方案一（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 40.0 0.77 590.7 65.6V -7.1051

231.9L

26.0W

2 102.6 0.80 727.3 914.2

3 118.0 0.80 687.0 1050.7

4 131.7 0.81 583.2 1010.5

5 152.6 0.81 411.8 906.7

6 191.6 0.81 1115.9 735.2 1241.5M

7 191.5 0.82 1106.1 197.9

8 191.1 0.82 1094.4 188.1

9 190.8 0.83 1085.4 176.4

10 190.5 0.83 1078.1 167.4

11 190.3 0.83 1071.5 160.1

12 190.0 0.84 1064.7 153.5

13 189.6 0.84 1056.9 146.7

14 189.1 0.84 1046.0 138.9

15 188.2 0.85 1027.3 128.0

16 185.4 0.85 109.3 55.5V 973.5L

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

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

1 25.736 8.91693 0.96589 1.687 1.470 0.189

2 60.553 20.32967 0.85922 55.359 20.491 2.723

3 65.516 21.42481 0.85084 68.840 23.551 3.213

4 68.468 21.66383 0.85305 69.184 22.649 3.194

5 71.879 21.45102 0.86325 65.169 20.322 3.038

6 76.723 20.52002 0.88601 56.410 16.480 2.749

7 74.989 19.97454 0.89316 14.842 4.436 0.743

8 73.115 19.43346 0.89932 13.751 4.215 0.708

9 71.654 19.03905 0.90373 12.637 3.953 0.664

10 70.437 18.72780 0.90718 11.791 3.752 0.630

11 69.329 18.45401 0.91015 11.099 3.588 0.601

12 68.223 18.18332 0.91300 10.470 3.440 0.576

13 66.996 17.87795 0.91605 9.830 3.289 0.550

14 65.431 17.47443 0.91979 9.086 3.113 0.520

15 62.983 16.81975 0.92529 8.064 2.870 0.479

16 57.562 15.35452 0.93548 6.289 2.449 0.410

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 64.671 583.818 0.03707 38.203 62.560 65.437

2 71.069 535.216 0.03830 51.685 81.038 96.568

3 75.736 536.119 0.03931 52.029 79.601 97.047

4 82.333 544.380 0.04082 48.014 71.446 88.199

5 95.334 560.249 0.04384 39.254 56.040 70.066

6 134.273 596.685 0.05333 149.840 198.659 251.122

7 134.483 599.274 0.05339 148.749 196.867 248.214

8 134.904 601.572 0.05360 147.635 195.137 245.415

9 135.238 603.294 0.05383 146.789 193.834 243.313

10 135.513 604.698 0.05405 146.097 192.771 241.602

11 135.764 605.971 0.05428 145.468 191.808 240.057

12 136.022 607.262 0.05451 144.828 190.832 238.493

13 136.330 608.753 0.05474 144.084 189.702 236.687

14 136.765 610.778 0.05500 143.062 188.158 234.228

15 137.536 614.215 0.05533 141.287 185.509 230.029

16 139.697 622.827 0.05597 135.998 177.826 218.356

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0486E-01 2.9149E-02 2.9032E-01 1.1246E-02 1.1718E+01

