```
         ---   Simulation  Input  File   ---
   *-STMT-*
             *XPSIM>  ...generated by XpsimWin v.1.06 ...
             *EXE-OPT> PAGELEN=66
             *
       100   RUN ID=TTEX01 CUSTOMER=STAFF PROJECT='TEX PLANT TEST'
       200   DESC   TEST CALCULATION - TURBOEXPANDER PLANT
       300   DESC    PROPANE RECOVERY
       400   DIMENSION ENG
             *
             *
       500   System Data
             *
             *
       600   CHEMCOMP N2 / CO2 / METHANE / ETHANE / PROPANE / BUTANE / IBUTANE / +
              PENTANE / IPENTANE / HEXANE / HEPTANE
       700   THERMSET UID=M1
       800   METHODS K=SRK HV=LK HL=LK SV=LK SL=LK CPV=LK CPL=LK DV=LK DL=LK IV=LK +
              VISV=IDEAL VISL=IDEAL THCV=IDEAL THCL=IDEAL SURT=IDEAL
             *
             *
       900   Flowsheet Data
             *
             *
             *
      1000   STREAM=FEED TEMP=115. PRES=800.
      1100   COMP 151.17 / 44.33 / 8545.25 / 868.88 / 483.96 / 58.33 / 114.92 / +
              18.92 / 38.83 / 24.63 / 4.38
             *
      1200   STREAM=S108 TEMP=-25. PRES=750. RATE(M)=10353.58 REFSTR=FEED
      1300   NAME S148 'PROPANE PRODUCT' / S119 'ETHANE RICH PRODUCT' / S114 +
              'EXPANDER LIQUID PRODUCT'
             *
      1400   FLASH IN FEED OUT S102(V) S101(L) UID=V-1
             *
      1500   FLASH IN S108 OUT S109(V) S110(L) UID=V-2 +
              DESC='MEDIUM PRESSURE FLASH'
             *
      1600   EXPANDER IN S109 OUT S113(V) S114(L) UID=EX-1 DESC=TURBOEXPANDER
      1700   CALC POUT=152 EFF=80.
             *
      1800   COLUMN IN S110 S114 OUT S143 S148 UID=C-1 DESC='DEETHANIZER COLUMN '
      1900   PARA TRAY=14 CON REB NITER=5
      2000   FEED STR=S110 TRAY=7
      2100   FEED STR=S114 TRAY=3
      2200   DRAWOFF STR=S143 TRAY=0 PHASE=VAP
      2300   DRAWOFF STR=S148 TRAY=15 PHASE=LIQ RATE(VAR)=688.
      2400   HEAT TRAY=0 VAR
      2500   HEAT TRAY=7 VAR
      2600   HEAT TRAY=15 VAR
      2700   PUMPAR FROM=8 TO=7 RATE(VAR)=600. PHASE=VAP TOTAL
      2800   PSPEC PTOP=134. TRAY=0 DP=8 / TRAY=1 DP=.1
      2900   PROFILE TRAY=0 LIQ=224. TEMP=-73 / TRAY=2 LIQ=180. TEMP=-47. / TRAY=3 +
              LIQ=900. TEMP=-40 / TRAY=7 LIQ=1240. TEMP=26. / TRAY=8 / TRAY=14 +
              LIQ=1406 TEMP=95. / TRAY=15 LIQ=704. TEMP=106
      3000   SPEC TEMP=-73. TRAY=0
      3100   SPEC TEMP=25. TRAY=7
      3200   SPEC FRAC(M)=.02 STR=LDRA:15 COMP=ETHANE
      3300   PLOT PROFILE
      3400   PRINT TRACE=PART LKEY=METHANE,ETHANE HKEY=PROPANE,PENTANE FORMAT=2 +
              TRAY=2 PROP=2 MFRAC WFRAC WRATE
             *
```

```
       - Simulation input - Continuation -
   *-STMT-*
      3500     HEATEXCH IN S113 OUT S116 UID=CONDENSR
      3600     HOT OUT=S116 FEED=S113 PRES=134.
      3700     DUTY DUTY=1 RATIO REFUOP=C-1 RHXID=0
      3800     HCURVE PLOT
               *
      3900     MIXER IN S116 S143 OUT S117 UID=MX-1
               *
      4000     HEATEXCH IN S102 S117 OUT S108 S119 UID=E-1 +
                DESC='COLD-BOX EXCHANGER '
      4100     DUTY DUTY=1 RATIO REFUOP=C-1 RHXID=7
      4200     HOT OUT=S108 FEED=S102 PRES=750.
      4300     COLD OUT=S119 FEED=S117 TEMP=105. PRES=118.
      4400     HCURVE PLOT
               *
               *
      4500     Recycle Data
               *
               *
      4600     SOLUTION NITER=10 NULLREC
      4700     ACCEL METHOD=WEGS START=5 FREQ=3 MINI=-4. MAXI=0.0
               *
               *
      4800     Output Data
               *
               *
      4900     PRINT FORMAT=2 WRATE MFRAC WFRAC MBAL STRSEQ=ALPH
               *
               *
      5000     END
           ---   End of Simulation Input File   ---
```

I) * PROBLEM GENERAL DATA *

1) * PROBLEM/PROJECT *
' TEST CALCULATION - TURBOEXPANDER PLANT '
' PROPANE RECOVERY '

2) * UNITS OF MEASURE *
- Input system BRITISH - Output system BRITISH

- INPUT AND OUTPUT UNITS -

Time	- HR	Weight	- LB
Temperature	- FAR	Pressure	- PSIA
Energy/Duty	- M-BTU	Work	- HP
Liq volums	- CUFT	Vap Volume	- CUFT
Viscosity	- CP	Thermal cond	- BTU/HFTF
Surface tens	- DYCM	Std Vap Vol	- S-CUFT

Standard Vapor Volume is 379.48318 FT3/LBM
Reference Status - Temperature 60°F - Pressure 1 atm

Enthalpy is 0.0 for ideal gas at 298.15 K
Std entropy is for ideal gas at 298.15 K and 1 Atm

II) * DEFINED COMPONENTS *

* No of Chemical Components 11
No of Hypothetical/Petroleum Components 0

No	1	2	3	4	5
CAS Registry no.	7727-37-9	124-38-9	74-82-8	74-84-0	74-98-6
Name	NITROGEN	CARBON DIOXIDE	METHANE	ETHANE	PROPANE
Component Key	N2	CO2	METHANE	ETHANE	PROPANE
Type	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Class	INOR	INOR	SHYD	SHYD	SHYD
Formula	N2	CO2	CH4	C2H6	C3H8
Molecular weight	28.010	44.010	16.040	30.070	44.100
Boiling point,FAR	-320.44	-109.39	-258.74	-127.48	-43.78
Std spec. gravity	0.64315	0.81906	0.40749	0.35522	0.50430
Critical temp,FAR	-232.51	87.91	-116.72	90.09	206.01
Critical pres,PSIA	493.129	1070.743	666.450	707.640	616.266
Critical vol,CUFT	1.433473	1.506352	1.586025	2.372784	3.255364
Critical Z	0.289987	0.274489	0.287211	0.284617	0.280844
Acentric factor	0.037000	0.223000	0.011000	0.099000	0.153000
Lat. heat, BTU/LBM	2387.039	6554.469	3515.381	6249.101	8103.358
H form, BTU/LBM	0.000	-169171.069	-32066.078	-36120.053	-44649.647
G form, BTU/LBM	-24533.825	-192525.630	-55933.363	-65486.299	-79284.128
Std entr, BT/LBM-F	45.71492	43.51755	44.47293	54.71937	64.53590

No	6	7	8	9	10
CAS Registry no.	106-97-8	75-28-5	109-66-0	78-78-4	110-54-3
Name	BUTANE	ISOBUTANE	PENTANE	ISOPENTANE	HEXANE
Component Key	BUTANE	IBUTANE	PENTANE	IPENTANE	HEXANE
Type	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Class	SHYD	SHYD	SHYD	SHYD	SHYD
Formula	C4H10	C4H10	C5H12	C5H12	C6H14
Molecular weight	58.120	58.120	72.150	72.150	86.180
Boiling point,FAR	31.10	10.89	96.91	82.18	155.71
Std spec. gravity	0.58434	0.55891	0.63094	0.62469	0.65877
Critical temp,FAR	305.65	274.98	385.86	369.10	454.55
Critical pres,PSIA	550.854	529.099	488.778	490.664	439.755
Critical vol,CUFT	4.083302	4.212638	4.876506	4.897169	5.924768
Critical Z	0.273882	0.282728	0.262694	0.270180	0.265578
Acentric factor	0.200000	0.183000	0.251000	0.227000	0.294000
Lat. heat, BTU/LBM	9448.820	9083.074	11028.154	10451.086	12376.581
H form, BTU/LBM	-54071.870	-57869.895	-62968.146	-66411.231	-71766.975
G form, BTU/LBM	-93782.315	-95734.534	-107754.554	-110454.190	-121603.711
Std entr, BT/LBM-F	73.99416	70.55479	83.45242	82.06712	92.86291

No	11
CAS Registry no.	142-82-5
Name	HEPTANE
Component Key	HEPTANE
Type	LIBRARY
Class	SHYD
Formula	C7H16
Molecular weight	100.210
Boiling point,FAR	209.17
Std spec. gravity	0.68637
Critical temp,FAR	512.51
Critical pres,PSIA	396.824
Critical vol,CUFT	6.919009
Critical Z	0.263181
Acentric factor	0.349000
Lat. heat, BTU/LBM	13618.673
H form, BTU/LBM	-80693.280
G form, BTU/LBM	-135541.890
Std entr, BT/LBM-F	102.20175

III) * PVT/THERMO/TRANSPORT PROPERTIES CALCULATION METHODS *

* CALCULATION SET 1 - M1 *

VLE K-values	SRK	- REDLICH-KWONG-SOAVE
ENTHALPY - Vapor	LK	- LEE-KESLER
ENTHALPY - Liquid	LK	- LEE-KESLER
ENTROPY - Vapor	LK	- LEE-KESLER
ENTROPY - Liquid	LK	- LEE-KESLER
DENSITY - Vapor	LK	- LEE-KESLER
DENSITY - Liquid	LK	- LEE-KESLER
VISCOSITY - Vapor	IDEAL	- IDEAL/LIBRARY
VISCOSITY - Liquid	IDEAL	- IDEAL/LIBRARY
HEAT CAPACITY - Vapor	LK	- LEE-KESLER
HEAT CAPACITY - Liquid	LK	- LEE-KESLER
CONDUCTIVITY - Vapor	IDEAL	- IDEAL/LIBRARY
CONDUCTIVITY - Liquid	IDEAL	- IDEAL/LIBRARY
ISENTROPIC Vapor Coeff	LK	- LEE-KESLER
SURFACE TENSION	IDEAL	- IDEAL/LIBRARY

- LIMITS AND OPTIONS -
Temperature - Min -359.67 FAR - Max 2240.33 FAR
Pressure - Min 0.100000E-04 PSIA - Max 15000.0 PSIA

Lowest significant composition 0.10000000E-19

Water K-values are calculated based on
'Vapor Pressure curve '
Water thermo-props are calculated based on
'Saturated conditions '
Water solubility in hydr phases calculated based on
'API solubility in HC mixtures '

*** STREAM 'FEED ' ***
- Temperature 115.000 FAR - Pressure 800.0000 PSIA

* No *	Component *	GLOBAL STREAM Mols	-Mol fr-	Weight	-Wt fr-
1	NITROGEN	151.170	0.014601	4234.271	0.020404
2	CARBON DIOXIDE	44.330	0.004282	1950.963	0.009401
3	METHANE	8545.250	0.825341	137065.750	0.660499
4	ETHANE	868.880	0.083921	26127.228	0.125903
5	PROPANE	483.960	0.046743	21342.639	0.102847
6	BUTANE	58.330	0.005634	3390.139	0.016337
7	ISOBUTANE	114.920	0.011100	6679.150	0.032186
8	PENTANE	18.920	0.001827	1365.078	0.006578
9	ISOPENTANE	38.830	0.003750	2801.584	0.013500
10	HEXANE	24.630	0.002379	2122.613	0.010229
11	HEPTANE	4.380	0.000423	438.920	0.002115
	* TOTAL *	10353.600	1.000000	207518.335	1.000000
		LBM		LB	

*** STREAM 'S108 ' ***
- Temperature -25.000 FAR - Pressure 750.0000 PSIA

* No *	Component *	GLOBAL STREAM Mols	-Mol fr-	Weight	-Wt fr-
1	NITROGEN	151.170	0.014601	4234.263	0.020404
2	CARBON DIOXIDE	44.330	0.004282	1950.959	0.009401
3	METHANE	8545.233	0.825341	137065.485	0.660499
4	ETHANE	868.878	0.083921	26127.177	0.125903
5	PROPANE	483.959	0.046743	21342.598	0.102847
6	BUTANE	58.330	0.005634	3390.133	0.016337
7	ISOBUTANE	114.920	0.011100	6679.137	0.032186
8	PENTANE	18.920	0.001827	1365.075	0.006578
9	ISOPENTANE	38.830	0.003750	2801.579	0.013500
10	HEXANE	24.630	0.002379	2122.609	0.010229
11	HEPTANE	4.380	0.000423	438.919	0.002115
	* TOTAL *	10353.580	1.000000	207517.934	1.000000
		LBM		LB	

*** UNIT 1 - 'V-1 ' - ' FLASH ' ***

--- Feed Streams --- - Product Streams -
'FEED ' 'S102 ' VAPOR to unit 7 - E-1
'S101 ' LIQUID

1) * CALCULATION TYPE *
Adiabatic flash
Temperature is variable
Pressure is fixed at lowest feed pressure

```
        ***   UNIT    2 - 'V-2     ' - ' FLASH                        '   ***
           Service/Desc 'MEDIUM PRESSURE FLASH                    '
                        --- Feed Streams ---          - Product  Streams -
   from unit   7 - E-1      'S108    '                 'S109    ' VAPOR       to unit   3 - EX-1
                                                       'S110    ' LIQUID      to unit   4 - C-1

   1) * CALCULATION TYPE *
     Adiabatic flash
     Temperature is variable
     Pressure is fixed at lowest feed pressure




        ***   UNIT    3 - 'EX-1    ' - ' EXPANDER                     '   ***
           Service/Desc 'TURBOEXPANDER                            '
                        --- Feed Streams ---          - Product  Streams -
   from unit   2 - V-2      'S109    '                 'S113    ' VAPOR       to unit   5 - CONDENSR
                                                       'S114    ' LIQUID      to unit   4 - C-1

   1) * OPERATING CONDITIONS *

     Lowest feed pressure set as inlet pressure
     Outlet pressure set at   152.0000 PSIA
     Adiabatic efficiency   80.000 per cent
```

*** UNIT 4 - 'C-1 ' - ' DISTILLATION COLUMN ' ***
Service/Desc 'DEETHANIZER COLUMN '

	--- Feed Streams ---	- Product Streams -	
from unit 2 - V-2	'S110 '	'S143 '	to unit 6 - MX-1
from unit 3 - EX-1	'S114 '	'S148 '	

1) * PARAMETERS *

No of theoretical trays 14
- condenser
- reboiler

No of Feeds	2
Products	2
Heater-Coolers	3
Pump-Arounds	1
Specifications	3

Calculation method 'SURE '
Maximum no of iterations 5
Max no of iterations with no error improvements 3

2) * CALCULATION TOLERANCES *
Bubble point 0.001000 Enthalpy balances 0.001000
Component balances 0.001000 Composition sums 0.001000

3) * COLUMN FEEDS *

1 - Stream S110 ON tray 7 - Flowrate FIXED - Temperature FIXED

2 - Stream S114 ON tray 3 - Flowrate FIXED - Temperature FIXED

4) * PRODUCT STREAMS *

1 - Stream S143 extracted as VAPOR from condenser - Flowrate NOT GIVEN
Material balance closed on this stream

2 - Stream S148 extracted as LIQUID from reboiler - Flowrate VARIABLE
Initial flowrate 688.000 LBM /HR

5) * HEATER / COOLERS *

1 - CONDENSER - User Id 0
Duty is VARIABLE - Initial value 0.000 M-BTU /HR

2 - On tray 7 - User Id 7
Duty is VARIABLE - Initial value 0.000 M-BTU /HR

3 - REBOILER - User Id 15
Duty is VARIABLE - Initial value 0.000 M-BTU /HR

6) * PUMPAROUNDS / BYPASSES *

PUMP-AROUND 1 from tray 8 on tray 7 - User Id
- Phase VAPOR , Flowrate VARIABLE 600.000 LBM /HR

7) * CONDENSER/REBOILER SPECS *
Reboiler is a KETTLE type

8) * INITIAL TEMPERATURE/FLOW-RATE ESTIMATES *

*** TRAY ***	OUTLET * LIQUID RATE * LBM /HR	* TEMPERATURE * FAR	* PRESSURE * PSIA
CON	224.000	-73.000	134.0000
1	NOT GIVEN	NOT GIVEN	142.0000
2	180.000	-47.000	NOT GIVEN
3	900.000	-40.000	NOT GIVEN
7	1240.000	26.000	NOT GIVEN
14	1406.000	95.000	NOT GIVEN
REB	704.000	106.000	143.4000

* TOTAL LIQUID AND/OR VAPOUR DRAWOFF *

TRAY 8 TOT.VAP.DRAW-OFF

9) * PERFORMANCE SPECIFICATIONS *

Spec 1
* Hold temperature of tray 0
at EQUAL TO -73.0000 FAR
Tolerance (RELATIVE) 0.010000

Spec 2
* Hold temperature of tray 7
at EQUAL TO 25.0000 FAR
Tolerance (RELATIVE) 0.010000

Spec 3
* Hold sum of MOLAR fractions of component(s)
4) ETHANE
contained in stream
'S148 '- LIQUID DRAW-OFF FROM REBOILER
at EQUAL TO 0.200000E-01
Tolerance (RELATIVE) 0.010000

*** UNIT 5 - 'CONDENSR' - ' HEAT-EXCHANGER ' ***

	--- Feed Streams ---	- Product Streams -	
from unit 3 - EX-1	'S113 '	'S116 '	to unit 6 - MX-1

1) * PRODUCTS SPECIFICATION *

Product 'S116 ' generated by HOT feed 'S113 '
Pressure set at 134.0000 PSIA
Temperature calculated by heat balance

2) * DUTY SPECIFICATION *

Duty value ratioed by that of unit 'C-1 '
set to 1.00000
Reference unit hxid '0 '

3) * PRINTOUT OPTIONS *

Heating/Cooling curves requested - No of points 10
Equal TEMPERATURE increments used

*** UNIT 6 - 'MX-1 ' - ' STREAM MIXER ' ***

	--- Feed Streams ---	- Product Streams -	
from unit 5 - CONDENSR	'S116 '	'S117 '	to unit 7 - E-1
from unit 4 - C-1	'S143 '		

1) * SPECIFICATIONS *
Outlet pressure set at lowest feed pressure

*** UNIT 7 - 'E-1 ' - ' HEAT-EXCHANGER ' ***
Service/Desc 'COLD-BOX EXCHANGER '

	--- Feed Streams ---	- Product Streams -	
from unit 1 - V-1	'S102 '	'S108 '	to unit 2 - V-2
from unit 6 - MX-1	'S117 '	'S119 '	

1) * PRODUCTS SPECIFICATION *

Product 'S108 ' generated by HOT feed 'S102 '
Pressure set at 750.0000 PSIA
Temperature calculated by heat balance

Product 'S119 ' generated by COLD feed 'S117 '
Pressure set at 118.0000 PSIA
Temperature set at 105.000 FAR

2) * DUTY SPECIFICATION *

Duty value ratioed by that of unit 'C-1 '
set to 1.00000
Reference unit hxid '7 '

3) * PRINTOUT OPTIONS *

Heating/Cooling curves requested - No of points 10
Equal TEMPERATURE increments used

V) **** STREAM / UNITS DICTIONARY ****

1) STREAMS-UNITS CROSS-REFERENCE TABLE

No	Stream Id	Description/Service	Product of Unit	Feed of Unit(s)
1	FEED	.....		1 V-1
2	S108	.....	7 E-1	2 V-2
3	S148	PROPANE PRODUCT	4 C-1	
4	S119	ETHANE RICH PRODUCT	7 E-1	
5	S114	EXPANDER LIQUID PRODUCT	3 EX-1	4 C-1
6	S102	.....	1 V-1	7 E-1
7	S101	.....	1 V-1	
8	S109	.....	2 V-2	3 EX-1
9	S110	.....	2 V-2	4 C-1
10	S113	.....	3 EX-1	5 CONDENSR
11	S143	.....	4 C-1	6 MX-1
12	S116	.....	5 CONDENSR	6 MX-1
13	S117	.....	6 MX-1	7 E-1

2) UNITS-STREAMS CROSS-REFERENCE TABLE

No	Unit	Unit Description	Feed Streams		Product Streams	
1	V-1	.....	1	FEED	6	S102
					7	S101
2	V-2	MEDIUM PRESSURE FLASH	2	S108	8	S109
					9	S110
3	EX-1	TURBOEXPANDER	8	S109	10	S113
					5	S114
4	C-1	DEETHANIZER COLUMN	9	S110	11	S143
			5	S114	3	S148
5	CONDENSR	.....	10	S113	12	S116
6	MX-1	.....	12	S116	13	S117
			11	S143		
7	E-1	COLD-BOX EXCHANGER	6	S102	2	S108
			13	S117	4	S119

VI) **** RUN STATISTICS ****

* No of streams 13
process operations 7
topping structures 0
control operations 0
set operations 0

The calculation is a RECYCLE PROBLEM
Calculation sequence defined by input sequence

No of Recycle loops 1

*** RECYCLE LOOPS AND CONVERGENCE TOLERANCES ***

* RECYCLE LOOP 1
Start Operation PROCESS Unit 2 - 'V-2 '
End Operation PROCESS Unit 7 - 'E-1 '
Maximum allowed iterations 10

- Stream 'S108 ' is a recycle from unit 7 - 'E-1 ' to unit 2 - 'V-2 '
- Specified tolerances
Temperature (ABSOLUTE) 1.000000 FAR
Pressure (RELATIVE) 0.010000
Flow-rate (RELATIVE) 0.010000
Composition (RELATIVE) 0.010000
Molar fractions lower than 0.0100000 are NOT considered
Convergence accelerated using BOUNDED WEGSTEIN method
Initial iteration 5 - Frequency 3
Adj factors - Minimum -4.00000 - Maximum 0.00000

*** SIMULATION TRACE FOLLOWS ***

... New/output binary file 'TTEX01 ' initialized ...

