

Tulsa Heaters, Inc. Coker Output Summary

Customer:

Heater: DELAYED COKER HEATER
Unit: EOR CONDITIONS (FOULED)

Date: 14-Apr-03
Engineer: RJP

I. Inlet Conditions

- A. Temperature = 624 °F
- B. Pressure = 431.41 psig
- C. Velocity = 9.634 ft/sec
- D. Mass Velocity = 481.0 lb/ft²sec
- E. Total Hydrocarbon Flow Rate = 98050 lb/hr
- F. Injected Steam Flow Rate = 1000 lb/hr
- G. Tube Diameter: inside = 3.222 outside = 4.000 inches

II. Outlet Conditions

- A. Temperature = 915 °F
- B. Pressure = 59.93 PSIG
- C. Velocity = 162 ft/sec
- D. Liquid Hydrocarbon Flow Rate = 81063 lb/hr
- E. Vapor Hydrocarbon Flow Rate = 16987 lb/hr
- F. Weight percent Hydrocarbon Vapor = 17.3%
- G. Steam Flow Rate = 1000 lb/hr
- H. Weight Cracked = 16987 lbs
- I. Weight Percent Cracked = 17.3%
- J. Total Residence Time = 95.18 seconds
- K. Residence Time above 800°F = 14.47 seconds
- L. Tube Diameter: inside = 3.624 outside = 4.500 inches

III. Total absorbed duty = 24,597,700 btu/hr

IV. Total Pressure Drop = 371.48 psi

Input Files:

Tube: "5092tubEOR.cok"
Fluid: "5092Fluid.cok"

Section 1:

| Tube | Inc | OD inches | Tube ID inches | Coke Thick inches | Temp out °F | Pressure out psig | Pressure drop psi | Heat Absorbed btu/hr |
|------|-----|--------------|----------------------|-------------------------|-------------------|-------------------------|-------------------------|----------------------------|
|------|-----|--------------|----------------------|-------------------------|-------------------|-------------------------|-------------------------|----------------------------|

Group #1 of 4 Tubes:12 Increments:1

| | | | | | | | | |
|----|---|-------|-------|----------|---------|---------|-------|----------|
| 1 | 1 | 4.000 | 3.222 | 6.25E-02 | 627.123 | 428.229 | 3.183 | 215937.3 |
| 2 | 1 | 4.000 | 3.222 | 6.25E-02 | 630.246 | 425.039 | 3.190 | 215935.3 |
| 3 | 1 | 4.000 | 3.222 | 6.25E-02 | 633.369 | 421.842 | 3.197 | 215933.3 |
| 4 | 1 | 4.000 | 3.222 | 6.25E-02 | 636.492 | 418.638 | 3.204 | 215929.3 |
| 5 | 1 | 4.000 | 3.222 | 6.25E-02 | 639.615 | 415.426 | 3.211 | 215927.3 |
| 6 | 1 | 4.000 | 3.222 | 6.25E-02 | 642.738 | 412.208 | 3.218 | 215927.3 |
| 7 | 1 | 4.000 | 3.222 | 6.25E-02 | 645.860 | 408.982 | 3.226 | 215924.3 |
| 8 | 1 | 4.000 | 3.222 | 6.25E-02 | 648.983 | 405.750 | 3.233 | 215921.3 |
| 9 | 1 | 4.000 | 3.222 | 6.25E-02 | 652.106 | 402.510 | 3.240 | 215919.3 |
| 10 | 1 | 4.000 | 3.222 | 6.25E-02 | 655.132 | 399.110 | 3.400 | 215958.3 |
| 11 | 1 | 4.000 | 3.222 | 6.25E-02 | 658.230 | 395.541 | 3.569 | 215035.3 |
| 12 | 1 | 4.000 | 3.222 | 6.25E-02 | 661.329 | 391.960 | 3.581 | 215031.3 |

Group #2 of 4 Tubes:18 Increments:1

| | | | | | | | | |
|----|---|-------|-------|-------|---------|---------|-------|----------|
| 1 | 1 | 4.000 | 3.222 | 0.125 | 664.520 | 387.569 | 4.391 | 221482.3 |
| 2 | 1 | 4.000 | 3.222 | 0.125 | 667.712 | 383.159 | 4.410 | 221478.3 |
| 3 | 1 | 4.000 | 3.222 | 0.125 | 670.903 | 378.729 | 4.430 | 221476.3 |
| 4 | 1 | 4.000 | 3.222 | 0.125 | 674.094 | 374.279 | 4.450 | 221472.3 |
| 5 | 1 | 4.000 | 3.222 | 0.125 | 677.286 | 369.809 | 4.470 | 221472.3 |
| 6 | 1 | 4.000 | 3.222 | 0.125 | 680.477 | 365.318 | 4.491 | 221468.3 |
| 7 | 1 | 4.000 | 3.222 | 0.125 | 683.669 | 360.806 | 4.512 | 221466.3 |
| 8 | 1 | 4.000 | 3.222 | 0.125 | 686.860 | 356.273 | 4.533 | 221464.3 |
| 9 | 1 | 4.000 | 3.222 | 0.125 | 690.052 | 351.718 | 4.555 | 221460.0 |
| 10 | 1 | 4.000 | 3.222 | 0.125 | 693.243 | 347.142 | 4.577 | 221458.0 |
| 11 | 1 | 4.000 | 3.222 | 0.125 | 696.434 | 342.543 | 4.599 | 221456.0 |
| 12 | 1 | 4.000 | 3.222 | 0.125 | 699.626 | 337.922 | 4.621 | 221452.0 |
| 13 | 1 | 4.000 | 3.222 | 0.125 | 702.631 | 333.274 | 4.647 | 221442.0 |
| 14 | 1 | 4.000 | 3.222 | 0.125 | 705.636 | 328.596 | 4.678 | 222358.0 |
| 15 | 1 | 4.000 | 3.222 | 0.125 | 708.642 | 323.887 | 4.710 | 222354.0 |
| 16 | 1 | 4.000 | 3.222 | 0.125 | 711.647 | 319.145 | 4.742 | 222354.0 |
| 17 | 1 | 4.000 | 3.222 | 0.125 | 714.652 | 314.369 | 4.776 | 222354.0 |
| 18 | 1 | 4.000 | 3.222 | 0.125 | 717.658 | 309.558 | 4.811 | 222352.0 |

Group #3 of 4 Tubes:20 Increments:3

| | | | | | | | | |
|---|---|-------|-------|-------|---------|---------|-------|----------|
| 1 | 1 | 4.000 | 3.222 | 0.125 | 720.239 | 308.276 | 1.282 | 191639.5 |
| 1 | 2 | 4.000 | 3.222 | 0.125 | 722.821 | 306.992 | 1.284 | 191637.5 |
| 1 | 3 | 4.000 | 3.222 | 0.125 | 725.402 | 304.810 | 2.182 | 191665.5 |
| 2 | 1 | 4.000 | 3.222 | 0.125 | 727.984 | 303.519 | 1.291 | 191637.5 |
| 2 | 2 | 4.000 | 3.222 | 0.125 | 730.566 | 302.226 | 1.293 | 191637.5 |

