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APPENDIX A

Process Simulation Code from Pro/II in Design Case

Generated by PRO/II Keyword Generation System <version 2.71 - 02-14-95>

TITLE

PRINT INPUT-COMPONENT, ION=NONE

DIMENSION METRIC, TEMP=K, PRES=BARG, WT=G, TIME=SEC, ENERGY=J, &

DUTY=J/SEC, STDTEMP=273.15, STDPRES=0

SEQUENCE SIMSCI

CALCULATION RVPBASIS=APIN, TVP=310.93

COMPONENT DATA

LIBID 1,N2/2,METHANE/3,ETHANE/4,PROPANE/5,IBUTANE/6,BUTANE/ &

7,IPENTANE/8,PENTANE/9,HEXANE/10,HEPTANE/11,OCTANE/12,NONANE/ &

13,DECANE/14,CO2/15,PROPENE

THERMODYNAMIC DATA

METHOD SYSTEM=SRK, SET=SRK01, DEFAULT

STREAM DATA

PROPERTY STREAM=S70201, TEMPERATURE=295, PRESSURE=43.4, PHASE=M, &

RATE(M)=4145.83, COMPOSITION(M)=1,0.016024/2,0.78523/ &

3,0.105412/4,0.05644/5,0.012721/6,0.011072/7,0.003024/ &

8,0.001701/9,0.000838/10,0.000536/11,0.000119/12,3.9E-5/ &

13,1.6E-5/14,0.00701, NORMALIZE

PROPERTY STREAM=S40, TEMPERATURE=240.83, PRESSURE=11, PHASE=M, &

RATE(M)=402.676, COMPOSITION(M)=2,0.018925/3,0.931406/ &

4,0.015015/14,0.034645, NORMALIZE

PROPERTY STREAM=S70405-2, TEMPERATURE=273.3, PRESSURE=27.7, PHASE=M, &

RATE(M)=742.717, COMPOSITION(M)=2,0.018925/3,0.931425/ &

4,0.014997/5,1E-6/14,0.034644, NORMALIZE

PROPERTY STREAM=S70411-1, TEMPERATURE=320.99, PRESSURE=16.5, &

PHASE=M, RATE(M)=688.525, COMPOSITION(M)=3,0.001878/ &

4,0.995102/5,0.002967/6,3.3E-5, NORMALIZE

PROPERTY STREAM=S70414--20, TEMPERATURE=172.76, PRESSURE=16.5, &

PHASE=M, RATE(M)=515.761, COMPOSITION(M)=3,0.001898/ &
 4,0.995102/5,0.002967/6,3.3E-5
 PROPERTY STREAM=REF-IN, TEMPERATURE=313, PRESSURE=15.2, PHASE=M, &
 RATE(M)=109.536, COMPOSITION(M)=15,1
 NAME S70201,Feed stream with DPCU

UNIT OPERATIONS SECTION

Column Unit

COLUMN UID=T70301-A

PARAMETER TRAY=16,IO
 FEED S70307,1/S13,7/S1,16
 PRODUCT OVHD(M)=S70308,3395, BTMS(M)=S70312
 DUTY 1,16
 PSPEC PTOP=15
 PRINT COMPOSITION=M, PROPTABLE=ALL, &
 KVALUE, TEFFICIENCY, DIAGRAM
 TEFFICIENCY(MURP) 1,0.9/15,0.9
 EFACTOR 1
 REBOILER TYPE=KETTLE

COLUMN UID=T70301-B

PARAMETER TRAY=6,IO
 FEED S70313,1/S20,1/S2,6
 PRODUCT BTMS(M)=S18,618, OVHD(M)=S1
 DUTY 1,6
 PSPEC PTOP=15
 PRINT COMPOSITION=M, PROPTABLE=ALL, &
 KVALUE, TEFFICIENCY, DIAGRAM
 TEFFICIENCY(MURP) 1,0.9/5,0.9
 EFACTOR 1
 REBOILER TYPE=KETTLE