. Stream 'FEED ' flashed .
. Stream 'S108 ' flashed .
. Feed/Recycle streams processed .

* WARNING, PRODUCT STREAM 'S101 ' (LIQUID) HAS NULL FLOW-RATE *
Unit op 1 - 'V-1 ' calculated
Unit op 2 - 'V-2 ' calculated

Loop 1 - calculation started
Unit op 3 - 'EX-1 ' calculated

Intermediate column calculation printout
... Feed S110 on tray 7 flashed at 142.6000 PSIA ...
- Temp -75.12 FAR , Rate, Liquid 714.081 LBM , Vapor 482.585 LBM
... Feed S114 on tray 3 flashed at 142.2000 PSIA ...
- Temp -127.99 FAR , Rate, Liquid 663.526 LBM , Vapor 9.091 LBM

- at iter 0, err sum 2.49713 , max err sum 0.493489 - adj. factor 0.000000
DK/K - max .10932E-02 - min .93927E-06 - avg 0.000133
Error sums, total 2.49713 , BP 1.23883 , H 0.259626 , Comp 0.998679
- Maximum Relative Errors -
* BP -0.199133 at tray 8 * H 0.076501 at tray 5
Tray Glob Mat Bal -0.217855 at tray 6 * Tray Part Mat Bal 0.163416 for comp 1 at tray 8
Coln Part Mat Bal 0.033368 for comp 11

*** INITIAL COLUMN STATUS ***

TRAY	TEMP	-TOTAL LIQ	VAP OUTLET-	- LIQ.	& VAP. DRAW-OFF -	BP.ERROR	ENT.BAL.ERR.
0	-73.000	224.000	1181.283	0.000	1181.283	-0.007844	0.000000
1	-60.000	202.000	1405.283	0.000	0.000	-0.088798	0.021449
2	-47.000	180.000	1383.283	0.000	0.000	-0.009411	-0.006376
3	-40.000	900.000	1352.192	0.000	0.000	0.020307	-0.007423
4	-23.500	985.000	1408.666	0.000	0.000	0.033589	0.070538
5	-7.000	1070.000	1493.666	0.000	0.000	0.092589	0.076501
6	9.500	1155.000	1578.666	0.000	0.000	0.135859	0.031425
7	26.000	1288.000	581.081	0.000	0.000	-0.112429	0.000000
8	35.857	1263.714	600.000	0.000	0.000	-0.199133	-0.028425
9	45.714	1287.429	575.714	0.000	0.000	-0.165561	-0.004263
10	55.571	1311.143	599.429	0.000	0.000	-0.131666	-0.002521
11	65.429	1334.857	623.143	0.000	0.000	-0.102777	-0.002057
12	75.286	1358.571	646.857	0.000	0.000	-0.067656	-0.002825
13	85.143	1382.286	670.571	0.000	0.000	-0.020324	-0.003151
14	95.000	1406.000	694.286	0.000	0.000	0.028694	0.002673
15	106.000	688.000	718.000	688.000	0.000	0.022193	0.000000

* PUMPAROUNDS / BYPASSES *
VAPOUR - FROM TRAY 8 - TO TRAY 6 - RATE 600.000
* HEATERS / COOLERS *
TRAY 0 - DUTY -1394.271 M-BTU
TRAY 7 - DUTY 5154.370 M-BTU
TRAY 15 - DUTY 5004.592 M-BTU
* SPECIFICATIONS *

NO	TYPE	GIVEN VALUE	CALC VALUE	ERROR	CONV
1	TEMPER	-73.0000 FAR	-73.0000 FAR	0.000000	Y
2	TEMPER	25.0000 FAR	26.0000 FAR	0.001031	Y
3	COMPOS	0.020000	0.007388	-0.497925	N

- at iter 1, err sum 0.898664 , max err sum 0.128656 - adj. factor 1.000000
DK/K - max .12575E-02 - min .15610E-06 - avg 0.000247
DT max - abs 18.2834 - rel 0.040550 DR max - abs 317.7229 - rel 0.379472
Error sums, total 0.898664 , BP 0.445982 , H 0.791684E-01, Comp 0.373513
- Maximum Relative Errors -
* BP 0.046215 at tray 12 * H -0.036362 at tray 6
Tray Glob Mat Bal 0.046079 at tray 1 * Tray Part Mat Bal 0.037187 for comp 1 at tray 8
Coln Part Mat Bal 0.007571 for comp 11

- at iter 2, err sum 0.381375 , max err sum 0.521495E-01 - adj. factor 0.510260
DK/K - max .53545E-03 - min .10783E-06 - avg 0.000059
DT max - abs 5.0088 - rel 0.012443 DR max - abs 58.0030 - rel 0.250000
Error sums, total 0.381375 , BP 0.167676 , H 0.362309E-01, Comp 0.177469
- Maximum Relative Errors -
* BP -0.016793 at tray 6 * H -0.010318 at tray 6
Tray Glob Mat Bal 0.025039 at tray 6 * Tray Part Mat Bal 0.012603 for comp 1 at tray 7
Coln Part Mat Bal 0.003333 for comp 11

- at iter 3, err sum 0.150096E-01, max err sum 0.513338E-02 - adj. factor 1.000000
DK/K - max .28033E-03 - min .26447E-06 - avg 0.000039
DT max - abs 1.6757 - rel 0.003811 DR max - abs 20.9197 - rel 0.088851
Error sums, total 0.150096E-01, BP 0.455511E-02, H 0.478017E-02, Comp 0.567434E-02
- Maximum Relative Errors -
* BP -0.001265 at tray 1 * H -0.002354 at tray 2
Tray Glob Mat Bal 0.001515 at tray 1 * Tray Part Mat Bal 0.001157 for comp 9 at tray 1
Coln Part Mat Bal 0.000233 for comp 11

- at iter 4, err sum 0.145113E-02, max err sum 0.413908E-03 - adj. factor 1.000000
DK/K - max .77026E-03 - min .28708E-07 - avg 0.000072
DT max - abs 0.1064 - rel 0.000242 DR max - abs 1.3812 - rel 0.005742
Error sums, total 0.145113E-02, BP 0.442957E-03, H 0.335710E-03, Comp 0.672461E-03
- Maximum Relative Errors -
* BP 0.000125 at tray 2 * H -0.000106 at tray 1
Tray Glob Mat Bal -0.000183 at tray 2 * Tray Part Mat Bal 0.000117 for comp 8 at tray 2
Coln Part Mat Bal 0.000044 for comp 1
*** COLUMN CALCULATION RESOLVED ***

*** FINAL COLUMN STATUS ***

TRAY	TEMP	TOTAL LIQ	VAP OUTLET	LIQ.	VAP. DRAW-OFF	BP.ERROR	ENT.BAL.ERR.
0	-73.000	186.864	1148.375	0.000	1148.375	0.000038	0.000000
1	-56.707	172.634	1335.240	0.000	0.000	0.000108	-0.000106
2	-50.822	156.917	1321.009	0.000	0.000	0.000125	0.000068
3	-45.284	891.491	1296.202	0.000	0.000	0.000016	-0.000004
4	-29.392	891.925	1367.249	0.000	0.000	0.000022	-0.000008
5	-20.086	861.456	1367.684	0.000	0.000	0.000005	-0.000008
6	-8.678	830.994	1337.214	0.000	0.000	-0.000033	0.000007
7	24.981	1181.794	363.281	0.000	0.000	0.000015	0.000000
8	42.293	1249.759	460.886	0.000	0.000	-0.000018	0.000061
9	49.201	1267.214	528.851	0.000	0.000	-0.000019	-0.000013
10	55.455	1276.434	546.307	0.000	0.000	-0.000017	-0.000003
11	62.902	1288.082	555.527	0.000	0.000	-0.000012	-0.000021
12	71.167	1303.720	567.175	0.000	0.000	-0.000009	-0.000005
13	79.316	1319.704	582.813	0.000	0.000	-0.000005	0.000000
14	87.332	1321.885	598.797	0.000	0.000	-0.000002	-0.000032
15	100.524	720.907	600.978	720.907	0.000	0.000001	0.000000

* PUMPAROUNDS / BYPASSES *
VAPOUR - FROM TRAY 8 - TO TRAY 6 - RATE 460.886
* HEATERS / COOLERS *
TRAY 0 - DUTY -1231.309 M-BTU
TRAY 7 - DUTY 4117.906 M-BTU
TRAY 15 - DUTY 4294.634 M-BTU
* SPECIFICATIONS *

NO	TYPE	GIVEN VALUE	CALC VALUE	ERROR	CONV
1	TEMPER	-73.0000 FAR	-73.0004 FAR	-0.000001	Y
2	TEMPER	25.0000 FAR	24.9810 FAR	-0.000020	Y
3	COMPOS	0.020000	0.019999	-0.000026	Y

Unit op 4 - 'C-1 ' calculated

* WARNING, HOT streams S113 /S116 temperature changes in wrong direction *
Unit op 5 - 'CONDENSR' calculated
Unit op 6 - 'MX-1 ' calculated
Unit op 7 - 'E-1 ' calculated

 * Iteration   1 of loop 1 completed *

*** CONVERGENCE FOR LOOP 1 IS CHECKING ***

 - STREAM 'S108   ' CHECKED -
 Temp   -26.879 FAR , old   -25.000 FAR , dt   -1.879 FAR   * PREC EXCEEDED *
 Pressure   750.000 PSIA, old   750.000 PSIA, dp   0.000 PSIA - PREC REACHED -
 Flow   10353.600 LBM , old   10353.580 LBM , diff   0.020 LBM   - PREC REACHED -
 No change of composision detected

 Iteration   2 of loop 1 resumed at   UNIT operation   2 - V-2
   Unit op   2 - 'V-2   ' calculated
   Unit op   3 - 'EX-1   ' calculated

    Intermediate column calculation printout
    ... Feed S110   on tray   7 flashed at 142.6000 PSIA ...
      - Temp   -77.57 FAR , Rate, Liquid   741.081 LBM , Vapor   506.250 LBM
    ... Feed S114   on tray   3 flashed at 142.2000 PSIA ...
      - Temp   -129.87 FAR , Rate, Liquid   666.848 LBM , Vapor   9.194 LBM

 - at iter   0, err sum 0.215827   , max err sum 0.329816E-01 - adj. factor 0.000000
   DK/K - max .90840E-03 - min .16274E-05 - avg   0.000127
   Error sums, total 0.215827   , BP 0.104119   , H 0.984608E-02, Comp 0.101862
    - Maximum Relative Errors -
    * BP   0.012002 at tray   3 * H   0.002148 at tray   4
    Tray Glob Mat Bal -0.018831 at tray   4 * Tray Part Mat Bal 0.013547   for comp 11 at tray   3
    Coln Part Mat Bal 0.002161   for comp 11

    *** INITIAL COLUMN STATUS ***
* TRAY * TEMP ** -TOTAL LIQ & VAP OUTLET- * - LIQ. & VAP. DRAW-OFF - * BP.ERROR * ENT.BAL.ERR.*
     0   -73.000   186.864   1202.466   0.000   1202.466   -0.000176   0.000000
     1   -56.707   172.634   1389.331   0.000   0.000   0.000856   0.000876
     2   -50.822   156.917   1375.100   0.000   0.000   0.003902   0.000490
     3   -45.284   891.491   1350.189   0.000   0.000   0.012002   0.000380
     4   -29.392   891.925   1417.914   0.000   0.000   0.009433   0.002148
     5   -20.086   861.456   1418.349   0.000   0.000   0.005260   0.001590
     6   -8.678   830.994   1387.879   0.000   0.000   0.002438   -0.002071
     7   24.981   1181.794   390.281   0.000   0.000   -0.009308   0.000000
     8   42.293   1249.759   460.886   0.000   0.000   -0.011541   0.000160
     9   49.201   1267.214   528.851   0.000   0.000   -0.011657   -0.000173
    10   55.455   1276.434   546.307   0.000   0.000   -0.010952   -0.000298
    11   62.902   1288.082   555.527   0.000   0.000   -0.009575   -0.000414
    12   71.167   1303.720   567.175   0.000   0.000   -0.007584   -0.000445
    13   79.316   1319.704   582.813   0.000   0.000   -0.005268   -0.000419
    14   87.332   1321.885   598.797   0.000   0.000   -0.003051   -0.000383
    15   100.524   720.907   600.978   720.907   0.000   -0.001115   0.000000
 * PUMPAROUNDS / BYPASSES *
   VAPOUR   - FROM TRAY   8 - TO TRAY   6 - RATE   460.886
 * HEATERS / COOLERS *
   TRAY   0 - DUTY   -1242.518 M-BTU
   TRAY   7 - DUTY   4350.612 M-BTU
   TRAY 15 - DUTY   4297.557 M-BTU
 * SPECIFICATIONS *
    NO TYPE   GIVEN VALUE   CALC   VALUE   ERROR CONV
     1 TEMPER   -73.0000 FAR   -73.0004 FAR   -0.000001 Y
     2 TEMPER   25.0000 FAR   24.9810 FAR   -0.000020 Y
     3 COMPOS   0.020000   0.019300   -0.017812 N

 - at iter   1, err sum 0.106804E-01, max err sum 0.207002E-02 - adj. factor 1.000000
   DK/K - max .93609E-04 - min .70901E-07 - avg   0.000016
   DT max - abs   1.3875 - rel   0.003360   DR max - abs   11.7479 - rel   0.039520
   Error sums, total 0.106804E-01, BP 0.287645E-02, H 0.408175E-02, Comp 0.372215E-02
    - Maximum Relative Errors -
    * BP   0.000300 at tray 11 * H -0.001310 at tray   2
    Tray Glob Mat Bal 0.000460 at tray   4 * Tray Part Mat Bal 0.000319   for comp 11 at tray   3
    Coln Part Mat Bal 0.000041   for comp 10

 - at iter   2, err sum 0.940421E-03, max err sum 0.119868E-03 - adj. factor 1.000000
   DK/K - max .12952E-02 - min .63272E-06 - avg   0.000278
   DT max - abs   0.0434 - rel   0.000086   DR max - abs   0.8505 - rel   0.003421
   Error sums, total 0.940421E-03, BP 0.598704E-04, H 0.195402E-03, Comp 0.685149E-03
    - Maximum Relative Errors -
    * BP   0.000009 at tray   2 * H -0.000057 at tray   1
    Tray Glob Mat Bal 0.000054 at tray 15 * Tray Part Mat Bal 0.000053   for comp 11 at tray   7
    Coln Part Mat Bal 0.000054   for comp 10
    *** COLUMN CALCULATION RESOLVED ***

    *** FINAL COLUMN STATUS ***
 * TRAY * TEMP ** -TOTAL LIQ & VAP OUTLET- * - LIQ. & VAP. DRAW-OFF - * BP.ERROR * ENT.BAL.ERR.*
     0   -72.979   179.286   1200.489   0.000   1200.489   -0.000006   0.000000
     1   -57.112   165.593   1379.775   0.000   0.000   0.000002   -0.000057
     2   -51.641   151.155   1366.082   0.000   0.000   0.000009   -0.000052
     3   -46.656   883.976   1342.449   0.000   0.000   -0.000002   -0.000001
     4   -30.521   881.974   1408.421   0.000   0.000   -0.000002   -0.000007
     5   -20.935   849.843   1406.419   0.000   0.000   -0.000003   -0.000001
     6   -9.371   820.399   1374.289   0.000   0.000   -0.000001   0.000003
     7   25.010   1180.585   380.896   0.000   0.000   -0.000001   0.000000
     8   42.557   1249.551   457.700   0.000   0.000   0.000001   0.000016
     9   49.507   1267.395   526.666   0.000   0.000   -0.000003   -0.000008
    10   55.728   1276.755   544.510   0.000   0.000   -0.000004   0.000006
    11   63.108   1288.446   553.870   0.000   0.000   -0.000006   0.000001
    12   71.292   1304.004   565.560   0.000   0.000   -0.000006   -0.000009
    13   79.368   1319.926   581.119   0.000   0.000   -0.000006   0.000022
    14   87.327   1322.162   597.041   0.000   0.000   -0.000005   -0.000013
    15   100.454   722.885   599.277   722.885   0.000   -0.000002   0.000000
 * PUMPAROUNDS / BYPASSES *
   VAPOUR   - FROM TRAY   8 - TO TRAY   6 - RATE   457.700
 * HEATERS / COOLERS *
   TRAY   0 - DUTY   -1193.344 M-BTU
   TRAY   7 - DUTY   4302.418 M-BTU
   TRAY 15 - DUTY   4281.325 M-BTU
 * SPECIFICATIONS *
     NO TYPE   GIVEN VALUE   CALC   VALUE   ERROR CONV
      1 TEMPER   -73.0000 FAR   -72.9787 FAR   0.000028 Y
      2 TEMPER   25.0000 FAR   25.0101 FAR   0.000010 Y
      3 COMPOS   0.020000   0.020000   0.000010 Y
   Unit op   4 - 'C-1   ' calculated

 * WARNING, HOT streams S113   /S116   temperature changes in wrong direction *
   Unit op   5 - 'CONDENSR' calculated
   Unit op   6 - 'MX-1   ' calculated
   Unit op   7 - 'E-1   ' calculated

 * Iteration   2 of loop 1 completed *

*** CONVERGENCE FOR LOOP 1 IS CHECKING ***

 - STREAM 'S108   ' CHECKED -
 Temp   -28.353 FAR , old   -26.879 FAR , dt   -1.475 FAR   * PREC EXCEEDED *
 Pressure   750.000 PSIA, old   750.000 PSIA, dp   0.000 PSIA - PREC REACHED -
 Flow   10353.600 LBM , old   10353.600 LBM , diff   0.000 LBM   - PREC REACHED -
 No change of composision detected

 Iteration   3 of loop 1 resumed at   UNIT operation   2 - V-2

   Unit op   2 - 'V-2   ' calculated
   Unit op   3 - 'EX-1   ' calculated

    Intermediate column calculation printout
    ... Feed S110   on tray   7 flashed at 142.6000 PSIA ...
      - Temp   -79.53 FAR , Rate, Liquid   762.856 LBM , Vapor   525.754 LBM
    ... Feed S114   on tray   3 flashed at 142.2000 PSIA ...
      - Temp   -131.29 FAR , Rate, Liquid   668.608 LBM , Vapor   9.290 LBM

 - at iter   0, err sum 0.172281   , max err sum 0.268156E-01 - adj. factor 0.000000
   DK/K - max .92733E-03 - min .11326E-05 - avg   0.000128
   Error sums, total 0.172281   , BP 0.823245E-01, H 0.826289E-02, Comp 0.816940E-01
    - Maximum Relative Errors -
    * BP   0.009996 at tray   3 * H -0.001760 at tray   6
    Tray Glob Mat Bal -0.015060 at tray   4 * Tray Part Mat Bal 0.011060   for comp 11 at tray   3
    Coln Part Mat Bal 0.001359   for comp 11