| Tube | Inc | -----Tube----- OD inches | ID inches | Coke Thick inches | Temp out °F | Pressure out psig | Pressure drop psi | Heat Absorbed btu/hr |
|------|-----|--------------------------------|--------------|-------------------------|-------------------|-------------------------|-------------------------|----------------------------|
| 2 | 3 | 4.000 | 3.222 | 0.125 | 733.148 | 300.030 | 2.196 | 191661.5 |
| 3 | 1 | 4.000 | 3.222 | 0.125 | 735.729 | 298.731 | 1.299 | 191635.5 |
| 3 | 2 | 4.000 | 3.222 | 0.125 | 738.311 | 297.429 | 1.301 | 191635.5 |
| 3 | 3 | 4.000 | 3.222 | 0.125 | 740.892 | 295.219 | 2.211 | 191661.5 |
| 4 | 1 | 4.000 | 3.222 | 0.125 | 743.474 | 293.911 | 1.307 | 191635.5 |
| 4 | 2 | 4.000 | 3.222 | 0.125 | 746.056 | 292.602 | 1.309 | 191634.0 |
| 4 | 3 | 4.000 | 3.222 | 0.125 | 748.638 | 290.377 | 2.224 | 191660.0 |
| 5 | 1 | 4.000 | 3.222 | 0.125 | 751.219 | 289.062 | 1.316 | 191632.0 |
| 5 | 2 | 4.000 | 3.222 | 0.125 | 753.801 | 287.744 | 1.318 | 191636.0 |
| 5 | 3 | 4.000 | 3.222 | 0.125 | 756.382 | 285.506 | 2.238 | 191656.0 |
| 6 | 1 | 4.000 | 3.222 | 0.125 | 758.964 | 284.183 | 1.323 | 191636.0 |
| 6 | 2 | 4.000 | 3.222 | 0.125 | 761.546 | 282.858 | 1.325 | 191630.0 |
| 6 | 3 | 4.000 | 3.222 | 0.125 | 764.128 | 280.607 | 2.251 | 191656.0 |
| 7 | 1 | 4.000 | 3.222 | 0.125 | 766.709 | 279.276 | 1.331 | 191632.0 |
| 7 | 2 | 4.000 | 3.222 | 0.125 | 769.291 | 277.944 | 1.333 | 191632.0 |
| 7 | 3 | 4.000 | 3.222 | 0.125 | 771.872 | 275.681 | 2.263 | 191654.0 |
| 8 | 1 | 4.000 | 3.222 | 0.125 | 774.454 | 274.343 | 1.338 | 191632.0 |
| 8 | 2 | 4.000 | 3.222 | 0.125 | 777.036 | 273.004 | 1.339 | 191628.0 |
| 8 | 3 | 4.000 | 3.222 | 0.125 | 779.618 | 270.730 | 2.274 | 191652.0 |
| 9 | 1 | 4.000 | 3.222 | 0.125 | 782.199 | 269.385 | 1.344 | 191630.0 |
| 9 | 2 | 4.000 | 3.222 | 0.125 | 784.781 | 268.040 | 1.346 | 191630.0 |
| 9 | 3 | 4.000 | 3.222 | 0.125 | 787.362 | 265.756 | 2.284 | 191646.0 |
| 10 | 1 | 4.000 | 3.222 | 0.125 | 789.944 | 264.406 | 1.350 | 191630.0 |
| 10 | 2 | 4.000 | 3.222 | 0.125 | 792.526 | 263.055 | 1.351 | 191626.0 |
| 10 | 3 | 4.000 | 3.222 | 0.125 | 795.108 | 260.762 | 2.293 | 191648.0 |
| 11 | 1 | 4.000 | 3.222 | 0.125 | 797.689 | 259.408 | 1.355 | 191626.0 |
| 11 | 2 | 4.000 | 3.222 | 0.125 | 800.271 | 258.052 | 1.355 | 192290.0 |
| 11 | 3 | 4.000 | 3.222 | 0.125 | 802.706 | 255.752 | 2.301 | 192188.0 |
| 12 | 1 | 4.000 | 3.222 | 0.125 | 804.509 | 254.353 | 1.398 | 194170.0 |
| 12 | 2 | 4.000 | 3.222 | 0.125 | 806.355 | 252.448 | 1.905 | 189683.0 |
| 12 | 3 | 4.000 | 3.222 | 0.125 | 808.315 | 249.138 | 3.310 | 189981.0 |
| 13 | 1 | 4.000 | 3.222 | 0.125 | 810.275 | 247.133 | 2.005 | 190011.0 |
| 13 | 2 | 4.000 | 3.222 | 0.125 | 812.236 | 245.080 | 2.053 | 190081.0 |
| 13 | 3 | 4.000 | 3.222 | 0.125 | 814.196 | 241.516 | 3.564 | 190191.0 |
| 14 | 1 | 4.000 | 3.222 | 0.125 | 816.156 | 239.358 | 2.158 | 190229.0 |
| 14 | 2 | 4.000 | 3.222 | 0.125 | 818.116 | 237.152 | 2.207 | 190319.0 |
| 14 | 3 | 4.000 | 3.222 | 0.125 | 820.077 | 233.325 | 3.827 | 190445.0 |
| 15 | 1 | 4.000 | 3.222 | 0.125 | 822.037 | 231.008 | 2.316 | 190489.0 |
| 15 | 2 | 4.000 | 3.222 | 0.125 | 823.997 | 228.642 | 2.367 | 190589.0 |

| Tube | Inc | -----Tube----- OD inches | ID inches | Coke Thick inches | Temp out °F | Pressure out psig | Pressure drop psi | Heat Absorbed btu/hr |
|-------------------------------------|-----|--------------------------------|--------------|-------------------------|-------------------|-------------------------|-------------------------|----------------------------|
| 15 | 3 | 4.000 | 3.222 | 0.125 | 825.958 | 224.540 | 4.102 | 190731.0 |
| 16 | 1 | 4.000 | 3.222 | 0.125 | 827.918 | 222.057 | 2.483 | 190787.0 |
| 16 | 2 | 4.000 | 3.222 | 0.125 | 829.878 | 219.522 | 2.536 | 190903.0 |
| 16 | 3 | 4.000 | 3.222 | 0.125 | 831.838 | 215.129 | 4.393 | 191061.0 |
| 17 | 1 | 4.000 | 3.222 | 0.125 | 833.798 | 212.469 | 2.660 | 191117.0 |
| 17 | 2 | 4.000 | 3.222 | 0.125 | 835.759 | 209.752 | 2.717 | 191241.0 |
| 17 | 3 | 4.000 | 3.222 | 0.125 | 837.719 | 205.047 | 4.705 | 191273.0 |
| 18 | 1 | 4.000 | 3.222 | 0.125 | 839.679 | 202.196 | 2.851 | 191385.0 |
| 18 | 2 | 4.000 | 3.222 | 0.125 | 841.640 | 199.284 | 2.912 | 191511.0 |
| 18 | 3 | 4.000 | 3.222 | 0.125 | 843.600 | 194.239 | 5.045 | 191609.0 |
| 19 | 1 | 4.000 | 3.222 | 0.125 | 845.560 | 191.177 | 3.062 | 191728.0 |
| 19 | 2 | 4.000 | 3.222 | 0.125 | 847.520 | 188.048 | 3.129 | 191864.0 |
| 19 | 3 | 4.000 | 3.222 | 0.125 | 849.481 | 182.624 | 5.424 | 191960.0 |
| 20 | 1 | 4.000 | 3.222 | 0.125 | 851.441 | 179.326 | 3.299 | 192138.0 |
| 20 | 2 | 4.000 | 3.222 | 0.125 | 853.401 | 175.952 | 3.374 | 192528.0 |
| 20 | 3 | 4.000 | 3.222 | 0.125 | 855.362 | 170.097 | 5.854 | 192856.0 |
| Group #4 of 4 Tubes:10 Increments:3 | | | | | | | | |
| 1 | 1 | 4.500 | 3.624 | 0.125 | 857.504 | 168.139 | 1.959 | 215488.0 |
| 1 | 2 | 4.500 | 3.624 | 0.125 | 859.647 | 166.145 | 1.993 | 215814.0 |
| 1 | 3 | 4.500 | 3.624 | 0.125 | 861.790 | 162.984 | 3.161 | 216240.0 |
| 2 | 1 | 4.500 | 3.624 | 0.125 | 863.932 | 160.909 | 2.076 | 216460.0 |
| 2 | 2 | 4.500 | 3.624 | 0.125 | 866.030 | 158.792 | 2.117 | 218816.0 |
| 2 | 3 | 4.500 | 3.624 | 0.125 | 868.032 | 155.416 | 3.376 | 218272.0 |
| 3 | 1 | 4.500 | 3.624 | 0.125 | 870.033 | 153.182 | 2.234 | 218334.0 |
| 3 | 2 | 4.500 | 3.624 | 0.125 | 872.034 | 150.892 | 2.290 | 218562.0 |
| 3 | 3 | 4.500 | 3.624 | 0.125 | 874.035 | 147.233 | 3.658 | 218726.0 |
| 4 | 1 | 4.500 | 3.624 | 0.125 | 876.011 | 144.810 | 2.423 | 217552.0 |
| 4 | 2 | 4.500 | 3.624 | 0.125 | 877.987 | 142.325 | 2.484 | 217766.0 |
| 4 | 3 | 4.500 | 3.624 | 0.125 | 879.963 | 138.357 | 3.969 | 218014.0 |
| 5 | 1 | 4.500 | 3.624 | 0.125 | 881.940 | 135.724 | 2.633 | 218098.0 |
| 5 | 2 | 4.500 | 3.624 | 0.125 | 883.916 | 133.022 | 2.701 | 218308.0 |
| 5 | 3 | 4.500 | 3.624 | 0.125 | 885.892 | 128.704 | 4.318 | 218550.0 |
| 6 | 1 | 4.500 | 3.624 | 0.125 | 887.868 | 125.832 | 2.872 | 218590.0 |
| 6 | 2 | 4.500 | 3.624 | 0.125 | 889.818 | 122.882 | 2.950 | 217556.0 |
| 6 | 3 | 4.500 | 3.624 | 0.125 | 891.769 | 118.159 | 4.723 | 217768.0 |
| 7 | 1 | 4.500 | 3.624 | 0.125 | 893.720 | 115.006 | 3.153 | 217736.0 |
| 7 | 2 | 4.500 | 3.624 | 0.125 | 895.670 | 111.761 | 3.245 | 217884.0 |
| 7 | 3 | 4.500 | 3.624 | 0.125 | 897.621 | 106.552 | 5.209 | 218046.0 |
| 8 | 1 | 4.500 | 3.624 | 0.125 | 899.572 | 103.055 | 3.497 | 217906.0 |

| Tube | Inc | -----Tube----- OD | ID | Coke Thick | Temp out | Pressure out | Pressure drop | Heat Absorbed |
|------|-----|----------------------|--------|---------------|-------------|-----------------|------------------|------------------|
| | | inches | inches | inches | °F | psig | psi | btu/hr |
| 8 | 2 | 4.500 | 3.624 | 0.125 | 901.445 | 99.432 | 3.623 | 217530.0 |
| 8 | 3 | 4.500 | 3.624 | 0.125 | 903.317 | 93.553 | 5.878 | 218544.0 |
| 9 | 1 | 4.500 | 3.624 | 0.125 | 905.190 | 89.539 | 4.014 | 218166.0 |
| 9 | 2 | 4.500 | 3.624 | 0.125 | 907.062 | 85.329 | 4.210 | 218052.0 |
| 9 | 3 | 4.500 | 3.624 | 0.125 | 908.935 | 78.424 | 6.905 | 217920.0 |
| 10 | 1 | 4.500 | 3.624 | 0.125 | 910.808 | 73.617 | 4.807 | 217242.0 |
| 10 | 2 | 4.500 | 3.624 | 0.125 | 912.680 | 68.495 | 5.122 | 216880.0 |
| 10 | 3 | 4.500 | 3.624 | 0.125 | 914.553 | 59.928 | 8.567 | 216474.0 |

