初期

COLUMN SUMMARY

---------- NET FLOW RATES ----------- HEATER

TRAY TEMP PRESSURE LIQUID VAPOR FEED PRODUCT DUTIES

DEG C MPAG KG-MOL/HR M\*WATT

------ ------- -------- -------- -------- --------- --------- ------------

1C 64.2 0.25 314.5 257.8V -2.2603

0.0W

2 76.3 0.30 326.7 572.3

3 79.3 0.30 324.1 584.5

4 81.2 0.30 321.1 581.9

5 82.8 0.31 317.7 578.9

6 84.3 0.31 313.6 575.5

7 85.9 0.31 307.9 571.4

8 88.0 0.32 298.3 565.7

9 91.3 0.32 276.6 556.1

10 98.3 0.32 224.9 534.4 104.8V

11 116.7 0.32 1036.9 377.9 763.5L

12 120.4 0.33 1063.8 426.4

13 122.7 0.33 1079.2 453.3

14 124.5 0.33 1090.0 468.7

15 126.1 0.33 1099.0 479.5

16 127.7 0.34 1107.3 488.5

17 129.5 0.34 1115.4 496.8

18 131.6 0.34 1123.1 504.9

19 134.5 0.34 1129.8 512.6

20 139.0 0.35 1132.3 519.3

21 147.4 0.35 1121.5 521.8

22 165.0 0.35 511.0 1923.9P 1923.9P 5.1394

610.5L

TRAY NET VAPOR RATES AND DENSITIES

--------------- RATES ---------------

TRAY MW ACTUAL DENS Z FROM NORMAL ACTUAL

KG/M3 DENSITY K\*KG/HR K\*M3/HR K\*M3/HR

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1 63.845 8.70667 0.91859 16.460 5.778 1.890