    *** INITIAL COLUMN STATUS ***
 * TRAY * TEMP ** -TOTAL LIQ & VAP OUTLET- * - LIQ. & VAP. DRAW-OFF - * BP.ERROR * ENT.BAL.ERR.*
     0   -72.979   179.286   1243.624   0.000   1243.624   0.000566   0.000000
     1   -57.112   165.593   1422.910   0.000   0.000   0.001423   0.000643
     2   -51.641   151.155   1409.217   0.000   0.000   0.003937   0.000232
     3   -46.656   883.976   1385.489   0.000   0.000   0.009996   0.001015
     4   -30.521   881.974   1449.701   0.000   0.000   0.007806   0.001731
     5   -20.935   849.843   1447.699   0.000   0.000   0.004439   0.001267
     6   -9.371   820.399   1415.569   0.000   0.000   0.002322   -0.001760
     7   25.010   1180.585   402.671   0.000   0.000   -0.006661   0.000000
     8   42.557   1249.551   457.700   0.000   0.000   -0.008501   0.000102
     9   49.507   1267.395   526.666   0.000   0.000   -0.008628   -0.000123
    10   55.728   1276.755   544.510   0.000   0.000   -0.008118   -0.000211
    11   63.108   1288.446   553.870   0.000   0.000   -0.007109   -0.000289
    12   71.292   1304.004   565.560   0.000   0.000   -0.005648   -0.000333
    13   79.368   1319.926   581.119   0.000   0.000   -0.003948   -0.000287
    14   87.327   1322.162   597.041   0.000   0.000   -0.002318   -0.000272
    15   100.454   722.885   599.277   722.885   0.000   -0.000905   0.000000
 * PUMPAROUNDS / BYPASSES *
   VAPOUR   - FROM TRAY   8 - TO TRAY   6 - RATE   457.700
 * HEATERS / COOLERS *
   TRAY   0 - DUTY   -1201.903 M-BTU
   TRAY   7 - DUTY   4490.346 M-BTU
   TRAY 15 - DUTY   4283.565 M-BTU
 * SPECIFICATIONS *
     NO TYPE   GIVEN VALUE   CALC   VALUE   ERROR CONV
      1 TEMPER   -73.0000 FAR   -72.9787 FAR   0.000028 Y
      2 TEMPER   25.0000 FAR   25.0101 FAR   0.000010 Y
      3 COMPOS   0.020000   0.019479   -0.013192 N

 - at iter   1, err sum 0.686268E-02, max err sum 0.135492E-02 - adj. factor 1.000000
   DK/K - max .17562E-02 - min .13479E-05 - avg   0.000257
   DT max - abs   1.0666 - rel   0.002589   DR max - abs   10.4479 - rel   0.032551
   Error sums, total 0.686268E-02, BP 0.167551E-02, H 0.261140E-02, Comp 0.257577E-02
    - Maximum Relative Errors -
    * BP   0.000177 at tray 11 * H -0.000891 at tray   2
    Tray Glob Mat Bal 0.000288 at tray   4 * Tray Part Mat Bal 0.000205   for comp 11 at tray   3
    Coln Part Mat Bal 0.000060   for comp 11
    *** COLUMN CALCULATION RESOLVED ***

*** FINAL COLUMN STATUS ***

TRAY	TEMP	TOTAL LIQ	VAP OUTLET	LIQ.	VAP. DRAW-OFF	BP.ERROR	ENT.BAL.ERR.
0	-72.986	173.666	1242.360	0.000	1242.360	-0.000030	0.000000
1	-57.440	160.373	1416.026	0.000	0.000	-0.000134	-0.000073
2	-52.277	146.536	1402.733	0.000	0.000	-0.000153	-0.000891
3	-47.723	876.589	1379.606	0.000	0.000	-0.000160	-0.000118
4	-31.390	872.872	1441.051	0.000	0.000	-0.000138	0.000268
5	-21.549	839.395	1437.334	0.000	0.000	-0.000064	-0.000097
6	-9.882	810.894	1403.857	0.000	0.000	-0.000009	-0.000133
7	25.019	1178.936	394.815	0.000	0.000	-0.000014	0.000000
8	42.796	1248.192	454.787	0.000	0.000	0.000084	-0.000429
9	49.770	1266.491	524.043	0.000	0.000	0.000127	0.000089
10	55.958	1276.084	542.342	0.000	0.000	0.000162	0.000091
11	63.278	1287.973	551.935	0.000	0.000	0.000177	0.000135
12	71.398	1303.492	563.824	0.000	0.000	0.000164	0.000009
13	79.416	1319.454	579.343	0.000	0.000	0.000130	0.000107
14	87.331	1321.964	595.305	0.000	0.000	0.000088	0.000173
15	100.412	724.149	597.815	724.149	0.000	0.000042	0.000000

* PUMPAROUNDS / BYPASSES *
VAPOUR - FROM TRAY 8 - TO TRAY 6 - RATE 454.787
* HEATERS / COOLERS *
TRAY 0 - DUTY -1165.373 M-BTU
TRAY 7 - DUTY 4448.089 M-BTU
TRAY 15 - DUTY 4270.062 M-BTU
* SPECIFICATIONS *

NO	TYPE	GIVEN VALUE	CALC VALUE	ERROR	CONV
1	TEMPER	-73.0000 FAR	-72.9861 FAR	0.000018	Y
2	TEMPER	25.0000 FAR	25.0192 FAR	0.000020	Y
3	COMPOS	0.020000	0.020015	0.000382	Y

Unit op 4 - 'C-1 ' calculated

* WARNING, HOT streams S113 /S116 temperature changes in wrong direction *
Unit op 5 - 'CONDENSR' calculated
Unit op 6 - 'MX-1 ' calculated
Unit op 7 - 'E-1 ' calculated

* Iteration 3 of loop 1 completed *

*** CONVERGENCE FOR LOOP 1 IS CHECKING ***

- STREAM 'S108 ' CHECKED -
Temp -29.483 FAR , old -28.353 FAR , dt -1.130 FAR * PREC EXCEEDED *
Pressure 750.000 PSIA, old 750.000 PSIA, dp 0.000 PSIA - PREC REACHED -
Flow 10353.600 LBM , old 10353.600 LBM , diff 0.000 LBM - PREC REACHED -
No change of composision detected

Iteration 4 of loop 1 resumed at UNIT operation 2 - V-2
Unit op 2 - 'V-2 ' calculated
Unit op 3 - 'EX-1 ' calculated

Intermediate column calculation printout

... Feed S110 on tray 7 flashed at 142.6000 PSIA ...
- Temp -81.05 FAR , Rate, Liquid 779.790 LBM , Vapor 541.131 LBM
... Feed S114 on tray 3 flashed at 142.2000 PSIA ...
- Temp -132.38 FAR , Rate, Liquid 670.141 LBM , Vapor 9.312 LBM

- at iter 0, err sum 0.126824 , max err sum 0.204483E-01 - adj. factor 0.000000
DK/K - max .94100E-03 - min .84807E-06 - avg 0.000129
Error sums, total 0.126824 , BP 0.602503E-01, H 0.660764E-02, Comp 0.599665E-01
- Maximum Relative Errors -
* BP 0.007614 at tray 3 * H 0.001614 at tray 4
Tray Glob Mat Bal -0.011220 at tray 4 * Tray Part Mat Bal 0.008351 for comp 11 at tray 3
Coln Part Mat Bal 0.000935 for comp 11

*** INITIAL COLUMN STATUS ***

TRAY	TEMP	TOTAL LIQ	VAP OUTLET	LIQ.	VAP. DRAW-OFF	BP.ERROR	ENT.BAL.ERR.
0	-72.986	173.666	1276.224	0.000	1276.224	0.000502	0.000000
1	-57.440	160.373	1449.890	0.000	0.000	0.001156	0.000429
2	-52.277	146.536	1436.597	0.000	0.000	0.003146	-0.000674
3	-47.723	876.589	1413.448	0.000	0.000	0.007614	0.000597
4	-31.390	872.872	1473.360	0.000	0.000	0.005918	0.001614
5	-21.549	839.395	1469.643	0.000	0.000	0.003385	0.000875
6	-9.882	810.894	1436.167	0.000	0.000	0.001892	-0.001555
7	25.019	1178.936	411.748	0.000	0.000	-0.004739	0.000000
8	42.796	1248.192	454.787	0.000	0.000	-0.006067	-0.000360
9	49.770	1266.491	524.043	0.000	0.000	-0.006142	0.000007
10	55.958	1276.084	542.342	0.000	0.000	-0.005739	-0.000066
11	63.278	1287.973	551.935	0.000	0.000	-0.004994	-0.000074
12	71.398	1303.492	563.824	0.000	0.000	-0.003948	-0.000225
13	79.416	1319.454	579.343	0.000	0.000	-0.002752	-0.000116
14	87.331	1321.964	595.305	0.000	0.000	-0.001615	-0.000015
15	100.412	724.149	597.815	724.149	0.000	-0.000641	0.000000

* PUMPAROUNDS / BYPASSES *
VAPOUR - FROM TRAY 8 - TO TRAY 6 - RATE 454.787
* HEATERS / COOLERS *
TRAY 0 - DUTY -1171.880 M-BTU
TRAY 7 - DUTY 4594.411 M-BTU
TRAY 15 - DUTY 4271.714 M-BTU
* SPECIFICATIONS *

NO	TYPE	GIVEN VALUE	CALC VALUE	ERROR	CONV
1	TEMPER	-73.0000 FAR	-72.9861 FAR	0.000018	Y
2	TEMPER	25.0000 FAR	25.0192 FAR	0.000020	Y
3	COMPOS	0.020000	0.019635	-0.009212	N

- at iter 1, err sum 0.524073E-02, max err sum 0.107191E-02 - adj. factor 1.000000
DK/K - max .13040E-02 - min .18509E-05 - avg 0.000195
DT max - abs 0.8107 - rel 0.001972 DR max - abs 8.0194 - rel 0.028408
Error sums, total 0.524073E-02, BP 0.115351E-02, H 0.194315E-02, Comp 0.214407E-02
- Maximum Relative Errors -
* BP 0.000121 at tray 11 * H -0.000739 at tray 2
Tray Glob Mat Bal 0.000213 at tray 4 * Tray Part Mat Bal 0.000158 for comp 11 at tray 3
Coln Part Mat Bal 0.000073 for comp 11
*** COLUMN CALCULATION RESOLVED ***

*** FINAL COLUMN STATUS ***

TRAY	TEMP	-TOTAL LIQ &	VAP OUTLET-	- LIQ. & VAP. DRAW-OFF -	BP.ERROR	ENT.BAL.ERR.
0	-72.977	168.869	1275.408	0.000 1275.408	-0.000013	0.000000
1	-57.702	155.952	1444.277	0.000 0.000	-0.000099	-0.000104
2	-52.792	142.963	1431.360	0.000 0.000	-0.000118	-0.000739
3	-48.533	871.145	1409.059	0.000 0.000	-0.000119	-0.000095
4	-32.039	865.745	1467.100	0.000 0.000	-0.000092	0.000211
5	-22.029	831.376	1461.701	0.000 0.000	-0.000044	-0.000072
6	-10.304	803.812	1427.331	0.000 0.000	-0.000010	-0.000106
7	25.016	1177.483	406.119	0.000 0.000	-0.000018	0.000000
8	42.923	1247.731	452.518	0.000 0.000	0.000045	-0.000172
9	49.930	1266.231	522.766	0.000 0.000	0.000082	0.000066
10	56.106	1275.864	541.266	0.000 0.000	0.000110	0.000069
11	63.392	1287.710	550.900	0.000 0.000	0.000121	0.000101
12	71.470	1303.195	562.745	0.000 0.000	0.000111	0.000016
13	79.450	1318.964	578.230	0.000 0.000	0.000088	0.000009
14	87.335	1321.505	593.999	0.000 0.000	0.000058	0.000183
15	100.383	724.965	596.540	724.965 0.000	0.000027	0.000000

* PUMPAROUNDS / BYPASSES *
VAPOUR - FROM TRAY 8 - TO TRAY 6 - RATE 452.518
* HEATERS / COOLERS *
TRAY 0 - DUTY -1140.738 M-BTU
TRAY 7 - DUTY 4564.200 M-BTU
TRAY 15 - DUTY 4260.567 M-BTU
* SPECIFICATIONS *

NO	TYPE	GIVEN VALUE	CALC VALUE	ERROR	CONV
1	TEMPER	-73.0000 FAR	-72.9771 FAR	0.000030	Y
2	TEMPER	25.0000 FAR	25.0156 FAR	0.000016	Y
3	COMPOS	0.020000	0.020011	0.000284	Y

Unit op 4 - 'C-1 ' calculated

* WARNING, HOT streams S113 /S116 temperature changes in wrong direction *
Unit op 5 - 'CONDENSR' calculated
Unit op 6 - 'MX-1 ' calculated
Unit op 7 - 'E-1 ' calculated

* Iteration 4 of loop 1 completed *

*** CONVERGENCE FOR LOOP 1 IS CHECKING ***

- STREAM 'S108 ' CHECKED -
Temp -30.378 FAR , old -29.483 FAR , dt -0.895 FAR - PREC REACHED -
Pressure 750.000 PSIA, old 750.000 PSIA, dp 0.000 PSIA - PREC REACHED -
Flow 10353.600 LBM , old 10353.600 LBM , diff 0.000 LBM - PREC REACHED -
No change of composision detected

* Loop 1 - Start UNIT 2 'V-2 ' - End UNIT 7 - 'E-1 ' *
* Convergence obtained after 4 iterations *

*** SOLUTION OBTAINED ***

... Base case results loaded on binary file 'TTEX01 ' ...

*** OVERALL PLANT MATERIAL BALANCE ***

1) * FEED & PRODUCT STREAMS *
- No of feeds 1
- No of products 3

- FEED STREAMS -
FEED

- PRODUCT STREAMS -
S148 S119 S101

2) * OVERALL MOLAR BALANCE *

No	Component	Feed	Product	Deviation Absolute	Deviation Percent
1	NITROGEN	151.170	151.169	0.137585E-02	0.0009
2	CARBON DIOXIDE	44.3300	44.3298	0.225131E-03	0.0005
3	METHANE	8545.25	8545.19	0.609724E-01	0.0007
4	ETHANE	868.880	868.877	0.293635E-02	0.0003
5	PROPANE	483.960	483.944	0.160114E-01	0.0033
6	BUTANE	58.3300	58.3290	0.101457E-02	0.0017
7	ISOBUTANE	114.920	114.917	0.251154E-02	0.0022
8	PENTANE	18.9200	18.9198	0.152555E-03	0.0008
9	ISOPENTANE	38.8300	38.8296	0.375263E-03	0.0010
10	HEXANE	24.6300	24.6299	0.115881E-03	0.0005
11	HEPTANE	4.38000	4.37998	0.155078E-04	0.0004
*	Total *	10353.6	10353.5	0.857064E-01	0.0008
		LBM	LBM	LBM	

3) * OVERALL WEIGHT BALANCE *

No	Component	Feed	Product	Deviation Absolute	Deviation Percent
1	NITROGEN	4234.27	4234.23	0.385377E-01	0.0009
2	CARBON DIOXIDE	1950.96	1950.95	0.990802E-02	0.0005
3	METHANE	137066.	137065.	0.977996	0.0007
4	ETHANE	26127.2	26127.1	0.882961E-01	0.0003
5	PROPANE	21342.6	21341.9	0.706104	0.0033
6	BUTANE	3390.14	3390.08	0.589667E-01	0.0017
7	ISOBUTANE	6679.15	6679.00	0.145970	0.0022
8	PENTANE	1365.08	1365.07	0.110068E-01	0.0008
9	ISOPENTANE	2801.58	2801.56	0.270752E-01	0.0010
10	HEXANE	2122.61	2122.60	0.998660E-02	0.0005
11	HEPTANE	438.920	438.918	0.155403E-02	0.0004
*	Total *	207518.	207516.	2.07540	0.0010
		LB	LB	LB	

*** UNIT 1 - 'V-1 ' - ' FLASH ' ***

--- Feed Streams --- - Product Streams -
'FEED ' 'S102 ' VAPOR to unit 7 - E-1
'S101 ' LIQUID

1) * OPERATING CONDITIONS *
Outlet temperature 115.00 °F
Outlet pressure 800.0000 psia

2) * FEEDS *

Stream		FEED
Temperature,	°F	115.00
Pressure,	psia	800.000
Total rate,	lbm/h	10354.
Vapor,	lbm/h	10354.
Liquid,	lbm/h	0.0000

3) * PRODUCTS *

Stream		S102
Temperature,	°F	115.00
Pressure,	psia	800.000
Total rate,	lbm/h	10354.
Vapor,	lbm/h	10354.
Liquid,	lbm/h	0.0000

*** UNIT 2 - 'V-2 ' - ' FLASH ' ***
Service/Desc 'MEDIUM PRESSURE FLASH '

--- Feed Streams --- - Product Streams -

from unit	7 - E-1	'S108 '	'S109 ' VAPOR	to unit	3 - EX-1
			'S110 ' LIQUID	to unit	4 - C-1

1) * OPERATING CONDITIONS *

Outlet temperature	-29.48 °F
Outlet pressure	750.0000 psia

2) * FEEDS *

Stream		S108
Temperature,	°F	-30.38
Pressure,	psia	750.000
Total rate,	lbm/h	10354.
Vapor,	lbm/h	9006.6
Liquid,	lbm/h	1347.0

3) * PRODUCTS *

Stream		S109	S110
Temperature,	°F	-29.48	-29.48
Pressure,	psia	750.000	750.000
Total rate,	lbm/h	9032.7	1320.9
Vapor,	lbm/h	9032.7	0.0000
Liquid,	lbm/h	0.0000	1320.9

*** UNIT 3 - 'EX-1 ' - ' EXPANDER ' ***
Service/Desc 'TURBOEXPANDER '

--- Feed Streams --- - Product Streams -

from unit	2 - V-2	'S109 '	'S113 ' VAPOR	to unit	5 - CONDENSR
			'S114 ' LIQUID	to unit	4 - C-1

1) * OPERATING CONDITIONS *

Discharge pressure	152.0000 psia
Outlet temperature	-130.489 °F
Available energy	2590.418 hp
Adiabatic efficiency	80.000 per cent

2) * FEEDS *

Stream		S109
Temperature,	°F	-29.48
Pressure,	psia	750.000
Total rate,	lbm/h	9032.7
Vapor,	lbm/h	9032.7
Liquid,	lbm/h	0.0000

3) * PRODUCTS *

Stream		S113	S114
Temperature,	°F	-130.49	-130.49
Pressure,	psia	152.000	152.000
Total rate,	lbm/h	8353.2	679.45
Vapor,	lbm/h	8353.2	0.0000
Liquid,	lbm/h	0.0000	679.45

*** UNIT 4 - 'C-1 ' - ' DISTILLATION COLUMN ' ***
Service/Desc 'DEETHANIZER COLUMN '

	--- Feed Streams ---	- Product Streams -	
from unit 2 - V-2	'S110 '	'S143 '	to unit 6 - MX-1
from unit 3 - EX-1	'S114 '	'S148 '	

1) * OPERATING CONDITIONS *

			*** OUTLET LIQUID ***		*** OUTLET VAPOR ***	
* Tray *	Temperature *	Pressure *	-Molar Rate-	-Weight Rate-	-Molar Rate-	-Weight Rate-
	°F	psia	lbm/h	lb/h	lbm/h	lb/h
CON	-72.98	134.	168.87	5182.38	1275.4	28008.4
1	-57.70	142.	155.95	5046.63	1444.3	33190.8
2	-52.79	142.	142.96	4809.84	1431.4	33055.2
3	-48.53	142.	871.14	30565.6	1409.1	32660.1
4	-32.04	142.	865.75	31351.3	1467.1	36808.3
5	-22.03	142.	831.38	31387.4	1461.7	37594.5
6	-10.30	142.	803.81	31976.5	1427.3	37630.5
7	25.02	143.	1177.5	52989.6	406.12	12476.7
8	42.92	143.	1247.7	56214.5	452.52	15901.4
9	49.93	143.	1266.2	57456.1	522.77	19126.5
10	56.11	143.	1275.9	58511.8	541.27	20368.2
11	63.39	143.	1287.7	59822.6	550.90	21423.8
12	71.47	143.	1303.2	61372.5	562.75	22734.5
13	79.45	143.	1319.0	62956.6	578.23	24284.1
14	87.33	143.	1321.5	64162.2	594.00	25868.0
REB	100.38	143.	724.96	37088.8	596.54	27073.5