Section 2:

| | | ----- Liquid ----- | | -----Hydrocarbon Vapor--- | | -----Steam----- | | |
|---------------|---------|--------------------|---------|---------------------------|-------|-----------------|--------------------|-------|
| Tube Inc | FloRate | Density | FloRate | Density | MW | FloRate | Density | |
| | lb/hr | lb/ft ³ | lb/hr | lb/ft ³ | | lb/hr | lb/ft ³ | |
| Group #1 of 4 | | Tubes:12 | | Increments:1 | | | | |
| 1 | 1 | 98050.00 | 49.930 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.908 |
| 2 | 1 | 98050.00 | 49.865 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.899 |
| 3 | 1 | 98050.00 | 49.799 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.890 |
| 4 | 1 | 98050.00 | 49.734 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.881 |
| 5 | 1 | 98050.00 | 49.668 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.873 |
| 6 | 1 | 98050.00 | 49.603 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.864 |
| 7 | 1 | 98050.00 | 49.537 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.855 |
| 8 | 1 | 98050.00 | 49.471 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.846 |
| 9 | 1 | 98050.00 | 49.406 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.838 |
| 10 | 1 | 98050.00 | 49.342 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.661 |
| 11 | 1 | 98050.00 | 49.277 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.653 |
| 12 | 1 | 98050.00 | 49.212 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.645 |
| Group #2 of 4 | | Tubes:18 | | Increments:1 | | | | |
| 1 | 1 | 98050.00 | 49.145 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.635 |
| 2 | 1 | 98050.00 | 49.078 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.626 |
| 3 | 1 | 98050.00 | 49.011 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.616 |
| 4 | 1 | 98050.00 | 48.944 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.607 |
| 5 | 1 | 98050.00 | 48.877 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.597 |
| 6 | 1 | 98050.00 | 48.810 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.588 |
| 7 | 1 | 98050.00 | 48.743 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.579 |
| 8 | 1 | 98050.00 | 48.676 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.569 |
| 9 | 1 | 98050.00 | 48.609 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.560 |
| 10 | 1 | 98050.00 | 48.542 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.551 |
| 11 | 1 | 98050.00 | 48.475 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.542 |
| 12 | 1 | 98050.00 | 48.408 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.532 |
| 13 | 1 | 98050.00 | 48.326 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.524 |
| 14 | 1 | 98050.00 | 48.242 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.515 |
| 15 | 1 | 98050.00 | 48.158 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.506 |
| 16 | 1 | 98050.00 | 48.074 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.498 |
| 17 | 1 | 98050.00 | 47.990 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.489 |
| 18 | 1 | 98050.00 | 47.906 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.480 |
| Group #3 of 4 | | Tubes:20 | | Increments:3 | | | | |
| 1 | 1 | 98050.00 | 47.833 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.477 |
| 1 | 2 | 98050.00 | 47.761 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.474 |
| 1 | 3 | 98050.00 | 47.689 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.470 |
| 2 | 1 | 98050.00 | 47.616 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.466 |
| 2 | 2 | 98050.00 | 47.544 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.463 |

| | | ----- Liquid ----- | -----Hydrocarbon Vapor--- | -----Steam----- | | | | |
|------|-----|--------------------|---------------------------|-----------------|--------------------|---------|----------|--------------------|
| Tube | Inc | FloRate | Density | FloRate | Density | MW | FloRate | Density |
| | | lb/hr | lb/ft ³ | lb/hr | lb/ft ³ | | lb/hr | lb/ft ³ |
| 2 | 3 | 98050.00 | 47.472 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.459 |
| 3 | 1 | 98050.00 | 47.400 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.456 |
| 3 | 2 | 98050.00 | 47.327 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.453 |
| 3 | 3 | 98050.00 | 47.255 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.449 |
| 4 | 1 | 98050.00 | 47.183 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.446 |
| 4 | 2 | 98050.00 | 47.110 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.443 |
| 4 | 3 | 98050.00 | 47.038 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.438 |
| 5 | 1 | 98050.00 | 46.966 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.435 |
| 5 | 2 | 98050.00 | 46.894 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.432 |
| 5 | 3 | 98050.00 | 46.821 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.428 |
| 6 | 1 | 98050.00 | 46.749 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.425 |
| 6 | 2 | 98050.00 | 46.677 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.422 |
| 6 | 3 | 98050.00 | 46.604 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.418 |
| 7 | 1 | 98050.00 | 46.532 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.415 |
| 7 | 2 | 98050.00 | 46.460 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.412 |
| 7 | 3 | 98050.00 | 46.388 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.408 |
| 8 | 1 | 98050.00 | 46.315 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.405 |
| 8 | 2 | 98050.00 | 46.243 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.402 |
| 8 | 3 | 98050.00 | 46.171 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.398 |
| 9 | 1 | 98050.00 | 46.098 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.395 |
| 9 | 2 | 98050.00 | 46.026 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.392 |
| 9 | 3 | 98050.00 | 45.954 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.388 |
| 10 | 1 | 98050.00 | 45.882 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.385 |
| 10 | 2 | 98050.00 | 45.809 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.382 |
| 10 | 3 | 98050.00 | 45.737 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.378 |
| 11 | 1 | 98050.00 | 45.665 | 0.000 | 0.642 | 136.490 | 1000.000 | 0.375 |
| 11 | 2 | 98050.00 | 45.595 | 0.000 | 1.885 | 95.106 | 1000.000 | 0.372 |
| 11 | 3 | 98050.00 | 45.549 | 0.000 | 1.884 | 96.055 | 1000.000 | 0.368 |
| 12 | 1 | 97498.02 | 45.514 | 528.980 | 1.885 | 96.758 | 1000.000 | 0.366 |
| 12 | 2 | 97304.41 | 45.479 | 745.587 | 1.883 | 97.478 | 1000.000 | 0.363 |
| 12 | 3 | 97074.42 | 45.442 | 975.578 | 1.871 | 98.243 | 1000.000 | 0.357 |
| 13 | 1 | 96844.43 | 45.405 | 1205.570 | 1.869 | 99.007 | 1000.000 | 0.354 |
| 13 | 2 | 96614.44 | 45.368 | 1435.561 | 1.866 | 99.772 | 1000.000 | 0.351 |
| 13 | 3 | 96384.45 | 45.330 | 1665.553 | 1.851 | 100.536 | 1000.000 | 0.345 |
| 14 | 1 | 96154.45 | 45.293 | 1895.544 | 1.847 | 101.301 | 1000.000 | 0.342 |
| 14 | 2 | 95924.46 | 45.256 | 2125.535 | 1.842 | 102.065 | 1000.000 | 0.338 |
| 14 | 3 | 95694.48 | 45.219 | 2355.527 | 1.825 | 102.830 | 1000.000 | 0.332 |
| 15 | 1 | 95464.48 | 45.181 | 2585.518 | 1.818 | 103.594 | 1000.000 | 0.329 |
| 15 | 2 | 95234.49 | 45.144 | 2815.510 | 1.811 | 104.359 | 1000.000 | 0.325 |