2 8.4361E-02 2.1446E-02 1.3985E-01 9.9279E-03 7.4962E+00

3 8.0977E-02 2.2037E-02 1.3176E-01 1.0029E-02 7.2037E+00

4 7.8549E-02 2.3018E-02 1.3132E-01 1.0210E-02 7.3224E+00

5 7.5158E-02 2.5117E-02 1.3687E-01 1.0553E-02 7.6828E+00

6 6.8459E-02 2.9710E-02 1.6110E-01 1.1257E-02 8.5731E+00

7 6.8727E-02 2.8155E-02 1.6319E-01 1.1151E-02 8.9213E+00

8 6.8976E-02 2.7821E-02 1.6515E-01 1.1179E-02 9.1477E+00

9 6.9164E-02 2.7664E-02 1.6665E-01 1.1214E-02 9.3115E+00

10 6.9318E-02 2.7553E-02 1.6789E-01 1.1247E-02 9.4450E+00

11 6.9458E-02 2.7458E-02 1.6902E-01 1.1278E-02 9.5661E+00

12 6.9601E-02 2.7368E-02 1.7019E-01 1.1311E-02 9.6882E+00

13 6.9767E-02 2.7269E-02 1.7156E-01 1.1349E-02 9.8277E+00

14 6.9994E-02 2.7145E-02 1.7346E-01 1.1398E-02 1.0014E+01

15 7.0385E-02 2.6954E-02 1.7679E-01 1.1477E-02 1.0323E+01

16 7.1354E-02 2.6552E-02 1.8571E-01 1.1666E-02 1.1078E+01

方案一（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 40.0 0.77 687.5 70.4V -7.5685

238.4L

25.3W

2 97.8 0.80 822.4 1021.6

3 113.0 0.80 785.4 1156.5

4 126.0 0.81 673.7 1119.5

5 146.7 0.81 473.0 1007.8

6 188.2 0.81 1160.4 807.1 1297.4M

7 188.2 0.82 1150.3 197.1

8 187.8 0.82 1138.7 186.9

9 187.5 0.83 1130.0 175.4

10 187.2 0.83 1122.8 166.6

11 186.9 0.83 1116.3 159.5

12 186.7 0.84 1109.7 153.0

13 186.3 0.84 1102.0 146.4

14 185.8 0.84 1091.3 138.7

15 184.8 0.85 1072.6 128.0

16 181.9 0.85 109.3 55.5V 1018.8L

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 28.121 9.82613 0.95773 1.981 1.579 0.202

2 59.414 20.22886 0.85844 60.700 22.899 3.001

3 64.066 21.21864 0.85088 74.094 25.923 3.492

4 66.687 21.39615 0.85326 74.658 25.093 3.489

5 69.615 21.02987 0.86496 70.159 22.589 3.336

6 74.489 19.99038 0.88936 60.123 18.091 3.008

7 72.713 19.42812 0.89685 14.332 4.418 0.738

8 70.869 18.89578 0.90298 13.249 4.190 0.701

9 69.436 18.50964 0.90733 12.181 3.932 0.658

10 68.245 18.20550 0.91071 11.373 3.735 0.625

11 67.162 17.93853 0.91361 10.711 3.575 0.597

12 66.084 17.67531 0.91637 10.110 3.429 0.572

13 64.889 17.37928 0.91931 9.499 3.281 0.547

14 63.368 16.98922 0.92291 8.787 3.108 0.517

15 60.993 16.35783 0.92814 7.806 2.868 0.477

16 55.754 14.95057 0.93767 6.096 2.451 0.408

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 62.926 580.122 0.03630 43.264 71.201 74.577

2 68.890 541.967 0.03715 56.658 88.553 104.542

3 72.854 547.151 0.03752 57.222 86.653 104.582

4 78.257 562.035 0.03812 52.722 76.930 93.806

5 90.239 590.273 0.03995 42.687 58.783 72.317

6 128.313 623.613 0.04911 148.896 190.976 238.764

7 128.504 626.286 0.04917 147.813 189.229 236.014

8 128.866 628.627 0.04936 146.745 187.600 233.438

9 129.153 630.378 0.04955 145.937 186.376 231.507

10 129.388 631.804 0.04975 145.275 185.379 229.937

11 129.601 633.096 0.04995 144.674 184.477 228.519

12 129.822 634.403 0.05016 144.063 183.563 227.084

13 130.085 635.913 0.05037 143.351 182.504 225.426

14 130.461 637.965 0.05060 142.369 181.057 223.162

15 131.134 641.448 0.05089 140.660 178.568 219.284

16 133.060 649.994 0.05147 135.564 171.416 208.562

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0462E-01 2.7098E-02 3.0849E-01 1.0969E-02 1.1393E+01