- HEATER/COOLERS -

1 - Condenser -1140.738 kBtu/h
2 - Heater at tray 7 4564.200 kBtu/h
3 - Reboiler 4260.567 kBtu/h

- PRODUCT STREAMS -

Stream 'S143 ', VAPOR draw-off from condenser
Flow rate, molar 1275.408 lbm/h - weight 28008.407 lb/h

Stream 'S148 ', LIQUID draw-off from reboiler
Flow rate, molar 724.965 lbm/h - weight 37088.750 lb/h

- FEED STREAMS -

Stream 'S110 ', Feed on tray 7
Flow rate, molar 1320.920 lbm/h - weight 43333.732 lb/h

Stream 'S114 ', Feed on tray 3
Flow rate, molar 679.453 lbm/h - weight 21766.856 lb/h

- PUMP AROUNDS/BYPASSES -

VAPOR Pump-around from tray 8 on tray 7
Flow rate, molar 452.518 lbm/h - weight 13902.171 lb/h

- REFLUX DATA -

Molar rate 168.869 lbm/h Weight rate 5182.384 lb/h

Ratios with respect to OVERHEAD product(s)
Molar 0.1324 Weight 0.1850

Ratios with respect to TOTAL FEED
Molar 0.0844 Weight 0.0796

2) * PRODUCT STREAMS *

* Stream 'S143 ', VAPOR draw-off from condenser
- Temperature -72.977 °F - Pressure 134.0000 psia

* No *	Component	-Molar Rate-	-Mol Fr-	- Weight Rate-	-Wt Fr-
1	NITROGEN	3.802	0.002981	106.483	0.003802
2	CARBON DIOXIDE	12.160	0.009534	535.170	0.019107
3	METHANE	759.709	0.595660	12185.727	0.435074
4	ETHANE	488.780	0.383234	14697.615	0.524757
5	PROPANE	10.943	0.008580	482.605	0.017231
6	BUTANE	0.001	0.000001	0.039	0.000001
7	ISOBUTANE	0.013	0.000010	0.769	0.000027
8	PENTANE	0.000	0.000000	0.000	0.000000
9	ISOPENTANE	0.000	0.000000	0.000	0.000000
10	HEXANE	0.000	0.000000	0.000	0.000000
11	HEPTANE	0.000	0.000000	0.000	0.000000
	* TOTAL *	1275.408 lbm/h	1.000000	28008.407 lb/h	1.000000

* Stream 'S148 ', LIQUID draw-off from reboiler
- Temperature 100.383 °F - Pressure 143.4000 psia

* No *	Component	-Molar Rate-	-Mol Fr-	- Weight Rate-	-Wt Fr-
1	NITROGEN	0.000	0.000000	0.000	0.000000
2	CARBON DIOXIDE	0.000	0.000000	0.011	0.000000
3	METHANE	0.000	0.000000	0.000	0.000000
4	ETHANE	14.508	0.020011	436.241	0.011762
5	PROPANE	451.132	0.622281	19894.918	0.536414
6	BUTANE	58.223	0.080312	3383.941	0.091239
7	ISOBUTANE	114.349	0.157731	6645.970	0.179191
8	PENTANE	18.919	0.026096	1364.989	0.036803
9	ISOPENTANE	38.824	0.053553	2801.162	0.075526
10	HEXANE	24.630	0.033974	2122.599	0.057230
11	HEPTANE	4.380	0.006042	438.918	0.011834
	* TOTAL *	724.965 lbm/h	1.000000	37088.750 lb/h	1.000000

3) * TRAY OUTLET MOLAR FLOW RATES - lbm/h *

	TRAY 0		TRAY 1		TRAY 2	
Temperature	-72.977 °F		-57.702 °F		-52.792 °F	
Pressure	134.0000 psia		142.0000 psia		142.1000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	3.801601	0.014096	3.815691	0.011505	3.813065	0.010207
2 CARBON DIOXIDE	12.160195	0.940971	13.101159	0.697149	12.857273	0.592929
3 METHANE	759.709013	14.598408	774.306438	11.240526	770.942223	9.867650
4 ETHANE	488.779885	132.312703	621.093360	108.536924	597.321178	88.836267
5 PROPANE	10.943418	20.891546	31.835187	34.927267	45.873695	41.648496
6 BUTANE	0.000673	0.008970	0.009644	0.065822	0.066501	0.365316
7 ISOBUTANE	0.013225	0.102058	0.115284	0.471254	0.484521	1.604689
8 PENTANE	0.000000	0.000005	0.000005	0.000221	0.000221	0.007043
9 ISOPENTANE	0.000001	0.000054	0.000055	0.001431	0.001432	0.029428
10 HEXANE	0.000000	0.000000	0.000000	0.000003	0.000003	0.000582
11 HEPTANE	0.000000	0.000000	0.000000	0.000000	0.000000	0.000006
Total	1275.408011	168.868812	1444.276823	155.952102	1431.360114	142.962613

	TRAY 3		TRAY 4		TRAY 5	
Temperature	-48.533 °F		-32.039 °F		-22.029 °F	
Pressure	142.2000 psia		142.3000 psia		142.4000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	3.686634	0.058756	3.440187	0.051216	3.432539	0.047571
2 CARBON DIOXIDE	12.716580	3.429059	10.161027	2.132258	8.864008	1.601787
3 METHANE	760.851652	57.852372	631.712934	41.191721	615.034154	36.063272
4 ETHANE	577.210555	495.160031	724.034531	457.128713	686.004659	361.123993
5 PROPANE	52.572843	268.909774	94.290715	317.931304	143.326779	380.995173
6 BUTANE	0.365921	11.063973	0.634357	11.341914	0.912897	12.174669
7 ISOBUTANE	1.617509	29.646714	2.757997	30.914570	4.027455	34.214309
8 PENTANE	0.007042	1.203500	0.013324	1.209308	0.019197	1.229637
9 ISOPENTANE	0.029427	3.269772	0.054102	3.292790	0.077298	3.371663
10 HEXANE	0.000582	0.521834	0.001215	0.522412	0.001822	0.524477
11 HEPTANE	0.000006	0.029165	0.000014	0.029171	0.000022	0.029198
Total	1409.058751	871.144950	1467.100403	865.745378	1461.700830	831.375748

	TRAY 6		TRAY 7		TRAY 8	
Temperature	-10.304 °F		25.016 °F		42.923 °F	
Pressure	142.5000 psia		142.6000 psia		142.7000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	3.428929	0.045243	0.139636	0.008979	0.008979	0.000580
2 CARBON DIOXIDE	8.333569	1.316108	2.987756	1.757719	1.757349	0.870738
3 METHANE	609.911290	32.797156	109.024068	25.299660	25.297887	5.377051
4 ETHANE	589.994793	262.110240	181.430128	272.035056	257.510208	308.849383
5 PROPANE	206.390601	435.418070	101.120112	601.591621	150.468891	650.415140
6 BUTANE	1.745528	17.385484	2.650689	62.315837	4.094732	63.596627
7 ISOBUTANE	7.326930	47.311945	7.854932	126.212874	11.867914	129.846816
8 PENTANE	0.039509	1.778741	0.216357	19.279542	0.361569	19.403559
9 ISOPENTANE	0.156124	4.868141	0.614439	39.824820	1.002288	40.158454
10 HEXANE	0.003879	0.740825	0.077429	24.769392	0.140617	24.822536
11 HEPTANE	0.000048	0.040271	0.003703	4.387157	0.007363	4.390187
Total	1427.331200	803.812224	406.119248	1177.482657	452.517797	1247.731070

3) * TRAY OUTLET MOLAR FLOW RATES - lbm/h *- CONTINUATION

	TRAY 9		TRAY 10		TRAY 11	
Temperature	49.930 °F		56.106 °F		63.392 °F	
Pressure	142.8000 psia		142.9000 psia		143.0000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000579	0.000033	0.000033	0.000002	0.000002	0.000000
2 CARBON DIOXIDE	0.870408	0.362749	0.362462	0.141532	0.141269	0.052414
3 METHANE	5.376529	0.988761	0.988643	0.174160	0.174131	0.029888
4 ETHANE	294.314810	291.384588	276.847715	252.852281	238.319904	203.158326
5 PROPANE	199.295276	687.575934	236.455135	732.459795	281.334646	788.643681
6 BUTANE	5.376762	64.467001	6.247754	65.479583	7.260273	66.781438
7 ISOBUTANE	15.504086	132.315332	17.973659	135.189792	20.847904	138.922345
8 PENTANE	0.486042	19.491168	0.573892	19.595684	0.678410	19.730231
9 ISOPENTANE	1.336843	40.390338	1.569212	40.663992	1.842865	41.014290
10 HEXANE	0.194373	24.862326	0.234492	24.911794	0.283973	24.977179
11 HEPTANE	0.010503	4.392617	0.012992	4.395808	0.016186	4.400187
Total	522.766210	1266.230848	541.265988	1275.864424	550.899564	1287.709979

	TRAY 12		TRAY 13		TRAY 14	
Temperature	71.470 °F		79.450 °F		87.335 °F	
Pressure	143.1000 psia		143.2000 psia		143.3000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	0.052162	0.018347	0.018099	0.006023	0.005775	0.001804
3 METHANE	0.029876	0.004996	0.004986	0.000810	0.000800	0.000125
4 ETHANE	188.634405	149.498532	134.982808	99.318603	84.808247	57.547260
5 PROPANE	337.512982	850.525778	399.391279	904.515353	453.380234	918.482537
6 BUTANE	8.561471	68.472922	10.251972	71.351771	13.129759	79.306912
7 ISOBUTANE	24.579169	143.874537	29.529525	151.908306	37.561374	169.232188
8 PENTANE	0.812742	19.893968	0.976134	20.148559	1.230342	21.397831
9 ISOPENTANE	2.192721	41.443266	2.620997	42.135737	3.312691	45.234216
10 HEXANE	0.349077	25.056896	0.428335	25.165962	0.536887	25.842491
11 HEPTANE	0.020515	4.405659	0.025906	4.412764	0.032918	4.459837
Total	562.745119	1303.194900	578.230040	1318.963888	593.999028	1321.505200

	TRAY 15	
Temperature	100.383 °F	
Pressure	143.4000 psia	
Phase	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000
2 CARBON DIOXIDE	0.001556	0.000247
3 METHANE	0.000116	0.000009
4 ETHANE	43.039267	14.507527
5 PROPANE	467.349226	451.131871
6 BUTANE	21.083961	58.223353
7 ISOBUTANE	54.883667	114.349109
8 PENTANE	2.479257	18.918771
9 ISOPENTANE	6.410447	38.824151
10 HEXANE	1.212940	24.629837
11 HEPTANE	0.079905	4.379984
Total	596.540340	724.964860

4) * TRAY OUTLET WEIGHT FLOW RATES - lb/h *

	TRAY 0		TRAY 1		TRAY 2	
Temperature	-72.977 °F		-57.702 °F		-52.792 °F	
Pressure	134.0000 psia		142.0000 psia		142.1000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	106.482814	0.394828	106.877486	0.322256	106.803933	0.285893
2 CARBON DIOXIDE	535.170133	41.412136	576.581933	30.681515	565.848534	26.094787
3 METHANE	12185.727253	234.158357	12419.869839	180.297962	12365.907866	158.277039
4 ETHANE	14697.614554	3978.643901	18676.281696	3263.706055	17961.452008	2671.307175
5 PROPANE	482.604816	921.317320	1403.931940	1540.292673	2023.030209	1836.698941
6 BUTANE	0.039139	0.521357	0.560502	3.825575	3.865056	21.232158
7 ISOBUTANE	0.768626	5.931620	6.700313	27.389298	28.160369	93.264492
8 PENTANE	0.000004	0.000388	0.000393	0.015971	0.015976	0.508120
9 ISOPENTANE	0.000070	0.003888	0.003958	0.103232	0.103311	2.123260
10 HEXANE	0.000000	0.000001	0.000001	0.000294	0.000294	0.050174
11 HEPTANE	0.000000	0.000000	0.000000	0.000001	0.000001	0.000587
Total	28008.407409	5182.383798	33190.808060	5046.634831	33055.187556	4809.842627

	TRAY 3		TRAY 4		TRAY 5	
Temperature	-48.533 °F		-32.039 °F		-22.029 °F	
Pressure	142.2000 psia		142.3000 psia		142.4000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	103.262599	1.645767	96.359614	1.434564	96.145393	1.332452
2 CARBON DIOXIDE	559.656603	150.912890	447.186728	93.840666	390.104962	70.494651
3 METHANE	12204.055173	927.951642	10132.671044	660.714913	9865.143523	578.454625
4 ETHANE	17356.725415	14889.465607	21771.723409	13745.863606	20628.164900	10859.000993
5 PROPANE	2318.462706	11858.922645	4158.221089	14020.772410	6320.711816	16801.889412
6 BUTANE	21.267336	643.038082	36.868820	659.192012	53.057544	707.591718
7 ISOBUTANE	94.009603	1723.066846	160.294775	1796.754665	234.075662	1988.535472
8 PENTANE	0.508104	86.832514	0.961355	87.251534	1.385097	88.718279
9 ISOPENTANE	2.123170	235.914000	3.903486	237.574778	5.577084	243.265432
10 HEXANE	0.050176	44.971629	0.104711	45.021482	0.157012	45.199415
11 HEPTANE	0.000587	2.922619	0.001364	2.923254	0.002157	2.925913
Total	32660.121473	30565.644242	36808.296394	31351.343884	37594.525150	31387.408362

	TRAY 6		TRAY 7		TRAY 8	
Temperature	-10.304 °F		25.016 °F		42.923 °F	
Pressure	142.5000 psia		142.6000 psia		142.7000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	96.044271	1.267249	3.911195	0.251512	0.251495	0.016233
2 CARBON DIOXIDE	366.760332	57.921904	131.491124	77.357217	77.340940	38.321180
3 METHANE	9782.972827	526.066151	1748.745284	405.806368	405.777929	86.247853
4 ETHANE	17741.147555	7881.656762	5455.605212	8180.096024	7743.333763	9287.103102
5 PROPANE	9101.826752	19201.939481	4459.397542	26530.194096	6635.678995	28683.311583
6 BUTANE	101.450085	1010.444256	154.058038	3621.796153	237.985817	3696.235628
7 ISOBUTANE	425.841147	2749.770024	456.528600	7335.491630	689.763105	7546.696293
8 PENTANE	2.850565	128.336168	15.610170	1391.018811	26.087192	1399.966651
9 ISOPENTANE	11.264372	351.236346	44.331762	2873.360523	72.315072	2897.432242
10 HEXANE	0.334249	63.844283	6.672836	2134.626019	12.118380	2139.205996
11 HEPTANE	0.004771	4.035530	0.371035	439.637040	0.737822	439.940678
Total	37630.496927	31976.518152	12476.722797	52989.635393	15901.390509	56214.477438

4) * TRAY OUTLET WEIGHT FLOW RATES - lb/h *- CONTINUATION

	TRAY 9		TRAY 10		TRAY 11	
Temperature	49.930 °F		56.106 °F		63.392 °F	
Pressure	142.8000 psia		142.9000 psia		143.0000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.016231	0.000934	0.000934	0.000053	0.000053	0.000003
2 CARBON DIOXIDE	38.306644	15.964602	15.951957	6.228820	6.217255	2.306744
3 METHANE	86.239484	15.859722	15.857821	2.793523	2.793066	0.479400
4 ETHANE	8850.048407	8761.936608	8324.812718	7603.269862	7166.281190	6108.972298
5 PROPANE	8788.922849	30322.102798	10427.672861	32301.481353	12406.859557	34779.191084
6 BUTANE	312.497354	3746.821787	363.119452	3805.673036	421.967040	3881.336857
7 ISOBUTANE	901.097418	7690.166428	1044.628949	7857.230053	1211.680084	8074.165998
8 PENTANE	35.067895	1406.287672	41.406336	1413.828460	48.947313	1423.536022
9 ISOPENTANE	96.453208	2914.162677	113.218605	2933.906811	132.962690	2959.180771
10 HEXANE	16.751077	2142.635097	20.208539	2146.898276	24.472785	2152.533084
11 HEPTANE	1.052468	440.184145	1.301887	440.503955	1.621976	440.942771
Total	19126.453035	57456.122470	20368.180058	58511.814202	21423.803008	59822.645031

	TRAY 12		TRAY 13		TRAY 14	
Temperature	71.470 °F		79.450 °F		87.335 °F	
Pressure	143.1000 psia		143.2000 psia		143.3000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000003	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	2.295646	0.807458	0.796520	0.265058	0.254163	0.079373
3 METHANE	0.479204	0.080128	0.079970	0.012988	0.012836	0.002005
4 ETHANE	5672.237868	4495.421901	4058.933977	2986.511075	2550.184573	1730.446519
5 PROPANE	14884.324532	37508.191921	17613.157814	39889.132512	19994.071057	40505.085377
6 BUTANE	497.592660	3979.645870	595.844566	4146.964599	763.101552	4609.317340
7 ISOBUTANE	1428.541159	8361.987395	1716.255845	8828.909981	2183.066889	9835.773918
8 PENTANE	58.639340	1435.349644	70.428081	1453.718447	88.769188	1543.853395
9 ISOPENTANE	158.204825	2990.131380	189.104912	3040.093153	239.010607	3263.648378
10 HEXANE	30.083439	2159.403091	36.913928	2168.802441	46.268948	2227.105696
11 HEPTANE	2.055806	441.491177	2.595991	442.203148	3.298703	446.920271
Total	22734.454483	61372.509966	24284.111604	62956.613402	25868.038516	64162.232272

	TRAY 15	
Temperature	100.383 °F	
Pressure	143.4000 psia	
Phase	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000
2 CARBON DIOXIDE	0.068485	0.010886
3 METHANE	0.001853	0.000152
4 ETHANE	1294.191059	436.241452
5 PROPANE	20610.103669	19894.918208
6 BUTANE	1225.399702	3383.940991
7 ISOBUTANE	3189.838425	6645.969626
8 PENTANE	178.878345	1364.989195
9 ISOPENTANE	462.513678	2801.162296
10 HEXANE	104.531137	2122.599154
11 HEPTANE	8.007295	438.918266
Total	27073.533648	37088.750225

5) * TRAY OUTLET MOLAR COMPOSITIONS *

	TRAY 0		TRAY 1		TRAY 2	
Temperature	-72.977 °F		-57.702 °F		-52.792 °F	
Pressure	134.0000 psia		142.0000 psia		142.1000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.002981	0.000083	0.002642	0.000074	0.002664	0.000071
2 CARBON DIOXIDE	0.009534	0.005572	0.009071	0.004470	0.008983	0.004147
3 METHANE	0.595660	0.086448	0.536121	0.072077	0.538608	0.069023
4 ETHANE	0.383234	0.783524	0.430038	0.695963	0.417310	0.621395
5 PROPANE	0.008580	0.123715	0.022042	0.223961	0.032049	0.291324
6 BUTANE	0.000001	0.000053	0.000007	0.000422	0.000046	0.002555
7 ISOBUTANE	0.000010	0.000604	0.000080	0.003022	0.000339	0.011225
8 PENTANE	0.000000	0.000000	0.000000	0.000001	0.000000	0.000049
9 ISOPENTANE	0.000000	0.000000	0.000000	0.000009	0.000001	0.000206
10 HEXANE	0.000000	0.000000	0.000000	0.000000	0.000000	0.000004
11 HEPTANE	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 3		TRAY 4		TRAY 5	
Temperature	-48.533 °F		-32.039 °F		-22.029 °F	
Pressure	142.2000 psia		142.3000 psia		142.4000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.002616	0.000067	0.002345	0.000059	0.002348	0.000057
2 CARBON DIOXIDE	0.009025	0.003936	0.006926	0.002463	0.006064	0.001927
3 METHANE	0.539972	0.066410	0.430586	0.047579	0.420766	0.043378
4 ETHANE	0.409643	0.568401	0.493514	0.528018	0.469319	0.434369
5 PROPANE	0.037311	0.308685	0.064270	0.367234	0.098055	0.458271
6 BUTANE	0.000260	0.012700	0.000432	0.013101	0.000625	0.014644
7 ISOBUTANE	0.001148	0.034032	0.001880	0.035709	0.002755	0.041154
8 PENTANE	0.000005	0.001382	0.000009	0.001397	0.000013	0.001479
9 ISOPENTANE	0.000021	0.003753	0.000037	0.003803	0.000053	0.004056
10 HEXANE	0.000000	0.000599	0.000001	0.000603	0.000001	0.000631
11 HEPTANE	0.000000	0.000033	0.000000	0.000034	0.000000	0.000035
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 6		TRAY 7		TRAY 8	
Temperature	-10.304 °F		25.016 °F		42.923 °F	
Pressure	142.5000 psia		142.6000 psia		142.7000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.002402	0.000056	0.000344	0.000008	0.000020	0.000000
2 CARBON DIOXIDE	0.005839	0.001637	0.007357	0.001493	0.003883	0.000698
3 METHANE	0.427309	0.040802	0.268453	0.021486	0.055905	0.004309
4 ETHANE	0.413355	0.326084	0.446741	0.231031	0.569061	0.247529
5 PROPANE	0.144599	0.541691	0.248991	0.510913	0.332515	0.521278
6 BUTANE	0.001223	0.021629	0.006527	0.052923	0.009049	0.050970
7 ISOBUTANE	0.005133	0.058859	0.019341	0.107189	0.026226	0.104066
8 PENTANE	0.000028	0.002213	0.000533	0.016374	0.000799	0.015551
9 ISOPENTANE	0.000109	0.006056	0.001513	0.033822	0.002215	0.032185
10 HEXANE	0.000003	0.000922	0.000191	0.021036	0.000311	0.019894
11 HEPTANE	0.000000	0.000050	0.000009	0.003726	0.000016	0.003519
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