| | ----- Liquid ----- | | -----Hydrocarbon Vapor--- | | | -----Steam----- | |
|-------------------------------------|--------------------|--------------------|---------------------------|--------------------|---------|-----------------|--------------------|
| Tube Inc | FloRate | Density | FloRate | Density | MW | FloRate | Density |
| | lb/hr | lb/ft ³ | lb/hr | lb/ft ³ | | lb/hr | lb/ft ³ |
| 15 | 3 95004.50 | 45.107 | 3045.501 | 1.791 | 105.123 | 1000.000 | 0.319 |
| 16 | 1 94774.51 | 45.070 | 3275.493 | 1.783 | 105.888 | 1000.000 | 0.315 |
| 16 | 2 94544.52 | 45.032 | 3505.484 | 1.774 | 106.652 | 1000.000 | 0.311 |
| 16 | 3 94314.52 | 44.995 | 3735.476 | 1.750 | 107.417 | 1000.000 | 0.304 |
| 17 | 1 94084.53 | 44.958 | 3965.467 | 1.740 | 108.181 | 1000.000 | 0.300 |
| 17 | 2 93854.54 | 44.921 | 4195.458 | 1.728 | 108.946 | 1000.000 | 0.296 |
| 17 | 3 93624.55 | 44.883 | 4425.450 | 1.702 | 109.710 | 1000.000 | 0.289 |
| 18 | 1 93394.56 | 44.846 | 4655.441 | 1.689 | 110.475 | 1000.000 | 0.285 |
| 18 | 2 93164.57 | 44.809 | 4885.433 | 1.675 | 111.239 | 1000.000 | 0.281 |
| 18 | 3 92934.58 | 44.772 | 5115.424 | 1.644 | 112.004 | 1000.000 | 0.274 |
| 19 | 1 92704.59 | 44.734 | 5345.416 | 1.629 | 112.768 | 1000.000 | 0.269 |
| 19 | 2 92474.59 | 44.697 | 5575.407 | 1.613 | 113.533 | 1000.000 | 0.265 |
| 19 | 3 92244.60 | 44.660 | 5805.398 | 1.578 | 114.298 | 1000.000 | 0.257 |
| 20 | 1 92014.61 | 44.623 | 6035.390 | 1.560 | 115.062 | 1000.000 | 0.252 |
| 20 | 2 91784.62 | 44.585 | 6265.381 | 1.540 | 115.826 | 1000.000 | 0.248 |
| 20 | 3 91554.63 | 44.548 | 6495.373 | 1.501 | 116.591 | 1000.000 | 0.240 |
| Group #4 of 4 Tubes:10 Increments:3 | | | | | | | |
| 1 | 1 91303.23 | 44.507 | 6746.769 | 1.493 | 117.427 | 1000.000 | 0.237 |
| 1 | 2 91051.84 | 44.467 | 6998.164 | 1.485 | 118.262 | 1000.000 | 0.234 |
| 1 | 3 90800.44 | 44.426 | 7249.560 | 1.467 | 119.098 | 1000.000 | 0.229 |
| 2 | 1 90549.05 | 44.385 | 7500.956 | 1.458 | 119.934 | 1000.000 | 0.226 |
| 2 | 2 90226.13 | 44.345 | 7823.877 | 1.448 | 120.752 | 1000.000 | 0.223 |
| 2 | 3 89848.20 | 44.307 | 8201.797 | 1.426 | 121.532 | 1000.000 | 0.218 |
| 3 | 1 89470.28 | 44.269 | 8579.716 | 1.415 | 122.313 | 1000.000 | 0.215 |
| 3 | 2 89092.37 | 44.231 | 8957.635 | 1.402 | 123.093 | 1000.000 | 0.212 |
| 3 | 3 88714.45 | 44.193 | 9335.554 | 1.378 | 123.874 | 1000.000 | 0.207 |
| 4 | 1 88341.29 | 44.156 | 9708.713 | 1.364 | 124.644 | 1000.000 | 0.203 |
| 4 | 2 87968.13 | 44.118 | 10081.87 | 1.349 | 125.415 | 1000.000 | 0.200 |
| 4 | 3 87594.97 | 44.081 | 10455.03 | 1.321 | 126.186 | 1000.000 | 0.194 |
| 5 | 1 87221.81 | 44.043 | 10828.19 | 1.304 | 126.956 | 1000.000 | 0.191 |
| 5 | 2 86848.65 | 44.006 | 11201.35 | 1.287 | 127.727 | 1000.000 | 0.187 |
| 5 | 3 86475.49 | 43.968 | 11574.51 | 1.255 | 128.498 | 1000.000 | 0.181 |
| 6 | 1 86102.34 | 43.931 | 11947.67 | 1.235 | 129.268 | 1000.000 | 0.177 |
| 6 | 2 85733.95 | 43.893 | 12316.05 | 1.215 | 130.029 | 1000.000 | 0.173 |
| 6 | 3 85365.56 | 43.856 | 12684.44 | 1.178 | 130.790 | 1000.000 | 0.167 |
| 7 | 1 84997.17 | 43.819 | 13052.83 | 1.156 | 131.551 | 1000.000 | 0.163 |
| 7 | 2 84628.79 | 43.782 | 13421.21 | 1.132 | 132.312 | 1000.000 | 0.158 |
| 7 | 3 84260.40 | 43.745 | 13789.60 | 1.090 | 133.072 | 1000.000 | 0.151 |
| 8 | 1 83892.02 | 43.708 | 14157.99 | 1.063 | 133.833 | 1000.000 | 0.147 |

| | ----- Liquid ----- | | -----Hydrocarbon Vapor--- | | -----Steam----- | | |
|----------|--------------------|--------------------|---------------------------|--------------------|-----------------|----------|--------------------|
| Tube Inc | FloRate | Density | FloRate | Density | MW | FloRate | Density |
| | lb/hr | lb/ft ³ | lb/hr | lb/ft ³ | | lb/hr | lb/ft ³ |
| 8 | 2 83538.38 | 43.673 | 14511.62 | 1.032 | 134.246 | 1000.000 | 0.142 |
| 8 | 3 83184.74 | 43.637 | 14865.25 | 0.980 | 134.564 | 1000.000 | 0.134 |
| 9 | 1 82831.11 | 43.601 | 15218.89 | 0.945 | 134.882 | 1000.000 | 0.129 |
| 9 | 2 82477.48 | 43.566 | 15572.52 | 0.908 | 135.201 | 1000.000 | 0.123 |
| 9 | 3 82123.84 | 43.530 | 15926.16 | 0.846 | 135.519 | 1000.000 | 0.115 |
| 10 | 1 81770.21 | 43.495 | 16279.79 | 0.803 | 135.837 | 1000.000 | 0.108 |
| 10 | 2 81416.58 | 43.459 | 16633.42 | 0.758 | 136.156 | 1000.000 | 0.102 |
| 10 | 3 81062.95 | 43.424 | 16987.06 | 0.680 | 136.474 | 1000.000 | 9.09E-02 |

Section 3:

| Tube | Inc | H.C. Vapor Wt% | Outlet Velocity ft/sec | Heat coeff * | -----Flux Rate----- Average ** | Maximum ** | --Tube metal temp- Avg. °F | Max. °F |
|---------------|-----|----------------|------------------------|--------------|--------------------------------|------------|----------------------------|---------|
| Group #1 of 4 | | | Tubes:12 Increments:1 | | | | | |
| 1 | 1 | 0.000 | 16.278 | 291.026 | 4957.228 | 4957.228 | 692.392 | 692.392 |
| 2 | 1 | 0.000 | 16.350 | 293.025 | 4957.228 | 4957.228 | 695.365 | 695.365 |
| 3 | 1 | 0.000 | 16.422 | 295.068 | 4957.228 | 4957.228 | 698.337 | 698.337 |
| 4 | 1 | 0.000 | 16.496 | 297.159 | 4957.228 | 4957.228 | 701.307 | 701.307 |
| 5 | 1 | 0.000 | 16.570 | 299.298 | 4957.228 | 4957.228 | 704.276 | 704.276 |
| 6 | 1 | 0.000 | 16.646 | 301.488 | 4957.228 | 4957.228 | 707.244 | 707.244 |
| 7 | 1 | 0.000 | 16.722 | 303.731 | 4957.228 | 4957.228 | 710.210 | 710.210 |
| 8 | 1 | 0.000 | 16.800 | 306.028 | 4957.228 | 4957.228 | 713.174 | 713.174 |
| 9 | 1 | 0.000 | 16.878 | 308.383 | 4957.228 | 4957.228 | 716.138 | 716.138 |
| 10 | 1 | 0.000 | 18.584 | 310.561 | 4957.228 | 4957.228 | 719.018 | 719.018 |
| 11 | 1 | 0.000 | 18.702 | 313.021 | 4957.228 | 4957.228 | 721.954 | 721.954 |
| 12 | 1 | 0.000 | 18.820 | 315.545 | 4957.228 | 4957.228 | 724.889 | 724.889 |
| Group #2 of 4 | | | Tubes:18 Increments:1 | | | | | |
| 1 | 1 | 0.000 | 20.587 | 342.709 | 5104.723 | 5104.723 | 730.511 | 730.511 |
| 2 | 1 | 0.000 | 20.741 | 345.664 | 5104.723 | 5104.723 | 733.531 | 733.531 |
| 3 | 1 | 0.000 | 20.899 | 348.704 | 5104.723 | 5104.723 | 736.549 | 736.549 |
| 4 | 1 | 0.000 | 21.060 | 351.831 | 5104.723 | 5104.723 | 739.565 | 739.565 |
| 5 | 1 | 0.000 | 21.226 | 355.052 | 5104.723 | 5104.723 | 742.580 | 742.580 |
| 6 | 1 | 0.000 | 21.396 | 358.370 | 5104.723 | 5104.723 | 745.592 | 745.592 |
| 7 | 1 | 0.000 | 21.571 | 361.791 | 5104.723 | 5104.723 | 748.602 | 748.602 |
| 8 | 1 | 0.000 | 21.751 | 365.320 | 5104.723 | 5104.723 | 751.610 | 751.610 |
| 9 | 1 | 0.000 | 21.935 | 368.964 | 5104.723 | 5104.723 | 754.615 | 754.615 |
| 10 | 1 | 0.000 | 22.125 | 372.729 | 5104.723 | 5104.723 | 757.619 | 757.619 |
| 11 | 1 | 0.000 | 22.320 | 376.621 | 5104.723 | 5104.723 | 760.620 | 760.620 |
| 12 | 1 | 0.000 | 22.521 | 380.648 | 5104.723 | 5104.723 | 763.618 | 763.618 |
| 13 | 1 | 0.000 | 22.722 | 383.101 | 5104.723 | 5104.723 | 766.508 | 766.508 |
| 14 | 1 | 0.000 | 22.928 | 385.394 | 5104.723 | 5104.723 | 769.406 | 769.406 |
| 15 | 1 | 0.000 | 23.141 | 387.732 | 5104.723 | 5104.723 | 772.304 | 772.304 |
| 16 | 1 | 0.000 | 23.361 | 390.117 | 5104.723 | 5104.723 | 775.201 | 775.201 |
| 17 | 1 | 0.000 | 23.588 | 392.550 | 5104.723 | 5104.723 | 778.097 | 778.097 |
| 18 | 1 | 0.000 | 23.823 | 395.033 | 5104.723 | 5104.723 | 780.993 | 780.993 |
| Group #3 of 4 | | | Tubes:20 Increments:3 | | | | | |
| 1 | 1 | 0.000 | 23.922 | 397.210 | 13580.60 | 16296.72 | 888.482 | 922.131 |
| 1 | 2 | 0.000 | 24.018 | 399.427 | 13580.60 | 16296.72 | 890.809 | 924.406 |
| 1 | 3 | 0.000 | 24.116 | 401.684 | 13580.60 | 16296.72 | 893.133 | 926.679 |
| 2 | 1 | 0.000 | 24.250 | 403.983 | 13580.60 | 16296.72 | 895.456 | 928.950 |
| 2 | 2 | 0.000 | 24.350 | 406.326 | 13580.60 | 16296.72 | 897.777 | 931.219 |

