EXHIBIT 3

PWR 17x17, Full Cask Model

Final PWR Basket Configuration

3.5% U-235 Enrichment

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THIS IS THE TOP OF AMPX

MODULE NITAWL   HAS BEEN CALLED

* NITAWL
0$$ 35 E
1$$ 0 7 5Z 1 2Z -1 0 T
2$$ 10001 -100 80003 -800 400000 922351 922381
3** 922381 295 2 .411 .173 72.8 .0231 1 16 7.67 1 3Z .3116 T

MODULE NITAWL   IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE XSDRNPM  HAS BEEN CALLED

XSDRN 2X2 CELL PWR 17X17 .5144 IN PITCH 3.5 PCT ENR
1$$ 2 3 21 1 3 3 6 8 3 1 10 10 F0 2$$ -2 -1 -1 F0 3$$ 1 6Z 1 2Z 1 0
4$$ -1 123 0 -2 E T
13$$ 3R1 2 2R3 14$$ 922351 922381 800 400000 100 800
15** 8.470-4 .023057 .047608 .042257 .066743 .033371 T
33** F1 T
35** 910 .41148 11.41738 71.47498 .73717 36$$ 10R1 3R2 8R3
38** 10R1 0 F1 39$$ 1 2 3 40$$ F3 51$$ 121T1 123 T

MODULE XSDRNPM  IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE NITAWL   HAS BEEN CALLED

* NITAWL
0$$ 35 E
1$$ 0 11 0 5 6Z -1 0 T
2$$ 10001 80003 130000 240003 250005 260001 280003 471090 481131 491150
820000 100 800 400000 922351 922381 T

MODULE NITAWL   IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE KENO     HAS BEEN CALLED

