12	6.84E-12	5.24E-13	1.96E-12
PROPANE	4.28E-05	1.03E-04	1.89E-05	4.57E-05	8.31E-06	2.01E-05
IBUTANE	0.00423	0.007	0.00272	0.00451	0.00174	0.0029
BUTANE	0.02716	0.04079	0.01922	0.02899	0.01356	0.02051
IPENTANE	0.61601	0.63597	0.61972	0.64318	0.6211	0.64705
PENTANE	0.30136	0.28546	0.30694	0.29225	0.31206	0.29823
HEXANE	0.04911	0.02984	0.0493	0.03018	0.04944	0.03044
HEPTANE	0.00209	8.37E-04	0.00209	8.46E-04	0.00209	8.52E-04
OCTANE	3.11E-09	8.10E-10	3.11E-09	8.19E-10	3.11E-09	8.25E-10
NONANE	0	0	0	0	0	0
H2S	1.80E-18	6.41E-18	5.41E-19	1.92E-18	1.62E-19	5.78E-19
COS	9.44E-14	2.55E-13	3.73E-14	1.01E-13	1.47E-14	3.98E-14
CH4S	2.50E-11	4.34E-11	1.54E-11	2.67E-11	9.44E-12	1.64E-11
ETSH	8.46E-08	1.01E-07	7.54E-08	9.02E-08	6.70E-08	8.04E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1953.21	1822.88	1958.63	1830.1	1962.71	1835.52

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	67		68		69	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	4.57E-25	2.48E-24	8.99E-26	4.87E-25	1.77E-26	9.59E-26
METHANE	0	0	0	0	0	0
ETHANE	1.50E-13	5.59E-13	4.29E-14	1.60E-13	1.23E-14	4.57E-14
PROPANE	3.65E-06	8.86E-06	1.60E-06	3.89E-06	7.03E-07	1.71E-06
IBUTANE	0.00111	0.00186	7.12E-04	0.00119	4.55E-04	7.60E-04
BUTANE	0.00954	0.01447	0.0067	0.01018	0.0047	0.00715
IPENTANE	0.62077	0.64848	0.61913	0.64807	0.61648	0.64629
PENTANE	0.31693	0.30371	0.32173	0.30892	0.32657	0.31405
HEXANE	0.04954	0.03063	0.04963	0.03077	0.0497	0.03089
HEPTANE	0.00209	8.57E-04	0.00209	8.60E-04	0.0021	8.63E-04
OCTANE	3.11E-09	8.30E-10	3.11E-09	8.33E-10	3.11E-09	8.36E-10
NONANE	0	0	0	0	0	0
H2S	4.87E-20	1.73E-19	1.46E-20	5.20E-20	4.38E-21	1.56E-20
COS	5.79E-15	1.57E-14	2.28E-15	6.17E-15	8.96E-16	2.43E-15
CH4S	5.78E-12	1.01E-11	3.54E-12	6.17E-12	2.16E-12	3.77E-12
ETSH	5.94E-08	7.14E-08	5.26E-08	6.33E-08	4.65E-08	5.61E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1965.8	1839.6	1968.14	1842.69	1969.91	1845.04

TRAY	70		71		72	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0.	0
CO2	3.48E-27	1.89E-26	6.85E-28	3.71E-27	1.34E-28	7.26E-28
METHANE	0	0	0	0	0	0
ETHANE	3.50E-15	1.31E-14	1.00E-15	3.74E-15	2.86E-16	1.07E-15
PROPANE	3.08E-07	7.50E-07	1.35E-07	3.29E-07	5.90E-08	1.44E-07
IBUTANE	2.90E-04	4.85E-04	1.85E-04	3.09E-04	1.18E-04	1.97E-04
BUTANE	0.00329	0.00502	0.00231	0.00351	0.00161	0.00246
IPENTANE	0.61301	0.64343	0.60886	0.63971	0.60411	0.63527
PENTANE	0.33155	0.31922	0.33673	0.32453	0.34217	0.33006
HEXANE	0.04976	0.03098	0.04983	0.03106	0.04989	0.03114
HEPTANE	0.0021	8.65E-04	0.0021	8.67E-04	0.0021	8.69E-04
OCTANE	3.11E-09	8.38E-10	3.11E-09	8.39E-10	3.11E-09	8.41E-10
NONANE	0	0	0	0	0	0
H2S	1.31E-21	4.68E-21	3.94E-22	1.40E-21	1.18E-22	4.20E-22
COS	3.52E-16	9.56E-16	1.39E-16	3.76E-16	5.44E-17	1.48E-16
CH4S	1.32E-12	2.31E-12	8.07E-13	1.41E-12	4.92E-13	8.61E-13
ETSH	4.11E-08	4.96E-08	3.62E-08	4.38E-08	3.19E-08	3.86E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1971.2	1846.8	1972.12	1848.09	1972.66	1849.01

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	73		74		75	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	2.55E-29	1.38E-28	4.20E-30	2.28E-29	0	0
METHANE	0	0	0	0	0	0
ETHANE	8.17E-17	3.05E-16	2.33E-17	8.72E-17	6.66E-18	2.49E-17
PROPANE	2.58E-08	6.30E-08	1.13E-08	2.75E-08	4.93E-09	1.20E-08
IBUTANE	7.49E-05	1.26E-04	4.77E-05	7.99E-05	3.03E-05	5.09E-05
BUTANE	0.00113	0.00172	7.85E-04	0.0012	5.47E-04	8.37E-04
IPENTANE	0.59883	0.63021	0.59305	0.62457	0.58678	0.6184
PENTANE	0.34791	0.33586	0.35399	0.34199	0.36044	0.34847
HEXANE	0.04996	0.03122	0.05003	0.03129	0.0501	0.03137
HEPTANE	0.0021	8.71E-04	0.0021	8.73E-04	0.0021	8.74E-04
OCTANE	3.11E-09	8.42E-10	3.11E-09	8.44E-10	3.11E-09	8.45E-10
NONANE	0	0	0	0	0	0
H2S	3.54E-23	1.26E-22	1.06E-23	3.77E-23	3.17E-24	1.13E-23
COS	2.14E-17	5.81E-17	8.40E-18	2.28E-17	3.30E-18	8.96E-18
CH4S	3.00E-13	5.25E-13	1.83E-13	3.20E-13	1.12E-13	1.95E-13
ETSH	2.81E-08	3.40E-08	2.47E-08	3.00E-08	2.18E-08	2.64E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1972.94	1849.55	1973.04	1849.83	1972.97	1849.93

TRAY	76		77		78	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.90E-18	7.11E-18	5.43E-19	2.03E-18	1.55E-19	5.79E-19
PROPANE	2.15E-09	5.26E-09	9.39E-10	2.30E-09	4.10E-10	1.00E-09
IBUTANE	1.93E-05	3.23E-05	1.22E-05	2.06E-05	7.77E-06	1.31E-05
BUTANE	3.81E-04	5.84E-04	2.65E-04	4.06E-04	1.84E-04	2.83E-04
IPENTANE	0.58003	0.61171	0.57279	0.60452	0.56507	0.5968
PENTANE	0.36728	0.35535	0.37455	0.36265	0.38227	0.37041
HEXANE	0.05018	0.03144	0.05027	0.03153	0.05037	0.03162
HEPTANE	0.00211	8.76E-04	0.00211	8.78E-04	0.00211	8.80E-04
OCTANE	3.11E-09	8.46E-10	3.11E-09	8.48E-10	3.12E-09	8.49E-10
NONANE	0	0	0	0	0	0
H2S	9.50E-25	3.38E-24	2.84E-25	1.01E-24	8.50E-26	3.03E-25
COS	1.29E-18	3.52E-18	5.08E-19	1.38E-18	1.99E-19	5.42E-19
CH4S	6.80E-14	1.19E-13	4.14E-14	7.25E-14	2.52E-14	4.42E-14
ETSH	1.91E-08	2.32E-08	1.68E-08	2.03E-08	1.47E-08	1.79E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1972.77	1849.86	1972.46	1849.66	1972.08	1849.35