| Tube | Inc | H.C. Vapor Wt% | Outlet Velocity ft/sec | Heat coeff * | ----Flux Rate----- Average ** Maximum ** | | --Tube metal temp- Avg. °F Max. °F | |
|------|-----|----------------|------------------------|--------------|--|----------|--|----------|
| 2 | 3 | 0.000 | 24.450 | 408.714 | 13580.60 | 16296.72 | 900.096 | 933.485 |
| 3 | 1 | 0.000 | 24.589 | 411.148 | 13580.60 | 16296.72 | 902.412 | 935.749 |
| 3 | 2 | 0.000 | 24.692 | 413.631 | 13580.60 | 16296.72 | 904.727 | 938.011 |
| 3 | 3 | 0.000 | 24.796 | 416.162 | 13580.60 | 16296.72 | 907.040 | 940.270 |
| 4 | 1 | 0.000 | 24.940 | 418.745 | 13580.60 | 16296.72 | 909.351 | 942.526 |
| 4 | 2 | 0.000 | 25.047 | 421.382 | 13580.60 | 16296.72 | 911.660 | 944.780 |
| 4 | 3 | 0.000 | 25.154 | 424.073 | 13580.60 | 16296.72 | 913.966 | 947.032 |
| 5 | 1 | 0.000 | 25.304 | 426.821 | 13580.60 | 16296.72 | 916.270 | 949.280 |
| 5 | 2 | 0.000 | 25.414 | 429.629 | 13580.60 | 16296.72 | 918.572 | 951.526 |
| 5 | 3 | 0.000 | 25.525 | 432.498 | 13580.60 | 16296.72 | 920.871 | 953.769 |
| 6 | 1 | 0.000 | 25.680 | 435.430 | 13580.60 | 16296.72 | 923.168 | 956.009 |
| 6 | 2 | 0.000 | 25.794 | 438.429 | 13580.60 | 16296.72 | 925.463 | 958.246 |
| 6 | 3 | 0.000 | 25.909 | 441.496 | 13580.60 | 16296.72 | 927.755 | 960.480 |
| 7 | 1 | 0.000 | 26.070 | 444.635 | 13580.60 | 16296.72 | 930.044 | 962.711 |
| 7 | 2 | 0.000 | 26.188 | 447.848 | 13580.60 | 16296.72 | 932.331 | 964.939 |
| 7 | 3 | 0.000 | 26.307 | 451.138 | 13580.60 | 16296.72 | 934.615 | 967.164 |
| 8 | 1 | 0.000 | 26.475 | 454.508 | 13580.60 | 16296.72 | 936.896 | 969.385 |
| 8 | 2 | 0.000 | 26.597 | 457.963 | 13580.60 | 16296.72 | 939.175 | 971.602 |
| 8 | 3 | 0.000 | 26.720 | 461.505 | 13580.60 | 16296.72 | 941.450 | 973.816 |
| 9 | 1 | 0.000 | 26.894 | 465.138 | 13580.60 | 16296.72 | 943.722 | 976.027 |
| 9 | 2 | 0.000 | 27.021 | 468.866 | 13580.60 | 16296.72 | 945.992 | 978.234 |
| 9 | 3 | 0.000 | 27.149 | 472.693 | 13580.60 | 16296.72 | 948.258 | 980.437 |
| 10 | 1 | 0.000 | 27.330 | 476.626 | 13580.60 | 16296.72 | 950.520 | 982.635 |
| 10 | 2 | 0.000 | 27.461 | 480.667 | 13580.60 | 16296.72 | 952.779 | 984.830 |
| 10 | 3 | 0.000 | 27.593 | 484.822 | 13580.60 | 16296.72 | 955.035 | 987.021 |
| 11 | 1 | 0.000 | 27.781 | 489.097 | 13580.60 | 16296.72 | 957.287 | 989.207 |
| 11 | 2 | 0.000 | 27.916 | 493.362 | 13580.60 | 16296.72 | 959.546 | 991.401 |
| 11 | 3 | 0.000 | 28.039 | 496.370 | 13580.60 | 16296.72 | 961.756 | 993.567 |
| 12 | 1 | 5.40E-03 | 29.759 | 501.630 | 13580.60 | 16296.72 | 963.173 | 994.906 |
| 12 | 2 | 7.60E-03 | 30.515 | 505.384 | 13580.60 | 16296.72 | 964.749 | 996.427 |
| 12 | 3 | 9.95E-03 | 31.352 | 509.233 | 13580.60 | 16296.72 | 966.436 | 998.060 |
| 13 | 1 | 1.23E-02 | 32.299 | 513.142 | 13580.60 | 16296.72 | 968.122 | 999.692 |
| 13 | 2 | 1.46E-02 | 33.155 | 517.089 | 13580.60 | 16296.72 | 969.811 | 1001.326 |
| 13 | 3 | 1.70E-02 | 34.022 | 521.072 | 13580.60 | 16296.72 | 971.501 | 1002.962 |
| 14 | 1 | 1.93E-02 | 35.032 | 525.096 | 13580.60 | 16296.72 | 973.192 | 1004.599 |
| 14 | 2 | 2.17E-02 | 35.928 | 529.160 | 13580.60 | 16296.72 | 974.885 | 1006.239 |
| 14 | 3 | 2.40E-02 | 36.837 | 533.264 | 13580.60 | 16296.72 | 976.580 | 1007.880 |
| 15 | 1 | 2.64E-02 | 37.927 | 537.412 | 13580.60 | 16296.72 | 978.275 | 1009.523 |
| 15 | 2 | 2.87E-02 | 38.874 | 541.604 | 13580.60 | 16296.72 | 979.972 | 1011.167 |