2 8.6013E-02 2.1046E-02 1.4263E-01 9.8728E-03 7.7828E+00

3 8.2873E-02 2.1604E-02 1.3293E-01 9.9930E-03 7.6117E+00

4 8.0929E-02 2.2471E-02 1.3234E-01 1.0184E-02 7.9404E+00

5 7.8020E-02 2.4309E-02 1.4073E-01 1.0572E-02 8.7249E+00

6 7.0194E-02 2.9143E-02 1.6846E-01 1.1396E-02 9.4758E+00

7 7.0445E-02 2.7835E-02 1.7069E-01 1.1306E-02 9.8223E+00

8 7.0680E-02 2.7531E-02 1.7276E-01 1.1334E-02 1.0054E+01

9 7.0858E-02 2.7382E-02 1.7434E-01 1.1369E-02 1.0223E+01

10 7.1004E-02 2.7274E-02 1.7564E-01 1.1401E-02 1.0360E+01

11 7.1137E-02 2.7183E-02 1.7682E-01 1.1432E-02 1.0484E+01

12 7.1272E-02 2.7095E-02 1.7804E-01 1.1464E-02 1.0610E+01

13 7.1429E-02 2.7000E-02 1.7947E-01 1.1500E-02 1.0753E+01

14 7.1646E-02 2.6880E-02 1.8146E-01 1.1548E-02 1.0943E+01

15 7.2023E-02 2.6696E-02 1.8496E-01 1.1623E-02 1.1262E+01

16 7.2956E-02 2.6304E-02 1.9426E-01 1.1800E-02 1.2035E+01

方案二（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 40.0 0.77 610.0 66.6V -7.2124

233.0L

25.9W

2 101.8 0.80 747.8 935.5

3 117.1 0.80 708.5 1073.4

4 130.6 0.81 602.7 1034.0

5 151.4 0.81 424.9 928.3

6 190.8 0.81 1118.1 750.4 1245.2M

7 190.7 0.82 1107.9 198.5

8 190.3 0.82 1096.2 188.3

9 190.0 0.83 1087.2 176.5

10 189.7 0.83 1079.8 167.6

11 189.5 0.83 1073.2 160.2

12 189.2 0.84 1066.5 153.6

13 188.8 0.84 1058.6 146.8

14 188.3 0.84 1047.7 139.0

15 187.3 0.85 1029.0 128.1

16 184.6 0.85 109.3 55.5V 975.1L

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 26.190 9.08829 0.96439 1.745 1.494 0.192

2 60.382 20.32260 0.85902 56.487 20.968 2.780

3 65.336 21.42221 0.85054 70.130 24.059 3.274

4 68.264 21.66968 0.85257 70.586 23.176 3.257

5 71.643 21.45227 0.86280 66.503 20.806 3.100

6 76.567 20.52013 0.88573 57.456 16.820 2.800

7 74.796 19.96005 0.89306 14.846 4.449 0.744

8 72.919 19.41648 0.89927 13.732 4.221 0.707

9 71.459 19.02146 0.90370 12.616 3.957 0.663

10 70.244 18.71009 0.90715 11.770 3.756 0.629

11 69.139 18.43639 0.91012 11.078 3.591 0.601

12 68.036 18.16595 0.91297 10.450 3.443 0.575

13 66.813 17.86098 0.91602 9.811 3.291 0.549

14 65.252 17.45810 0.91977 9.069 3.115 0.519

15 62.812 16.80451 0.92525 8.048 2.872 0.479

16 57.409 15.34221 0.93542 6.277 2.451 0.409

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 64.389 582.678 0.03698 39.274 64.422 67.403

2 70.760 535.217 0.03822 52.918 83.070 98.871

3 75.335 535.976 0.03920 53.373 81.763 99.581

4 81.780 544.104 0.04068 49.291 73.460 90.590

5 94.722 560.335 0.04367 40.243 57.513 71.820

6 134.046 597.692 0.05324 149.878 198.580 250.761

7 134.271 600.329 0.05330 148.764 196.753 247.803

8 134.695 602.643 0.05352 147.647 195.018 244.999

9 135.030 604.373 0.05374 146.801 193.713 242.898

10 135.306 605.783 0.05397 146.109 192.650 241.191

11 135.557 607.060 0.05419 145.481 191.688 239.649

12 135.816 608.355 0.05442 144.843 190.712 238.089

13 136.124 609.850 0.05466 144.100 189.583 236.288

14 136.560 611.880 0.05492 143.079 188.042 233.835

15 137.332 615.327 0.05525 141.308 185.396 229.647

16 139.501 623.965 0.05589 136.031 177.727 218.011

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0477E-01 2.8721E-02 2.9433E-01 1.1192E-02 1.1638E+01