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS
10 103 201 3 123 70 16 6 17 262 44 2 22 1 -16 1 0 2000 2Z 1 1 3Z 1 2Z
0 -1 0 -1 2Z
1 -922351 2.411-4 1 922381 6.3625-3 1 800 3.4322-2 1 400000 3.6248-3
1 100 4.1431-2 2 10001 6.6743-2 2 80003 3.3371-2  3 240003 1.6733-2
3 250005 1.7614-3 3 260001 6.0416-2 3 280003 8.3667-3  4 471090 2.1707-2
4 481131 3.3172-4 4 491150 7.6069-3  5 820000 3.2993-2  6 130000 6.0252-2
4 60003 1-15
BOX TYPE  1
CUBOID  6 14.6114 0 1.0693 0 365.76 0 123R.5
BOX TYPE  2
CUBOID  4 11.3741 0 .6293 .2134 365.76 0 123R.5
CUBOID  3 12.2339 0 .9512 .0914 365.76 0 123R.5
CUBOID  2 12.3254 0 .9512 0     365.76 0 123R.5
CUBOID  6 14.6114 0 .9512 0     365.76 0 123R.5
BOX TYPE  3
CUBOID  1 11.3741 0 9.445  0 365.76 0 123R.5
CUBOID  3 11.496  0 9.445  0 365.76 0 123R.5
CUBOID  4 12.1198 0 9.445  0 365.76 0 123R.5
CUBOID  3 12.2339 0 9.445  0 365.76 0 123R.5
CUBOID  2 12.3254 0 9.445  0 365.76 0 123R.5
CUBOID  6 14.6114 0 9.445  0 365.76 0 123R.5
BOX TYPE  4
CUBOID  1 11.3741 0 .9512  0 365.76 0 123R.5
CUBOID  3 11.496  0 .9512  0 365.76 0 123R.5
CUBOID  4 12.1198 0 .9512  0 365.76 0 123R.5
CUBOID  2 12.2339 0 .9512  0 365.76 0 123R.5
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CUBOID  2 12.3254 0 .9512  0 365.76 0 123R.5
CUBOID  6 14.6114 0 .9512  0 365.76 0 123R.5
BOX TYPE  5
CUBOID  1 11.3741 0 2.286  0 365.76 0 123R.5
CUBOID  3 11.496  0 2.286  0 365.76 0 123R.5
CUBOID  4 12.1198 0 2.286  0 365.76 0 123R.5
CUBOID  3 12.2339 0 2.286  0 365.76 0 123R.5
CUBOID  2 12.3254 0 2.286  0 365.76 0 123R.5
CUBOID  6 14.6114 0 2.286  0 365.76 0 123R.5
BOX TYPE  6
CUBOID  1 11.3741 0 .9512  0 365.76 0 123R.5
CUBOID  3 11.496  0 .9512  0 365.76 0 123R.5
CUBOID  4 12.1198 0 .9512  0 365.76 0 123R.5
CUBOID  3 12.2339 0 .9512  0 365.76 0 123R.5
CUBOID  2 12.3254 0 .9512  0 365.76 0 123R.5
CUBOID  6 14.6114 0 .9512  0 365.76 0 123R.5
BOX TYPE  7
CUBOID  1 11.3741 0 9.4552 0 365.76 0 123R.5
CUBOID  3 11.496  0 9.4552 0 365.76 0 123R.5
CUBOID  4 12.1198 0 9.4552 0 365.76 0 123R.5
CUBOID  3 12.2339 0 9.4552 0 365.76 0 123R.5
CUBOID  2 12.3254 0 9.4552 0 365.76 0 123R.5
CUBOID  6 14.6114 0 9.4552 0 365.76 0 123R.5
BOX TYPE  8
CUBOID  4 11.3741 0 .7379 .1219 365.76 0 123R.5
CUBOID  3 12.2339 0 .8598 0     365.76 0 123R.5
CUBOID  2 12.3254 0 .8598 0     365.76 0 123R.5
CUBOID  6 14.6114 0 .8598 0     365.76 0 123R.5
BOX TYPE  9
CUBOID  2 12.3254 0 2.9192 .8905 365.76 0 123R.5
CUBOID  3 12.3254 0 3.81   0 365.76 0 123R.5
CUBOID  6 14.6114 0 3.81   0 365.76 0 123R.5
BOX TYPE  10
CUBOID  4 11.3741 0 .7379 .1219 365.76 0 123R.5
CUBOID  3 12.2339 0 .8598 0     365.76 0 123R.5
CUBOID  2 12.3254 0 .8598 0     365.76 0 123R.5
CUBOID  6 14.6114 0 .8598 0     365.76 0 123R.5
BOX TYPE  11
CUBOID  1 11.3741 0 7.7635 0 365.76 0 123R.5
CUBOID  3 11.496  0 7.7635 0 365.76 0 123R.5
CUBOID  4 12.1198 0 7.7635 0 365.76 0 123R.5
CUBOID  3 12.2339 0 7.7635 0 365.76 0 123R.5
CUBOID  2 12.3254 0 7.7635 0 365.76 0 123R.5
CUBOID  6 14.6114 0 7.7635 0 365.76 0 123R.5
BOX TYPE  12
CUBOID  1 11.3741 0 .9512  0 365.76 0 123R.5
CUBOID  3 11.496  0 .9512  0 365.76 0 123R.5
CUBOID  4 12.1198 0 .9512  0 365.76 0 123R.5
CUBOID  3 12.2339 0 .9512  0 365.76 0 123R.5
CUBOID  2 12.3254 0 .9512  0 365.76 0 123R.5
CUBOID  6 14.6114 0 .9512  0 365.76 0 123R.5
BOX TYPE  13
CUBOID  1 11.3741 0 2.54   0 365.76 0 123R.5
CUBOID  3 11.496  0 2.54   0 365.76 0 123R.5
CUBOID  4 12.1198 0 2.54   0 365.76 0 123R.5
CUBOID  3 12.2339 0 2.54   0 365.76 0 123R.5
CUBOID  2 12.3254 0 2.54   0 365.76 0 123R.5
CUBOID  6 14.6114 0 2.54   0 365.76 0 123R.5
BOX TYPE  14
CUBOID  1 11.3741 0 4.7244 0 365.76 0 123R.5
CUBOID  3 11.496  0 4.7244 0 365.76 0 123R.5
CUBOID  4 12.1198 0 4.7244 0 365.76 0 123R.5
CUBOID  3 12.2339 0 4.7244 0 365.76 0 123R.5
CUBOID  2 12.3254 0 4.7244 0 365.76 0 123R.5
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CUBOID  1 11.3741 0 6.7691 0 365.76 0 123R.5
CUBOID  3 11.496  0 6.7691 0 365.76 0 123R.5
CUBOID  4 12.1198 0 6.7691 0 365.76 0 123R.5
CUBOID  3 12.2339 0 6.7691 0 365.76 0 123R.5
CUBOID  2 12.3254 0 6.7691 0 365.76 0 123R.5
CUBOID  6 14.6114 0 6.7691 0 365.76 0 123R.5
BOX TYPE  16
CUBOID  4 11.3741 0 .7379 .1219 365.76 0 123R.5
CUBOID  3 12.2339 0 .6598 0     365.76 0 123R.5
CUBOID  2 12.3254 0 .9512 0     365.76 0 123R.5
CUBOID  6 14.6114 0 .9512 0     365.76 0 123R.5
BOX TYPE  17
CUBOID  6 14.6114 0 2.40   0 365.76 0 123R.5
BOX TYPE  18
CUBOID  3 13.5    0 1.905 0 365.76 0 123R.5
CUBOID  5 14.6114 0 1.905 0 365.76 0 123R.5
BOX TYPE  19
CUBOID  5 14.6114 0 7.62 0 365.76 0 123R.5
BOX TYPE  20
CUBOID  5 14.6114 0 7.62 0 365.76 0 123R.5
BOX TYPE  21
CUBOID  3 14.6114 0 5.08 0 365.76 0 123R.5
BOX TYPE  22
CUBOID  2 14.6114 0 15.24 0 365.76 0 123R.5
BOX TYPE  23
CUBOID  3 24.365  16.1354  .3175 0 365.76 0 123R.5
CUBOID  2 24.365  16.1354 1.0693 0 365.76 0 123R.5
CUBOID  6 26.651  14.6114 1.0693 0 365.76 0 123R.5