5) * TRAY OUTLET MOLAR COMPOSITIONS *- CONTINUATION

	TRAY 9		TRAY 10		TRAY 11	
Temperature	49.930 °F		56.106 °F		63.392 °F	
Pressure	142.8000 psia		142.9000 psia		143.0000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	0.001665	0.000286	0.000670	0.000111	0.000256	0.000041
3 METHANE	0.010285	0.000781	0.001827	0.000137	0.000316	0.000023
4 ETHANE	0.562995	0.230120	0.511482	0.198181	0.432601	0.157767
5 PROPANE	0.381232	0.543010	0.436856	0.574089	0.510682	0.612439
6 BUTANE	0.010285	0.050913	0.011543	0.051322	0.013179	0.051861
7 ISOBUTANE	0.029658	0.104495	0.033207	0.105959	0.037843	0.107883
8 PENTANE	0.000930	0.015393	0.001060	0.015359	0.001231	0.015322
9 ISOPENTANE	0.002557	0.031898	0.002899	0.031872	0.003345	0.031851
10 HEXANE	0.000372	0.019635	0.000433	0.019525	0.000515	0.019397
11 HEPTANE	0.000020	0.003469	0.000024	0.003445	0.000029	0.003417
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 12		TRAY 13		TRAY 14	
Temperature	71.470 °F		79.450 °F		87.335 °F	
Pressure	143.1000 psia		143.2000 psia		143.3000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	0.000093	0.000014	0.000031	0.000005	0.000010	0.000001
3 METHANE	0.000053	0.000004	0.000009	0.000001	0.000001	0.000000
4 ETHANE	0.335204	0.114717	0.233441	0.075300	0.142775	0.043547
5 PROPANE	0.599762	0.652647	0.690713	0.685777	0.763268	0.695028
6 BUTANE	0.015214	0.052542	0.017730	0.054097	0.022104	0.060013
7 ISOBUTANE	0.043677	0.110401	0.051069	0.115172	0.063235	0.128060
8 PENTANE	0.001444	0.015266	0.001688	0.015276	0.002071	0.016192
9 ISOPENTANE	0.003896	0.031801	0.004533	0.031946	0.005577	0.034229
10 HEXANE	0.000620	0.019227	0.000741	0.019080	0.000904	0.019555
11 HEPTANE	0.000036	0.003381	0.000045	0.003346	0.000055	0.003375
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 15	
Temperature	100.383 °F	
Pressure	143.4000 psia	
Phase	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000
2 CARBON DIOXIDE	0.000003	0.000000
3 METHANE	0.000000	0.000000
4 ETHANE	0.072148	0.020011
5 PROPANE	0.783433	0.622281
6 BUTANE	0.035344	0.080312
7 ISOBUTANE	0.092003	0.157731
8 PENTANE	0.004156	0.026096
9 ISOPENTANE	0.010746	0.053553
10 HEXANE	0.002033	0.033974
11 HEPTANE	0.000134	0.006042
Total	1.000000	1.000000

6) * TRAY OUTLET WEIGHT COMPOSITIONS *

	TRAY 0		TRAY 1		TRAY 2	
Temperature	-72.977 °F		-57.702 °F		-52.792 °F	
Pressure	134.0000 psia		142.0000 psia		142.1000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.003802	0.000076	0.003220	0.000064	0.003231	0.000059
2 CARBON DIOXIDE	0.019107	0.007991	0.017372	0.006080	0.017118	0.005425
3 METHANE	0.435074	0.045184	0.374196	0.035726	0.374099	0.032907
4 ETHANE	0.524757	0.767725	0.562694	0.646709	0.543378	0.555383
5 PROPANE	0.017231	0.177779	0.042299	0.305212	0.061202	0.381863
6 BUTANE	0.000001	0.000101	0.000017	0.000758	0.000117	0.004414
7 ISOBUTANE	0.000027	0.001145	0.000202	0.005427	0.000852	0.019390
8 PENTANE	0.000000	0.000000	0.000000	0.000003	0.000000	0.000106
9 ISOPENTANE	0.000000	0.000001	0.000000	0.000020	0.000003	0.000441
10 HEXANE	0.000000	0.000000	0.000000	0.000000	0.000000	0.000010
11 HEPTANE	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 3		TRAY 4		TRAY 5	
Temperature	-48.533 °F		-32.039 °F		-22.029 °F	
Pressure	142.2000 psia		142.3000 psia		142.4000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.003162	0.000054	0.002618	0.000046	0.002557	0.000042
2 CARBON DIOXIDE	0.017136	0.004937	0.012149	0.002993	0.010377	0.002246
3 METHANE	0.373668	0.030359	0.275282	0.021075	0.262409	0.018430
4 ETHANE	0.531435	0.487131	0.591490	0.438446	0.548701	0.345967
5 PROPANE	0.070988	0.387982	0.112970	0.447214	0.168129	0.535307
6 BUTANE	0.000651	0.021038	0.001002	0.021026	0.001411	0.022544
7 ISOBUTANE	0.002878	0.056373	0.004355	0.057310	0.006226	0.063355
8 PENTANE	0.000016	0.002841	0.000026	0.002783	0.000037	0.002827
9 ISOPENTANE	0.000065	0.007718	0.000106	0.007578	0.000148	0.007750
10 HEXANE	0.000002	0.001471	0.000003	0.001436	0.000004	0.001440
11 HEPTANE	0.000000	0.000096	0.000000	0.000093	0.000000	0.000093
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 6		TRAY 7		TRAY 8	
Temperature	-10.304 °F		25.016 °F		42.923 °F	
Pressure	142.5000 psia		142.6000 psia		142.7000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.002552	0.000040	0.000313	0.000005	0.000016	0.000000
2 CARBON DIOXIDE	0.009746	0.001811	0.010539	0.001460	0.004864	0.000682
3 METHANE	0.259975	0.016452	0.140161	0.007658	0.025518	0.001534
4 ETHANE	0.471457	0.246483	0.437263	0.154372	0.486960	0.165208
5 PROPANE	0.241874	0.600501	0.357417	0.500668	0.417302	0.510248
6 BUTANE	0.002696	0.031600	0.012348	0.068349	0.014966	0.065752
7 ISOBUTANE	0.011316	0.085993	0.036590	0.138433	0.043378	0.134248
8 PENTANE	0.000076	0.004013	0.001251	0.026251	0.001641	0.024904
9 ISOPENTANE	0.000299	0.010984	0.003553	0.054225	0.004548	0.051542
10 HEXANE	0.000009	0.001997	0.000535	0.040284	0.000762	0.038054
11 HEPTANE	0.000000	0.000126	0.000030	0.008297	0.000046	0.007826
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

6) * TRAY OUTLET WEIGHT COMPOSITIONS *- CONTINUATION

	TRAY 9		TRAY 10		TRAY 11	
Temperature	49.930 °F		56.106 °F		63.392 °F	
Pressure	142.8000 psia		142.9000 psia		143.0000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	0.002003	0.000278	0.000783	0.000106	0.000290	0.000039
3 METHANE	0.004509	0.000276	0.000779	0.000048	0.000130	0.000008
4 ETHANE	0.462712	0.152498	0.408717	0.129944	0.334501	0.102118
5 PROPANE	0.459517	0.527744	0.511959	0.552051	0.579116	0.581372
6 BUTANE	0.016338	0.065212	0.017828	0.065041	0.019696	0.064881
7 ISOBUTANE	0.047113	0.133844	0.051287	0.134285	0.056558	0.134968
8 PENTANE	0.001833	0.024476	0.002033	0.024163	0.002285	0.023796
9 ISOPENTANE	0.005043	0.050720	0.005559	0.050142	0.006206	0.049466
10 HEXANE	0.000876	0.037292	0.000992	0.036692	0.001142	0.035982
11 HEPTANE	0.000055	0.007661	0.000064	0.007528	0.000076	0.007371
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 12		TRAY 13		TRAY 14	
Temperature	71.470 °F		79.450 °F		87.335 °F	
Pressure	143.1000 psia		143.2000 psia		143.3000 psia	
Phase	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2 CARBON DIOXIDE	0.000101	0.000013	0.000033	0.000004	0.000010	0.000001
3 METHANE	0.000021	0.000001	0.000003	0.000000	0.000000	0.000000
4 ETHANE	0.249500	0.073248	0.167144	0.047438	0.098584	0.026970
5 PROPANE	0.654703	0.611156	0.725296	0.633597	0.772926	0.631292
6 BUTANE	0.021887	0.064844	0.024536	0.065870	0.029500	0.071838
7 ISOBUTANE	0.062836	0.136250	0.070674	0.140238	0.084392	0.153295
8 PENTANE	0.002579	0.023388	0.002900	0.023091	0.003432	0.024062
9 ISOPENTANE	0.006959	0.048721	0.007787	0.048289	0.009240	0.050866
10 HEXANE	0.001323	0.035185	0.001520	0.034449	0.001789	0.034711
11 HEPTANE	0.000090	0.007194	0.000107	0.007024	0.000128	0.006965
Total	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

	TRAY 15	
Temperature	100.383 °F	
Pressure	143.4000 psia	
Phase	VAPOR	LIQUID
1 NITROGEN	0.000000	0.000000
2 CARBON DIOXIDE	0.000003	0.000000
3 METHANE	0.000000	0.000000
4 ETHANE	0.047803	0.011762
5 PROPANE	0.761264	0.536414
6 BUTANE	0.045262	0.091239
7 ISOBUTANE	0.117821	0.179191
8 PENTANE	0.006607	0.036803
9 ISOPENTANE	0.017084	0.075526
10 HEXANE	0.003861	0.057230
11 HEPTANE	0.000296	0.011834
Total	1.000000	1.000000

7) * TRAY PROPERTIES - Time basis 'h ' *

		Tray 0	Tray 1	Tray 2	Tray 3	Tray 4
Temperature, °F		-72.977	-57.702	-52.792	-48.533	-32.039
Pressure, psia		134.000	142.000	142.100	142.200	142.300
*** VAPOR ***						
Flow rate	lbm	1275.408	1444.277	1431.360	1409.059	1467.100
	lb	28008.407	33190.808	33055.188	32660.121	36808.296
Mol. weight		21.9604	22.9809	23.0936	23.1787	25.0891
Std. Volume rate	SCF	483995.887938	548078.761670	543177.087678	534714.095642	556739.926139
Act. volume rate	ft3	35681.3407	39436.5433	39670.2914	39549.9262	42476.7530
Heat content	kBtu	-2116.836716	-2279.020731	-2194.129559	-2103.282965	-2085.212688
Enthalpy	Btu/lbm	-1659.733	-1577.967	-1532.898	-1492.686	-1421.316
	Btu/lb	-75.579	-68.664	-66.378	-64.399	-56.651
Specific Heat	btu/lbm °F	10.324657	10.720042	10.739763	10.754481	11.460959
	btu/lb °F	0.470150	0.466476	0.465055	0.463982	0.456809
Entropy	btu/lbm °F	42.1983	43.2105	43.4604	43.6544	45.4287
	btu/lb °F	1.9216	1.8803	1.8819	1.8834	1.8107
Compressibility		0.903245	0.898712	0.901823	0.904492	0.897640
Density	lb/ft3	0.7850	0.8416	0.8332	0.8258	0.8666
Isentr. Exponent		1.309684	1.299297	1.295991	1.293280	1.276219
Viscosity	cP	0.0080	0.0082	0.0082	0.0083	0.0084
Thermal Conduct.	btu/h.ft.°F	0.011108	0.011278	0.011446	0.011591	0.011429
*** LIQUID ***						
Flow rate	lbm	168.869	155.952	142.963	871.145	865.745
	lb	5182.384	5046.635	4809.843	30565.644	31351.344
Mol. weight		30.6888	32.3602	33.6441	35.0867	36.2131
Std. Volume rate	ft3	218.880615	204.682163	188.858322	1163.974996	1172.056458
Act. volume rate	ft3	166.3124	160.9593	151.3327	946.3008	978.1988
Heat content	kBtu	-1302.921903	-1217.667657	-1142.280765	-7146.850819	-7024.783464
Enthalpy	Btu/lbm	-7715.586	-7807.959	-7990.066	-8203.974	-8114.145
	Btu/lb	-251.414	-241.283	-237.488	-233.820	-224.066
Specific Heat	btu/lbm °F	19.164304	19.981308	20.492411	21.066662	21.816018
	btu/lb °F	0.624472	0.617466	0.609094	0.600416	0.602434
Entropy	btu/lbm °F	34.5883	36.3180	37.3239	38.4255	39.7645
	btu/lb °F	1.1271	1.1223	1.1094	1.0952	1.0981
Density	lb/ft3	31.1605	31.3535	31.7832	32.3001	32.0501
Sp. Grav. 60/60		0.3793	0.3949	0.4079	0.4206	0.4285
Viscosity	cP	0.1120	0.1137	0.1186	0.1246	0.1212
Thermal Conduct.	btu/h.ft.°F	0.073885	0.071549	0.071336	0.071151	0.068324
Surface Tension	dyn/cm	11.0948	10.7474	10.9389	11.1556	10.5090

* TRAY PROPERTIES - Time basis 'h ' * - Continuation

		Tray 5	Tray 6	Tray 7	Tray 8	Tray 9
Temperature, °F		-22.029	-10.304	25.016	42.923	49.930
Pressure, psia		142.400	142.500	142.600	142.700	142.800
*** VAPOR ***						
Flow rate	lbm	1461.701	1427.331	406.119	452.518	522.766
	lb	37594.525	37630.497	12476.723	15901.391	19126.453
Mol. weight		25.7197	26.3642	30.7218	35.1398	36.5870
Std. Volume rate	SCF	554690.879154	541648.182591	154115.423594	171722.892701	198380.983794
Act. volume rate	ft3	43390.1086	43665.2329	13220.5987	14763.5025	17110.9961
Heat content	kBtu	-1961.220131	-1765.855013	-399.943672	-415.658320	-454.676651
Enthalpy	Btu/lbm	-1341.738	-1237.173	-984.794	-918.546	-869.751
	Btu/lb	-52.168	-46.926	-32.055	-26.140	-23.772
Specific Heat	btu/lbm °F	11.705160	11.969034	13.874879	16.103217	16.917255
	btu/lb °F	0.455105	0.453987	0.451629	0.458261	0.462384
Entropy	btu/lbm °F	46.2094	47.0502	50.9782	54.0413	55.0205
	btu/lb °F	1.7967	1.7846	1.6593	1.5379	1.5038
Compressibility		0.899910	0.903858	0.892343	0.863050	0.854557
Density	lb/ft3	0.8664	0.8618	0.9437	1.0771	1.1178
Isentr. Exponent		1.267377	1.257265	1.222287	1.203099	1.196745
Viscosity	cP	0.0085	0.0086	0.0088	0.0088	0.0088
Thermal Conduct.	btu/h.ft.°F	0.011652	0.012001	0.011976	0.011198	0.011086
*** LIQUID ***						
Flow rate	lbm	831.376	803.812	1177.483	1247.731	1266.231
	lb	31387.408	31976.518	52989.635	56214.477	57456.122
Mol. weight		37.7536	39.7811	45.0025	45.0534	45.3757
Std. Volume rate	ft3	1133.533963	1107.574530	1709.674834	1823.707957	1855.052000
Act. volume rate	ft3	973.0272	982.3528	1602.3292	1742.3083	1793.2616
Heat content	kBtu	-6828.781195	-6708.005737	-9937.710427	-9974.937754	-9958.149916
Enthalpy	Btu/lbm	-8213.833	-8345.240	-8439.793	-7994.461	-7864.403
	Btu/lb	-217.564	-209.779	-187.541	-177.444	-173.317
Specific Heat	btu/lbm °F	22.585367	23.601362	26.587843	27.210376	27.589746
	btu/lb °F	0.598231	0.593281	0.590808	0.603959	0.608029
Entropy	btu/lbm °F	41.0418	42.6605	47.5683	48.4307	48.9147
	btu/lb °F	1.0871	1.0724	1.0570	1.0750	1.0780
Density	lb/ft3	32.2575	32.5510	33.0704	32.2644	32.0400
Sp. Grav. 60/60		0.4435	0.4625	0.4965	0.4937	0.4961
Viscosity	cP	0.1235	0.1270	0.1277	0.1157	0.1127
Thermal Conduct.	btu/h.ft.°F	0.067365	0.066330	0.062653	0.059827	0.058938
Surface Tension	dyn/cm	10.4844	10.5086	9.8084	8.6322	8.3167

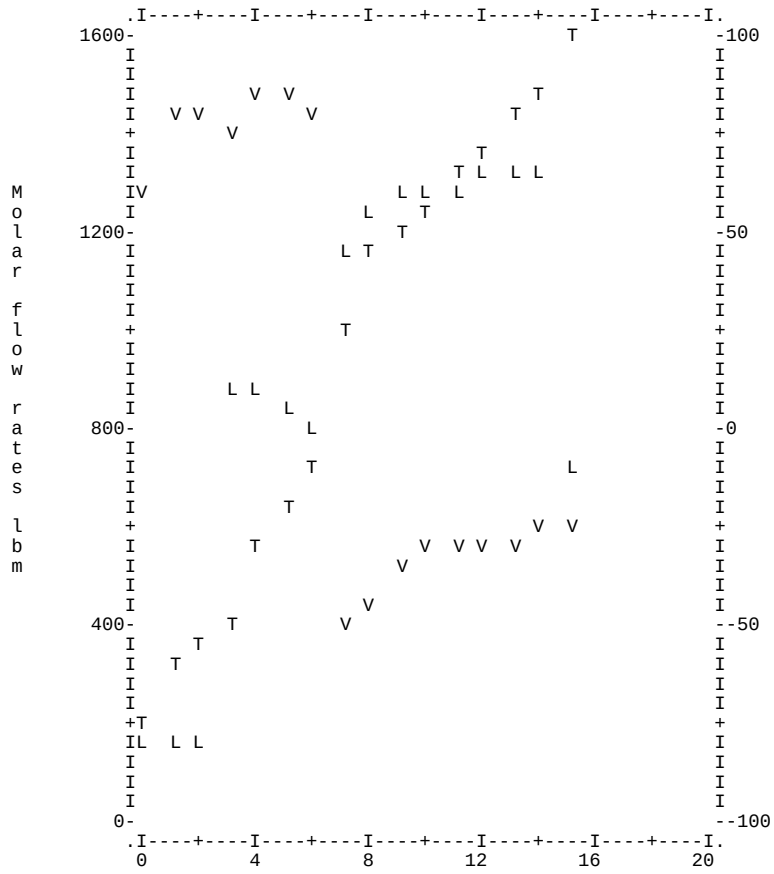
* TRAY PROPERTIES - Time basis 'h ' * - Continuation