COLUMN UID=T70301-C

PARAMETER TRAY=10,IO

FEED S70315,1/S25,1/S3,10

PRODUCT OVHD(M)=S2, BTMS(M)=S24,704

DUTY 1,10

PSPEC PTOP=15

PRINT COMPOSITION=M, PROPTABLE=ALL, &

KVALUE, TEFFICIENCY, DIAGRAM

TEFFICIENCY(MURP) 1,0.95/9,0.95

EFACTOR 1

REBOILER TYPE=KETTLE

COLUMN UID=T70301-D

PARAMETER TRAY=12,IO

FEED S70317,1/S4,12

PRODUCT BTMS(M)=S28,961, OVHD(M)=S3

DUTY 1,12

PSPEC PTOP=15

PRINT COMPOSITION=M, PROPTABLE=ALL, &

KVALUE, TEFFICIENCY, DIAGRAM

REBOILER TYPE=KETTLE

COLUMN UID=T70401

PARAMETER TRAY=90,IO=45

FEED S70405-2,1/S70401-1,30

PRODUCT OVHD(M)=S70402,1145.4, BTMS(M)=S70406

DUTY 1,90

PSPEC PTOP=28

PRINT COMPOSITION=M, PROPTABLE=ALL, &

KVALUE, TEFFICIENCY, DIAGRAM

SPEC STREAM=S70406, RATE(), VALUE=360.57

VARY DUTY=1

REBOILER TYPE=KETTLE

COLUMN UID=T70402

PARAMETER TRAY=81,IO=70

FEED S70408,56/S70414--20,1

PRODUCT OVHD(M)=S70409, BTMS(M)=S70415,27.51, LDRAW(M)=S70414, &
41,158.16

DUTY 1,81

PSPEC PTOP=16.5

PRINT COMPOSITION=M, PROPTABLE=ALL, &
KVALUE, TEFFICIENCY, DIAGRAM

SPEC STREAM=S70415, RATE(), VALUE=28.87

SPEC STREAM=S70414, RATE(), VALUE=158.14

VARY DUTY=1

VARY DRAW=S70414

REBOILER TYPE=KETTLE

Expander Unit

EXPANDER UID=X70301

FEED S70305

PRODUCT M=S70307

OPERATION PRES=16, TESTIMATE=172.7

METHOD SET=SRK01

Flash Drum Unit

FLASH UID=D70301

FEED S70201-1

PRODUCT V=S70301, W=S70302

ISO TEMPERATURE=256.35, PRESSURE=43.1

METHOD SET=SRK01

FLASH UID=D70302

FEED S70301-2

PRODUCT V=D70303, W=S70304

ISO TEMPERATURE=234.82, PRESSURE=42.9

METHOD SET=SRK01

FLASH UID=D70303

FEED S70303-1

PRODUCT W=S70306, V=S70305

ISO TEMPERATURE=206.78, PRESSURE=42.9

METHOD SET=SRK01

FLASH UID=D70401

FEED S70402-1

PRODUCT L=S70402-2

ISO TEMPERATURE=273.3, PRESSURE=27.7

METHOD SET=SRK01

FLASH UID=D70402

FEED S70409-1

PRODUCT L=S70411

ISO TEMPERATURE=320, PRESSURE=16.2

METHOD SET=SRK01

FLASH UID=T70301-E

FEED S70320

PRODUCT W=S33, V=S4

ISO TEMPERATURE=274.7, PRESSURE=15

METHOD SET=SRK01

Heat Exchanger Unit

HX UID=E4

HOT FEED=S70319, M=S70320, DP=0.5, METH=SRK01

OPER HTEMP=274.75

HX UID=E70304

COLD FEED=S70301-1, M=S70301-2, DP=0.2, METH=SRK01

OPER CTEMP=234.82

HX UID=E70403

COLD FEED=S70402, M=S70402-1, DP=0.3

OPER CTEMP=273.3

HX UID=E70404AB

HOT FEED=S70407, M=S70408, DP=0.2

OPER HTEMP=361.42

HX UID=E70405

COLD FEED=S70409, M=S70409-1, DP=0.3

OPER CTEMP=320

HX UID=E70408

HOT FEED=S70423, M=S70401, DP=0.3

OPER HTEMP=316.1

LNG Heat Exchanger Unit

LNGHX UID=E70301, NAME=Cold box1

COLD FEED=S70201, M=S70201-1, TEMP=256.35, NUMBER=1, &

CELL=CELL1, DP=0.3, METHOD=SRK01

COLD FEED=S70301, M=S70301-1, TEMP=239.5, NUMBER=2, CELL=CELL2