2 8.4543E-02 2.1383E-02 1.4037E-01 9.9172E-03 7.5049E+00

3 8.1151E-02 2.1965E-02 1.3191E-01 1.0018E-02 7.2059E+00

4 7.8746E-02 2.2922E-02 1.3126E-01 1.0195E-02 7.3211E+00

5 7.5377E-02 2.4980E-02 1.3681E-01 1.0536E-02 7.6983E+00

6 6.8558E-02 2.9601E-02 1.6150E-01 1.1245E-02 8.6110E+00

7 6.8830E-02 2.8086E-02 1.6363E-01 1.1143E-02 8.9627E+00

8 6.9079E-02 2.7756E-02 1.6562E-01 1.1172E-02 9.1911E+00

9 6.9267E-02 2.7600E-02 1.6713E-01 1.1206E-02 9.3561E+00

10 6.9421E-02 2.7489E-02 1.6838E-01 1.1239E-02 9.4904E+00

11 6.9561E-02 2.7395E-02 1.6953E-01 1.1271E-02 9.6122E+00

12 6.9703E-02 2.7304E-02 1.7070E-01 1.1303E-02 9.7350E+00

13 6.9869E-02 2.7206E-02 1.7208E-01 1.1341E-02 9.8751E+00

14 7.0095E-02 2.7083E-02 1.7399E-01 1.1390E-02 1.0062E+01

15 7.0485E-02 2.6893E-02 1.7735E-01 1.1468E-02 1.0373E+01

16 7.1451E-02 2.6493E-02 1.8632E-01 1.1655E-02 1.1131E+01

方案二（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 40.0 0.77 702.0 73.7V -7.6862

237.7L

25.1W

2 97.5 0.80 842.6 1038.5

3 112.6 0.80 807.1 1179.2

4 125.3 0.81 694.1 1143.6

5 145.5 0.81 484.4 1030.7

6 186.6 0.81 1137.9 820.9 1273.8M

7 186.5 0.82 1127.0 200.6

8 186.1 0.82 1115.0 189.7

9 185.8 0.83 1105.8 177.6

10 185.5 0.83 1098.4 168.5

11 185.2 0.83 1091.7 161.1

12 185.0 0.84 1084.8 154.4

13 184.6 0.84 1076.9 147.5

14 184.1 0.84 1065.9 139.6

15 183.1 0.85 1047.0 128.6

16 180.4 0.85 109.6 55.5V 992.8L

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 28.135 9.83111 0.95770 2.074 1.653 0.211

2 59.539 20.29480 0.85797 61.833 23.277 3.047

3 64.407 21.39343 0.84934 75.946 26.430 3.550

4 67.237 21.67903 0.85054 76.893 25.633 3.547

5 70.433 21.44160 0.86079 72.593 23.101 3.386

6 75.612 20.46691 0.88494 62.072 18.400 3.033

7 73.793 19.88142 0.89268 14.804 4.496 0.745

8 71.934 19.33605 0.89898 13.642 4.251 0.706

9 70.492 18.94129 0.90345 12.522 3.982 0.661

10 69.293 18.63061 0.90693 11.677 3.777 0.627

11 68.201 18.35731 0.90993 10.986 3.611 0.598

12 67.113 18.08756 0.91279 10.360 3.460 0.573

13 65.904 17.78322 0.91585 9.723 3.307 0.547

14 64.364 17.38185 0.91959 8.983 3.128 0.517

15 61.955 16.73105 0.92506 7.968 2.883 0.476

16 56.638 15.27994 0.93510 6.210 2.458 0.406

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 63.114 576.195 0.03666 44.306 73.383 76.893