CUBOID  2 26.7424 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 26.8644 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  4 27.4803 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 27.6022 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  1 50.3504 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 50.4723 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  4 51.0883 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 51.2102 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  2 51.3017 14.6114 1.0693 0 365.76 0 123R.5
CUBOID  6 57.15   14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 59.055  14.6114 1.0693 0 365.76 0 123R.5
CUBOID  5 74.295  14.6114 1.0693 0 365.76 0 123R.5
CUBOID  3 79.375  14.6114 1.0693 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 1.0693 0 365.76 0 123R.5
BOX TYPE  24
CUBOID  6 16.1354 14.6114 .9512  0 365.76 0 123R.5
CUBOID  2 24.365  14.6114 .9512  0 365.76 0 123R.5
CUBOID  6 26.651  14.6114 .9512  0 365.76 0 123R.5
CUBOID  2 26.7424 14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 26.8644 14.6114 .9512  0 365.76 0 123R.5
CUBOID  4 27.4803 14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 27.6022 14.6114 .9512  0 365.76 0 123R.5
CUBOID  1 50.3504 14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 50.4723 14.6114 .9512  0 365.76 0 123R.5
CUBOID  4 51.0883 14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 51.2102 14.6114 .9512  0 365.76 0 123R.5
CUBOID  2 51.3017 14.6114 .9512  0 365.76 0 123R.5
CUBOID  6 57.15   14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 59.055  14.6114 .9512  0 365.76 0 123R.5
CUBOID  5 74.295  14.6114 .9512  0 365.76 0 123R.5
CUBOID  3 79.375  14.6114 .9512  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 .9512  0 365.76 0 123R.5
BOX TYPE  25
CUBOID  3 24.365  16.1354 4.4682 3.8532 365.76 0 123R.5
CUBOID  2 24.365  16.1354 9.4450 0      365.76 0 123R.5
CUBOID  6 26.651  14.6114 9.445  0 365.76 0 123R.5
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CUBOID  4 27.4803 14.6114 9.445  0 365.76 0 123R.5
CUBOID  3 27.6022 14.6114 9.445  0 365.76 0 123R.5
CUBOID  1 50.3504 14.6114 9.445  0 365.76 0 123R.5
CUBOID  3 50.4723 14.6114 9.445  0 365.76 0 123R.5
CUBOID  4 51.0863 14.6114 9.445  0 365.76 0 123R.5
CUBOID  3 51.2102 14.6114 9.445  0 365.76 0 123R.5
CUBOID  2 51.3017 14.6114 9.445  0 365.76 0 123R.5
CUBOID  6 56.7    14.6114 9.445  0 365.76 0 123R.5
CUBOID  3 58.6    14.6114 9.445  0 365.76 0 123R.5
CUBOID  5 74.0    14.6114 9.445  0 365.76 0 123R.5
CUBOID  3 79.1    14.6114 9.445  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 9.445  0 365.76 0 123R.5
BOX TYPE  26
CUBOID  4 50.3504 27.6022 .7379 .1219 365.76 0 123R.5
CUBOID  3 51.2102 26.7424 .8598 0     365.76 0 123R.5
CUBOID  2 51.3017 26.651  .9512 0     365.76 0 123R.5
CUBOID  6 55.9    24.365  .9512 0     365.76 0 123R.5
CUBOID  2 55.9    16.1354 .9512 0     365.76 0 123R.5
CUBOID  6 55.9    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 57.8    14.6114 .9512 0     365.76 0 123R.5
CUBOID  5 73.3    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 78.5    14.6114 .9512 0     365.76 0 123R.5
CUBOID  2 94.615  14.6114 .9512 0     365.76 0 123R.5
BOX TYPE  27
CUBOID  5 73.0    57.5    2.286  0 365.76 0 123R.5
CUBOID  3 78.2    55.5    2.286  0 365.76 0 123R.5
CUBOID  6 78.2    14.6114 2.286  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 2.286  0 365.76 0 123R.5
BOX TYPE  28
CUBOID  4 38.3108 15.5626 .8293 .2134 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 .9512 .0914 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 .9512 0     365.76 0 123R.5
CUBOID  6 55.4    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 57.3    14.6114 .9512 0     365.76 0 123R.5
CUBOID  5 72.9    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 78.1    14.6114 .9512 0     365.76 0 123R.5
CUBOID  2 94.615  14.6114 .9512 0     365.76 0 123R.5
BOX TYPE  29
CUBOID  1 38.3108 15.5626 9.4552  0 365.76 0 123R.5
CUBOID  3 38.4327 15.4407 9.4552  0 365.76 0 123R.5
CUBOID  4 39.0487 14.8248 9.4552  0 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 9.4552  0 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 9.4552  0 365.76 0 123R.5
CUBOID  6 41.8021 14.6114 9.4552  0 365.76 0 123R.5
CUBOID  2 46.1276 14.6114 9.4552  0 365.76 0 123R.5
CUBOID  6 53.4    14.6114 9.4552  0 365.76 0 123R.5
CUBOID  3 55.4    14.6114 9.4552  0 365.76 0 123R.5
CUBOID  5 71.4    14.6114 9.4552  0 365.76 0 123R.5
CUBOID  3 76.7    14.6114 9.4552  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 9.4552  0 365.76 0 123R.5
BOX TYPE  30
CUBOID  1 38.3108 15.5626 .8598  0 365.76 0 123R.5
CUBOID  3 38.4327 15.4407 .8598  0 365.76 0 123R.5
CUBOID  4 39.0487 14.8248 .8598  0 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 .8598  0 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 .8598  0 365.76 0 123R.5
CUBOID  6 41.8021 14.6114 .8598  0 365.76 0 123R.5
CUBOID  2 46.1276 14.6114 .8598  0 365.76 0 123R.5
CUBOID  6 50.7    14.6114 .8598  0 365.76 0 123R.5
CUBOID  3 52.8    14.6114 .8598  0 365.76 0 123R.5
CUBOID  5 69.4    14.6114 .8598  0 365.76 0 123R.5
CUBOID  3 74.9    14.6114 .8598  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 .8598  0 365.76 0 123R.5
BOX TYPE  31