| Tube Inc | H.C. Vapor Wt% | Outlet Velocity ft/sec | Heat coeff * | -----Flux Rate----- | | --Tube metal temp-- | | |
|-------------------------------------|----------------|------------------------|--------------|---------------------|------------|---------------------|----------|----------|
| | | | | Average ** | Maximum ** | Avg. °F | Max. °F | |
| 15 | 3 | 3.11E-02 | 39.839 | 545.840 | 13580.60 | 16296.72 | 981.671 | 1012.813 |
| 16 | 1 | 3.34E-02 | 41.031 | 550.124 | 13580.60 | 16296.72 | 983.370 | 1014.461 |
| 16 | 2 | 3.58E-02 | 42.045 | 554.455 | 13580.60 | 16296.72 | 985.071 | 1016.110 |
| 16 | 3 | 3.81E-02 | 43.082 | 558.834 | 13580.60 | 16296.72 | 986.773 | 1017.760 |
| 17 | 1 | 4.04E-02 | 44.404 | 563.266 | 13580.60 | 16296.72 | 988.476 | 1019.411 |
| 17 | 2 | 4.28E-02 | 45.506 | 567.751 | 13580.60 | 16296.72 | 990.180 | 1021.064 |
| 17 | 3 | 4.51E-02 | 46.633 | 572.294 | 13580.60 | 16296.72 | 991.884 | 1022.718 |
| 18 | 1 | 4.75E-02 | 48.114 | 576.892 | 13580.60 | 16296.72 | 993.590 | 1024.372 |
| 18 | 2 | 4.98E-02 | 49.326 | 581.548 | 13580.60 | 16296.72 | 995.297 | 1026.028 |
| 18 | 3 | 5.22E-02 | 50.575 | 586.265 | 13580.60 | 16296.72 | 997.004 | 1027.685 |
| 19 | 1 | 5.45E-02 | 52.274 | 591.042 | 13580.60 | 16296.72 | 998.712 | 1029.343 |
| 19 | 2 | 5.69E-02 | 53.635 | 595.882 | 13580.60 | 16296.72 | 1000.422 | 1031.002 |
| 19 | 3 | 5.92E-02 | 55.048 | 600.792 | 13580.60 | 16296.72 | 1002.131 | 1032.661 |
| 20 | 1 | 6.16E-02 | 57.037 | 605.766 | 13580.60 | 16296.72 | 1003.841 | 1034.322 |
| 20 | 2 | 6.39E-02 | 58.596 | 610.812 | 13580.60 | 16296.72 | 1005.553 | 1035.983 |
| 20 | 3 | 6.62E-02 | 60.224 | 615.933 | 13580.60 | 16296.72 | 1007.264 | 1037.645 |
| Group #4 of 4 Tubes:10 Increments:3 | | | | | | | | |
| 1 | 1 | 6.88E-02 | 48.292 | 494.706 | 13580.60 | 15210.28 | 1019.407 | 1038.835 |
| 1 | 2 | 7.14E-02 | 49.384 | 499.302 | 13580.60 | 15210.28 | 1021.212 | 1040.600 |
| 1 | 3 | 7.39E-02 | 50.502 | 503.978 | 13580.60 | 15210.28 | 1023.019 | 1042.366 |
| 2 | 1 | 7.65E-02 | 51.924 | 508.736 | 13580.60 | 15210.28 | 1024.825 | 1044.132 |
| 2 | 2 | 7.98E-02 | 53.330 | 513.794 | 13580.60 | 15210.28 | 1026.573 | 1045.838 |
| 2 | 3 | 8.36E-02 | 54.942 | 518.984 | 13580.60 | 15210.28 | 1028.222 | 1047.444 |
| 3 | 1 | 8.75E-02 | 56.948 | 524.246 | 13580.60 | 15210.28 | 1029.873 | 1049.053 |
| 3 | 2 | 9.14E-02 | 58.683 | 529.584 | 13580.60 | 15210.28 | 1031.525 | 1050.664 |
| 3 | 3 | 9.52E-02 | 60.479 | 535.004 | 13580.60 | 15210.28 | 1033.180 | 1052.278 |
| 4 | 1 | 9.90E-02 | 62.772 | 540.435 | 13580.60 | 15210.28 | 1034.816 | 1053.873 |
| 4 | 2 | 0.103 | 64.718 | 545.951 | 13580.60 | 15210.28 | 1036.453 | 1055.469 |
| 4 | 3 | 0.107 | 66.741 | 551.562 | 13580.60 | 15210.28 | 1038.092 | 1057.067 |
| 5 | 1 | 0.110 | 69.426 | 557.262 | 13580.60 | 15210.28 | 1039.732 | 1058.667 |
| 5 | 2 | 0.114 | 71.668 | 563.061 | 13580.60 | 15210.28 | 1041.373 | 1060.268 |
| 5 | 3 | 0.118 | 74.018 | 568.972 | 13580.60 | 15210.28 | 1043.015 | 1061.870 |
| 6 | 1 | 0.122 | 77.246 | 574.985 | 13580.60 | 15210.28 | 1044.658 | 1063.473 |
| 6 | 2 | 0.126 | 79.890 | 581.035 | 13580.60 | 15210.28 | 1046.281 | 1065.056 |
| 6 | 3 | 0.129 | 82.687 | 587.217 | 13580.60 | 15210.28 | 1047.904 | 1066.640 |
| 7 | 1 | 0.133 | 86.682 | 593.514 | 13580.60 | 15210.28 | 1049.527 | 1068.224 |
| 7 | 2 | 0.137 | 89.936 | 599.945 | 13580.60 | 15210.28 | 1051.151 | 1069.808 |
| 7 | 3 | 0.141 | 93.421 | 606.539 | 13580.60 | 15210.28 | 1052.773 | 1071.391 |
| 8 | 1 | 0.144 | 98.612 | 613.267 | 13580.60 | 15210.28 | 1054.396 | 1072.975 |

| Tube | Inc | H.C. Vapor Wt% | Outlet Velocity ft/sec | Heat coeff * | -----Flux Rate----- | | --Tube metal temp-- | |
|------|-----|----------------|------------------------|--------------|---------------------|------------|---------------------|----------|
| | | | | | Average ** | Maximum ** | Avg. °F | Max. °F |
| 8 | 2 | 0.148 | 102.909 | 617.237 | 13580.60 | 15210.28 | 1056.079 | 1074.635 |
| 8 | 3 | 0.152 | 107.669 | 620.503 | 13580.60 | 15210.28 | 1057.797 | 1076.335 |
| 9 | 1 | 0.155 | 115.112 | 623.770 | 13580.60 | 15210.28 | 1059.517 | 1078.036 |
| 9 | 2 | 0.159 | 121.287 | 627.076 | 13580.60 | 15210.28 | 1061.236 | 1079.737 |
| 9 | 3 | 0.162 | 128.278 | 630.509 | 13580.60 | 15210.28 | 1062.952 | 1081.434 |
| 10 | 1 | 0.166 | 140.055 | 633.935 | 13580.60 | 15210.28 | 1064.669 | 1083.132 |
| 10 | 2 | 0.170 | 150.165 | 637.439 | 13580.60 | 15210.28 | 1066.385 | 1084.829 |
| 10 | 3 | 0.173 | 162.325 | 641.257 | 13580.60 | 15210.28 | 1068.088 | 1086.512 |

* - Heat Coeff is 'Inside Heat Transfer Coefficient' and is in 'btu/hr·ft²·°F'

** - FLUX rates are in 'btu/hr·ft²'

Section 4:

| Tube | Inc | incr. | >800°F coil sec. | >800°F coil sec. | Rxn Velocity Constant | ---Coking Factor-- | | --Weight Cracked-- | |
|------|-----|-------|------------------------|------------------------|-----------------------------|--------------------|-------|--------------------|---------|
| | | | | | | Inc | Accum | Accum | Percent |
| | | | | | | | | lbs | Wt% |

Group #1 of 4

Tubes:12 Increments:1

| | | | | | | | | | |
|----|---|-------|-------|----------|----------|----------|-------|-------|-------|
| 1 | 1 | 0.000 | 0.000 | 8.17E-07 | 1.65E-15 | 1.65E-15 | 0.000 | 0.000 | 0.000 |
| 2 | 1 | 0.000 | 0.000 | 9.29E-07 | 1.22E-14 | 1.39E-14 | 0.000 | 0.000 | 0.000 |
| 3 | 1 | 0.000 | 0.000 | 1.05E-06 | 4.14E-14 | 5.53E-14 | 0.000 | 0.000 | 0.000 |
| 4 | 1 | 0.000 | 0.000 | 1.20E-06 | 1.02E-13 | 1.57E-13 | 0.000 | 0.000 | 0.000 |
| 5 | 1 | 0.000 | 0.000 | 1.36E-06 | 2.09E-13 | 3.66E-13 | 0.000 | 0.000 | 0.000 |
| 6 | 1 | 0.000 | 0.000 | 1.54E-06 | 3.85E-13 | 7.51E-13 | 0.000 | 0.000 | 0.000 |
| 7 | 1 | 0.000 | 0.000 | 1.74E-06 | 6.56E-13 | 1.41E-12 | 0.000 | 0.000 | 0.000 |
| 8 | 1 | 0.000 | 0.000 | 1.97E-06 | 1.06E-12 | 2.46E-12 | 0.000 | 0.000 | 0.000 |
| 9 | 1 | 0.000 | 0.000 | 2.23E-06 | 1.63E-12 | 4.09E-12 | 0.000 | 0.000 | 0.000 |
| 10 | 1 | 0.000 | 0.000 | 2.52E-06 | 2.28E-12 | 6.37E-12 | 0.000 | 0.000 | 0.000 |
| 11 | 1 | 0.000 | 0.000 | 2.84E-06 | 3.08E-12 | 9.46E-12 | 0.000 | 0.000 | 0.000 |
| 12 | 1 | 0.000 | 0.000 | 3.20E-06 | 4.28E-12 | 1.37E-11 | 0.000 | 0.000 | 0.000 |