		Tray 10	Tray 11	Tray 12	Tray 13	Tray 14
Temperature, °F		56.106	63.392	71.470	79.450	87.335
Pressure, psia		142.900	143.000	143.100	143.200	143.300
*** VAPOR ***						
Flow rate	lbm	541.266	550.900	562.745	578.230	593.999
	lb	20368.180	21423.803	22734.454	24284.112	25868.039
Mol. weight		37.6306	38.8888	40.3992	41.9973	43.5490
Std. Volume rate	SCF	205401.338470	209057.118252	213552.307378	219428.574524	225412.640203
Act. volume rate	ft3	17838.2396	18308.5192	18853.0307	19498.9465	20166.1569
Heat content	kBtu	-437.203059	-400.712267	-356.444384	-309.084737	-252.724085
Enthalpy	Btu/lbm	-807.742	-727.378	-633.403	-534.536	-425.462
	Btu/lb	-21.465	-18.704	-15.679	-12.728	-9.770
Specific Heat	btu/lbm °F	17.506793	18.221272	19.098067	20.052380	21.001140
	btu/lb °F	0.465227	0.468549	0.472734	0.477468	0.482242
Entropy	btu/lbm °F	55.8752	56.9383	58.1523	59.3501	60.4752
	btu/lb °F	1.4848	1.4641	1.4394	1.4132	1.3887
Compressibility		0.850721	0.846522	0.840959	0.834531	0.828643
Density	lb/ft3	1.1418	1.1702	1.2059	1.2454	1.2827
Isentr. Exponent		1.191296	1.185018	1.178334	1.172102	1.166370
Viscosity	cP	0.0088	0.0088	0.0089	0.0089	0.0089
Thermal Conduct.	btu/h.ft.°F	0.011127	0.011198	0.011263	0.011313	0.011371
*** LIQUID ***						
Flow rate	lbm	1275.864	1287.710	1303.195	1318.964	1321.505
	lb	58511.814	59822.645	61372.510	62956.613	64162.232
Mol. weight		45.8605	46.4566	47.0939	47.7319	48.5524
Std. Volume rate	ft3	1872.181220	1892.663810	1918.757225	1946.289271	1960.288271
Act. volume rate	ft3	1833.7717	1883.7386	1943.5371	2005.1244	2050.8093
Heat content	kBtu	-9922.374245	-9879.141090	-9831.942725	-9775.673858	-9642.891031
Enthalpy	Btu/lbm	-7776.982	-7671.868	-7544.491	-7411.631	-7296.900
	Btu/lb	-169.579	-165.140	-160.201	-155.276	-150.289
Specific Heat	btu/lbm °F	28.005353	28.515198	29.087439	29.673478	30.338883
	btu/lb °F	0.610664	0.613803	0.617648	0.621670	0.624869
Entropy	btu/lbm °F	49.4467	50.0763	50.7448	51.3997	52.2011
	btu/lb °F	1.0782	1.0779	1.0775	1.0768	1.0751
Density	lb/ft3	31.9079	31.7574	31.5777	31.3979	31.2863
Sp. Grav. 60/60		0.5006	0.5063	0.5123	0.5181	0.5243
Viscosity	cP	0.1112	0.1096	0.1078	0.1061	0.1050
Thermal Conduct.	btu/h.ft.°F	0.058278	0.057515	0.056655	0.055795	0.054976
Surface Tension	dyn/cm	8.1377	7.9425	7.7174	7.4895	7.2956

* TRAY PROPERTIES - Time basis 'h ' * - Continuation

		- Tray 15 -
Temperature, °F		100.383
Pressure, psia		143.400
*** VAPOR ***		
Flow rate	lbm	596.540
	lb	27073.534
Mol. weight		45.3842
Std. Volume rate	SCF	226377.025208
Act. volume rate	ft3	20682.3982
Heat content	kBtu	-118.130200
Enthalpy	Btu/lbm	-198.026
	Btu/lb	-4.363
Specific Heat	btu/lbm °F	22.112395
	btu/lb °F	0.487226
Entropy	btu/lbm °F	62.0951
	btu/lb °F	1.3682
Compressibility		0.827096
Density	lb/ft3	1.3090
Isentr. Exponent		1.157717
Viscosity	cP	0.0090
Thermal Conduct.	btu/h.ft.°F	0.011591
*** LIQUID ***		
Flow rate	lbm	724.965
	lb	37088.750
Mol. weight		51.1594
Std. Volume rate	ft3	1103.153613
Act. volume rate	ft3	1173.4821
Heat content	kBtu	-5264.193900
Enthalpy	Btu/lbm	-7261.309
	Btu/lb	-141.935
Specific Heat	btu/lbm °F	31.919623
	btu/lb °F	0.623925
Entropy	btu/lbm °F	54.6247
	btu/lb °F	1.0677
Density	lb/ft3	31.6057
Sp. Grav. 60/60		0.5385
Viscosity	cP	0.1058
Thermal Conduct.	btu/h.ft.°F	0.054718
Surface Tension	dyn/cm	7.2558

*** COLUMN FLOW-RATES AND TEMPERATURES PROFILES ***



*** TRAY COMPOSITION OF LIGHT/HEAVY KEYS ***

TRAY NO.	0		1		2	
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR
* LIGHT KEYS *						
3 METHANE	0.08644822	0.59565959	0.07207679	0.53612052	0.06902259	0.53860815
4 ETHANE	0.78352362	0.38323413	0.69596320	0.43003761	0.62139510	0.41731020
* HEAVY KEYS *						
5 PROPANE	0.12371465	0.00858033	0.22396150	0.02204230	0.29132439	0.03204902
6 BUTANE	0.00005312	0.00000053	0.00042207	0.00000668	0.00255532	0.00004646
7 ISOBUTANE	0.00060436	0.00001037	0.00302179	0.00007982	0.01122453	0.00033850
8 PENTANE	0.00000003	0.00000000	0.00000142	0.00000000	0.00004926	0.00000015
RELATIVE VOLATILITY	16.28915231		12.92735917		13.02641271	
SEPARATION FACTOR	1.94518241		1.21710142		0.81648180	

TRAY NO.	3		4		5	
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR
* LIGHT KEYS *						
3 METHANE	0.08644822	0.59565959	0.07207679	0.53612052	0.06902259	0.53860815
4 ETHANE	0.78352362	0.38323413	0.69596320	0.43003761	0.62139510	0.41731020
* HEAVY KEYS *						
5 PROPANE	0.12371465	0.00858033	0.22396150	0.02204230	0.29132439	0.03204902
6 BUTANE	0.00005312	0.00000053	0.00042207	0.00000668	0.00255532	0.00004646
7 ISOBUTANE	0.00060436	0.00001037	0.00302179	0.00007982	0.01122453	0.00033850
8 PENTANE	0.00000003	0.00000000	0.00000142	0.00000000	0.00004926	0.00000015
RELATIVE VOLATILITY	13.78336224		10.06412989		9.46803740	
SEPARATION FACTOR	0.57615372		0.32126597		-0.07614838	

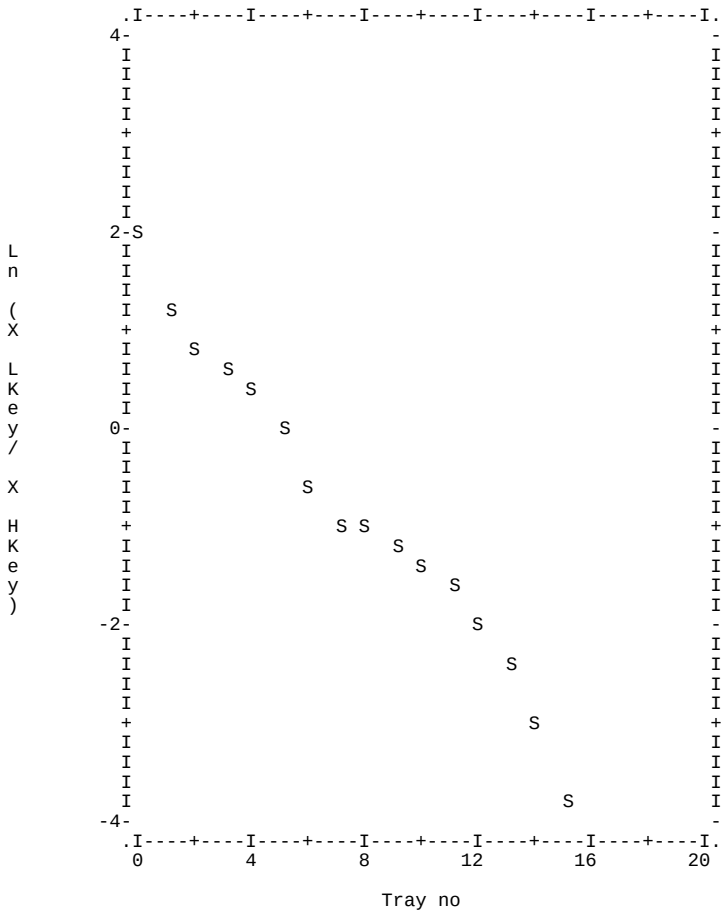
TRAY NO.	6		7		8	
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR
* LIGHT KEYS *						
3 METHANE	0.08644822	0.59565959	0.07207679	0.53612052	0.06902259	0.53860815
4 ETHANE	0.78352362	0.38323413	0.69596320	0.43003761	0.62139510	0.41731020
* HEAVY KEYS *						
5 PROPANE	0.12371465	0.00858033	0.22396150	0.02204230	0.29132439	0.03204902
6 BUTANE	0.00005312	0.00000053	0.00042207	0.00000668	0.00255532	0.00004646
7 ISOBUTANE	0.00060436	0.00001037	0.00302179	0.00007982	0.01122453	0.00033850
8 PENTANE	0.00000003	0.00000000	0.00000142	0.00000000	0.00004926	0.00000015
RELATIVE VOLATILITY	9.47591926		7.06951945		4.65815268	
SEPARATION FACTOR	-0.53172802		-1.00143459		-1.01060455	

TRAY NO.	9		10		11	
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR
* LIGHT KEYS *						
3 METHANE	0.08644822	0.59565959	0.07207679	0.53612052	0.06902259	0.53860815
4 ETHANE	0.78352362	0.38323413	0.69596320	0.43003761	0.62139510	0.41731020
* HEAVY KEYS *						
5 PROPANE	0.12371465	0.00858033	0.22396150	0.02204230	0.29132439	0.03204902
6 BUTANE	0.00005312	0.00000053	0.00042207	0.00000668	0.00255532	0.00004646
7 ISOBUTANE	0.00060436	0.00001037	0.00302179	0.00007982	0.01122453	0.00033850
8 PENTANE	0.00000003	0.00000000	0.00000142	0.00000000	0.00004926	0.00000015
RELATIVE VOLATILITY	4.19860120		4.00436479		3.83812166	
SEPARATION FACTOR	-1.12863121		-1.32583215		-1.60760209	

TRAY NO.	12		13		14	
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR
* LIGHT KEYS *						
3 METHANE	0.08644822	0.59565959	0.07207679	0.53612052	0.06902259	0.53860815
4 ETHANE	0.78352362	0.38323413	0.69596320	0.43003761	0.62139510	0.41731020
* HEAVY KEYS *						
5 PROPANE	0.12371465	0.00858033	0.22396150	0.02204230	0.29132439	0.03204902
6 BUTANE	0.00005312	0.00000053	0.00042207	0.00000668	0.00255532	0.00004646
7 ISOBUTANE	0.00060436	0.00001037	0.00302179	0.00007982	0.01122453	0.00033850
8 PENTANE	0.00000003	0.00000000	0.00000142	0.00000000	0.00004926	0.00000015
RELATIVE VOLATILITY	3.67835670		3.54465407		3.46605601	
SEPARATION FACTOR	-1.97995528		-2.44736932		-3.02777082	

TRAY NO.	15	
PHASE	LIQUID	VAPOR
* LIGHT KEYS *		
3 METHANE	0.08644822	0.59565959
4 ETHANE	0.78352362	0.38323413
* HEAVY KEYS *		
5 PROPANE	0.12371465	0.00858033
6 BUTANE	0.00005312	0.00000053
7 ISOBUTANE	0.00060436	0.00001037
8 PENTANE	0.00000003	0.00000000
RELATIVE VOLATILITY	3.49299727	
SEPARATION FACTOR	-3.79089010	

*** LIGHT-KEY/HEAVY-KEY SEPARATION FACTOR ***



***   UNIT   5 - 'CONDENSR' - ' HEAT-EXCHANGER   '   ***

	--- Feed Streams ---	- Product Streams -	
from unit 3 - EX-1	'S113 '	'S116 '	to unit 6 - MX-1

1) * OPERATING DATA *

Heat Balance Closed on stream(s)
1) S116

Hot stream duty	-1140.738 kBtu/h
Cold stream duty	1140.738 kBtu/h
Received/specified Duty	1140.738 kBtu/h
Total Exchanged Heat	1140.738 kBtu/h

2) * HOT SIDE CONDITIONS *

HOT Stream 1		Inlet	Outlet
ID/NAME		S113	S116
PHASE		VAPOR	VAPOR
Temperature, °F		-130.489	-118.22
Pressure, psia		152.000	134.000
Vapor,	lbm/h	8353.2271	8353.2271
	lb/h	142419.1021	142419.1021
Liquid,	lbm/h	0.0000	0.0000
	lb/h	0.0000	0.0000
Total,	lbm/h	8353.2271	8353.2271
	lb/h	142419.1021	142419.1021

*** HEATING CURVE OF STREAMS S113 /S116 ***

	INLET	OUTLET
Stream	S113	S116
Temperature, °F	-130.489	-118.223
Pressure, psia	152.000	134.000
Total flow rate, lbm/HR	8353.227	8353.227
Vapor rate, lbm/HR	8353.227	8353.227
Liquid 1/H rate, lbm/HR	0.000	0.000
Liquid 2/W rate, lbm/HR	0.000	0.000

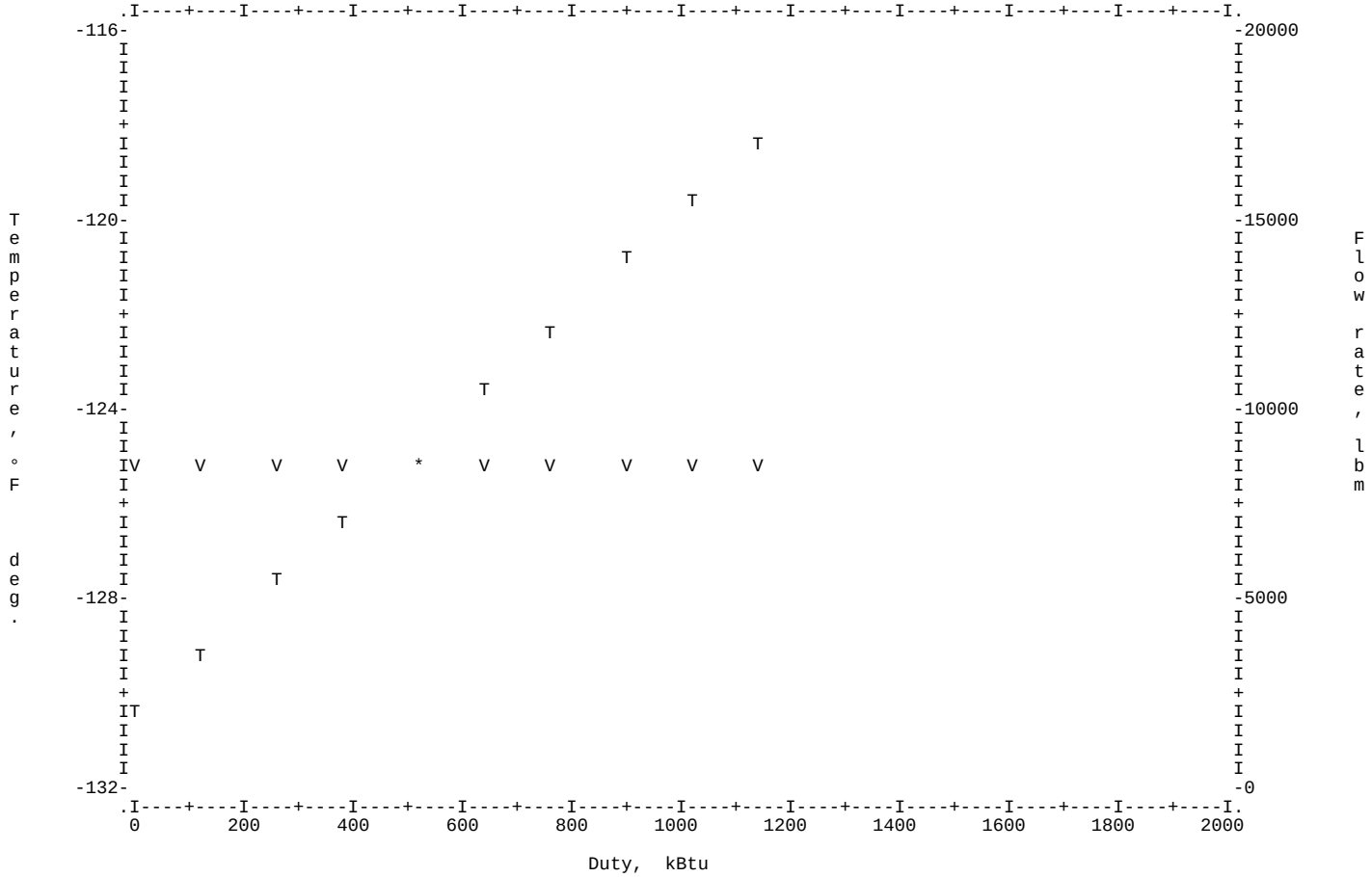
*** VAPOR ***

Temperature °F	Pressure psia	Flow Rate lbm	Flow Rate lb	Heat Content kBtu	Duty kBtu
-130.49	152.000	8353.23	142419.10	-16035.68	0.00
-129.13	150.000	8353.23	142419.10	-15906.08	129.60
-127.76	148.000	8353.23	142419.10	-15777.24	258.44
-126.40	146.000	8353.23	142419.10	-15649.16	386.52
-125.04	144.000	8353.23	142419.10	-15521.79	513.89
-123.67	142.000	8353.23	142419.10	-15395.12	640.56
-122.31	140.000	8353.23	142419.10	-15269.12	766.56
-120.95	138.000	8353.23	142419.10	-15143.77	891.91
-119.59	136.000	8353.23	142419.10	-15019.05	1016.63
-118.22	134.000	8353.23	142419.10	-14894.94	1140.74

*** VAPOR***

Temperature °F	Pressure psia	Molecular Weight	Density lb/ft3	Viscosity cP	Specific Heat BTU/LB-F	Conductivity btu/h.ft
-130.49	152.000	17.05	0.815	0.0075	0.54678	0.0116
-129.13	150.000	17.05	0.798	0.0075	0.54437	0.0116
-127.76	148.000	17.05	0.782	0.0075	0.54206	0.0116
-126.40	146.000	17.05	0.766	0.0075	0.53984	0.0117
-125.04	144.000	17.05	0.751	0.0076	0.53770	0.0117
-123.67	142.000	17.05	0.735	0.0076	0.53565	0.0118
-122.31	140.000	17.05	0.720	0.0076	0.53367	0.0118
-120.95	138.000	17.05	0.705	0.0076	0.53176	0.0118
-119.59	136.000	17.05	0.690	0.0076	0.52992	0.0119
-118.22	134.000	17.05	0.676	0.0077	0.52815	0.0119

* TEMPERATURE AND VAPOUR / LIQUID PROFILES *



*** UNIT 6 - 'MX-1 ' - ' STREAM MIXER ' ***

--- Feed Streams --- - Product Streams -

from unit 5 - CONDENSR 'S116 ' 'S117 ' to unit 7 - E-1
from unit 4 - C-1 'S143 '

1) * OPERATING CONDITIONS *
Outlet Temperature -111.82 °F
Outlet Pressure 134.0000 psia

2) * FEEDS *

Stream		S116	S143
Temperature,	°F	-118.22	-72.98
Pressure,	psia	134.000	134.000
Total rate,	lbm/h	8353.2	1275.4
Vapor,	lbm/h	8353.2	1275.4
Liquid,	lbm/h	0.0000	0.0000

3) * PRODUCTS *

Stream		S117
Temperature,	°F	-111.82
Pressure,	psia	134.000
Total rate,	lbm/h	9628.6
Vapor,	lbm/h	9628.6
Liquid,	lbm/h	0.0000

*** UNIT 7 - 'E-1 ' - ' HEAT-EXCHANGER ' ***
Service/Desc 'COLD-BOX EXCHANGER '

	--- Feed Streams ---	- Product Streams -	
from unit 1 - V-1	'S102 '	'S108 '	to unit 2 - V-2
from unit 6 - MX-1	'S117 '	'S119 '	

1) * OPERATING DATA *

Heat Balance Closed on stream(s)
1) S108
Hot stream duty -23460.143 kBtu/h
Cold stream duty 23460.143 kBtu/h
Received/specified Duty -4564.200 kBtu/h
Total Exchanged Heat 23460.143 kBtu/h
FT values - Given 0.0000 - Calculated 1.0000
LMTD - Not corrected -34.063 °F - Corrected -34.063 °F