HOT FEED=S70316, M=S70317, TEMP=265.25, NUMBER=3, CELL=CELL3

HOT FEED=S70318, M=S70319, TEMP=273.3, NUMBER=4, CELL=CELL4

HOT FEED=S70322, M=S70422, TEMP=287.347, NUMBER=5, CELL=CELL5, &

DP=0.3

HOT FEED=S38, M=S39, TEMP=287.35, NUMBER=6, CELL=CELL6

HOT FEED=S40, M=S41, NUMBER=7, CELL=CELL7, DP=1, METHOD=SRK01

METHOD SET=SRK01

LNGHX UID=E70302

COLD FEED=D70303, M=S70303-1, TEMP=206.78, NUMBER=1, &

CELL=CELL1

HOT FEED=S70312-1, M=S70313, TEMP=211.75, NUMBER=2, CELL=CELL2

HOT FEED=S70314, M=S70315, TEMP=229.75, NUMBER=3, CELL=CELL3

HOT FEED=S70308, M=S38, NUMBER=4, CELL=CELL4

METHOD SET=SRK01

LNGHX UID=E70406

HOT FEED=S70422, M=S70423, TEMP=287.347, NUMBER=1, CELL=CELL1, &

DP=0.3, METHOD=SRK01

COLD FEED=S70411-1, M=S70411-2, TEMP=300, NUMBER=2, CELL=CELL2

COLD FEED=S70414, M=S62, TEMP=300, NUMBER=3, CELL=CELL3

COLD FEED=REF-IN, M=RE-OUT, NUMBER=4, CELL=CELL4

METHOD SET=SRK01

Pump Unit

PUMP UID=P70301

FEED S33

PRODUCT M=S70321

OPERATION EFF=72, DP=15.4

METHOD SET=SRK01

PUMP UID=P70302

FEED S28

PRODUCT M=S70318

OPERATION EFF=75, DP=2.04

METHOD SET=SRK01

PUMP UID=P70303

FEED S24

PRODUCT M=S70316

OPERATION EFF=75, DP=2.09

METHOD SET=SRK01

PUMP UID=P70304

FEED S18

PRODUCT M=S70314

OPERATION EFF=68, DP=2.11

METHOD SET=SRK01

PUMP UID=P70305

FEED S70312

PRODUCT M=S70312-1

OPERATION EFF=68, DP=2.09

METHOD SET=SRK01

PUMP UID=P70401

FEED S70405

PRODUCT M=S70405-1

OPERATION EFF=71, DP=3.98

METHOD SET=SRK01

PUMP UID=P70402

FEED S70411

PRODUCT M=S70411-1

OPERATION DP=4.4

METHOD SET=SRK01

Splitter Unit

SPLITTER UID=SP1

FEED S70402-2

PRODUCT M=S70404, M=S70405

OPERATION OPTION=FILL

SPEC STREAM=S70404, RATE(), VALUE=402.69

SPLITTER UID=SP2

FEED S70411-2

PRODUCT M=S70414--20, M=S70413

OPERATION OPTION=FILL

SPEC STREAM=S70413, RATE(), VALUE=172.76

Valve Unit

VALVE UID=V1

FEED S70306

PRODUCT M=S13

OPERATION PRESSURE=15

METHOD SET=SRK01

VALVE UID=V2

FEED S70304

PRODUCT M=S20

OPERATION PRESSURE=15

METHOD SET=SRK01

VALVE UID=V3

FEED S70302

PRODUCT M=S25

OPERATION PRESSURE=15

METHOD SET=SRK01

VALVE UID=V4

FEED S70321

PRODUCT M=S70322

OPERATION PRESSURE=30.4

VALVE UID=V5

FEED S70401

PRODUCT M=S70401-1

OPERATION PRESSURE=28

VALVE UID=V70405

FEED S70405-1

PRODUCT M=S70405-2

OPERATION PRESSURE=28

VALVE UID=V70406

FEED S70406

PRODUCT M=S70407

OPERATION PRESSURE=16.7

END

APPENDIX B

Shortcut Distillation Output In Design Case

Demethanizer T70301-A COLUMN SUMMARY

----- NET FLOW RATES -----							HEATER	
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES	
	DEG K	BAR(GA)	G-MOL/SEC			M*/J/SEC		
1	171.6	15.00	310.3		2727.9M	3383.2V		
2	172.3	15.00	308.7	965.6				