CUBOID  1 38.3108 15.5626 3.81    0 365.76 0 123R.5
CUBOID  3 38.4327 15.4407 3.81    0 365.76 0 123R.5
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CUBOID  4 39.0487 14.8248 3.81    0 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 3.81    0 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 3.81    0 365.76 0 123R.5
CUBOID  6 49.7    14.6114 3.81    0 365.76 0 123R.5
CUBOID  3 51.9    14.6114 3.81    0 365.76 0 123R.5
CUBOID  5 68.7    14.6114 3.81    0 365.76 0 123R.5
CUBOID  3 74.2    14.6114 3.81    0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 3.81    0 365.76 0 123R.5
BOX TYPE  32
CUBOID  1 38.3108 15.5626 .8598   0 365.76 0 123R.5
CUBOID  3 38.4327 15.4407 .8598   0 365.76 0 123R.5
CUBOID  4 39.0487 14.8248 .8598   0 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 .8598   0 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 .8598   0 365.76 0 123R.5
CUBOID  6 48.6    14.6114 .8598   0 365.76 0 123R.5
CUBOID  3 50.8    14.6114 .8598   0 365.76 0 123R.5
CUBOID  5 67.9    14.6114 .8598   0 365.76 0 123R.5
CUBOID  3 73.4    14.6114 .8598   0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 .8598   0 365.76 0 123R.5
BOX TYPE  33
CUBOID  1 38.3108 15.5626 7.7635  0 365.76 0 123R.5
CUBOID  3 38.4327 15.4407 7.7635  0 365.76 0 123R.5
CUBOID  4 39.0487 14.8248 7.7635  0 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 7.7635  0 365.76 0 123R.5
CUBOID  2 39.2621 14.6114 7.7635  0 365.76 0 123R.5
CUBOID  6 45.7    14.6114 7.7635  0 365.76 0 123R.5
CUBOID  3 46.1    14.6114 7.7635  0 365.76 0 123R.5
CUBOID  5 65.9    14.6114 7.7635  0 365.76 0 123R.5
CUBOID  3 71.6    14.6114 7.7635  0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 7.7635  0 365.76 0 123R.5
BOX TYPE  34
CUBOID  4 38.3108 15.5626 .7379 .1219 365.76 0 123R.5
CUBOID  3 39.1706 14.7028 .8596 0     365.76 0 123R.5
CUBOID  2 39.2621 14.6114 .9512 0     365.76 0 123R.5
CUBOID  6 42.6    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 44.5    14.6114 .9512 0     365.76 0 123R.5
CUBOID  5 63.4    14.6114 .9512 0     365.76 0 123R.5
CUBOID  3 69.2    14.6114 .9512 0     365.76 0 123R.5
CUBOID  2 94.615  14.6114 .9512 0     365.76 0 123R.5
BOX TYPE  35
CUBOID  6 40.4    14.6114 2.54 0 365.76 0 123R.5
CUBOID  3 43.1    14.6114 2.54 0 365.76 0 123R.5
CUBOID  5 62.4    14.6114 2.54 0 365.76 0 123R.5
CUBOID  3 66.3    14.6114 2.54 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 2.54 0 365.76 0 123R.5
BOX TYPE  36
CUBOID  2 28.8976 15.5626 4.7244 0 365.76 0 123R.5
CUBOID  6 36.3    14.6114 4.7244 0 365.76 0 123R.5
CUBOID  3 39.3    14.6114 4.7244 0 365.76 0 123R.5
CUBOID  5 58.9    14.6114 4.7244 0 365.76 0 123R.5
CUBOID  3 66.0    14.6114 4.7244 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 4.7244 0 365.76 0 123R.5
BOX TYPE  37
CUBOID  5 55.0    31.4    6.7691 0 365.76 0 123R.5
CUBOID  3 61.6    27.7    6.7691 0 365.76 0 123R.5
CUBOID  6 61.6    14.6114 6.7691 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 6.7691 0 365.76 0 123R.5
BOX TYPE  38
CUBOID  5 51.9    25.6    .9512 0 365.76 0 123R.5
CUBOID  3 58.9    20.9    .9512 0 365.76 0 123R.5
CUBOID  6 58.9    14.6114 .9512 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 .9512 0 365.76 0 123R.5
BOX TYPE  39
CUBOID  5 49.5    20.5    2.4 0 365.76 0 123R.5
CUBOID  3 56.8    14.6114 2.4 0 365.76 0 123R.5
CUBOID  2 94.615  14.6114 2.4 0 365.76 0 123R.5
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BOX TYPE  40
CUBOID  5 47.6    14.6114 1.905 0 365.76 0 123R.5
CUBOID  3 54.7    14.6114 1.905 0 365.76 0 123R.5
CUBOID  2 94.615 14.6114 1.905 0 365.76 0 123R.5
BOX TYPE  41
CUBOID  5 40.2    14.6114 7.62  0 365.76 0 123R.5
CUBOID  3 48.9    14.6114 7.62  0 365.76 0 123R.5
CUBOID  2 94.615 14.6114 7.62  0 365.76 0 123R.5
BOX TYPE  42
CUBOID  5 24.9    14.6114 7.62  0 365.76 0 123R.5
CUBOID  3 37.4    14.6114 7.62  0 365.76 0 123R.5
CUBOID  2 94.615 14.6114 7.62  0 365.76 0 123R.5
BOX TYPE  43
CUBOID  3 22.2    14.6114 5.08  0 365.76 0 123R.5
CUBOID  2 94.615 14.6114 5.08  0 365.76 0 123R.5
BOX TYPE  44
CUBOID  2 94.615 14.6114 15.24 0 365.76 0 123R.5
REFLECTOR  2 42 15 15 500
23 2 2 1  1  1 4R1 0
24 2 2 1 2  2  4R1 0
25 2 2 1  3  3 4R1 0
26 2 2 1  4  4 4R1 0
27 2 2 1  5  5 4R1 0
28 2 2 1  6  6 4R1 0
29 2 2 1  7  7 4R1 0
30 2 2 1  8  8 4R1 0
31 2 2 1  9  9 4R1 0
32 2 2 1 10 10 4R1 0
33 2 2 1 11 11 4R1 0
34 2 2 1 12 12 4R1 0
35 2 2 1 13 13 4R1 0
36 2 2 1 14 14 4R1 0
37 2 2 1 15 15 4R1 0
38 2 2 1 16 16 4R1 0
39 2 2 1 17 17 4R1 0
40 2 2 1 18 18 4R1 0
41 2 2 1 19 19 4R1 0
42 2 2 1 20 20 4R1 0
43 2 2 1 21 21 4R1 0
44 2 2 1 22 22 4R1 0
 1 3R1  1  1 4R1 0
 2 3R1  2  2 4R1 0
 3 3R1  3  3 4R1 0
 4 3R1  4  4 4R1 0
 5 3R1  5  5 4R1 0
 6 3R1  6  6 4R1 0
 7 3R1  7  7 4R1 0
 8 3R1  8  8 4R1 0
 9 3R1  9  9 4R1 0
10 3R1 10 10 4R1 0
11 3R1 11 11 4R1 0
12 3R1 12 12 4R1 0
13 3R1 13 13 4R1 0
14 3R1 14 14 4R1 0
15 3R1 15 15 4R1 0
16 3R1 16 16 4R1 0
17 3R1 17 17 4R1 0
18 3R1 18 18 4R1 0
19 3R1 19 19 4R1 0
20 3R1 20 20 4R1 0
21 3R1 21 21 4R1 0
22 3R1 22 22 4R1 1
MODULE KENO    IS FINISHED, USER CODE 0000   SYSTEM CODE 000
```