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	79		80		81	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	4.41E-20	1.65E-19	1.26E-20	4.71E-20	3.58E-21	1.34E-20
PROPANE	1.78E-10	4.37E-10	7.77E-11	1.90E-10	3.38E-11	8.28E-11
IBUTANE	4.93E-06	8.29E-06	3.13E-06	5.26E-06	1.98E-06	3.34E-06
BUTANE	1.28E-04	1.96E-04	8.86E-05	1.36E-04	6.13E-05	9.45E-05
IPENTANE	0.55684	0.58857	0.5481	0.5798	0.53883	0.57048
PENTANE	0.39044	0.37863	0.3991	0.38735	0.40824	0.39658
HEXANE	0.05047	0.03172	0.0506	0.03182	0.05074	0.03195
HEPTANE	0.00211	8.82E-04	0.00211	8.84E-04	0.00212	8.86E-04
OCTANE	3.12E-09	8.51E-10	3.12E-09	8.53E-10	3.12E-09	8.54E-10
NONANE	0	0	0	0	0	0
H2S	2.54E-26	9.07E-26	7.60E-27	2.71E-26	2.27E-27	8.10E-27
COS	7.81E-20	2.13E-19	3.06E-20	8.33E-20	1.20E-20	3.27E-20
CH4S	1.53E-14	2.69E-14	9.31E-15	1.63E-14	5.66E-15	9.93E-15
ETSH	1.29E-08	1.56E-08	1.13E-08	1.37E-08	9.83E-09	1.20E-08
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1971.62	1848.97	1971.1	1848.51	1970.53	1847.99

TRAY	82		83		84	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.02E-21	3.82E-21	2.90E-22	1.09E-21	8.25E-23	3.10E-22
PROPANE	1.47E-11	3.60E-11	6.37E-12	1.57E-11	2.76E-12	6.80E-12
IBUTANE	1.26E-06	2.11E-06	7.94E-07	1.34E-06	5.02E-07	8.47E-07
BUTANE	4.24E-05	6.54E-05	2.93E-05	4.52E-05	2.02E-05	3.12E-05
IPENTANE	0.52903	0.56061	0.51866	0.55015	0.50771	0.5391
PENTANE	0.41789	0.40634	0.42803	0.41662	0.43868	0.42745
HEXANE	0.05092	0.0321	0.05115	0.03229	0.05146	0.03252
HEPTANE	0.00212	8.89E-04	0.00212	8.92E-04	0.00213	8.95E-04
OCTANE	3.13E-09	8.56E-10	3.13E-09	8.59E-10	3.13E-09	8.61E-10
NONANE	0	0	0	0	0	0
H2S	6.77E-28	2.42E-27	2.01E-28	7.19E-28	5.89E-29	2.11E-28
COS	4.70E-21	1.28E-20	1.84E-21	5.01E-21	7.19E-22	1.96E-21
CH4S	3.44E-15	6.04E-15	2.08E-15	3.67E-15	1.26E-15	2.22E-15
ETSH	8.57E-09	1.05E-08	7.47E-09	9.11E-09	6.49E-09	7.93E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1969.89	1847.42	1969.19	1846.79	1968.4	1846.08

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	85		86		87	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	2.35E-23	8.81E-23	6.67E-24	2.50E-23	1.89E-24	7.11E-24
PROPANE	1.20E-12	2.95E-12	5.18E-13	1.28E-12	2.24E-13	5.53E-13
IBUTANE	3.17E-07	5.36E-07	2.00E-07	3.38E-07	1.26E-07	2.14E-07
BUTANE	1.39E-05	2.15E-05	9.54E-06	1.48E-05	6.54E-06	1.02E-05
IPENTANE	0.49616	0.52744	0.48397	0.51512	0.4711	0.50213
PENTANE	0.44979	0.4388	0.46134	0.45065	0.47324	0.46297
HEXANE	0.0519	0.03285	0.05254	0.03331	0.05351	0.03398
HEPTANE	0.00213	8.98E-04	0.00214	9.02E-04	0.00214	9.07E-04
OCTANE	3.14E-09	8.63E-10	3.14E-09	8.66E-10	3.15E-09	8.70E-10
NONANE	0	0	0	0	0	0
H2S	1.65E-29	5.88E-29	3.78E-30	1.35E-29	0	0
COS	2.81E-22	7.67E-22	1.10E-22	3.00E-22	4.29E-23	1.17E-22
CH4S	7.66E-16	1.35E-15	4.64E-16	8.17E-16	2.80E-16	4.94E-16
ETSH	5.63E-09	6.89E-09	4.88E-09	5.98E-09	4.21E-09	5.17E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1967.49	1845.29	1966.4	1844.38	1965.05	1843.29

TRAY	88		89		90	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	5.37E-25	2.02E-24	1.52E-25	5.73E-25	4.32E-26	1.63E-25
PROPANE	9.66E-14	2.39E-13	4.16E-14	1.03E-13	1.79E-14	4.44E-14
IBUTANE	7.95E-08	1.35E-07	4.99E-08	8.47E-08	3.13E-08	5.32E-08
BUTANE	4.47E-06	6.97E-06	3.05E-06	4.77E-06	2.08E-06	3.25E-06
IPENTANE	0.45746	0.48841	0.44296	0.47388	0.42743	0.45842
PENTANE	0.48538	0.47567	0.49754	0.48862	0.5094	0.50161
HEXANE	0.055	0.035	0.05732	0.03657	0.06097	0.03903
HEPTANE	0.00215	9.13E-04	0.00217	9.23E-04	0.0022	9.38E-04
OCTANE	3.15E-09	8.74E-10	3.16E-09	8.80E-10	3.18E-09	8.88E-10
NONANE	0	0	0	0	0	0
H2S	0	0	0	0	0	0
COS	1.67E-23	4.58E-23	6.53E-24	1.79E-23	2.54E-24	6.97E-24
CH4S	1.69E-16	2.99E-16	1.02E-16	1.81E-16	6.14E-17	1.09E-16
ETSH	3.63E-09	4.46E-09	3.12E-09	3.84E-09	2.67E-09	3.29E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1963.3	1841.94	1960.92	1840.19	1957.59	1837.81

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	91		92		93	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	1.22E-26	4.61E-26	3.45E-27	1.30E-26	9.72E-28	3.68E-27
PROPANE	7.69E-15	1.91E-14	3.29E-15	8.20E-15	1.40E-15	3.51E-15
IBUTANE	1.96E-08	3.34E-08	1.22E-08	2.09E-08	7.55E-09	1.30E-08
BUTANE	1.41E-06	2.21E-06	9.49E-07	1.50E-06	6.36E-07	1.01E-06
IPENTANE	0.41061	0.44188	0.39215	0.42397	0.37154	0.40432
PENTANE	0.52042	0.51427	0.52975	0.52604	0.5361	0.53602
HEXANE	0.06672	0.04289	0.07575	0.04897	0.08979	0.05854
HEPTANE	0.00225	9.65E-04	0.00235	0.00102	0.00257	0.00112
OCTANE	3.20E-09	8.99E-10	3.25E-09	9.19E-10	3.34E-09	9.57E-10
NONANE	0	0	0	0	0	0
H2S	0	0	0	0	0	0
COS	9.90E-25	2.71E-24	3.85E-25	1.06E-24	1.49E-25	4.10E-25
CH4S	3.69E-17	6.55E-17	2.20E-17	3.93E-17	1.31E-17	2.35E-17
ETSH	2.27E-09	2.81E-09	1.92E-09	2.39E-09	1.61E-09	2.02E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1952.78	1834.48	1945.75	1829.67	1935.51	1822.64