3	172.7	15.00	305.1	964.0				
4	173.2	15.00	300.4	960.4				
5	173.9	15.00	293.8	955.7				
6	174.9	15.00	281.0	949.2				
7	177.1	15.00	781.2	936.3	803.0M			
8	177.2	15.00	782.0	633.5				
9	177.3	15.00	782.0	634.2				
10	177.3	15.00	781.8	634.3				
11	177.3	15.00	781.4	634.1				
12	177.4	15.00	779.8	633.6				
13	177.8	15.00	775.4	632.1				
14	178.8	15.00	763.1	627.7				
15	181.9	15.00	731.2	615.4				
16R	191.2	15.00	583.5	531.7V	679.5L	.0000		

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
		TRAY	TRAY	FRAC	G-MOL/SEC	M*/J/SEC	
FEED	S70307	MIXED	1		.1141	2727.87	-4.8842
FEED	S13	MIXED	7		.6262	803.04	-4.0406
FEED	S1	VAPOR	16		.0000	531.74	.9105
PROD	S70308	VAPOR	1			3383.19	-3.3988
PROD	S70312	LIQUID	16			679.46	-4.6158

Demethanizer T70301-B COLUMN SUMMARY

----- NET FLOW RATES -----						HEATER	
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG K	BAR(GA)	G-MOL/SEC				M*J/SEC
1	210.8	15.00	729.9		679.7M	531.7V	
					293.4M		
2	211.3	15.00	730.5	288.6			
3	212.2	15.00	731.4	289.2			
4	213.6	15.00	733.0	290.1			
5	215.8	15.00	735.2	291.7			
6R	219.9	15.00	293.9	293.6V	734.9L	.0000	

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
			TRAY	TRAY	FRAC	G-MOL/SEC	M*J/SEC
FEED	S70313	MIXED	1	.7750		679.67	-2.6904
FEED	S20	MIXED	1	.7042		293.37	-1.0758
FEED	S2	VAPOR	6	.0000		293.58	1.0119
PROD	S1	VAPOR	1			531.74	.9105
PROD	S18	LIQUID	6			734.87	-3.6646

Demethanizer T70301-C COLUMN SUMMARY

----- NET FLOW RATES -----						HEATER	
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG K	BAR(GA)	G-MOL/SEC				M*J/SEC
1	230.6	15.00	920.2		735.3M	293.6V	
					321.6M		
2	230.6	15.00	920.5	156.9			

3	230.6	15.00	920.7	157.3		
4	230.7	15.00	920.9	157.4		
5	230.8	15.00	921.4	157.6		
6	231.1	15.00	922.6	158.1		
7	232.0	15.00	925.9	159.4		
8	234.1	15.00	934.0	162.6		
9	238.7	15.00	952.5	170.7		
10R	247.7	15.00	189.2	226.7V	989.9L	.0000

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
			TRAY	TRAY	FRAC	G-MOL/SEC	M*/J/SEC
FEED	S70315	MIXED	1		.9441	735.29	-2.9006
FEED	S25	MIXED	1		7446	321.55	-.6489
FEED	S3	VAPOR	10		.0000	226.66	1.8668
PROD	S2	VAPOR	1			293.58	1.0119
PROD	S24	LIQUID	10			989.92	-2.6948

Demethanizer T70301-D COLUMN SUMMARY

----- NET FLOW RATES -----							HEATER
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG K	BAR(GA)	G-MOL/SEC				M*/J/SEC
1	262.1	15.00	849.4	989.6M	226.7V		
2	262.1	15.00	849.4	86.5			
3	262.1	15.00	849.4	86.5			
4	262.1	15.00	849.4	86.5			
5	262.1	15.00	849.5	86.5			
6	262.2	15.00	849.7	86.6			

7	262.2	15.00	850.1	86.8			
8	262.4	15.00	851.0	87.2			
9	262.8	15.00	852.9	88.1			
10	263.5	15.00	856.8	90.0			
11	264.9	15.00	864.4	93.9			
12R	267.7	15.00	101.5	114.0V	876.9L	.0000	