Group #2 of 4

Tubes:18 Increments:1

| | | | | | | | | | |
|----|---|-------|-------|----------|----------|----------|-------|-------|-------|
| 1 | 1 | 0.000 | 0.000 | 3.61E-06 | 5.29E-12 | 1.90E-11 | 0.000 | 0.000 | 0.000 |
| 2 | 1 | 0.000 | 0.000 | 4.08E-06 | 7.03E-12 | 2.61E-11 | 0.000 | 0.000 | 0.000 |
| 3 | 1 | 0.000 | 0.000 | 4.61E-06 | 9.22E-12 | 3.53E-11 | 0.000 | 0.000 | 0.000 |
| 4 | 1 | 0.000 | 0.000 | 5.20E-06 | 1.20E-11 | 4.73E-11 | 0.000 | 0.000 | 0.000 |
| 5 | 1 | 0.000 | 0.000 | 5.87E-06 | 1.54E-11 | 6.27E-11 | 0.000 | 0.000 | 0.000 |
| 6 | 1 | 0.000 | 0.000 | 6.62E-06 | 1.96E-11 | 8.23E-11 | 0.000 | 0.000 | 0.000 |
| 7 | 1 | 0.000 | 0.000 | 7.45E-06 | 2.49E-11 | 1.07E-10 | 0.000 | 0.000 | 0.000 |
| 8 | 1 | 0.000 | 0.000 | 8.39E-06 | 3.12E-11 | 1.38E-10 | 0.000 | 0.000 | 0.000 |
| 9 | 1 | 0.000 | 0.000 | 9.44E-06 | 3.90E-11 | 1.77E-10 | 0.000 | 0.000 | 0.000 |
| 10 | 1 | 0.000 | 0.000 | 1.06E-05 | 4.83E-11 | 2.26E-10 | 0.000 | 0.000 | 0.000 |
| 11 | 1 | 0.000 | 0.000 | 1.19E-05 | 5.96E-11 | 2.85E-10 | 0.000 | 0.000 | 0.000 |
| 12 | 1 | 0.000 | 0.000 | 1.34E-05 | 7.31E-11 | 3.58E-10 | 0.000 | 0.000 | 0.000 |
| 13 | 1 | 0.000 | 0.000 | 1.50E-05 | 8.89E-11 | 4.47E-10 | 0.000 | 0.000 | 0.000 |
| 14 | 1 | 0.000 | 0.000 | 1.67E-05 | 1.07E-10 | 5.55E-10 | 0.000 | 0.000 | 0.000 |
| 15 | 1 | 0.000 | 0.000 | 1.86E-05 | 1.29E-10 | 6.84E-10 | 0.000 | 0.000 | 0.000 |
| 16 | 1 | 0.000 | 0.000 | 2.06E-05 | 1.54E-10 | 8.38E-10 | 0.000 | 0.000 | 0.000 |
| 17 | 1 | 0.000 | 0.000 | 2.30E-05 | 1.84E-10 | 1.02E-09 | 0.000 | 0.000 | 0.000 |
| 18 | 1 | 0.000 | 0.000 | 2.55E-05 | 2.19E-10 | 1.24E-09 | 0.000 | 0.000 | 0.000 |

Group #3 of 4

Tubes:20 Increments:3

| | | | | | | | | | |
|---|---|-------|-------|----------|----------|----------|-------|-------|-------|
| 1 | 1 | 0.000 | 0.000 | 2.81E-05 | 2.39E-10 | 1.32E-09 | 0.000 | 0.000 | 0.000 |
| 1 | 2 | 0.000 | 0.000 | 3.08E-05 | 2.67E-10 | 1.41E-09 | 0.000 | 0.000 | 0.000 |
| 1 | 3 | 0.000 | 0.000 | 3.37E-05 | 2.98E-10 | 1.51E-09 | 0.000 | 0.000 | 0.000 |
| 2 | 1 | 0.000 | 0.000 | 3.68E-05 | 3.31E-10 | 1.62E-09 | 0.000 | 0.000 | 0.000 |
| 2 | 2 | 0.000 | 0.000 | 4.02E-05 | 3.69E-10 | 1.74E-09 | 0.000 | 0.000 | 0.000 |

| Tube | Inc | >800°F incr. sec. | >800°F coil sec. | Rxn Velocity Constant | ---Coking Factor-- | | --Weight Cracked-- | |
|------|-----|-------------------------|------------------------|-----------------------------|--------------------|----------|--------------------|----------------|
| | | | | | Inc | Accum | Accum lbs | Percent Wt% |
| 2 | 3 | 0.000 | 0.000 | 4.39E-05 | 4.10E-10 | 1.88E-09 | 0.000 | 0.000 |
| 3 | 1 | 0.000 | 0.000 | 4.80E-05 | 4.56E-10 | 2.03E-09 | 0.000 | 0.000 |
| 3 | 2 | 0.000 | 0.000 | 5.24E-05 | 5.06E-10 | 2.20E-09 | 0.000 | 0.000 |
| 3 | 3 | 0.000 | 0.000 | 5.71E-05 | 5.62E-10 | 2.39E-09 | 0.000 | 0.000 |
| 4 | 1 | 0.000 | 0.000 | 6.23E-05 | 6.23E-10 | 2.59E-09 | 0.000 | 0.000 |
| 4 | 2 | 0.000 | 0.000 | 6.79E-05 | 6.91E-10 | 2.82E-09 | 0.000 | 0.000 |
| 4 | 3 | 0.000 | 0.000 | 7.40E-05 | 7.66E-10 | 3.08E-09 | 0.000 | 0.000 |
| 5 | 1 | 0.000 | 0.000 | 8.07E-05 | 8.47E-10 | 3.36E-09 | 0.000 | 0.000 |
| 5 | 2 | 0.000 | 0.000 | 8.78E-05 | 9.37E-10 | 3.67E-09 | 0.000 | 0.000 |
| 5 | 3 | 0.000 | 0.000 | 9.56E-05 | 1.04E-09 | 4.02E-09 | 0.000 | 0.000 |
| 6 | 1 | 0.000 | 0.000 | 1.04E-04 | 1.14E-09 | 4.40E-09 | 0.000 | 0.000 |
| 6 | 2 | 0.000 | 0.000 | 1.13E-04 | 1.26E-09 | 4.82E-09 | 0.000 | 0.000 |
| 6 | 3 | 0.000 | 0.000 | 1.23E-04 | 1.40E-09 | 5.29E-09 | 0.000 | 0.000 |
| 7 | 1 | 0.000 | 0.000 | 1.34E-04 | 1.54E-09 | 5.80E-09 | 0.000 | 0.000 |
| 7 | 2 | 0.000 | 0.000 | 1.45E-04 | 1.69E-09 | 6.36E-09 | 0.000 | 0.000 |
| 7 | 3 | 0.000 | 0.000 | 1.58E-04 | 1.87E-09 | 6.99E-09 | 0.000 | 0.000 |
| 8 | 1 | 0.000 | 0.000 | 1.72E-04 | 2.05E-09 | 7.67E-09 | 0.000 | 0.000 |
| 8 | 2 | 0.000 | 0.000 | 1.86E-04 | 2.26E-09 | 8.42E-09 | 0.000 | 0.000 |
| 8 | 3 | 0.000 | 0.000 | 2.02E-04 | 2.49E-09 | 9.25E-09 | 0.000 | 0.000 |
| 9 | 1 | 0.000 | 0.000 | 2.19E-04 | 2.73E-09 | 1.02E-08 | 0.000 | 0.000 |
| 9 | 2 | 0.000 | 0.000 | 2.38E-04 | 3.00E-09 | 1.12E-08 | 0.000 | 0.000 |
| 9 | 3 | 0.000 | 0.000 | 2.58E-04 | 3.29E-09 | 1.23E-08 | 0.000 | 0.000 |
| 10 | 1 | 0.000 | 0.000 | 2.80E-04 | 3.60E-09 | 1.35E-08 | 0.000 | 0.000 |
| 10 | 2 | 0.000 | 0.000 | 3.03E-04 | 3.95E-09 | 1.48E-08 | 0.000 | 0.000 |
| 10 | 3 | 0.000 | 0.000 | 3.28E-04 | 4.33E-09 | 1.62E-08 | 0.000 | 0.000 |
| 11 | 1 | 0.000 | 0.000 | 3.55E-04 | 4.74E-09 | 1.78E-08 | 0.000 | 0.000 |
| 11 | 2 | 0.000 | 0.000 | 3.85E-04 | 5.19E-09 | 1.95E-08 | 0.000 | 0.000 |
| 11 | 3 | 0.000 | 0.000 | 4.15E-04 | 5.67E-09 | 2.14E-08 | 0.000 | 0.000 |
| 12 | 1 | 0.467 | 0.467 | 4.43E-04 | 5.94E-09 | 2.34E-08 | 529.104 | 5.40E-03 |
| 12 | 2 | 0.448 | 0.915 | 4.68E-04 | 6.12E-09 | 2.54E-08 | 745.587 | 7.60E-03 |
| 12 | 3 | 0.436 | 1.351 | 4.96E-04 | 6.40E-09 | 2.76E-08 | 975.578 | 9.95E-03 |
| 13 | 1 | 0.423 | 1.775 | 5.26E-04 | 6.68E-09 | 2.98E-08 | 1205.570 | 1.23E-02 |
| 13 | 2 | 0.412 | 2.187 | 5.58E-04 | 7.00E-09 | 3.21E-08 | 1435.561 | 1.46E-02 |
| 13 | 3 | 0.402 | 2.589 | 5.92E-04 | 7.33E-09 | 3.46E-08 | 1665.553 | 1.70E-02 |
| 14 | 1 | 0.390 | 2.980 | 6.27E-04 | 7.64E-09 | 3.71E-08 | 1895.544 | 1.93E-02 |
| 14 | 2 | 0.380 | 3.360 | 6.65E-04 | 7.99E-09 | 3.98E-08 | 2125.535 | 2.17E-02 |
| 14 | 3 | 0.371 | 3.731 | 7.05E-04 | 8.36E-09 | 4.26E-08 | 2355.527 | 2.40E-02 |
| 15 | 1 | 0.360 | 4.091 | 7.47E-04 | 8.71E-09 | 4.55E-08 | 2585.518 | 2.64E-02 |
| 15 | 2 | 0.352 | 4.443 | 7.91E-04 | 9.10E-09 | 4.85E-08 | 2815.510 | 2.87E-02 |