2) * HOT SIDE CONDITIONS *

HOT Stream 1		Inlet	Outlet
ID/NAME		S102	S108
PHASE		VAPOR	MIXED
Temperature, °F		115.000	-30.38
Pressure, psia		800.000	750.000
Vapor,	lbm/h	10353.6000	9006.6143
	lb/h	207518.3352	163526.7057
Liquid,	lbm/h	0.0000	1346.9857
	lb/h	0.0000	43993.1029
Total,	lbm/h	10353.6000	10353.6000
	lb/h	207518.3352	207518.3352

3) * COLD SIDE CONDITIONS *

COLD Stream 1		Inlet	Outlet
ID/NAME		S117	S119
PHASE		VAPOR	VAPOR
Temperature, °F		-111.819	105.00
Pressure, psia		134.000	118.000
Vapor,	lbm/h	9628.6351	9628.6351
	lb/h	170427.5095	170427.5095
Liquid,	lbm/h	0.0000	0.0000
	lb/h	0.0000	0.0000
Total,	lbm/h	9628.6351	9628.6351
	lb/h	170427.5095	170427.5095

*** COOLING CURVE OF STREAMS S102 /S108 ***

	INLET	OUTLET
Stream	S102	S108
Temperature, °F	115.000	-30.378
Pressure, psia	800.000	750.000
Total flow rate, lbm/HR	10353.600	10353.600
Vapor rate, lbm/HR	10353.600	9005.834
Liquid 1/H rate, lbm/HR	0.000	1347.766
Liquid 2/W rate, lbm/HR	0.000	0.000

	Temperature	Pressure	Molar Flow Rate		Weight Flow Rate		Vapor Fraction		Heat Content		Duty Total
			Vapor	Liquid	Vapor	Liquid			Vapor	Liquid	
	°F	psia	lbm	lbm	lb	lb	Molar	Weight	kBtu	kBtu	kBtu
	115.00	800.000	10353.60	0.00	207518.34	0.00	1.0000	1.0000	-1247.73	0.00	0.00
	98.85	794.444	10353.60	0.00	207518.34	0.00	1.0000	1.0000	-3225.55	0.00	1977.82
	82.69	788.889	10353.60	0.00	207518.34	0.00	1.0000	1.0000	-5220.13	0.00	3972.40
	66.54	783.333	10353.60	0.00	207518.34	0.00	1.0000	1.0000	-7240.73	0.00	5993.01
D	61.72	781.250	10353.60	0.00	207518.34	0.00	1.0000	1.0000	-7846.57	0.00	6598.85
	50.39	777.778	10295.82	57.78	204756.67	2761.66	0.9944	0.9867	-9118.75	-451.07	8322.10
	34.23	772.222	10173.20	180.40	199563.73	7954.60	0.9826	0.9617	-10809.33	-1370.11	10931.71
	18.08	766.667	9990.55	363.05	192711.67	14806.67	0.9649	0.9286	-12317.77	-2684.08	13754.13
	1.93	761.111	9739.53	614.07	184276.63	23241.70	0.9407	0.8880	-13612.97	-4425.71	16790.95
	-14.23	755.556	9415.86	937.74	174523.84	32994.50	0.9094	0.8410	-14687.30	-6586.08	20025.65
	-30.38	750.000	9005.83	1347.77	163511.55	44006.78	0.8698	0.7879	-15524.07	-9187.61	23463.95

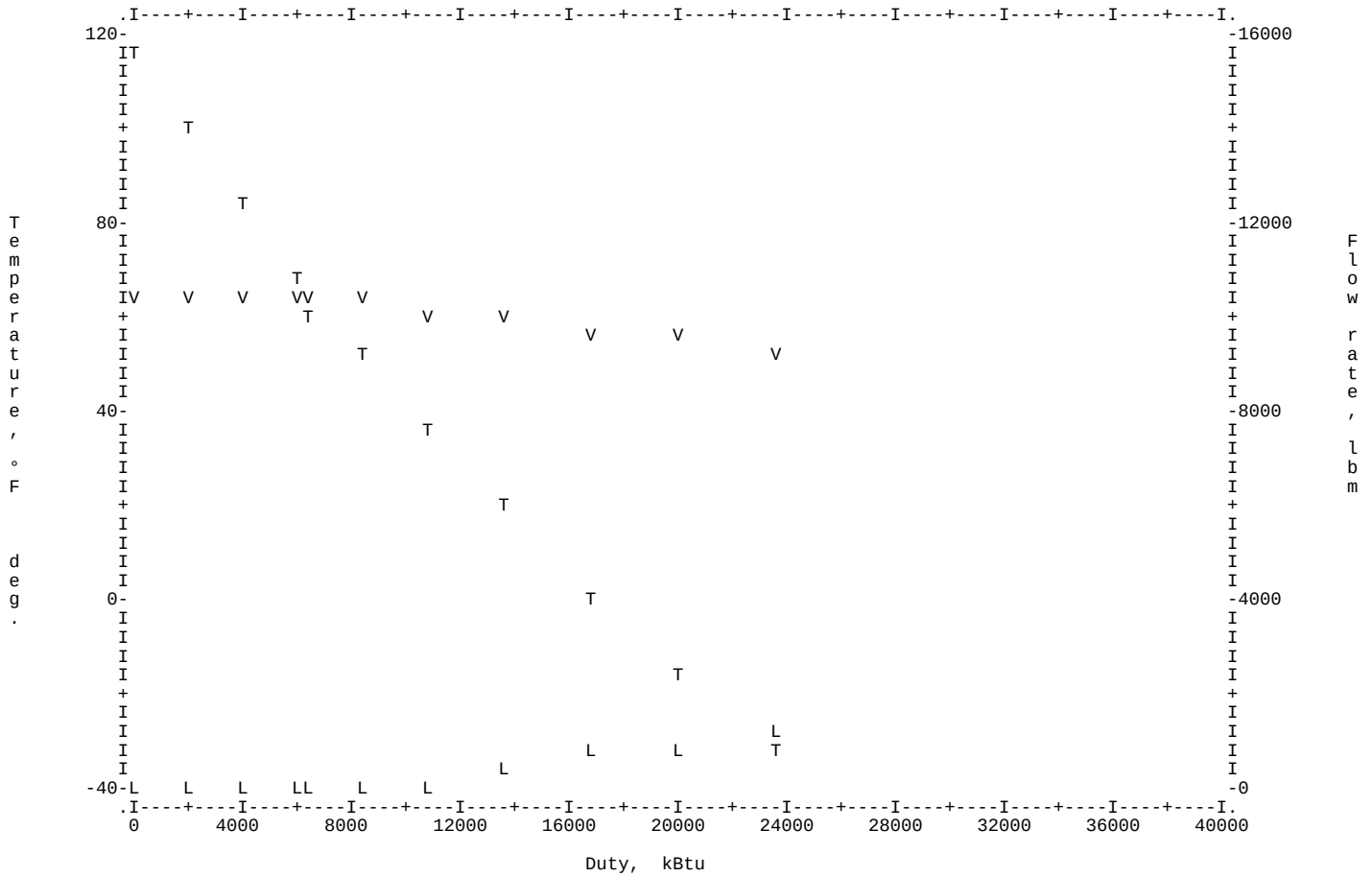
*** VAPOR***

	Temperature	Pressure	Molecular	Density	Viscosity	Specific Heat	Conductivity
	°F	psia	Weight	lb/ft3	cP	BTU/LB-F	btu/h.ft
	115.00	800.000	20.04	2.930	0.0127	0.59957	0.0228
	98.85	794.444	20.04	3.039	0.0125	0.60436	0.0222
	82.69	788.889	20.04	3.161	0.0123	0.61170	0.0216
	66.54	783.333	20.04	3.301	0.0121	0.62243	0.0210
D	61.72	781.250	20.04	3.345	0.0121	0.62634	0.0209
	50.39	777.778	19.89	3.423	0.0119	0.63617	0.0205
	34.23	772.222	19.62	3.531	0.0117	0.65336	0.0201
	18.08	766.667	19.29	3.640	0.0116	0.67518	0.0197
	1.93	761.111	18.92	3.755	0.0114	0.70292	0.0194
	-14.23	755.556	18.54	3.886	0.0113	0.73907	0.0191
	-30.38	750.000	18.16	4.048	0.0111	0.78823	0.0189

*** LIQUID 1/H ***

	Temperature	Pressure	Molecular	Spgr	Density	Viscosity	Specific Heat	Conductivity
	°F	psia	Weight		lb/ft3	cP	BTU/LB-F	btu/h.ft
	115.00	800.000	0.00	0.0000	0.000	0.00	0.00000	0.0000
	98.85	794.444	0.00	0.0000	0.000	0.00	0.00000	0.0000
	82.69	788.889	0.00	0.0000	0.000	0.00	0.00000	0.0000
	66.54	783.333	0.00	0.0000	0.000	0.00	0.00000	0.0000
D	61.72	781.250	50.63	0.5610	34.193	0.106	0.58889	0.0635
	50.39	777.778	47.80	0.5485	33.642	0.102	0.59153	0.0641
	34.23	772.222	44.09	0.5310	32.845	0.952E-01	0.59669	0.0652
	18.08	766.667	40.78	0.5143	32.071	0.890E-01	0.60340	0.0667
	1.93	761.111	37.85	0.4989	31.353	0.830E-01	0.61147	0.0686
	-14.23	755.556	35.18	0.4849	30.666	0.768E-01	0.62135	0.0710
	-30.38	750.000	32.65	0.4720	29.930	0.695E-01	0.63446	0.0738

* TEMPERATURE AND VAPOUR / LIQUID PROFILES *



*** HEATING CURVE OF STREAMS S117 /S119 ***

	INLET	OUTLET
Stream	S117	S119
Temperature, °F	-111.819	105.000
Pressure, psia	134.000	118.000
Total flow rate, lbm/HR	9628.635	9628.635
Vapor rate, lbm/HR	9628.635	9628.635
Liquid 1/H rate, lbm/HR	0.000	0.000
Liquid 2/W rate, lbm/HR	0.000	0.000

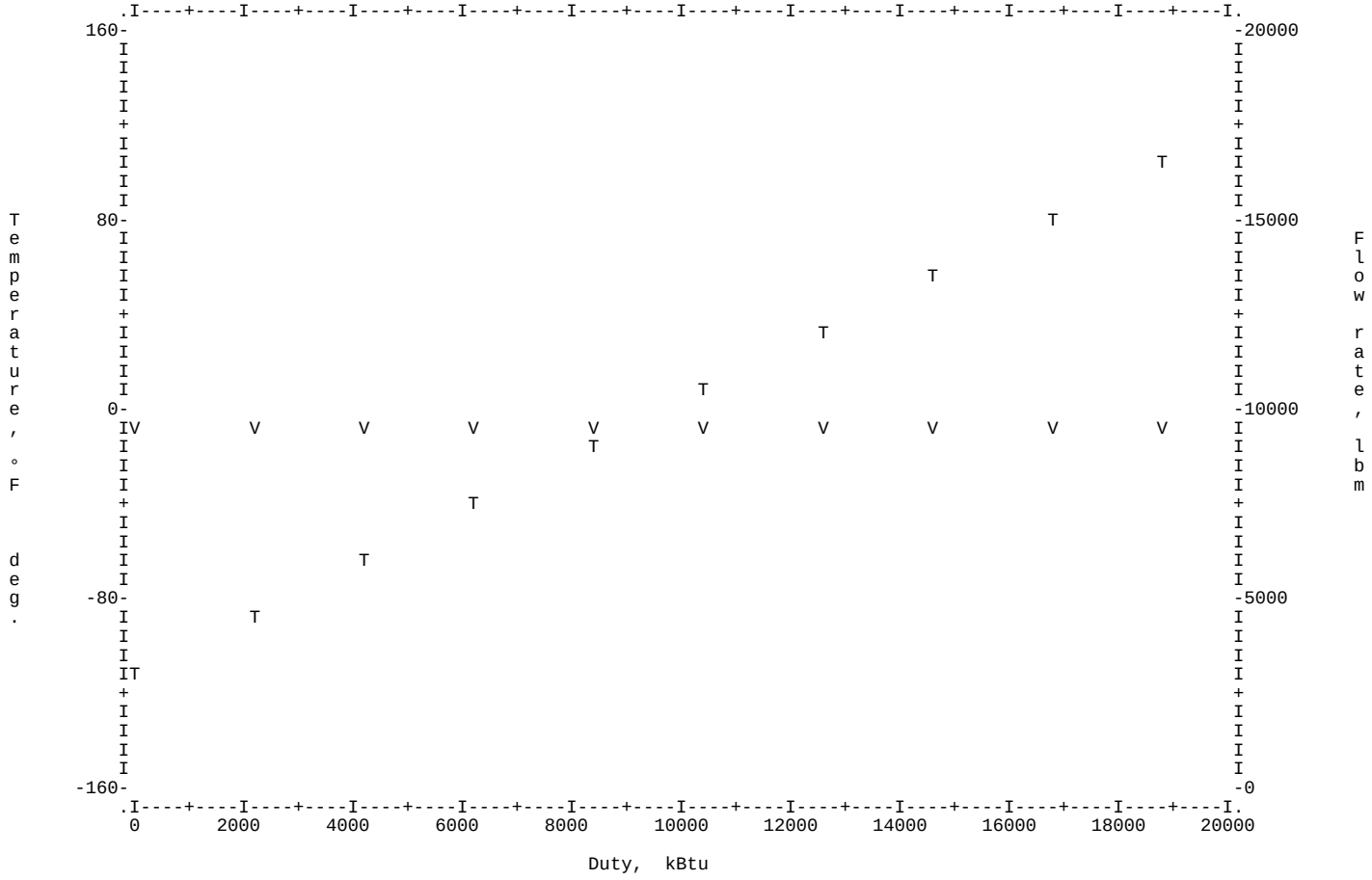
*** VAPOR ***

Temperature °F	Pressure psia	Flow Rate lbm	Flow Rate lb	Heat Content kBtu	Duty kBtu
-111.82	134.000	9628.64	170427.51	-17011.87	0.00
-87.73	132.222	9628.64	170427.51	-14889.02	2122.85
-63.64	130.444	9628.64	170427.51	-12798.12	4213.75
-39.55	128.667	9628.64	170427.51	-10723.09	6288.78
-15.46	126.889	9628.64	170427.51	-8652.45	8359.43
8.64	125.111	9628.64	170427.51	-6577.53	10434.34
32.73	123.333	9628.64	170427.51	-4491.53	12520.34
56.82	121.556	9628.64	170427.51	-2388.88	14622.99
80.91	119.778	9628.64	170427.51	-264.96	16746.91
105.00	118.000	9628.64	170427.51	1884.16	18896.04

*** VAPOR***

Temperature °F	Pressure psia	Molecular Weight	Density lb/ft3	Viscosity cP	Specific Heat BTU/LB-F	Conductivity btu/h.ft
-111.82	134.000	17.70	0.690	0.0077	0.51707	0.0118
-87.73	132.222	17.70	0.626	0.0082	0.50759	0.0126
-63.64	130.444	17.70	0.572	0.0086	0.50263	0.0135
-39.55	128.667	17.70	0.527	0.0091	0.50080	0.0145
-15.46	126.889	17.70	0.488	0.0096	0.50128	0.0155
8.64	125.111	17.70	0.453	0.0100	0.50354	0.0165
32.73	123.333	17.70	0.423	0.0104	0.50725	0.0175
56.82	121.556	17.70	0.396	0.0109	0.51214	0.0185
80.91	119.778	17.70	0.371	0.0113	0.51803	0.0196
105.00	118.000	17.70	0.349	0.0117	0.52478	0.0207

* TEMPERATURE AND VAPOUR / LIQUID PROFILES *



 *** STREAM DATA CALCULATION AND STORING ***

    Stream 'FEED   ' pvt/thermo/trans props calculated
    Stream 'S108   ' pvt/thermo/trans props calculated
    Stream 'S148   ' pvt/thermo/trans props calculated
    Stream 'S119   ' pvt/thermo/trans props calculated
    Stream 'S114   ' pvt/thermo/trans props calculated
    Stream 'S102   ' pvt/thermo/trans props calculated
 Stream 'S101   ' has NULL flowrate - Props NOT calculated
    Stream 'S109   ' pvt/thermo/trans props calculated
    Stream 'S110   ' pvt/thermo/trans props calculated
    Stream 'S113   ' pvt/thermo/trans props calculated
    Stream 'S143   ' pvt/thermo/trans props calculated
    Stream 'S116   ' pvt/thermo/trans props calculated
    Stream 'S117   ' pvt/thermo/trans props calculated

*** STREAM COMPONENT MOLAR FLOW RATES - lbm/h ***

Stream Id	S110	S102	S113	S143	S114	S116
Temperature, °F	-29.483	115.000	-130.489	-72.977	-130.489	-118.223
Pressure, psia	750.0000	800.0000	152.0000	134.0000	152.0000	134.0000
Phase	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR
1 NITROGEN	3.381837	151.170000	147.367024	3.801601	0.419861	147.367024
2 CARBON DIOXIDE	6.732901	44.330000	32.169332	12.160195	5.427854	32.169332
3 METHANE	573.927786	8545.250000	7785.480005	759.709013	185.800711	7785.480005
4 ETHANE	243.392325	868.880000	365.589652	488.779885	259.908677	365.589652
5 PROPANE	276.514690	483.960000	21.868699	10.943418	185.593874	21.868699
6 BUTANE	47.796322	58.330000	0.104959	0.000673	10.431962	0.104959
7 ISOBUTANE	87.464402	114.920000	0.555155	0.013225	26.906295	0.555155
8 PENTANE	17.729790	18.920000	0.001077	0.000000	1.190364	0.001077
9 ISOPENTANE	35.610811	38.830000	0.005472	0.000001	3.216181	0.005472
10 HEXANE	24.110937	24.630000	0.000047	0.000000	0.520701	0.000047
11 HEPTANE	4.351149	4.380000	0.000000	0.000000	0.029156	0.000000
TOTALS, lbm/h	1320.920312	10353.600000	8353.227129	1275.408011	679.452559	8353.227129
VAPOR fraction	0.000000	1.000000	1.000000	1.000000	0.000000	1.000000
LIQUID 1/H fraction	1.000000	0.000000	0.000000	0.000000	1.000000	0.000000
Enthalpy kBtu/h	-9025.081918	-1247.726909	-16035.679879	-2116.836716	-6040.970800	-14894.941991

Stream Id	S117	S108	S148	S109	S119	FEED
Temperature, °F	-111.819	-30.378	100.383	-29.483	105.000	115.000
Pressure, psia	134.0000	750.0000	143.4000	750.0000	118.0000	800.0000
Phase	VAPOR	MIXED	LIQUID	VAPOR	VAPOR	VAPOR
1 NITROGEN	151.168624	151.170000	0.000000	147.786885	151.168624	151.170000
2 CARBON DIOXIDE	44.329528	44.330000	0.000247	37.597186	44.329528	44.330000
3 METHANE	8545.189018	8545.250000	0.000009	7971.280716	8545.189018	8545.250000
4 ETHANE	854.369536	868.880000	14.507527	625.498328	854.369536	868.880000
5 PROPANE	32.812118	483.960000	451.131871	207.462573	32.812118	483.960000
6 BUTANE	0.105632	58.330000	58.223353	10.536921	0.105632	58.330000
7 ISOBUTANE	0.568380	114.920000	114.349109	27.461450	0.568380	114.920000
8 PENTANE	0.001077	18.920000	18.918771	1.191441	0.001077	18.920000
9 ISOPENTANE	0.005473	38.830000	38.824151	3.221653	0.005473	38.830000
10 HEXANE	0.000047	24.630000	24.629837	0.520748	0.000047	24.630000
11 HEPTANE	0.000000	4.380000	4.379984	0.029156	0.000000	4.380000
TOTALS, lbm/h	9628.635140	10353.600000	724.964860	9032.679688	9628.635140	10353.600000
VAPOR fraction	1.000000	0.869902	0.000000	1.000000	1.000000	1.000000
LIQUID 1/H fraction	0.000000	0.130098	1.000000	0.000000	0.000000	0.000000
Enthalpy kBtu/h	-17011.778707	-24707.869823	-5264.193900	-15483.557124	1884.163785	-1247.726909