```
NITAWL

     0$ ARRAY      9 ENTRIES READ

     1$ ARRAY     12 ENTRIES READ

     0T

    NSCH     NUMBER OF EXTRA CROSS SECTIONS                    0
    NMT      NUMBER OF NUCLIDES FROM MASTER LIBRARY            7
    MWT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 2)    0
    MXT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 3)    0
    MCR      ANISN/DOT/MORSE OUTPUT TRIGGER                    0
    MXX      TOTAL CROSS SECTION POSITION                      0
    MS       WITHIN-GROUP SCATTERING CROSS SECTION POSITION    0
    IRES     NUMBER OF RESONANCE CALCULATIONS                  1
    IQM      TABLE LENGTH FOR CROSS SECTIONS                   0
    IPM      IS AN OLD ANISN LIBRARY MOUNTED ? (0/1=NO/YES)    0
    IPP      OUTPUT OPTION TRIGGER                            -1
    IFG      PRINT CONTROL - ANISN OUTPUT                      0

  THE STORAGE ALLOCATED FOR THIS CASE IS 350208 WORDS

     2$ ARRAY      7 ENTRIES READ

     3* ARRAY     15 ENTRIES READ

     0T

    GENERAL INFORMATION CONCERNING CROSS SECTION LIBRARY
      TAPE IDENTIFICATION NUMBER                    0
      NUMBER OF NUCLIDES ON TAPE                  206
      NUMBER OF NEUTRON ENERGY GROUPS             123
      FIRST THERMAL NEUTRON ENERGY GROUP           94
      NUMBER OF GAMMA ENERGY GROUPS                 0

    XSDRN TAPE      0
                    SUPER-XSDRN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--      5-900K,6
                    -800K,7-850K,8-750K,9-1000K,ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
                    MPERATURES ARE DESIRED, CALL C.W. CRAVEN, JR. OR      N. M. GREENE---ALL THER
                    MAL DATA IS PO (IFTG=94).  ALSO J. WILSON DATA  AND 3 1/V NUCLIDES      JULY, 1
                    968                                  -THIS IS A CONVERTED TAPE

    NUCLIDES FROM XSDRN TAPE
      1    URANIUM-235                      THERMAL TEMPERATURE = 294.6 K          922351
      2    URANIUM-238P                     THERMAL TEMPERATURE = 294.6 K          922381
      3    HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K            10001
      4    HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K              100
      5    OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K           60003
      6    OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K             600
      7    ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K         400000