2 69.330 533.866 0.03798 58.419 92.477 109.427

3 73.556 534.088 0.03885 59.366 91.733 111.154

4 79.330 541.438 0.04018 55.066 82.882 101.703

5 91.959 559.086 0.04310 44.545 64.175 79.674

6 131.182 597.691 0.05257 149.275 198.516 249.753

7 131.427 600.404 0.05265 148.114 196.606 246.690

8 131.838 602.740 0.05286 146.994 194.852 243.876

9 132.162 604.482 0.05308 146.148 193.539 241.775

10 132.427 605.901 0.05329 145.458 192.470 240.069

11 132.668 607.186 0.05351 144.831 191.502 238.529

12 132.917 608.488 0.05374 144.195 190.523 236.972

13 133.213 609.990 0.05397 143.455 189.390 235.176

14 133.630 612.030 0.05422 142.439 187.846 232.732

15 134.372 615.487 0.05454 140.682 185.202 228.570

16 136.451 624.114 0.05516 135.472 177.583 217.062

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0428E-01 2.7116E-02 3.1946E-01 1.0969E-02 1.1219E+01

2 8.5399E-02 2.1097E-02 1.4375E-01 9.8615E-03 7.5073E+00

3 8.1983E-02 2.1655E-02 1.3314E-01 9.9607E-03 7.1887E+00

4 7.9665E-02 2.2507E-02 1.3128E-01 1.0120E-02 7.2810E+00

5 7.6412E-02 2.4354E-02 1.3651E-01 1.0450E-02 7.7301E+00

6 6.9289E-02 2.9125E-02 1.6132E-01 1.1190E-02 8.6791E+00

7 6.9569E-02 2.7761E-02 1.6355E-01 1.1099E-02 9.0388E+00

8 6.9822E-02 2.7451E-02 1.6556E-01 1.1126E-02 9.2730E+00

9 7.0013E-02 2.7300E-02 1.6709E-01 1.1160E-02 9.4421E+00

10 7.0168E-02 2.7192E-02 1.6835E-01 1.1192E-02 9.5799E+00

11 7.0310E-02 2.7099E-02 1.6951E-01 1.1222E-02 9.7047E+00

12 7.0454E-02 2.7011E-02 1.7070E-01 1.1254E-02 9.8305E+00

13 7.0621E-02 2.6914E-02 1.7209E-01 1.1290E-02 9.9739E+00

14 7.0851E-02 2.6793E-02 1.7402E-01 1.1337E-02 1.0165E+01

15 7.1245E-02 2.6606E-02 1.7740E-01 1.1413E-02 1.0482E+01

16 7.2218E-02 2.6213E-02 1.8640E-01 1.1594E-02 1.1251E+01

方案三（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 40.0 0.77 678.3 70.1V -7.6565

235.1L

26.3W

2 100.0 0.80 822.8 1009.7

3 115.5 0.80 783.0 1154.2

4 128.9 0.81 668.2 1114.5

5 150.0 0.81 468.5 999.7

6 190.9 0.81 1127.9 800.0 1259.4M

7 190.8 0.82 1116.9 200.0

8 190.4 0.82 1104.9 189.0

9 190.1 0.83 1095.8 177.0

10 189.8 0.83 1088.4 167.9

11 189.5 0.83 1081.7 160.5

12 189.2 0.84 1075.0 153.9

13 188.9 0.84 1067.1 147.1

14 188.4 0.84 1056.2 139.2

15 187.4 0.85 1037.4 128.3

16 184.6 0.85 109.5 55.5V 983.4L

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 27.129 9.44440 0.96129 1.902 1.571 0.201

2 60.061 20.32811 0.85837 60.647 22.633 2.983

3 65.063 21.44389 0.84970 75.099 25.871 3.502

4 68.037 21.71968 0.85134 75.829 24.981 3.491

5 71.473 21.50318 0.86166 71.450 22.407 3.323

6 76.778 20.58846 0.88500 61.423 17.931 2.983

7 74.890 19.98876 0.89276 14.980 4.483 0.749

8 72.989 19.43631 0.89907 13.793 4.236 0.710

9 71.518 19.03756 0.90355 12.658 3.967 0.665

10 70.298 18.72411 0.90702 11.803 3.763 0.630

11 69.189 18.44912 0.91002 11.106 3.598 0.602

12 68.084 18.17784 0.91288 10.475 3.448 0.576

13 66.860 17.87238 0.91594 9.834 3.297 0.550

14 65.299 17.46928 0.91969 9.089 3.120 0.520

15 62.859 16.81563 0.92518 8.066 2.876 0.480

16 57.456 15.35279 0.93538 6.290 2.454 0.410

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

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1 63.798 579.591 0.03684 43.272 71.308 74.660