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
			TRAY	TRAY	FRAC	G-MOL/SEC	M*J/SEC
FEED	S70317	MIXED	1	.8583		989.56	.0034
FEED	S4	VAPOR	12	.0000		114.00	1.1960
PROD	S3	VAPOR	1			226.66	1.8668
PROD	S28	LIQUID	12			876.91	-.6680

Deethanizer T70401 COLUMN SUMMARY

----- NET FLOW RATES -----						HEATER	
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG K	BAR(GA)	G-MOL/SEC			M*J/SEC	
1	278.1	28.00	768.8		742.9L	1145.6V	
2	279.2	28.00	773.6	1171.5			
28	307.7	28.00	565.3	982.0			
29	309.3	28.00	535.6	968.0			
30	312.8	28.00	1116.7	938.3	763.3M		
31	313.6	28.00	1126.3	756.2			
88	357.5	28.00	1318.7	961.9			
89	360.7	28.00	1291.0	958.1			
90R	366.7	28.00	930.4			360.6L	9.6449

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM TO		FLOW RATES		HEAT RATES	
			TRAY	TRAY	LIQUID FRAC	G-MOL/SEC	M*/J/SEC	M*/J/SEC
FEED	S70405-2	LIQUID	1	1.0000		742.89		.4396
FEED	S70401-1	MIXED	30	.7568		763.27		5.1857
PROD	S70402	VAPOR	1			1145.59		10.3478
PROD	S70406	LIQUID	90			360.57		4.9215

SPECIFICATIONS

STRM S70406	90	MOL RATE	3.606E+02	3.606E+02
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Depropanizer T70402 COLUMN SUMMARY

TRAY	TEMP DEG K	PRESSURE BAR(GA)	NET FLOW RATES		FEED	PRODUCT	DUTIES
			LIQUID G-MOL/SEC	VAPOR G-MOL/SEC			
1	322.9	16.50	659.5		528.4L	702.0V	
2	323.1	16.50	660.3	833.1			
41	349.7	16.50	414.7	749.1		158.1L	
42	350.7	16.50	412.7	746.4			
55	356.1	16.50	379.9	721.9			
56	357.9	16.50	350.7	711.6	360.6M		
57	365.5	16.50	354.7	321.9			
79	412.8	16.50	342.1	318.4			
80	418.9	16.50	329.0	313.2			
81R	428.1	16.50	300.1			28.9L	5.1597

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID FRAC	FLOW RATES		HEAT RATES	
			TRAY	TRAY		G-MOL/SEC	M*J/SEC		
FEED	S70414--20	LIQUID	1	1.0000		528.45	1.5604		
FEED	S70408	MIXED	56	.0048		360.57	8.9476		
PROD	S70409	VAPOR	1			702.01	13.0760		
PROD	S70414	LIQUID	41			158.14	1.7065		
PROD	S70415	LIQUID	81			28.87	.8851		

SPECIFICATIONS

STRM S70415	81	MOL RATE	2.887E+01	2.887E+01
STRM S70414	41	MOL RATE	1.581E+02	1.581E+02

APPENDIX C

Shortcut Distillation Output In Actual Case



Demethanizer T70301-A COLUMN SUMMARY

TRAY	----- NET FLOW RATES -----					PRODUCT	HEATER
	TEMP DEG C	PRESSURE BAR(GA)	LIQUID G-MOL/HR	VAPOR G-MOL/HR	FEED		DUTIES M*/J/SEC
1	-97.4	14.84	765091.4		1.06E+07M	1.25E+07V	
2	-96.2	14.84	760095.0	2.66E+06			
3	-95.7	14.84	752310.4	2.66E+06			
4	-95.2	14.85	745101.4	2.65E+06			
5	-94.7	14.85	737039.9	2.64E+06			
6	-94.2	14.86	715895.4	2.63E+06			
7	-92.6	14.86	2.37E+06	2.61E+06	2.52E+06M		
8	-92.4	14.86	2.37E+06	1.74E+06			
9	-92.4	14.87	2.37E+06	1.74E+06			
10	-92.3	14.87	2.37E+06	1.74E+06			
11	-92.1	14.88	2.36E+06	1.74E+06			
12	-91.5	14.88	2.35E+06	1.73E+06			
13	-90.1	14.89	2.32E+06	1.72E+06			
14	-86.9	14.89	2.26E+06	1.69E+06			
15	-80.1	14.90	2.18E+06	1.64E+06			
16R	-66.4	14.90	1.55E+06	1.49E+06V		2.12E+06L	.0000