TRAY	94		95		96	
COMPONENT	X	Y	X	Y	X	Y
N2	0	0	0	0	0	0
CO2	0	0	0	0	0	0
METHANE	0	0	0	0	0	0
ETHANE	2.72E-28	1.03E-27	7.53E-29	2.87E-28	1.99E-29	7.60E-29
PROPANE	5.96E-16	1.50E-15	2.52E-16	6.36E-16	1.05E-16	2.68E-16
IBUTANE	4.64E-09	8.03E-09	2.81E-09	4.92E-09	1.67E-09	2.97E-09
BUTANE	4.23E-07	6.75E-07	2.78E-07	4.47E-07	1.79E-07	2.92E-07
IPENTANE	0.34808	0.38237	0.32097	0.35739	0.2894	0.32851
PENTANE	0.53757	0.54284	0.53152	0.54446	0.51471	0.53808
HEXANE	0.1113	0.07344	0.1434	0.09629	0.1895	0.13044
HEPTANE	0.00305	0.00135	0.00411	0.00186	0.0064	0.00297
OCTANE	3.60E-09	1.05E-09	4.37E-09	1.30E-09	6.81E-09	2.10E-09
NONANE	0	0	0	0	0	0
H2S	0	0	0	0	0	0
COS	5.76E-26	1.59E-25	2.22E-26	6.15E-26	8.47E-27	2.36E-26
CH4S	7.73E-18	1.39E-17	4.50E-18	8.20E-18	2.57E-18	4.76E-18
ETSH	1.33E-09	1.68E-09	1.08E-09	1.39E-09	8.61E-10	1.13E-09
PN1THIOL	0	0	0	0	0	0
BU1THIOL	0	0	0	0	0	0
TEG	0	0	0	0	0	0
H2O	0	0	0	0	0	0
RATE, KG-MOL/HR	1920.84	1812.4	1900.59	1797.73	1874.36	1777.48

Table C-4b (Continued) Molar composition of the depropanizer from simulation

TRAY	97		98	
COMPONENT	X	Y	X	Y
N2	0	0	0	0
CO2	0	0	0	0
METHANE	0	0	0	0
ETHANE	4.34E-30	1.67E-29	0	0
PROPANE	4.32E-17	1.11E-16	1.72E-17	4.50E-17
IBUTANE	9.68E-10	1.75E-09	5.39E-10	9.99E-10
BUTANE	1.13E-07	1.87E-07	6.88E-08	1.16E-07
IPENTANE	0.25296	0.29483	0.21211	0.25588
PENTANE	0.48384	0.52018	0.43687	0.4872
HEXANE	0.25204	0.17959	0.33047	0.24643
HEPTANE	0.01116	0.0054	0.02055	0.01049
OCTANE	1.44E-08	4.68E-09	3.71E-08	1.28E-08
NONANE	0	0	0	0
H2S	0	0	0	0
COS	3.19E-27	8.98E-27	1.18E-27	3.34E-27
CH4S	1.43E-18	2.70E-18	7.63E-19	1.48E-18
ETSH	6.63E-10	8.88E-10	4.88E-10	6.75E-10
PN1THIOL	0	0	0	0
BU1THIOL	0	0	0	0
TEG	0	0	0	0
H2O	0	0	0	0
RATE, KG-MOL/HR	1843.36	1751.25	123.11	1720.25

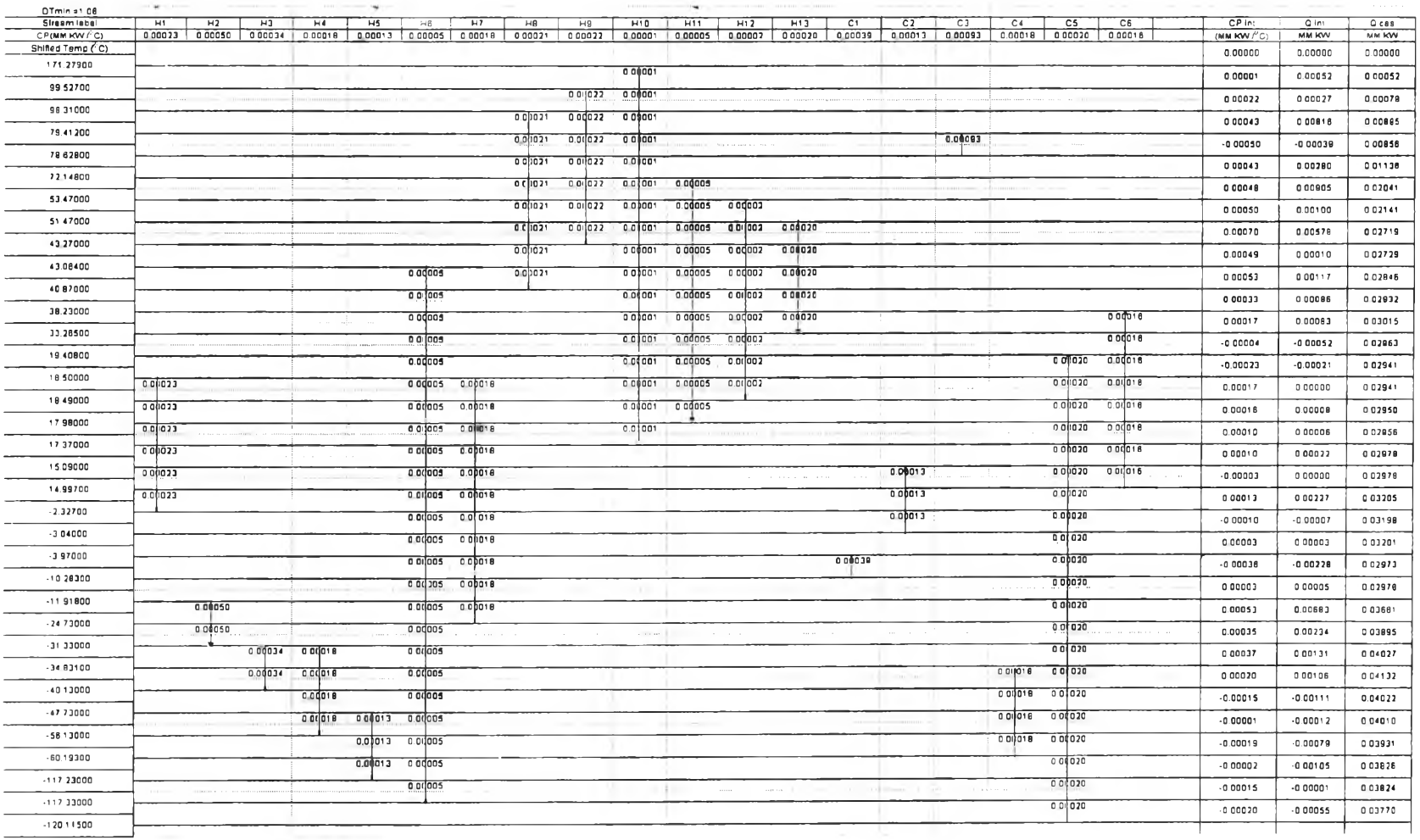

Figure C-1 Problem table algorithm for the ΔTmin = 1.06°C (the existing process).