| Tube | Inc | >800°F incr. sec. | >800°F coil sec. | Rxn Velocity Constant | ---Coking Factor-- | | --Weight Cracked-- | |
|---------------|-----|-------------------------|------------------------|-----------------------------|--------------------|----------|--------------------|----------------|
| | | | | | Inc | Accum | Accum lbs | Percent Wt% |
| 15 | 3 | 0.343 | 4.786 | 8.38E-04 | 9.51E-09 | 5.17E-08 | 3045.501 | 3.11E-02 |
| 16 | 1 | 0.333 | 5.119 | 8.88E-04 | 9.89E-09 | 5.50E-08 | 3275.493 | 3.34E-02 |
| 16 | 2 | 0.325 | 5.444 | 9.40E-04 | 1.03E-08 | 5.84E-08 | 3505.484 | 3.58E-02 |
| 16 | 3 | 0.317 | 5.761 | 9.96E-04 | 1.08E-08 | 6.20E-08 | 3735.476 | 3.81E-02 |
| 17 | 1 | 0.308 | 6.069 | 1.05E-03 | 1.12E-08 | 6.57E-08 | 3965.467 | 4.04E-02 |
| 17 | 2 | 0.300 | 6.369 | 1.12E-03 | 1.16E-08 | 6.96E-08 | 4195.458 | 4.28E-02 |
| 17 | 3 | 0.293 | 6.662 | 1.18E-03 | 1.21E-08 | 7.37E-08 | 4425.450 | 4.51E-02 |
| 18 | 1 | 0.284 | 6.946 | 1.25E-03 | 1.26E-08 | 7.78E-08 | 4655.441 | 4.75E-02 |
| 18 | 2 | 0.277 | 7.223 | 1.32E-03 | 1.31E-08 | 8.22E-08 | 4885.433 | 4.98E-02 |
| 18 | 3 | 0.270 | 7.493 | 1.40E-03 | 1.36E-08 | 8.67E-08 | 5115.424 | 5.22E-02 |
| 19 | 1 | 0.262 | 7.755 | 1.48E-03 | 1.40E-08 | 9.14E-08 | 5345.416 | 5.45E-02 |
| 19 | 2 | 0.255 | 8.010 | 1.56E-03 | 1.46E-08 | 9.63E-08 | 5575.407 | 5.69E-02 |
| 19 | 3 | 0.248 | 8.258 | 1.65E-03 | 1.51E-08 | 1.01E-07 | 5805.398 | 5.92E-02 |
| 20 | 1 | 0.240 | 8.498 | 1.75E-03 | 1.56E-08 | 1.06E-07 | 6035.390 | 6.16E-02 |
| 20 | 2 | 0.233 | 8.731 | 1.85E-03 | 1.61E-08 | 1.12E-07 | 6265.381 | 6.39E-02 |
| 20 | 3 | 0.227 | 8.959 | 1.95E-03 | 1.67E-08 | 1.17E-07 | 6495.373 | 6.62E-02 |
| Group #4 of 4 | | | Tubes:10 Increments:3 | | | | | |
| 1 | 1 | 0.283 | 9.242 | 2.07E-03 | 2.22E-08 | 1.25E-07 | 6746.769 | 6.88E-02 |
| 1 | 2 | 0.277 | 9.519 | 2.19E-03 | 2.33E-08 | 1.33E-07 | 6998.164 | 7.14E-02 |
| 1 | 3 | 0.271 | 9.790 | 2.33E-03 | 2.43E-08 | 1.41E-07 | 7249.560 | 7.39E-02 |
| 2 | 1 | 0.263 | 10.053 | 2.47E-03 | 2.53E-08 | 1.49E-07 | 7500.956 | 7.65E-02 |
| 2 | 2 | 0.257 | 10.310 | 2.62E-03 | 2.64E-08 | 1.58E-07 | 7823.877 | 7.98E-02 |
| 2 | 3 | 0.250 | 10.560 | 2.77E-03 | 2.74E-08 | 1.67E-07 | 8201.797 | 8.36E-02 |
| 3 | 1 | 0.241 | 10.801 | 2.93E-03 | 2.81E-08 | 1.76E-07 | 8579.716 | 8.75E-02 |
| 3 | 2 | 0.234 | 11.035 | 3.09E-03 | 2.90E-08 | 1.86E-07 | 8957.635 | 9.14E-02 |
| 3 | 3 | 0.227 | 11.262 | 3.27E-03 | 2.99E-08 | 1.96E-07 | 9335.554 | 9.52E-02 |
| 4 | 1 | 0.219 | 11.481 | 3.45E-03 | 3.06E-08 | 2.06E-07 | 9708.713 | 9.90E-02 |
| 4 | 2 | 0.212 | 11.693 | 3.64E-03 | 3.16E-08 | 2.17E-07 | 10081.87 | 0.103 |
| 4 | 3 | 0.206 | 11.899 | 3.84E-03 | 3.25E-08 | 2.28E-07 | 10455.03 | 0.107 |
| 5 | 1 | 0.198 | 12.096 | 4.05E-03 | 3.31E-08 | 2.39E-07 | 10828.19 | 0.110 |
| 5 | 2 | 0.192 | 12.288 | 4.27E-03 | 3.41E-08 | 2.50E-07 | 11201.35 | 0.114 |
| 5 | 3 | 0.186 | 12.474 | 4.51E-03 | 3.50E-08 | 2.62E-07 | 11574.51 | 0.118 |
| 6 | 1 | 0.178 | 12.652 | 4.75E-03 | 3.55E-08 | 2.74E-07 | 11947.67 | 0.122 |
| 6 | 2 | 0.172 | 12.824 | 5.01E-03 | 3.64E-08 | 2.86E-07 | 12316.05 | 0.126 |
| 6 | 3 | 0.166 | 12.990 | 5.27E-03 | 3.72E-08 | 2.98E-07 | 12684.44 | 0.129 |
| 7 | 1 | 0.159 | 13.149 | 5.55E-03 | 3.76E-08 | 3.11E-07 | 13052.83 | 0.133 |
| 7 | 2 | 0.153 | 13.302 | 5.85E-03 | 3.83E-08 | 3.23E-07 | 13421.21 | 0.137 |
| 7 | 3 | 0.148 | 13.450 | 6.16E-03 | 3.91E-08 | 3.36E-07 | 13789.60 | 0.141 |
| 8 | 1 | 0.140 | 13.590 | 6.48E-03 | 3.91E-08 | 3.49E-07 | 14157.99 | 0.144 |

| Tube | Inc | >800°F incr. sec. | >800°F coil sec. | Rxn Velocity Constant | ---Coking Factor-- | | --Weight Cracked-- | |
|------|-----|-------------------------|------------------------|-----------------------------|--------------------|----------|--------------------|----------------|
| | | | | | Inc | Accum | Accum lbs | Percent Wt% |
| 8 | 2 | 0.134 | 13.724 | 6.81E-03 | 3.96E-08 | 3.63E-07 | 14511.62 | 0.148 |
| 8 | 3 | 0.128 | 13.852 | 7.16E-03 | 4.00E-08 | 3.76E-07 | 14865.25 | 0.152 |
| 9 | 1 | 0.120 | 13.973 | 7.52E-03 | 3.95E-08 | 3.89E-07 | 15218.89 | 0.155 |
| 9 | 2 | 0.114 | 14.087 | 7.89E-03 | 3.95E-08 | 4.02E-07 | 15572.52 | 0.159 |
| 9 | 3 | 0.108 | 14.195 | 8.28E-03 | 3.94E-08 | 4.15E-07 | 15926.16 | 0.162 |
| 10 | 1 | 9.96E-02 | 14.295 | 8.69E-03 | 3.81E-08 | 4.28E-07 | 16279.79 | 0.166 |
| 10 | 2 | 9.31E-02 | 14.388 | 9.13E-03 | 3.75E-08 | 4.41E-07 | 16633.42 | 0.170 |
| 10 | 3 | 8.65E-02 | 14.474 | 9.58E-03 | 3.67E-08 | 4.53E-07 | 16987.06 | 0.173 |