    URANIUM-235                    THERMAL TEMPERATURE = 294.6 K          922351

    URANIUM-238R                   THERMAL TEMPERATURE = 294.6 K          922381

    RESONANCE DATA FOR THIS NUCLIDE

    MASS NUMBER (A)        =    238.000          TEMPERATURE(KELVIN)     =    295.000
```

```
SPIN FACTOR (G)          =      1.000          LUMP DIMENSION (A-BAR)  = 0.4110000E 00
SIGMA-M(EFFECTIVE)       = 0.7279999E 02       DANCOFF CORRECTION (C)  = 0.1730000E 00
THE ABSORBER WILL BE TREATED BY THE NORDHEIM INTEGRAL METHOD.
MASS OF MODERATOR-1      =     16.000          SIGMA(PER ABSORBER ATOM)= 0.7669999E 01
MODERATOR-1 WILL BE TREATED BY THE NORDHEIM INTEGRAL METHOD.
THIS RESONANCE MATERIAL WILL BE TREATED AS A 2-DIMENSIONAL OBJECT.
VOLUME FRACTION OF LUMP IN CELL USED TO ACCOUNT FOR SPATIAL SELF-SHIELDING=0.31160
IHC209I IBCOM - PROGRAM INTERRUPT (1) - DIVIDE CHECK OLD PSW IS  FF8500400207A312
TRACEBACK  ROUTINE  CALLED FROM ISN   REG.  14   REG.  15   REG.   0   REG.   1
           RSNANC            C078    420771F2  000790A8  00051124  00076274
           MSTPRD            0162    420740EE  00076030  000000CE  00072C24
           TAPEKD            0219    52069C88  00072960  00091184  000685E0
           NITAWL                    52069F84  00068098  08002800  00069FA8
           ALOCAT            0073    52068C6E  00069F10  00000000  00067CDC
             MAIN                    00013802  01067C30  00000030  80067260
ENTRY POINT=  01067C30
STANDARD FIXUP TAKEN , EXECUTION CONTINUING
GROUP        RES ABS        RES FISS
 50       4.503454E-02     0.0
 51       5.644771E-02     0.0
 52       7.065427E-02     0.0
 53       8.822636E-02     0.0
 54       1.097224E-01     0.0
 55       1.399526E-01     0.0
 56       1.677716E-01     0.0
 57       2.059034E-01     0.0
 58       2.511217E-01     0.0
 59       3.043749E-01     0.0
 60       3.660388E-01     0.0
 61       4.364820E-01     0.0
 62       5.157664E-01     0.0
 63       6.039047E-01     0.0
 64       6.997099E-01     0.0
 65       7.416977E-01     0.0
 66       7.891298E-01     0.0
 67       7.876071E-01     0.0
 68       9.997522E-01     0.0
 69       1.201341E 00     0.0
 70       1.195052E 00     0.0
 71       1.175694E 00     0.0
 72       1.105050E 00     0.0
 73       1.126532E 00     0.0
 74       1.322448E 00     0.0
 75       2.054536E 00     0.0
 76       1.215260E 00     0.0
 77       4.260267E 00     0.0
 78       1.819791E 00     0.0
```

81	1.965123E 00	0.0
82	8.290844E 00	0.0
83	8.367271E-01	0.0
84	1.237360E 01	0.0
85	3.889907E-01	0.0
86	0.0	0.0
87	6.175446E-01	0.0
88	1.996124E 01	0.0
89	7.829182E 00	0.0
90	9.669526E-01	0.0
91	5.076947E-01	0.0
92	1.504756E-01	0.0

EXCESS RESONANCE INTEGRALS

	RESOLVED	UNRESOLVED	TOTAL
ABSORPTION	0.18358E 02	0.11637E 01	0.19522E 02
FISSION	0.0	0.0	0.0

ELAPSED TIME 0.29 MIN.

HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K 10001

HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K 100

OXYGEN NATURAL BROWN - ST. JOHN KERNEL TEMP. = 293.6 K 80003

OXYGEN NATURAL BROWN - ST. JOHN KERNEL TEMP. = 293.6 K 800

ZIRCONIUM NATURAL BROWN - ST. JOHN KERNEL TEMP. = 627.13 K 400000

ELAPSED TIME 0.37 MIN.

```
THIS XSURN WORKING TAPE WAS CREATED
THE TITLE OF THE PARENT CASE IS AS FOLLOWS
SUPER-XSURN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--        5-900K,6
-800K,7-850K,8-750K,9-1000K,ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
MPERATURES ARE DESIRED, CALL C.W. CRAVEN, JR. OR        N. M. GREENE----ALL THER
 TAPE ID                                  0        NUMBER OF NUCLIDES                    7
 NUMBER OF NEUTRON GROUPS               123        NUMBER OF GAMMA GROUPS                0
 FIRST THERMAL GROUP                     94
                              TABLE OF CONTENTS
URANIUM-235                    THERMAL TEMPERATURE = 294.6 K          ID    922351
URANIUM-238                    THERMAL TEMPERATURE = 294.6 K          ID    922381
HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K         ID     10001
HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K         ID       100
OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K        ID     80003
OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K        ID       800
ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K       ID    400000
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                    XSDRN 2X2 CELL PWR 17X17 .5144 IN PITCH 3.5 PCT ENR