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM TO		LIQUID	FLOW RATES		HEAT RATES
			TRAY	TRAY		FRAC	G-MOL/HR	
FEED	S12	MIXED	1	.0730	10585326.35		-3.8524	
FEED	S15	MIXED	7	.6552	2522197.28		-3.6204	
FEED	S33	VAPOR	16	.0000	1490777.16		1.3115	
PROD	S34	VAPOR	1		12481131.20		-2.7259	
PROD	S16	LIQUID	16		2117169.59		-3.4353	

Demethanizer T70301-B COLUMN SUMMARY

TRAY	TEMP	PRESSURE	NET FLOW RATES		FEED	PRODUCT	HEATER
			LIQUID	VAPOR			
	DEG C	BAR(GA)		G-MOL/HR			M*J/SEC
1	-46.9	14.90	2.44E+06		1.08E+06M	1.49E+06V	
							2.12E+06M
2	-46.6	14.91	2.45E+06	738429.4			
3	-46.2	14.91	2.45E+06	741487.0			
4	-45.6	14.92	2.46E+06	745324.0			
5	-44.7	14.92	2.46E+06	750357.5			
6R	-42.6	14.92	755508.8	755910.2V		2.46E+06L	.0000

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM TO		LIQUID	FLOW RATES		HEAT RATES
			TRAY	TRAY		FRAC	G-MOL/HR	
FEED	S14	MIXED	1	.7166	1079774.12		-1.0392	
FEED	S18	MIXED	1	.7890	2117114.93		-1.4302	
FEED	S32	VAPOR	6	.0000	755910.16		.8859	
PROD	S33	VAPOR	1		1490777.16		1.3115	
PROD	S19	LIQUID	6		2462022.05		-2.8950	

Demethanizer T70301-C COLUMN SUMMARY

----- NET FLOW RATES -----						HEATER	
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG C	BAR(GA)		G-MOL/HR			M*/J/SEC
1	-34.7	14.92	2.98E+06		854711.9M	755910.2V	
						2.46E+06M	
2	-34.6	14.93	2.98E+06	419854.5			
3	-34.6	14.93	2.98E+06	421253.4			
4	-34.5	14.94	2.98E+06	421950.4			
5	-34.4	14.94	2.98E+06	422781.1			
6	-34.2	14.94	2.99E+06	424507.8			
7	-33.5	14.95	3.00E+06	428579.3			
8	-31.9	14.95	3.02E+06	438326.3			
9	-28.3	14.96	3.07E+06	461795.5			
10R	-20.0	14.96	514332.8		634390.0V	3.19E+06L	.0000

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
			TRAY	TRAY	FRAC	G-MOL/HR	M*/J/SEC
FEED	S13	MIXED	1	.7608		854711.86	-.3311
FEED	S29	MIXED	1	.9653		2461344.92	-2.3874
FEED	S31	VAPOR	10	.0000		634389.98	1.5673
PROD	S32	VAPOR	1			755910.16	.8859
PROD	S21	LIQUID	10			3194536.60	-2.0372

Demethanizer T70301-D COLUMN SUMMARY

TRAY	TEMP DEG C	PRESSURE BAR(GA)	----- NET FLOW RATES -----			HEATER DUTIES M*J/SEC
			LIQUID	VAPOR	FEED	
				G-MOL/HR		
1	-5.0	14.96	2.73E+06		3.19E+06M	631550.2V
2	-5.0	14.96	2.73E+06	163363.2		
3	-5.0	14.97	2.73E+06	163542.2		
4	-5.0	14.97	2.73E+06	163730.0		
5	-5.0	14.98	2.73E+06	163938.6		
6	-5.0	14.98	2.73E+06	164181.0		
7	-5.0	14.98	2.73E+06	164488.1		
8	-4.9	14.99	2.73E+06	164904.6		
9	-4.9	14.99	2.73E+06	165657.1		
10	-4.7	15.00	2.73E+06	167137.1		
11	-4.5	15.00	2.74E+06	169479.8		
12R	-3.2	15.00	173955.1		193119.4V	2.76E+06L .0000