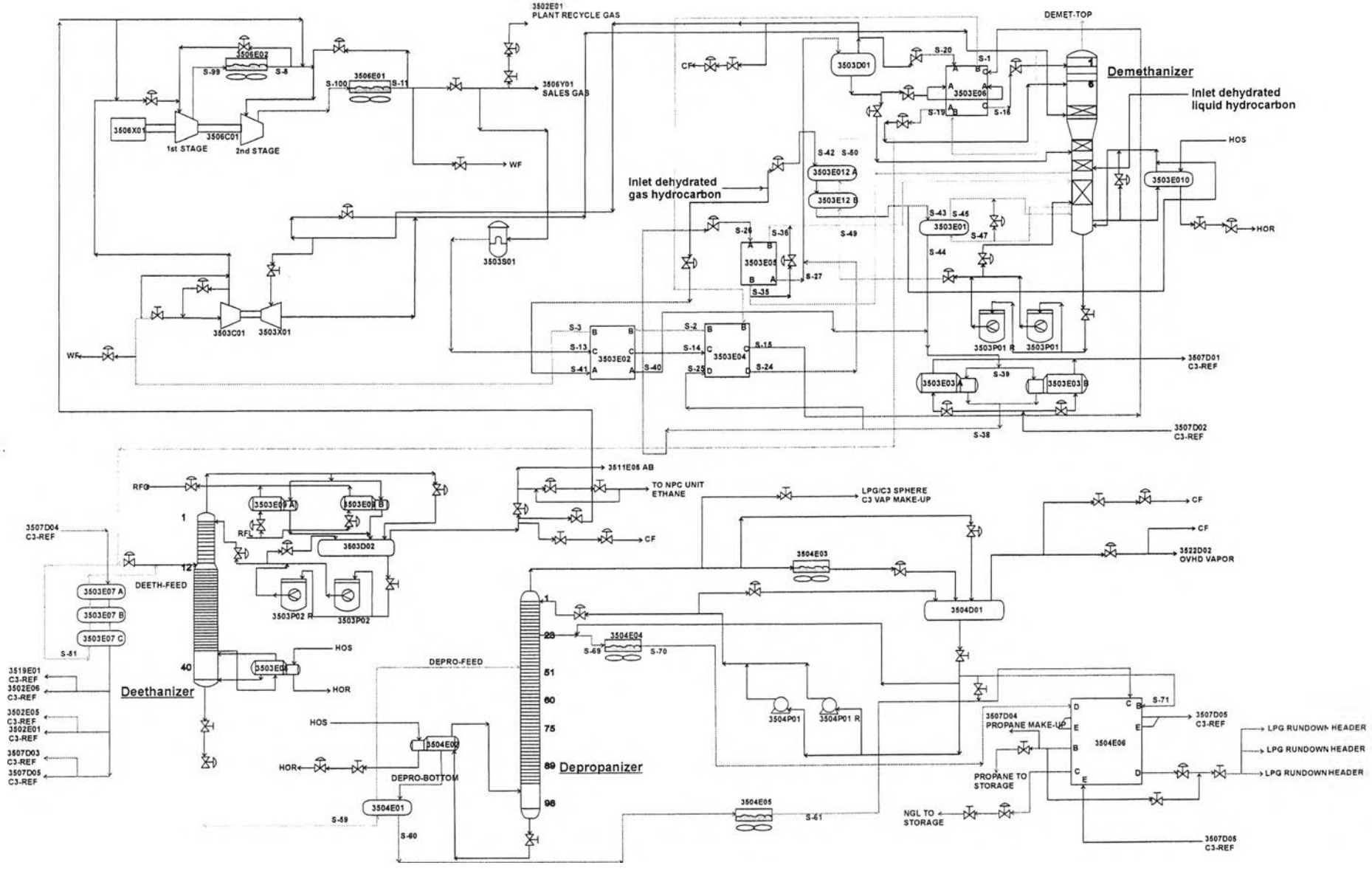

Figure C-2 The Gas Separation Plant 5 (GSP 5) of Actual-Data Case.

Appendix D Effect of Reflux-Ratio Reduction of the Deethanizer on the Product Specifications

Table D-1 Molar composition of products for reflux ratio of 1.733 (Existing)

Composition	GSP5 Products			
	Ethane Stream	Propane Stream	LPG Stream	NGL Stream**
N2	0.0000	0.0000	0.0000	0.0000
CO2	0.0065	0.0000	0.0000	0.0000
METHANE	0.0026	0.0000	0.0000	0.0000
ETHANE	0.9868	0.0005	0.0000	0.0000
PROPANE	0.0040	0.9995	0.5814	0.0000
IBUTANE	0.0000	0.0000	0.1882	0.0000
BUTANE	0.0000	0.0000	0.2029	0.0000
IPENTANE	0.0000	0.0000	0.0149	0.2122
PENTANE	0.0000	0.0000	0.0125	0.4368
HEXANE	0.0000	0.0000	0.0000	0.3305
HEPTANE	0.0000	0.0000	0.0000	0.0206
OCTANE	0.0000	0.0000	0.0000	0.0000
NONANE	0.0000	0.0000	0.0000	0.0000
H2S	0.0000	0.0000	0.0000	0.0000
COS	0.0000	0.0000	0.0000	0.0000
CH4S	0.0000	0.0000	0.0000	0.0000
ETSH	0.0000	0.0000	0.0000	0.0000
PN1THIOL	0.0000	0.0000	0.0000	0.0000
BU1THIOL	0.0000	0.0000	0.0000	0.0000
TEG	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000

*** Do not meet the specification**

**** RVP = 12.8 psig**

Table D-2 Molar composition of products for reflux ratio of 1.70

Composition	GSP5 Products			
	Ethane Stream	Propane Stream	LPG Stream	NGL Stream**
N2	0.0000	0.0000	0.0000	0.0000
CO2	0.0068	0.0000	0.0000	0.0000
METHANE	0.0025	0.0000	0.0000	0.0000
ETHANE	0.9866	0.0015	0.0002	0.0000
PROPANE	0.0041	0.9985	0.5811	0.0000
IBUTANE	0.0000	0.0000	0.1883	0.0000
BUTANE	0.0000	0.0000	0.2031	0.0000
IPENTANE	0.0000	0.0000	0.0150	0.2110
PENTANE	0.0000	0.0000	0.0123	0.4385
HEXANE	0.0000	0.0000	0.0000	0.3300
HEPTANE	0.0000	0.0000	0.0000	0.0205
OCTANE	0.0000	0.0000	0.0000	0.0000
NONANE	0.0000	0.0000	0.0000	0.0000
H2S	0.0000	0.0000	0.0000	0.0000
COS	0.0000	0.0000	0.0000	0.0000
CH4S	0.0000	0.0000	0.0000	0.0000
ETSH	0.0000	0.0000	0.0000	0.0000
PN1THIOL	0.0000	0.0000	0.0000	0.0000
BU1THIOL	0.0000	0.0000	0.0000	0.0000
TEG	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000

Table D-3 Molar composition of products for reflux ratio of 1.688

Composition	GSP5 Products			
	Ethane Stream	Propane Stream	LPG Stream	NGL Stream**
N2	0.0000	0.0000	0.0000	0.0000
CO2	0.0066	0.0000	0.0000	0.0000
METHANE	0.0026	0.0000	0.0000	0.0000
ETHANE	0.9867	**0.0206** *	0.0019	0.0000
PROPANE	0.0041	0.9794	0.5788	0.0000
IBUTANE	0.0000	0.0000	0.1881	0.0000
BUTANE	0.0000	0.0000	0.2029	0.0000
IPENTANE	0.0000	0.0000	0.0164	0.1982
PENTANE	0.0000	0.0000	0.0118	0.4480
HEXANE	0.0000	0.0000	0.0000	0.3331
HEPTANE	0.0000	0.0000	0.0000	0.0207
OCTANE	0.0000	0.0000	0.0000	0.0000
NONANE	0.0000	0.0000	0.0000	0.0000
H2S	0.0000	0.0000	0.0000	0.0000
COS	0.0000	0.0000	0.0000	0.0000
CH4S	0.0000	0.0000	0.0000	0.0000
ETSH	0.0000	0.0000	0.0000	0.0000
PN1THIOL	0.0000	0.0000	0.0000	0.0000
BU1THIOL	0.0000	0.0000	0.0000	0.0000
TEG	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000