*** STREAM COMPONENT WEIGHT FLOW RATES - lb/h ***

Stream Id	S110	S102	S113	S143	S114	S116
Temperature, °F	-29.483	115.000	-130.489	-72.977	-130.489	-118.223
Pressure, psia	750.0000	800.0000	152.0000	134.0000	152.0000	134.0000
Phase	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR
1 NITROGEN	94.725234	4234.270944	4127.749592	106.482814	11.760309	4127.749592
2 CARBON DIOXIDE	296.314921	1950.963078	1415.772151	535.170133	238.879817	1415.772151
3 METHANE	9205.797662	137065.750183	124879.044782	12185.727253	2980.242099	124879.044782
4 ETHANE	7318.808920	26127.227682	10993.283380	14697.614554	7815.455735	10993.283380
5 PROPANE	12194.299493	21342.638904	964.409776	482.604816	8184.690945	964.409776
6 BUTANE	2777.922013	3390.139308	6.100212	0.039139	606.305607	6.100212
7 ISOBUTANE	5083.430585	6679.149825	32.265603	0.768626	1563.793749	32.265603
8 PENTANE	1279.204254	1365.077886	0.077681	0.000004	85.884776	0.077681
9 ISOPENTANE	2569.319824	2801.584267	0.394825	0.000070	232.047409	0.394825
10 HEXANE	2077.880378	2122.613228	0.004087	0.000000	44.874015	0.004087
11 HEPTANE	436.028649	438.919844	0.000024	0.000000	2.921718	0.000024
TOTALS, lb/h	43333.731934	207518.335150	142419.102115	28008.407409	21766.856179	142419.102115
VAPOR fraction	0.000000	1.000000	1.000000	1.000000	0.000000	1.000000
LIQUID 1/H fraction	1.000000	0.000000	0.000000	0.000000	1.000000	0.000000
Enthalpy kBtu/h	-9025.081918	-1247.726909	-16035.679879	-2116.836716	-6040.970800	-14894.941991

Stream Id	S117	S108	S148	S109	S119	FEED
Temperature, °F	-111.819	-30.378	100.383	-29.483	105.000	115.000
Pressure, psia	134.0000	750.0000	143.4000	750.0000	118.0000	800.0000
Phase	VAPOR	MIXED	LIQUID	VAPOR	VAPOR	VAPOR
1 NITROGEN	4234.232406	4234.270944	0.000000	4139.509902	4234.232406	4234.270944
2 CARBON DIOXIDE	1950.942284	1950.963078	0.010886	1654.651968	1950.942284	1950.963078
3 METHANE	137064.772035	137065.750183	0.000152	127859.286881	137064.772035	137065.750183
4 ETHANE	25690.897934	26127.227682	436.241452	18808.739115	25690.897934	26127.227682
5 PROPANE	1447.014592	21342.638904	19894.918208	9149.100722	1447.014592	21342.638904
6 BUTANE	6.139351	3390.139308	3383.940991	612.405819	6.139351	3390.139308
7 ISOBUTANE	33.034229	6679.149825	6645.969626	1596.059352	33.034229	6679.149825
8 PENTANE	0.077685	1365.077886	1364.989195	85.962456	0.077685	1365.077886
9 ISOPENTANE	0.394896	2801.584267	2801.162296	232.442235	0.394896	2801.584267
10 HEXANE	0.004087	2122.613228	2122.599154	44.878102	0.004087	2122.613228
11 HEPTANE	0.000024	438.919844	438.918266	2.921742	0.000024	438.919844
TOTALS, lb/h	170427.509523	207518.335150	37088.750225	164185.958293	170427.509523	207518.335150
VAPOR fraction	1.000000	0.788011	0.000000	1.000000	1.000000	1.000000
LIQUID 1/H fraction	0.000000	0.211996	1.000000	0.000000	0.000000	0.000000
Enthalpy kBtu/h	-17011.778707	-24707.869823	-5264.193900	-15483.557124	1884.163785	-1247.726909

*** STREAM MOLAR COMPOSITIONS ***

Stream Id	S110	S102	S113	S143	S114	S116
Temperature, °F	-29.483	115.000	-130.489	-72.977	-130.489	-118.223
Pressure, psia	750.0000	800.0000	152.0000	134.0000	152.0000	134.0000
Phase	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR
1 NITROGEN	0.00256021	0.01460072	0.01764193	0.00298069	0.00061794	0.01764193
2 CARBON DIOXIDE	0.00509713	0.00428160	0.00385113	0.00953436	0.00798857	0.00385113
3 METHANE	0.43449085	0.82534094	0.93203260	0.59565959	0.27345649	0.93203260
4 ETHANE	0.18425966	0.08392057	0.04376628	0.38323413	0.38252660	0.04376628
5 PROPANE	0.20933488	0.04674316	0.00261799	0.00858033	0.27315207	0.00261799
6 BUTANE	0.03618411	0.00563379	0.00001257	0.00000053	0.01535348	0.00001257
7 ISOBUTANE	0.06621474	0.01109952	0.00006646	0.00001037	0.03959996	0.00006646
8 PENTANE	0.01342230	0.00182738	0.00000013	0.00000000	0.00175195	0.00000013
9 ISOPENTANE	0.02695909	0.00375039	0.00000066	0.00000000	0.00473349	0.00000066
10 HEXANE	0.01825314	0.00237888	0.00000001	0.00000000	0.00076635	0.00000001
11 HEPTANE	0.00329403	0.00042304	0.00000000	0.00000000	0.00004291	0.00000000
TOTALS, /h	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
VAPOR fraction	0.000000	1.000000	1.000000	1.000000	0.000000	1.000000
LIQUID 1/H fraction	1.000000	0.000000	0.000000	0.000000	1.000000	0.000000
Spec Ent, Btu/lbm	-6832.419666	-120.511408	-1919.698774	-1659.732961	-8890.938327	-1783.136237

Stream Id	S117	S108	S148	S109	S119	FEED
Temperature, °F	-111.819	-30.378	100.383	-29.483	105.000	115.000
Pressure, psia	134.0000	750.0000	143.4000	750.0000	118.0000	800.0000
Phase	VAPOR	MIXED	LIQUID	VAPOR	VAPOR	VAPOR
1 NITROGEN	0.01569990	0.01460072	0.00000000	0.01636136	0.01569990	0.01460072
2 CARBON DIOXIDE	0.00460393	0.00428160	0.00000034	0.00416235	0.00460393	0.00428160
3 METHANE	0.88747667	0.82534094	0.00000001	0.88249346	0.88747667	0.82534094
4 ETHANE	0.08873215	0.08392057	0.02001135	0.06924837	0.08873215	0.08392057
5 PROPANE	0.00340776	0.04674316	0.62228102	0.02296800	0.00340776	0.04674316
6 BUTANE	0.00001097	0.00563379	0.08031197	0.00116653	0.00001097	0.00563379
7 ISOBUTANE	0.00005903	0.01109952	0.15773055	0.00304023	0.00005903	0.01109952
8 PENTANE	0.00000011	0.00182738	0.02609612	0.00013190	0.00000011	0.00182738
9 ISOPENTANE	0.00000057	0.00375039	0.05355315	0.00035667	0.00000057	0.00375039
10 HEXANE	0.00000000	0.00237888	0.03397384	0.00005765	0.00000000	0.00237888
11 HEPTANE	0.00000000	0.00042304	0.00604165	0.00000323	0.00000000	0.00042304
TOTALS, /h	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
VAPOR fraction	1.000000	0.869902	0.000000	1.000000	1.000000	1.000000
LIQUID 1/H fraction	0.000000	0.130098	1.000000	0.000000	0.000000	0.000000
Spec Ent, Btu/lbm	-1766.790252	-2386.403746	-7261.309051	-1714.170950	195.683371	-120.511408

*** STREAM WEIGHT COMPOSITIONS ***

Stream Id	S110	S102	S113	S143	S114	S116
Temperature, °F	-29.483	115.000	-130.489	-72.977	-130.489	-118.223
Pressure, psia	750.0000	800.0000	152.0000	134.0000	152.0000	134.0000
Phase	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR
1 NITROGEN	0.00218595	0.02040432	0.02898312	0.00380182	0.00054029	0.02898312
2 CARBON DIOXIDE	0.00683797	0.00940140	0.00994089	0.01910748	0.01097447	0.00994089
3 METHANE	0.21243953	0.66049947	0.87684196	0.43507391	0.13691652	0.87684196
4 ETHANE	0.16889404	0.12590323	0.07718967	0.52475724	0.35905303	0.07718967
5 PROPANE	0.28140432	0.10284700	0.00677163	0.01723071	0.37601622	0.00677163
6 BUTANE	0.06410530	0.01633658	0.00004283	0.00000140	0.02785453	0.00004283
7 ISOBUTANE	0.11730886	0.03218583	0.00022655	0.00002744	0.07184289	0.00022655
8 PENTANE	0.02951983	0.00657811	0.00000055	0.00000000	0.00394567	0.00000055
9 ISOPENTANE	0.05929145	0.01350042	0.00000277	0.00000000	0.01066058	0.00000277
10 HEXANE	0.04795064	0.01022856	0.00000003	0.00000000	0.00206158	0.00000003
11 HEPTANE	0.01006211	0.00211509	0.00000000	0.00000000	0.00013423	0.00000000
TOTALS, /h	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
VAPOR fraction	0.000000	1.000000	1.000000	1.000000	0.000000	1.000000
LIQUID 1/H fraction	1.000000	0.000000	0.000000	0.000000	1.000000	0.000000
Spec Ent, Btu/lb	-208.269205	-6.012610	-112.595008	-75.578618	-277.530699	-104.585282

Stream Id	S117	S108	S148	S109	S119	FEED
Temperature, °F	-111.819	-30.378	100.383	-29.483	105.000	115.000
Pressure, psia	134.0000	750.0000	143.4000	750.0000	118.0000	800.0000
Phase	VAPOR	MIXED	LIQUID	VAPOR	VAPOR	VAPOR
1 NITROGEN	0.02484477	0.02040432	0.00000000	0.02521233	0.02484477	0.02040432
2 CARBON DIOXIDE	0.01144734	0.00940140	0.00000029	0.01007791	0.01144734	0.00940140
3 METHANE	0.80424089	0.66049947	0.00000000	0.77874678	0.80424089	0.66049947
4 ETHANE	0.15074384	0.12590323	0.01176210	0.11455754	0.15074384	0.12590323
5 PROPANE	0.00849050	0.10284700	0.53641382	0.05572401	0.00849050	0.10284700
6 BUTANE	0.00003602	0.01633658	0.09123901	0.00372995	0.00003602	0.01633658
7 ISOBUTANE	0.00019383	0.03218583	0.17919098	0.00972105	0.00019383	0.03218583
8 PENTANE	0.00000046	0.00657811	0.03680332	0.00052357	0.00000046	0.00657811
9 ISOPENTANE	0.00000232	0.01350042	0.07552593	0.00141573	0.00000232	0.01350042
10 HEXANE	0.00000002	0.01022856	0.05723027	0.00027334	0.00000002	0.01022856
11 HEPTANE	0.00000000	0.00211509	0.01183427	0.00001780	0.00000000	0.00211509
TOTALS, /h	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
VAPOR fraction	1.000000	0.788011	0.000000	1.000000	1.000000	1.000000
LIQUID 1/H fraction	0.000000	0.211996	1.000000	0.000000	0.000000	0.000000
Spec Ent, Btu/lb	-99.818267	-119.063551	-141.935058	-94.305002	11.055514	-6.012610

STREAM SUMMARY

Stream Id		S110	S102	S113	S143	S114
Temperature, °F		-29.483	115.000	-130.489	-72.977	-130.489
Pressure, psia		750.0000	800.0000	152.0000	134.0000	152.0000
Phase		LIQUID	VAPOR	VAPOR	VAPOR	LIQUID
Flow rate	lbm/h	1320.920	10353.600	8353.227	1275.408	679.453
	lb/h	43333.732	207518.335	142419.102	28008.407	21766.856
Vapor fract.		0.000000	1.000000	1.000000	1.000000	0.000000
LIQUID 1/H FRACT		1.000000	0.000000	0.000000	0.000000	1.000000
LIQUID 2/W FRACT		0.000000	0.000000	0.000000	0.000000	0.000000
Mol. weight		32.8057	20.043109	17.049591	21.960351	32.035873
Act. Volume rate	ft3/h	1445.440300	70817.062411	174760.013149	35681.340702	633.306515
Enthalpy	kBtu/h	-9025.081918	-1247.726909	-16035.679879	-2116.836716	-6040.970800
Spec. enthalpy	Btu/lbm	-6832.420	-120.511	-1919.699	-1659.733	-8890.938
	Btu/lb	-208.269	-6.013	-112.595	-75.579	-277.531
*** VAPOUR ***						
Flow rate	lbm/h		10353.600	8353.227	1275.408	
	lb/h		207518.335	142419.102	28008.407	
Wt. fraction			1.000000	1.000000	1.000000	
Mol. weight			20.0431	17.0496	21.9604	
Std. Volume rate	S-ft3/h		3929016.617597	3169908.843212	483995.834370	
Act. Volume rate	ft3/h		70817.0624	174760.0131	35681.3407	
Enthalpy	kBtu/h		-1247.726909	-16035.679879	-2116.836716	
Spec. enthalpy	Btu/lbm		-120.511	-1919.699	-1659.733	
	Btu/lb		-6.013	-112.595	-75.579	
Spec. Heat cap.	btu/lbm °F		12.017156	9.322330	10.324657	
	btu/lb °F		0.599565	0.546777	0.470150	
Spec. Entropy	btu/lbm °F		40.6270	36.5180	42.1983	
	btu/lb °F		2.0270	2.1419	1.9216	
Compressibility			0.887141	0.900059	0.903245	
Density	lb/ft3		2.9303	0.8149	0.7850	
Isentr. Exponent			1.286766	1.356072	1.309684	
Viscosity	cP		0.1274E-01	0.7466E-02	0.7981E-02	
Thermal Conduct.	btu/h.ft.°F		0.022783	0.011578	0.011108	
Reference Gas Status - Temperature 60°F			- Pressure 1 atm			
*** LIQUID 1/H ***						
Flow rate	lbm/h	1320.920				679.453
	lb/h	43333.732				21766.856
Wt. fraction		1.000000				1.000000
Mol. weight		32.8057				32.0359
Std. Volume rate	ft3/h	1468.262769				805.230846
Act. Volume rate	ft3/h	1445.4403				633.3065
Enthalpy	kBtu/h	-9025.081918				-6040.970800
Spec. enthalpy	Btu/lbm	-6832.420				-8890.938
	Btu/lb	-208.269				-277.531
Spec. Heat cap.	btu/lbm °F	20.780812				18.892273
	btu/lb °F	0.633451				0.589722
Spec. Entropy	btu/lbm °F	39.1920				33.3228
	btu/lb °F	1.1947				1.0402
Density	lb/ft3	29.9796				34.3702
Sp. Grav. 60/60		0.4727				0.4330
Viscosity	cP	0.7004E-01				0.1706
Thermal Conduct.	btu/h.ft.°F	0.073672				0.084147
Surface Tension	dyn/cm	7.6689				14.1398

STREAM SUMMARY

Stream Id		S116	S117	S108	S148	S109
Temperature, °F		-118.223	-111.819	-30.378	100.383	-29.483
Pressure, psia		134.0000	134.0000	750.0000	143.4000	750.0000
Phase		VAPOR	VAPOR	MIXED	LIQUID	VAPOR
Flow rate	lbm/h	8353.227	9628.635	10353.600	724.965	9032.680
	lb/h	142419.102	170427.510	207518.335	37088.750	164185.958
Vapor fract.		1.000000	1.000000	0.869902	0.000000	1.000000
LIQUID 1/H FRACT		0.000000	0.000000	0.130098	1.000000	0.000000
LIQUID 2/W FRACT		0.000000	0.000000	0.000000	0.000000	0.000000
Mol. weight		17.0496	17.700069	20.043109	51.159377	18.176883
Act. Volume rate	ft3/h	210769.853882	246876.939720	41864.100504	1173.482124	40683.095568
Enthalpy	kBtu/h	-14894.941991	-17011.778707	-24707.869823	-5264.193900	-15483.557124
Spec. enthalpy	Btu/lbm	-1783.136	-1766.790	-2386.404	-7261.309	-1714.171
	Btu/lb	-104.585	-99.818	-119.064	-141.935	-94.305
*** VAPOUR ***						
Flow rate	lbm/h	8353.227	9628.635	9006.614		9032.680
	lb/h	142419.102	170427.510	163526.706		164185.958
Wt. fraction		1.000000	1.000000	0.788011		1.000000
Mol. weight		17.0496	17.7001	18.1563		18.1769
Std. Volume rate	S-ft3/h	3169908.843212	3653904.677583	3417858.271005		3427749.632498
Act. Volume rate	ft3/h	210769.8539	246876.9397	40394.3291		40683.0956
Enthalpy	kBtu/h	-14894.940634	-17011.874186	-15525.553207		-15483.557124
Spec. enthalpy	Btu/lbm	-1783.136	-1766.800	-1723.795		-1714.171
	Btu/lb	-104.585	-99.819	-94.942		-94.305
Spec. Heat cap.	btu/lbm °F	9.004714	9.152188	14.311506		14.264876
	btu/lb °F	0.528148	0.517071	0.788240		0.784781
Spec. Entropy	btu/lbm °F	37.1538	37.9426	35.6725		35.7169
	btu/lb °F	2.1792	2.1436	1.9647		1.9650
Compressibility		0.922595	0.920243	0.730033		0.731604
Density	lb/ft3	0.6757	0.6903	4.0483		4.0357
Isentr. Exponent		1.349719	1.344614	1.365250		1.364789
Viscosity	cP	0.7668E-02	0.7717E-02	0.1112E-01		0.1113E-01
Thermal Conduct.	btu/h.ft.°F	0.011893	0.011790	0.018866		0.018872
Reference Gas Status - Temperature 60°F			- Pressure 1 atm			
*** LIQUID 1/H ***						
Flow rate	lbm/h			1346.986	724.965	
	lb/h			43993.103	37088.750	
Wt. fraction				0.211996	1.000000	
Mol. weight				32.6604	51.1594	
Std. Volume rate	ft3/h			1492.849956	1103.153613	
Act. Volume rate	ft3/h			1469.7715	1173.4821	
Enthalpy	kBtu/h			-9184.433039	-5264.193900	
Spec. enthalpy	Btu/lbm			-6818.508	-7261.309	
	Btu/lb			-208.770	-141.935	
Spec. Heat cap.	btu/lbm °F			20.718582	31.919623	
	btu/lb °F			0.634364	0.623925	
Spec. Entropy	btu/lbm °F			39.0750	54.6247	
	btu/lb °F			1.1964	1.0677	
Density	lb/ft3			29.9319	31.6057	
Sp. Grav. 60/60				0.4720	0.5385	
Viscosity	cP			0.6957E-01	0.1058	
Thermal Conduct.	btu/h.ft.°F			0.073812	0.054865	
Surface Tension	dyn/cm			7.6463	7.2558	

STREAM SUMMARY

Stream Id		S119	FEED
Temperature, °F		105.000	115.000
Pressure, psia		118.0000	800.0000
Phase		VAPOR	VAPOR
Flow rate	lbm/h	9628.635	10353.600
	lb/h	170427.510	207518.335
Vapor fract.		1.000000	1.000000
LIQUID 1/H FRACT		0.000000	0.000000
LIQUID 2/W FRACT		0.000000	0.000000
Mol. weight		17.7001	20.043109
Act. Volume rate	ft3/h	487730.911681	70817.062411
Enthalpy	kBtu/h	1884.163785	-1247.726909
Spec. enthalpy	Btu/lbm	195.683	-120.511
	Btu/lb	11.056	-6.013
*** VAPOUR ***			
Flow rate	lbm/h	9628.635	10353.600
	lb/h	170427.510	207518.335
Wt. fraction		1.000000	1.000000
Mol. weight		17.7001	20.0431
Std. Volume rate	S-ft3/h	3653904.677583	3929016.617597
Act. Volume rate	ft3/h	487730.9117	70817.0624
Enthalpy	kBtu/h	1884.163785	-1247.726909
Spec. enthalpy	Btu/lbm	195.683	-120.511
	Btu/lb	11.056	-6.013
Spec. Heat cap.	btu/lbm °F	9.288594	12.017156
	btu/lb °F	0.524777	0.599565
Spec. Entropy	btu/lbm °F	42.5688	40.6270
	btu/lb °F	2.4050	2.0270
Compressibility		0.986229	0.887141
Density	lb/ft3	0.3494	2.9303
Isentr. Exponent		1.285005	1.286766
Viscosity	cP	0.1173E-01	0.1274E-01
Thermal Conduct.	btu/h.ft.°F	0.020749	0.022783

Reference Gas Status - Temperature 60°F - Pressure 1 atm

 - Calculation time   1.80 sec

 - Simulation no.   4 - Ended at 16.58.53 on AUG 28, 2008 -