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES		HEAT RATES
						TRAY	TRAY	
FEED	S30	MIXED	1	.8534		3194536.60	.5508	
FEED	S28	VAPOR	12	.0000		193119.36	.5470	
PROD	S31	VAPOR	1			631550.15	1.5608	
PROD	S23	LIQUID	12			2756105.80	-4.629	

Deethanizer T70401 COLUMN SUMMARY

----- NET FLOW RATES -----							HEATER
TRAY	TEMP	PRESSURE	LIQUID	VAPOR	FEED	PRODUCT	DUTIES
	DEG C	BAR(GA)	G-MOL/HR		M*J/SEC		
1	6.1	26.79	2.15E+06		2.26E+06M	3.58E+06V	
2	10.4	26.79	2.08E+06	3.46E+06			
3	14.3	26.79	1.99E+06	3.39E+06			
30	36.6	26.82	1.59E+06	3.00E+06			
31	40.3	26.82	3.90E+06	2.91E+06	2.57E+06M		
32	43.3	26.82	3.94E+06	2.64E+06			
88	86.2	26.89	4.68E+06	3.47E+06			
89	89.0	26.89	4.50E+06	3.42E+06			
90R	96.0	26.89		3.24E+06		1.25E+06L	9.9129

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM	TO	LIQUID	FLOW RATES	HEAT RATES
					TRAY	TRAY	FRAC
FEED	S8	MIXED	1	.9523		2262000.00	.4153
FEED	S9	MIXED	31	.8758		2568701.75	3.8275
PROD	S2	VAPOR	1			3577186.06	9.2238
PROD	S3	LIQUID	90			1253515.68	4.9318

SPECIFICATIONS

STRM S2	1	TEMPERATURE	6.100E+00	6.099E+00
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COLUMN SUMMARY

TRAY	TEMP DEG C	PRESSURE BAR(GA)	----- NET FLOW RATES -----			PRODUCT	HEATER DUTIES M*J/SEC
			LIQUID	VAPOR	FEED		
			G-MOL/HR				
1	6.1	26.79	2.15E+06		2.26E+06M	3.58E+06V	
2	10.4	26.79	2.08E+06	3.46E+06			
3	14.3	26.79	1.99E+06	3.39E+06			
30	36.6	26.82	1.59E+06	3.00E+06			
31	40.3	26.82	3.90E+06	2.91E+06	2.57E+06M		
32	43.3	26.82	3.94E+06	2.64E+06			
88	86.2	26.89	4.68E+06	3.47E+06			
89	89.0	26.89	4.50E+06	3.42E+06			
90R	96.0	26.89	3.24E+06			1.25E+06L	9.9129

FEED AND PRODUCT STREAMS

TYPE	STREAM	PHASE	FROM TRAY	TO TRAY	LIQUID FRAC	FLOW RATES	HEAT RATES
						G-MOL/HR	M*J/SEC
FEED	S8	MIXED	1	.9523		2262000.00	.4153
FEED	S9	MIXED	31	.8758		2568701.75	3.8275
PROD	S2	VAPOR	1			3577186.06	9.2238
PROD	S3	LIQUID	90			1253515.68	4.9318

SPECIFICATIONS

1 (ACTIVE)	STRM S2	1	TEMPERATURE	6.100E+00	6.099E+00
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APPENDIX D

Hot streams and cold stream detail

Stream Number	Initial Temperature (K)	Final Temperature (K)	Pressure (BarG)	Mole flowrate (mol/sec.)
H1	295.0	256.0	43.0	4145.0
H2	256.35	234.82	43.10	3824.28
H3	234.82	206.78	42.90	3530.9
H4	206.78	172.77	42.90	2727.87
H5	366.67	361.42	28.0	360.57
H6	273.3	268.07	27.70	402.69
C1	191.34	211.75	17.09	679.46
C2	220.07	229.75	17.11	734.87
C3	247.93	265.25	17.09	989.92
C4	267.88	274.75	17.04	876.91
C5	276.43	287.35	30.40	763.18
C6	171.59	287.35	15.00	3383.18
C7	313.0	320.97	15.20	109.54



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