Table D-4 Molar composition of products for reflux ratio of 1.6876

Composition	GSP5 Products			
	Ethane Stream	Propane Stream	LPG Stream	NGL Stream**
N2	0.0000	0.0000	0.0000	0.0000
CO2	0.0072	0.0000	0.0000	0.0000
METHANE	0.0028	0.0000	0.0000	0.0000
ETHANE	0.9859	**0.2577** *	**0.0233** *	0.0000
PROPANE	0.0042	0.7423	0.5676	0.0000
IBUTANE	0.0000	0.0000	0.1863	0.0000
BUTANE	0.0000	0.0000	0.2009	0.0000
IPENTANE	0.0000	0.0000	0.0193	0.1551
PENTANE	0.0000	0.0000	0.0026	0.5124
HEXANE	0.0000	0.0000	0.0000	0.3130
HEPTANE	0.0000	0.0000	0.0000	0.0195
OCTANE	0.0000	0.0000	0.0000	0.0000
NONANE	0.0000	0.0000	0.0000	0.0000
H2S	0.0000	0.0000	0.0000	0.0000
COS	0.0000	0.0000	0.0000	0.0000
CH4S	0.0000	0.0000	0.0000	0.0000
ETSH	0.0000	0.0000	0.0000	0.0000
PN1THIOL	0.0000	0.0000	0.0000	0.0000
BU1THIOL	0.0000	0.0000	0.0000	0.0000
TEG	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000

Table D-5 Molar composition of products for reflux ratio of 1.687

Composition	GSP5 Products			
	Ethane Stream	Propane Stream	LPG Stream	NGL Stream**
N2	0.0000	0.0000	0.0000	0.0000
CO2	0.0075	0.0000	0.0000	0.0000
METHANE	0.0029	0.0000	0.0000	0.0000
ETHANE	0.9854	**0.3270** *	**0.0299** *	0.0000
PROPANE	0.0042	0.6730	0.5628	0.0000
IBUTANE	0.0000	0.0000	0.1858	0.0000
BUTANE	0.0000	0.0000	0.2004	0.0000
IPENTANE	0.0000	0.0000	0.0195	0.1511
PENTANE	0.0000	0.0000	0.0016	0.5190
HEXANE	0.0000	0.0000	0.0000	0.3106
HEPTANE	0.0000	0.0000	0.0000	0.0193
OCTANE	0.0000	0.0000	0.0000	0.0000
NONANE	0.0000	0.0000	0.0000	0.0000
H2S	0.0000	0.0000	0.0000	0.0000
COS	0.0000	0.0000	0.0000	0.0000
CH4S	0.0000	0.0000	0.0000	0.0000
ETSH	0.0000	0.0000	0.0000	0.0000
PN1THIOL	0.0000	0.0000	0.0000	0.0000
BU1THIOL	0.0000	0.0000	0.0000	0.0000
TEG	0.0000	0.0000	0.0000	0.0000
H2O	0.0000	0.0000	0.0000	0.0000

Appendix E Flow Sheet for Various Modification Options

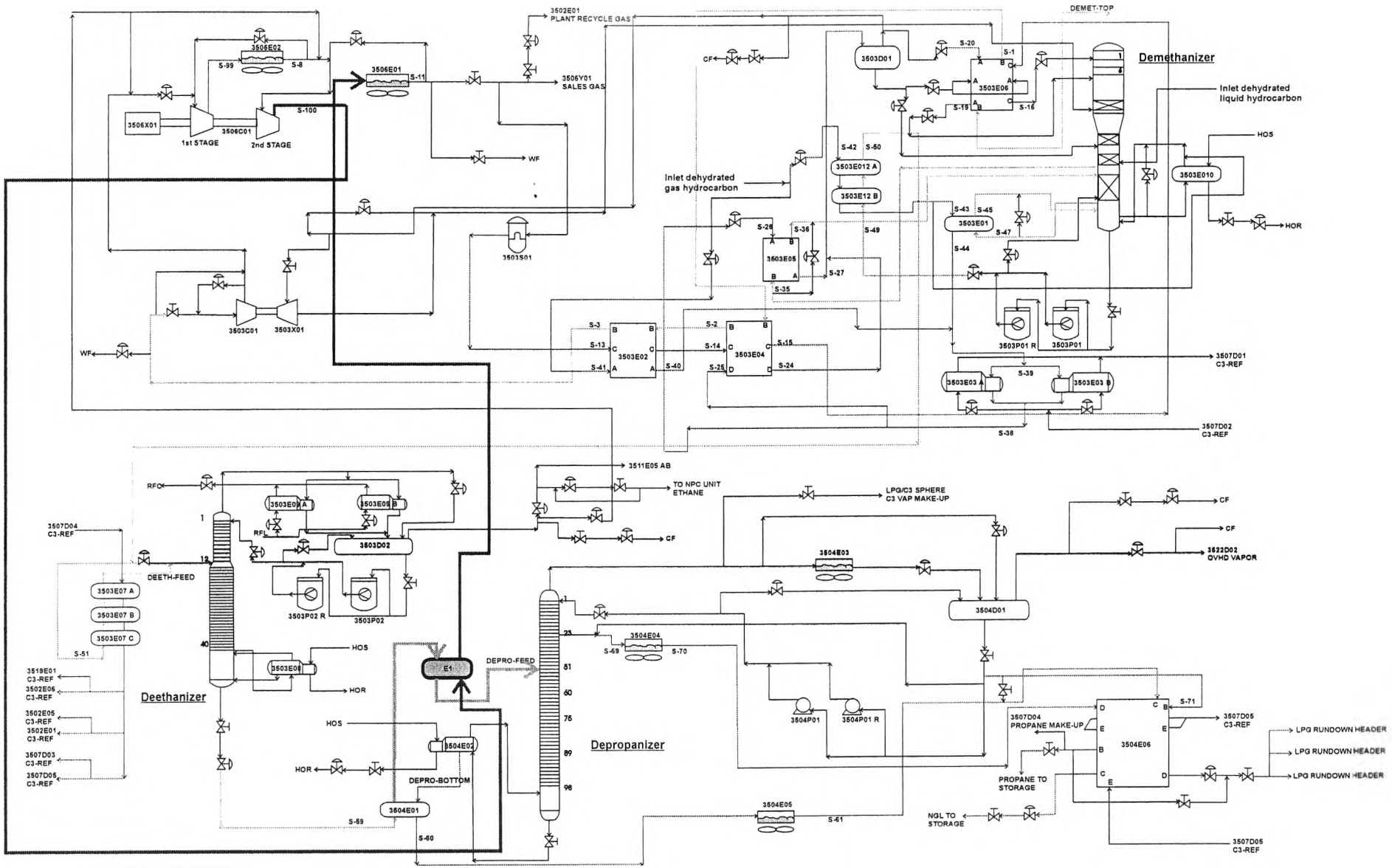

Figure E-1 Option A.