2 70.159 534.749 0.03812 57.724 90.920 107.946

3 74.650 535.308 0.03905 58.454 89.819 109.197

4 80.927 543.231 0.04049 54.075 80.835 99.544

5 94.013 560.259 0.04350 44.048 63.046 78.621

6 133.122 597.142 0.05291 150.151 198.988 251.449

7 133.377 599.905 0.05298 148.963 197.051 248.312

8 133.796 602.249 0.05319 147.828 195.286 245.461

9 134.125 603.991 0.05341 146.974 193.968 243.338

10 134.395 605.408 0.05363 146.277 192.897 241.617

11 134.640 606.688 0.05385 145.646 191.929 240.067

12 134.891 607.984 0.05408 145.004 190.949 238.500

13 135.191 609.478 0.05431 144.260 189.817 236.694

14 135.614 611.506 0.05456 143.236 188.272 234.235

15 136.365 614.948 0.05488 141.461 185.619 230.037

16 138.469 623.570 0.05550 136.171 177.934 218.373

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0453E-01 2.7979E-02 3.0536E-01 1.1089E-02 1.1439E+01

2 8.4907E-02 2.1251E-02 1.4168E-01 9.8915E-03 7.5086E+00

3 8.1449E-02 2.1832E-02 1.3225E-01 9.9936E-03 7.1963E+00

4 7.9027E-02 2.2760E-02 1.3113E-01 1.0166E-02 7.3010E+00

5 7.5621E-02 2.4795E-02 1.3669E-01 1.0508E-02 7.7066E+00

6 6.8632E-02 2.9559E-02 1.6080E-01 1.1237E-02 8.5836E+00

7 6.8919E-02 2.8104E-02 1.6303E-01 1.1145E-02 8.9409E+00

8 6.9173E-02 2.7777E-02 1.6502E-01 1.1174E-02 9.1715E+00

9 6.9363E-02 2.7620E-02 1.6654E-01 1.1209E-02 9.3376E+00

10 6.9518E-02 2.7508E-02 1.6778E-01 1.1242E-02 9.4726E+00

11 6.9659E-02 2.7412E-02 1.6892E-01 1.1273E-02 9.5947E+00

12 6.9803E-02 2.7321E-02 1.7009E-01 1.1306E-02 9.7176E+00

13 6.9969E-02 2.7222E-02 1.7146E-01 1.1343E-02 9.8577E+00

14 7.0196E-02 2.7098E-02 1.7335E-01 1.1392E-02 1.0044E+01

15 7.0589E-02 2.6907E-02 1.7668E-01 1.1470E-02 1.0355E+01

16 7.1561E-02 2.6506E-02 1.8556E-01 1.1656E-02 1.1112E+01

方案三（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 40.0 0.77 759.7 78.4V -8.0171

239.8L

25.3W

2 95.7 0.80 899.8 1103.2

3 111.1 0.80 864.0 1243.4

4 123.7 0.81 745.1 1207.5

5 144.0 0.81 517.7 1088.7

6 186.2 0.81 1146.4 861.2 1289.3M

7 186.1 0.82 1135.2 200.7

8 185.7 0.82 1123.1 189.4

9 185.4 0.83 1114.0 177.4

10 185.1 0.83 1106.6 168.3

11 184.9 0.83 1099.9 160.9

12 184.6 0.84 1093.1 154.2

13 184.3 0.84 1085.2 147.4

14 183.8 0.84 1074.2 139.4

15 182.8 0.85 1055.3 128.5

16 180.1 0.85 109.6 55.5V 1001.2L

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

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1 29.118 10.21253 0.95415 2.283 1.757 0.224