2 66.880 10.19393 0.90629 38.274 12.827 3.755

3 67.813 10.32241 0.90529 39.637 13.101 3.840

4 68.297 10.40969 0.90480 39.744 13.043 3.818

5 68.642 10.48443 0.90447 39.735 12.975 3.790

6 68.941 10.55289 0.90423 39.675 12.899 3.760

7 69.246 10.61629 0.90412 39.566 12.807 3.727

8 69.607 10.67215 0.90425 39.376 12.680 3.690

9 70.107 10.70709 0.90501 38.985 12.464 3.641

10 70.966 10.66272 0.90789 37.926 11.979 3.557

11 74.239 10.63418 0.91277 28.055 8.470 2.638

12 76.456 10.95981 0.90886 32.600 9.557 2.975

13 77.668 11.16007 0.90671 35.207 10.160 3.155

14 78.520 11.31652 0.90521 36.801 10.505 3.252

15 79.252 11.45802 0.90393 38.000 10.747 3.316

16 79.966 11.59608 0.90272 39.063 10.949 3.369

17 80.725 11.73680 0.90153 40.106 11.136 3.417

18 81.607 11.88603 0.90032 41.200 11.316 3.466

19 82.752 12.05299 0.89904 42.419 11.490 3.519

20 84.466 12.25576 0.89766 43.864 11.640 3.579

21 87.534 12.53908 0.89615 45.674 11.695 3.642

22 94.285 13.07142 0.89358 48.182 11.454 3.686

TRAY NET LIQUID RATES AND DENSITIES

--------------- RATES ---------------

TRAY MW ACTUAL DENS Z FROM DRY STD LIQ ACTUAL

KG/M3 DENSITY K\*KG/HR M3/HR M3/HR

---- -------- ------------ -------- ----------- ----------- -----------

1 69.368 576.377 0.01508 21.815 34.614 37.848

2 70.944 568.423 0.01724 23.178 36.443 40.775

3 71.839 568.360 0.01742 23.284 36.443 40.967

4 72.494 568.635 0.01758 23.275 36.310 40.931

5 73.077 569.094 0.01774 23.215 36.110 40.793

6 73.687 569.802 0.01790 23.107 35.828 40.552

7 74.432 570.948 0.01807 22.917 35.395 40.138

8 75.520 572.973 0.01827 22.525 34.593 39.313

9 77.603 577.244 0.01858 21.467 32.638 37.188

10 83.213 588.242 0.01930 18.716 27.814 31.817

11 96.886 606.060 0.02090 100.460 143.115 165.760

12 96.885 602.267 0.02096 103.067 146.770 171.132

13 96.982 600.105 0.02106 104.661 148.975 174.404

14 97.121 598.566 0.02117 105.860 150.613 176.855

15 97.291 597.275 0.02129 106.923 152.047 179.017

16 97.501 596.087 0.02141 107.966 153.432 181.124

17 97.780 594.948 0.02154 109.060 154.853 183.310

18 98.191 593.842 0.02168 110.279 156.378 185.704

19 98.887 592.783 0.02184 111.724 158.078 188.474

20 100.269 591.848 0.02207 113.534 159.974 191.829

21 103.468 591.173 0.02247 116.042 162.132 196.291

22 111.154 589.855 0.02335 67.860 93.241 115.045

TRAY TRANSPORT PROPERTIES

TRAY - THERMAL CONDUCTIVITY - ------ VISCOSITY ------- -- SURFACE --

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

---- ----------- ----------- ----------- ----------- -------------

1 9.7770E-02 1.6436E-02 1.9297E-01 8.4627E-03 1.0767E+01

2 9.3984E-02 1.7088E-02 1.7314E-01 8.6280E-03 9.9719E+00

3 9.3199E-02 1.7228E-02 1.6951E-01 8.6548E-03 9.9003E+00

4 9.2720E-02 1.7340E-02 1.6758E-01 8.6787E-03 9.8730E+00

5 9.2342E-02 1.7442E-02 1.6620E-01 8.7014E-03 9.8622E+00

6 9.1990E-02 1.7546E-02 1.6506E-01 8.7253E-03 9.8645E+00

7 9.1620E-02 1.7665E-02 1.6404E-01 8.7529E-03 9.8848E+00

8 9.1172E-02 1.7821E-02 1.6318E-01 8.7892E-03 9.9393E+00

9 9.0499E-02 1.8076E-02 1.6290E-01 8.8483E-03 1.0082E+01

10 8.9071E-02 1.8670E-02 1.6605E-01 8.9819E-03 1.0498E+01

11 8.5269E-02 2.0253E-02 1.7686E-01 9.2702E-03 1.1060E+01

12 8.4338E-02 2.0352E-02 1.7278E-01 9.2451E-03 1.0750E+01

13 8.3773E-02 2.0440E-02 1.7055E-01 9.2400E-03 1.0575E+01

14 8.3345E-02 2.0528E-02 1.6901E-01 9.2422E-03 1.0449E+01

15 8.2963E-02 2.0618E-02 1.6773E-01 9.2476E-03 1.0343E+01

16 8.2584E-02 2.0713E-02 1.6655E-01 9.2549E-03 1.0242E+01

17 8.2179E-02 2.0821E-02 1.6540E-01 9.2645E-03 1.0142E+01

18 8.1709E-02 2.0954E-02 1.6424E-01 9.2777E-03 1.0036E+01

19 8.1097E-02 2.1139E-02 1.6302E-01 9.2982E-03 9.9179E+00

20 8.0179E-02 2.1440E-02 1.6175E-01 9.3348E-03 9.7746E+00

21 7.8542E-02 2.2023E-02 1.6055E-01 9.4095E-03 9.5748E+00

22 7.5239E-02 2.3246E-02 1.5902E-01 9.5601E-03 9.1903E+00

末期

COLUMN SUMMARY

---------- NET FLOW RATES ----------- HEATER

TRAY TEMP PRESSURE LIQUID VAPOR FEED PRODUCT DUTIES

DEG C MPAG KG-MOL/HR M\*WATT

------ ------- -------- -------- -------- --------- --------- ------------

1C 68.6 0.25 205.9 293.2V -1.5844

0.0W

2 81.5 0.30 209.9 499.1

3 85.2 0.30 205.5 503.1

4 87.6 0.30 201.6 498.7

5 89.5 0.31 197.9 494.7

6 91.2 0.31 194.0 491.1

7 93.0 0.31 189.0 487.1

8 95.0 0.32 181.0 482.2

9 98.2 0.32 164.7 474.1

10 104.4 0.32 132.9 457.9 123.2V

11 118.9 0.32 957.8 302.9 773.2L

12 122.8 0.33 986.3 354.6