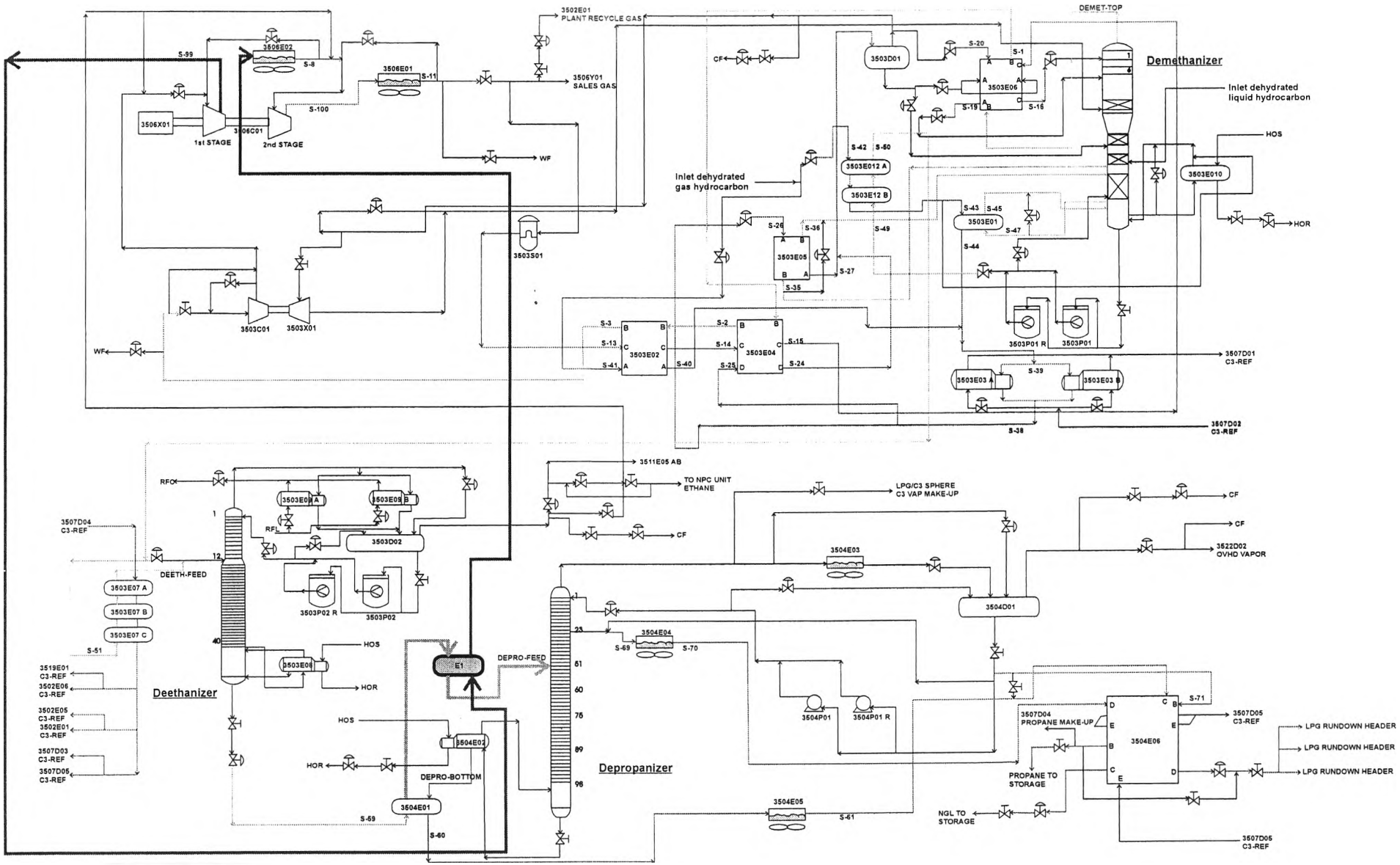

Figure E-2 Option B.

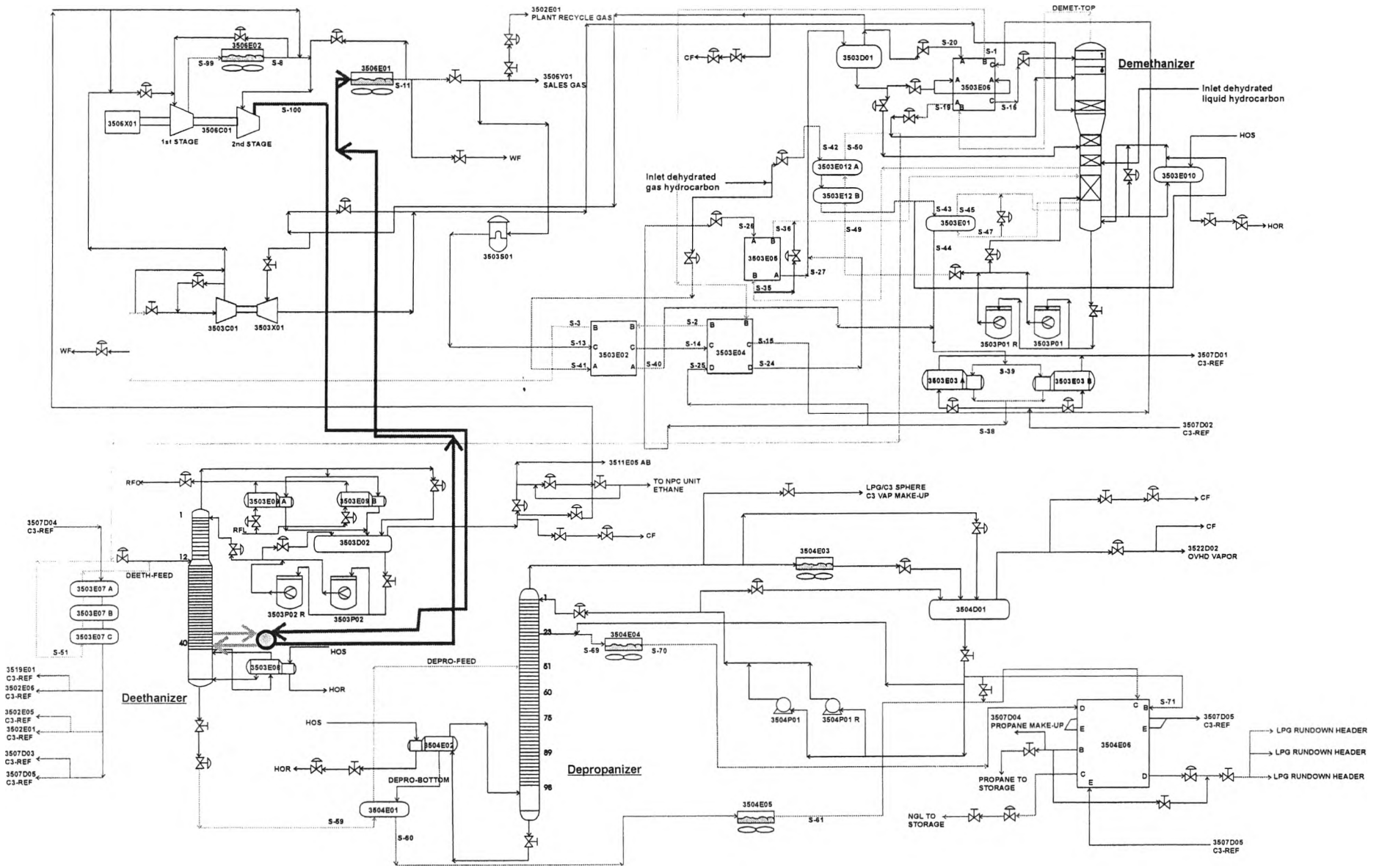

Figure E-3 Option C.