     1$ ARRAY     15 ENTRIES READ

     2$ ARRAY     10 ENTRIES READ

     3$ ARRAY     12 ENTRIES READ

     4$ ARRAY      9 ENTRIES READ

     OT

          THE FOLLOWING DIRECT ACCESS SPACE IS REQUIRED
     LOGICAL UNIT  6 HAS    176 BLOCKS OF LENGTH  880 WORDS
     LOGICAL UNIT  9 HAS    132 BLOCKS OF LENGTH  880 WORDS
     LOGICAL UNIT 10 HAS    492 BLOCKS OF LENGTH  105 WORDS
GENERAL PROBLEM DESCRIPTION DATA BLOCK

                         GENERAL PROBLEM DATA

IGE   1/2/3 = PLANE/CYLINDER/SPHERE        2     ISN   QUADRATURE ORDER                    8
IZM   NUMBER OF ZONES                      3     ISCT  ORDER OF SCATTERING                3
IM    NUMBER OF SPACIAL INTERVALS         21     IEVT  0/1/2/3/4/5/6=Q/K/ALPHA/C/Z/R/H    1
IBL   0/1/2/3 = VACUUM/REFL/PER/WHITE      1     IIM   INNER ITERATION MAXIMUM           10
IBR   RIGHT BOUNDARY CONDITION             3     ICM   OUTER ITERATION MAXIMUM           10
MXX   NUMBER OF MIXTURES                   3     ICLC  -1/0/N--FLAT RES/SN/OPT            0
MS    MIXING TABLE LENGTH                  6     ITM   0/1 = FORWARD/ADJOINT              0
IGM   NUMBER OF ENERGY GROUPS            123     IFLU  0/1/2/3/4=L-S/L/S/W/L-W            0
NNG   NUMBER OF NEUTRON GROUPS           123     IPRT  -2/-1/0/N=MIXTURE XSEC PRINT      -2
NGG   NUMBER OF GAMMA GROUPS               0     ID1   0/1/2/3=NO/PRT ND/PCH N/BOTH      -1
IFTG  NUMBER OF FIRST THERMAL GROUP       94     IPBT  -1/0/1=NONE/FINE/ALL BAL. PRT     -1

                         SPECIAL OPTIONS

IFG   0/1 = NONE/WEIGHTING CALCULATION     1     IPN   DUMMY PARAMETER                    0
IUM   VOLUMETRIC SOURCES (0/N=NO/YES)      0     IDFM  0/1 = NONE/DENSITY FACTORS 38*     1
IPM   BOUNDARY SOURCES (0/N=NO/YES)        0     IAZ   0/N = NONE/N ACTIVITIES BY ZONE     0
IFN   0/1/2 = INPUT 33*/34*/USE LAST       0     IAI   0/1=NONE/ACTIVITIES BY INTERVAL    0
ITMX  MAXIMUM TIME (MINUTES)               0     IFCT  0/1=NO/YES UPSCATTER SCALING       1
IDT1  0/1/2/3=NO/XSECT/SRCE/FLUX--OUT      0     IPVT  0/1/2=NO/K/ALPHA PARAMETRIC SRCH   0

                    WEIGHTING DATA (IFG=1)

ICON  -1/0/1=CELL/ZONE/REGION WEIGHT      -1     INTF  TOTAL XSECT PSN IN BRD GP TABLES   3
IGMF  NUMBER OF BROAD GROUPS             123     NUSF  PSN G-G OR FILE NUMBER              4
ITP   0/10/20/30/40 0/C/E/AC/A             0     NUSF  TABLE LENGTH OR MAX ORDER         126
IPP   -2/-1/0/N=WGTED XSECT PRINT         -2     MSCM  EXTRA 1-D X-SECT POSITIONS          0
IAP   -1/N ANISN XSECT PRINT              -1