13 125.2 0.33 1002.7 383.0

14 127.0 0.33 1014.0 399.5

15 128.6 0.33 1023.3 410.8

16 130.3 0.34 1032.1 420.1

17 132.2 0.34 1040.8 428.9

18 134.5 0.34 1049.9 437.6

19 137.6 0.34 1058.9 446.7

20 142.4 0.35 1065.6 455.7

21 151.1 0.35 1062.8 462.4

22 168.8 0.35 459.6 1745.5P 1745.5P 4.7556

603.2L

TRAY NET VAPOR RATES AND DENSITIES

--------------- RATES ---------------

TRAY MW ACTUAL DENS Z FROM NORMAL ACTUAL

KG/M3 DENSITY K\*KG/HR K\*M3/HR K\*M3/HR

---- -------- ------------ -------- ----------- ----------- -----------

1 64.678 8.69608 0.91966 18.962 6.571 2.181

2 67.637 10.12945 0.90869 33.759 11.187 3.333

3 68.606 10.23734 0.90823 34.514 11.276 3.371

4 69.126 10.31089 0.90811 34.472 11.177 3.343

5 69.486 10.37426 0.90805 34.378 11.089 3.314

6 69.772 10.43191 0.90805 34.262 11.006 3.284

7 70.031 10.48353 0.90815 34.115 10.919 3.254

8 70.301 10.52415 0.90850 33.897 10.807 3.221

9 70.639 10.53599 0.90955 33.493 10.628 3.179

10 71.151 10.46520 0.91255 32.577 10.262 3.113

11 73.835 10.48632 0.91558 22.365 6.789 2.133

12 76.307 10.84519 0.91120 27.059 7.948 2.495

13 77.657 11.06393 0.90879 29.746 8.585 2.689

14 78.574 11.22919 0.90714 31.390 8.954 2.795

15 79.348 11.37609 0.90579 32.597 9.208 2.865

16 80.112 11.52006 0.90451 33.657 9.417 2.922

17 80.950 11.66952 0.90322 34.716 9.612 2.975

18 81.951 11.83198 0.90185 35.864 9.809 3.031

19 83.269 12.01840 0.90035 37.194 10.012 3.095

20 85.223 12.24952 0.89865 38.834 10.214 3.170

21 88.608 12.57429 0.89662 40.973 10.364 3.258

22 95.732 13.16278 0.89328 43.999 10.301 3.343

TRAY NET LIQUID RATES AND DENSITIES

--------------- RATES ---------------

TRAY MW ACTUAL DENS Z FROM DRY STD LIQ ACTUAL

KG/M3 DENSITY K\*KG/HR M3/HR M3/HR

---- -------- ------------ -------- ----------- ----------- -----------

1 71.850 581.467 0.01528 14.797 23.158 25.447

2 74.093 575.314 0.01753 15.552 24.046 27.032

3 75.473 576.617 0.01774 15.510 23.810 26.898

4 76.479 577.956 0.01792 15.416 23.543 26.673

5 77.320 579.254 0.01810 15.300 23.264 26.413

6 78.122 580.611 0.01827 15.153 22.944 26.098

7 79.025 582.226 0.01845 14.935 22.515 25.651

8 80.295 584.554 0.01868 14.531 21.781 24.859

9 82.675 588.861 0.01905 13.615 20.219 23.121

10 88.301 598.224 0.01981 11.735 17.106 19.617

11 99.443 610.411 0.02118 95.249 134.745 156.041

12 99.301 606.112 0.02122 97.936 138.529 161.580

13 99.311 603.656 0.02130 99.580 140.820 164.962

14 99.393 601.958 0.02141 100.787 142.480 167.431

15 99.524 600.553 0.02152 101.847 143.919 169.588

16 99.708 599.242 0.02164 102.906 145.335 171.726

17 99.971 597.941 0.02177 104.054 146.840 174.021

18 100.376 596.608 0.02191 105.384 148.532 176.639

19 101.072 595.224 0.02207 107.024 150.525 179.805

20 102.440 593.806 0.02228 109.163 152.932 183.836

21 105.558 592.381 0.02267 112.189 155.938 189.386

22 113.044 590.103 0.02353 68.190 93.318 115.556

TRAY TRANSPORT PROPERTIES

TRAY - THERMAL CONDUCTIVITY - ------ VISCOSITY ------- -- SURFACE --

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

---- ----------- ----------- ----------- ----------- -------------

1 9.6790E-02 1.6737E-02 1.8522E-01 8.5335E-03 1.0951E+01

2 9.2966E-02 1.7510E-02 1.6901E-01 8.7259E-03 1.0233E+01

3 9.2098E-02 1.7721E-02 1.6653E-01 8.7697E-03 1.0215E+01

4 9.1554E-02 1.7884E-02 1.6539E-01 8.8058E-03 1.0227E+01

5 9.1135E-02 1.8022E-02 1.6474E-01 8.8376E-03 1.0247E+01

6 9.0766E-02 1.8152E-02 1.6435E-01 8.8682E-03 1.0274E+01

7 9.0397E-02 1.8290E-02 1.6420E-01 8.9006E-03 1.0314E+01

8 8.9962E-02 1.8461E-02 1.6448E-01 8.9409E-03 1.0385E+01

9 8.9304E-02 1.8734E-02 1.6593E-01 9.0042E-03 1.0539E+01

10 8.8002E-02 1.9329E-02 1.7128E-01 9.1335E-03 1.0907E+01

11 8.4942E-02 2.0562E-02 1.8075E-01 9.3494E-03 1.1263E+01

12 8.3955E-02 2.0647E-02 1.7594E-01 9.3150E-03 1.0913E+01

13 8.3360E-02 2.0724E-02 1.7332E-01 9.3044E-03 1.0716E+01

14 8.2923E-02 2.0804E-02 1.7157E-01 9.3037E-03 1.0579E+01

15 8.2536E-02 2.0890E-02 1.7015E-01 9.3073E-03 1.0464E+01

16 8.2148E-02 2.0986E-02 1.6883E-01 9.3134E-03 1.0355E+01

17 8.1721E-02 2.1097E-02 1.6752E-01 9.3219E-03 1.0244E+01

18 8.1214E-02 2.1237E-02 1.6614E-01 9.3340E-03 1.0122E+01

19 8.0549E-02 2.1432E-02 1.6464E-01 9.3532E-03 9.9812E+00

20 7.9564E-02 2.1743E-02 1.6298E-01 9.3875E-03 9.8066E+00

21 7.7868E-02 2.2325E-02 1.6124E-01 9.4566E-03 9.5634E+00

22 7.4570E-02 2.3511E-02 1.5906E-01 9.5946E-03 9.1327E+00