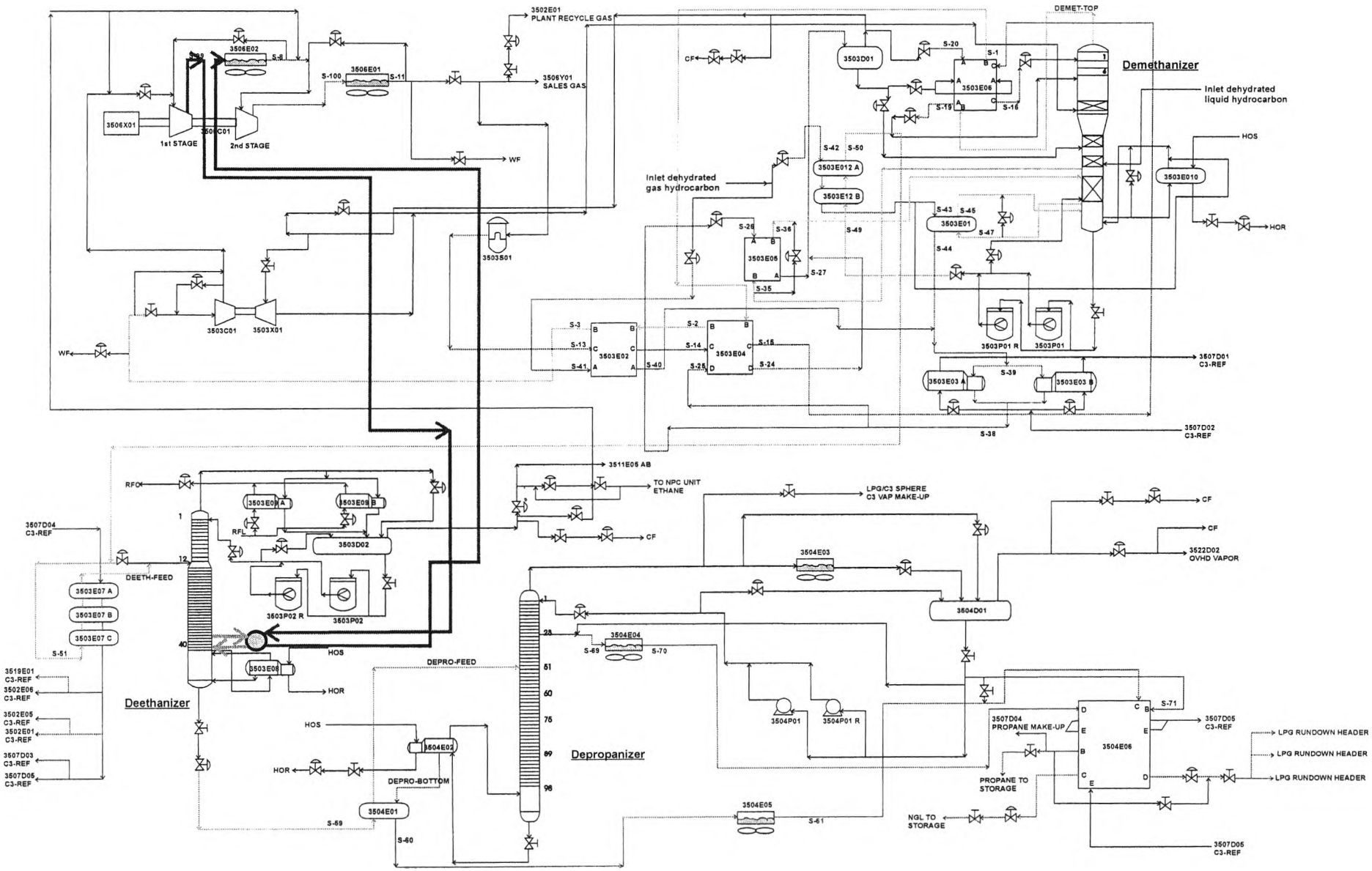

Figure E-4 Option D.

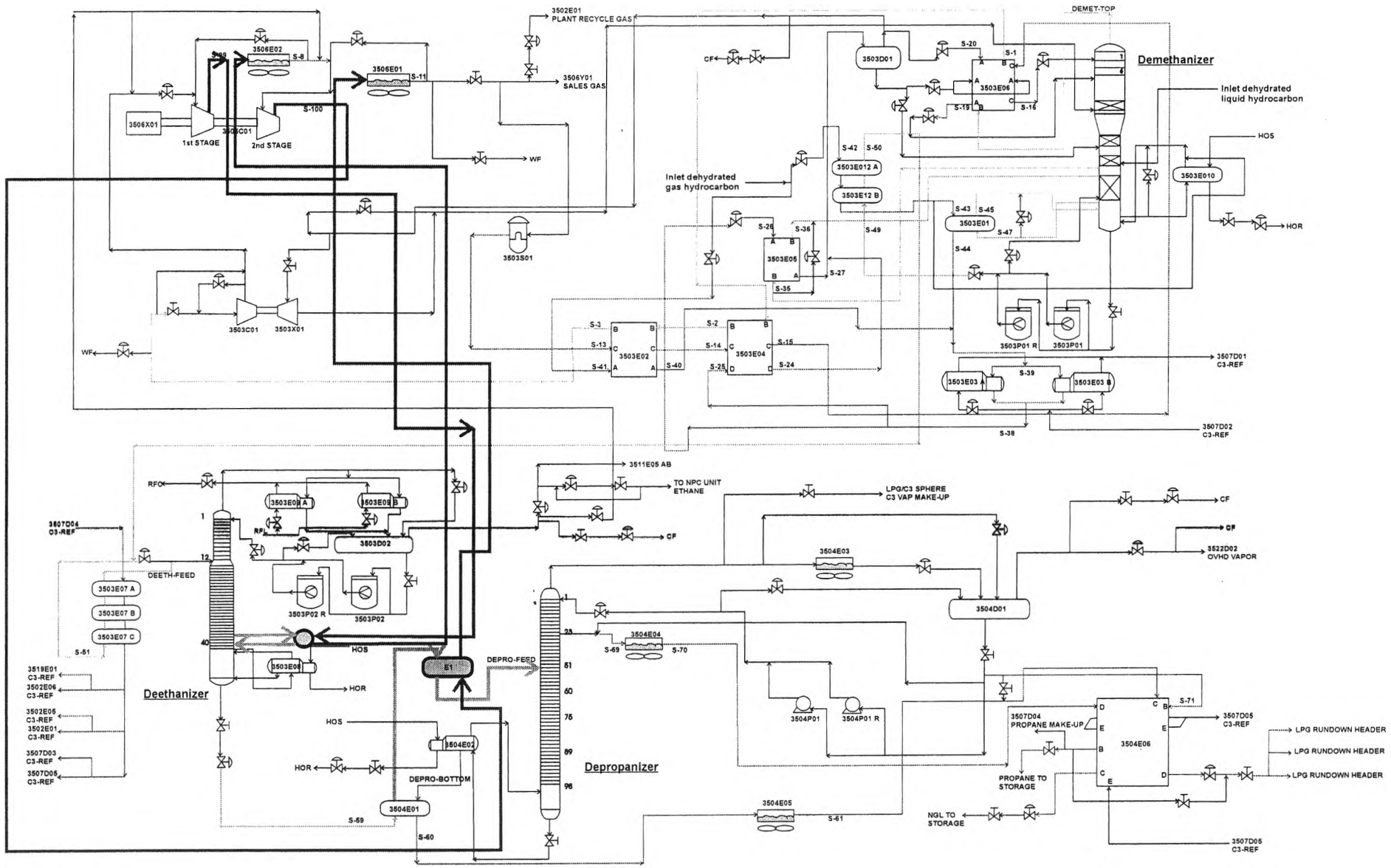

Figure E-5 Option E.