2 59.148 20.26489 0.85777 65.254 24.728 3.220

3 64.052 21.36661 0.84915 79.640 27.869 3.727

4 66.921 21.67228 0.85008 80.808 27.065 3.729

5 70.132 21.43467 0.86035 76.350 24.401 3.562

6 75.506 20.45462 0.88492 65.029 19.304 3.179

7 73.641 19.85280 0.89285 14.781 4.499 0.745

8 71.781 19.30602 0.89918 13.597 4.246 0.704

9 70.341 18.91130 0.90366 12.479 3.976 0.660

10 69.143 18.60063 0.90714 11.636 3.772 0.626

11 68.054 18.32770 0.91013 10.949 3.606 0.597

12 66.967 18.05819 0.91299 10.325 3.456 0.572

13 65.762 17.75461 0.91605 9.691 3.303 0.546

14 64.226 17.35417 0.91978 8.955 3.125 0.516

15 61.826 16.70546 0.92523 7.944 2.880 0.476

16 56.525 15.25877 0.93521 6.195 2.456 0.406

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

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1 62.546 573.182 0.03652 47.515 79.056 82.897

2 68.793 533.741 0.03788 61.901 98.285 115.976

3 72.999 533.937 0.03873 63.069 97.690 118.121

4 78.661 541.100 0.04002 58.611 88.422 108.318

5 91.347 559.353 0.04294 47.290 68.213 84.543

6 130.227 597.804 0.05222 149.298 198.554 249.744

7 130.479 600.567 0.05230 148.114 196.606 246.624

8 130.880 602.907 0.05250 146.996 194.852 243.812

9 131.194 604.650 0.05271 146.154 193.541 241.716

10 131.451 606.068 0.05293 145.466 192.474 240.015

11 131.685 607.352 0.05314 144.842 191.510 238.481

12 131.926 608.652 0.05336 144.208 190.533 236.930

13 132.213 610.151 0.05359 143.472 189.405 235.142

14 132.618 612.184 0.05384 142.461 187.867 232.710

15 133.335 615.630 0.05415 140.712 185.233 228.566

16 135.349 624.230 0.05474 135.517 177.634 217.095

TRAY TRANSPORT PROPERTIES

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

KCAL/HR-M-C CP TENSION

LIQUID VAPOR LIQUID VAPOR DYNE/CM

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

1 1.0403E-01 2.6402E-02 3.3389E-01 1.0859E-02 1.1024E+01

2 8.5791E-02 2.0985E-02 1.4550E-01 9.8400E-03 7.5285E+00

3 8.2303E-02 2.1553E-02 1.3375E-01 9.9433E-03 7.2028E+00

4 7.9955E-02 2.2390E-02 1.3141E-01 1.0101E-02 7.2844E+00

5 7.6685E-02 2.4199E-02 1.3659E-01 1.0431E-02 7.7565E+00

6 6.9469E-02 2.9077E-02 1.6108E-01 1.1188E-02 8.6912E+00

7 6.9755E-02 2.7756E-02 1.6334E-01 1.1102E-02 9.0532E+00

8 7.0009E-02 2.7447E-02 1.6535E-01 1.1130E-02 9.2884E+00

9 7.0200E-02 2.7295E-02 1.6687E-01 1.1163E-02 9.4583E+00

10 7.0356E-02 2.7186E-02 1.6813E-01 1.1195E-02 9.5965E+00

11 7.0498E-02 2.7093E-02 1.6928E-01 1.1225E-02 9.7216E+00

12 7.0643E-02 2.7003E-02 1.7046E-01 1.1256E-02 9.8476E+00

13 7.0810E-02 2.6906E-02 1.7184E-01 1.1292E-02 9.9912E+00

14 7.1040E-02 2.6784E-02 1.7376E-01 1.1339E-02 1.0182E+01

15 7.1435E-02 2.6596E-02 1.7711E-01 1.1415E-02 1.0499E+01

16 7.2412E-02 2.6203E-02 1.8605E-01 1.1595E-02 1.1268E+01