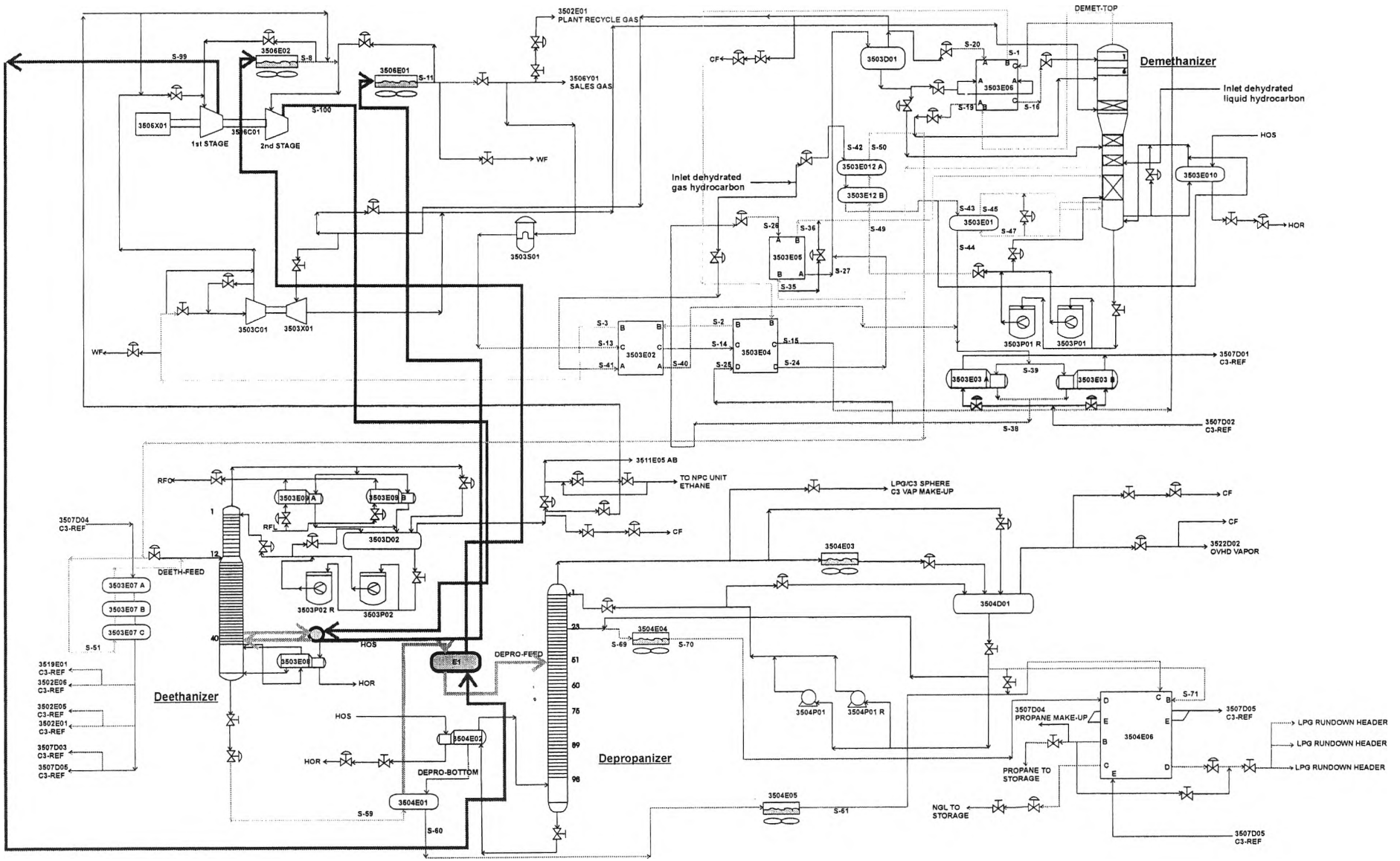

Figure E-6 Option F.

Appendix F Economical Evaluation

Utility Cost Saving Calculation

Utility Cost of the GSP5 *(Reference: Gas Separation Plant 5, PTT Public Company Limited)*

Cost of hot oil; 6000 Baht/KW•Yr

Cost of refrigerant-C3; 0.0355 US$/KW•Hr

Cost of electricity; 3.5 Baht/KW•Hr

Money exchange: 35.808 Baht/US$ (Reference: Ministry of Financial based on 25 Jan 2007)

Assumption: Operating time is 365 days (8760 Hours)

Equation of Utility Cost Saving

Utility cost saving (US$/Yr) = Amount of utility saving (KW) x (price / unit)

Table F-1 Option A

Utility Type	Utility Saving (KW)			
	Depropanizer	3506E01	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant-C3	-200	-	-	-7.3
Hot oil	+4200	-	-	-
Air cooler	-	+4314	+7.3	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	-64466.154
Hot oil	+703753.351
Air cooler	+3700040.717
TOTAL	**+4339327.914**

Table F-2 Option B

Utility Type	Utility Saving (KW)			
	Depropanizer	3506E02	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant-C3	-320	-	-	-6
Hot oil	+3500	-	-	-
Air cooler	-	+3699	-1.9	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	-101379.48
Hot oil	+586461.126
Air cooler	+3165579.926
TOTAL	**+3650661.572**

Table F-3 Option C

Utility Type	Utility Saving (KW)			
	Deethanizer	3506E01	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant-C3	+13	-	-	0
Hot oil	+2300	-	-	-
Air cooler	-	+2326	+9	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	+4042.74
Hot oil	+385388.74
Air cooler	+1999304.625
TOTAL	**+2388736.105**

Table F-4 Option D

Utility Type	Utility Saving (KW)			
	Deethanizer	3506E02	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant-C3	+16	-	-	0
Hot oil	+1800	-	-	-
Air cooler	-	+1838	+9	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	+4975.68
Hot oil	+301608.579
Air cooler	+1581462.802
TOTAL	**+1888047.061**

Table F-5 Option E

Utility Type	Utility Saving (KW)					
	Deethanizer	Depropanizer	3506E01	3506E02	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant	+16	-430	-	-	-	0
Hot oil	+1800	+3800	-	-	-	-
Air cooler	-	-	+4327	+1838	-2.5	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	-128746
Hot Oil	+938338
Air Cooler	+5276537
TOTAL	**+6086129**

Table F-6 Option F

Utility Type	Utility Saving (KW)					
	Deethanizer	Depropanizer	3506E01	3506E02	Other Air Cooler	Other REF-C3 Exchanger
Refrigerant-C3	+13	-210	-	-	-	0
Hot oil	+2300	+3500	-	-	-	-
Air cooler	-	-	+2326	+3768	-2.9	-

Utility Type	Cost Saving (US$/Yr)
Refrigerant-C3	-61263
Hot oil	+971850
Air cooler	+5215402
TOTAL	**+6125989**

Investment Cost Calculation

Investment Cost Equation for Shell and Tube Heat Exchanger

Cost of equipment A (US$) = Cost of equipment B x (Capacity equipment A / Capacity equipment B)^n

Where n = 0.6 for heat exchanger floating head

Cost of equipment B = 26,218 US$

Capacity equipment B = 83.8 m^2

(Reference: Gas Separation Plant 5, PTT Public Company Limited)

Assumption: The maximal heat exchanger area is around 2000 m^2

: Type of exchanger is shell and tube (carbon steel; CS)

: Uses design data of heat exchange unit 3504E01 as the equipment B

: The overall heat transfer coefficient is 681.4 W/m^2-K

(Reference: Perry's chemical engineering handbook 7th edition)

Investment Cost Equation for Air Cooler Heat Exchanger

Cost of equipment A (US$) = Cost of equipment B x (Capacity equipment A / Capacity equipment B)

Where Cost of equipment B = 55867 US$

Capacity equipment B = 2977 m^2

(Reference: Gas Separation Plant 5, PTT Public Company Limited)

Assumption: The heat exchanger area is based on external bare tube

: Type of exchanger is air cooler (carbon steel; CS)

: Uses design data of heat exchange unit 3504E03 as the equipment B

: The overall heat transfer coefficient is 605.67 W/m^2-K

(Reference: The design-data case of air cooler unit 3504E03)

This study uses module factor of 3 to estimate more accurate investment cost.

(Reference: Sung-Geun Yoon, Jeongseok Lee, Sunwon Park, Heat integration analysis for an industrial ethylbenzene plant using pinch analysis. Applied Thermal Engineering, 2006)

Table F-7 Installation cost of the GSP5 (Approximate value)

Components	Assumed % of total
Purchased equipment	27.5
Purchased-equipment installation	10
Instrumentation	5
Piping	11.5
Electrical	6
Building	10.5
Yard improvements	3.5
Service facilities	14
Land	1.5
Engineering and supervision	12.5
Construction expense	10
Contractor's fee	4
Contingency	10

(Reference: Gas Separation Plant 1, PTT Public Company Limited)

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