                         FLOATING POINT PARAMETERS

EV    EIGENVALUE GUESS          0.0          PV    IPVT=1/2--K/ALPHA          0.0
EVM   EIGENVALUE MODIFIER       0.0          EPS   OVERALL CONVERGENCE        1.00000E-04
BF    BUCKLING FACTOR=1.420892  1.42089E 00  PTC   POINT CONVERGENCE          1.00000E-04
DY    CYL/PLA HT FOR BUCKLING   0.0          XNF   NORMALIZATION FACTOR       1.00000E 00
DZ    PLANE DEPTH FOR BUCKLING  0.0          EQL   EV CHANGE EPS FOR SEARCH   1.00000E-03
VSC   VOID STREAMING CORRECTION 0.0          XNPM  NEW PARAM MOD FOR SEARCH   7.50000E-01
      THIS CASE WILL REQUIRE    17717 LOCATIONS FOR MIXING
      THIS CASE HAS BEEN ALLOCATED 350720 LOCATIONS
```

9/75

XSORN 2X2 CELL PWR 17X17 .5144 IN PITCH 3.5 PCT ENR

13$ ARRAY 6 ENTRIES READ

14$ ARRAY 6 ENTRIES READ

15* ARRAY 6 ENTRIES READ

0T

DATA BLOCK 2 (MIXING TABLE, ETC.)

NUCLIDES ON TAPE	CCCC IDENTIFICATION	MIXTURE	MIXING TABLE COMPONENT	ATOM DENSITY	EXTRA XSECT ID'S
1 922351		1	922351	8.47000E-04	
2 922381		1	922381	2.30570E-02	
3 10001		1	800	4.78080E-02	
4 100		2	400000	4.22570E-02	
5 80003		3	100	6.67430E-02	
6 800		3	800	3.33710E-02	
7 400000					

ELAPSED TIME 0.08 MIN.

8559 LOCATIONS WILL BE USED

33* ARRAY 2583 ENTRIES READ

0T

35* ARRAY 22 ENTRIES READ

36$ ARRAY 21 ENTRIES READ

38* ARRAY 21 ENTRIES READ

39$ ARRAY 3 ENTRIES READ

40$ ARRAY 3 ENTRIES READ

51$ ARRAY 123 ENTRIES READ

0T

XSDRN 2X2 CELL PWR 17X17 .5144 IN PITCH 3.5 PCT ENR
NEUTRON GROUP PARAMETERS

GP	ENERGY BOUNDARIES	LETHARGY BOUNDARIES	MID PT VELOCITIES	BROAD GP NUMBERS	CALC TYPE	RIGHT ALBEDO	LEFT ALBEDO
1	1.491826E 07	-3.99997E-01	5.21031E 09	1	0	1.00000E 00	
2	1.349866E 07	-3.00001E-01	4.95620E 09	2	0	1.00000E 00	
3	1.22140E 07	-1.99998E-01	4.71448E 09	3	0	1.00000E 00	
4	1.10517E 07	-9.99992E-02	4.48455E 09	4	0	1.00000E 00	
5	1.00000E 07	0	4.26584E 09	5	0	1.00000E 00	
6	9.04837E 06	1.00000E-01	4.05780E 09	6	0	1.00000E 00	
7	8.18731E 06	2.00000E-01	3.85490E 09	7	0	1.00000E 00	
8	7.40818E 06	3.00000E-01	3.67165E 09	8	0	1.00000E 00	
9	6.70320E 06	4.00000E-01	3.49258E 09	9	0	1.00000E 00	
10	6.06531E 06	4.99999E-01	3.32224E 09	10	0	1.00000E 00	
11	5.48812E 06	5.99999E-01	3.16021E 09	11	0	1.00000E 00	
12	4.96585E 06	7.00001E-01	3.00609E 09	12	0	1.00000E 00	
13	4.49329E 06	8.00000E-01	2.85949E 09	13	0	1.00000E 00	
14	4.06570E 06	8.99999E-01	2.72002E 09	14	0	1.00000E 00	
15	3.67879E 06	1.00000E 00	2.58736E 09	15	0	1.00000E 00	
16	3.32871E 06	1.10000E 00	2.46118E 09	16	0	1.00000E 00	
17	3.01194E 06	1.20000E 00	2.34115E 09	17	0	1.00000E 00	
18	2.72532E 06	1.30000E 00	2.22697E 09	18	0	1.00000E 00	
19	2.46597E 06	1.40000E 00	2.11835E 09	19	0	1.00000E 00	
20	2.23130E 06	1.50000E 00	2.01504E 09	20	0	1.00000E 00	
21	2.01897E 06	1.60000E 00	1.91677E 09	21	0	1.00000E 00	
22	1.82684E 06	1.70000E 00	1.82329E 09	22	0	1.00000E 00	
23	1.65299E 06	1.80000E 00	1.73436E 09	23	0	1.00000E 00	
24	1.49569E 06	1.90000E 00	1.64978E 09	24	0	1.00000E 00	
25	1.35335E 06	2.00000E 00	1.56931E 09	25	0	1.00000E 00	
26	1.22456E 06	2.10000E 00	1.49278E 09	26	0	1.00000E 00	
27	1.10803E 06	2.20000E 00	1.41998E 09	27	0	1.00000E 00	
28	1.00259E 06	2.30000E 00	1.35072E 09	28	0	1.00000E 00	
29	9.07160E 05	2.40000E 00	1.28485E 09	29	0	1.00000E 00	
30	8.20850E 05	2.50000E 00	1.22218E 09	30	0	1.00000E 00	
31	7.42736E 05	2.60000E 00	1.16256E 09	31	0	1.00000E 00	
32	6.72055E 05	2.70000E 00	1.10588E 09	32	0	1.00000E 00	
33	6.08101E 05	2.80000E 00	1.05194E 09	33	0	1.00000E 00	
34	5.50232E 05	2.90000E 00	1.00064E 09	34	0	1.00000E 00	
35	4.97871E 05	3.00000E 00	9.51639E 08	35	0	1.00000E 00	
36	4.50492E 05	3.10000E 00	9.05417E 08	36	0	1.00000E 00	
37	4.07622E 05	3.20000E 00	8.61259E 08	37	0	1.00000E 00	
38	3.68832E 05	3.30000E 00	8.19255E 08	38	0	1.00000E 00	
39	3.33733E 05	3.40000E 00	7.79300E 08	39	0	1.00000E 00	
40	3.01974E 05	3.50000E 00	7.41293E 08	40	0	1.00000E 00	
41	2.73237E 05	3.60000E 00	7.05139E 08	41	0	1.00000E 00	
42	2.47235E 05	3.70000E 00	6.70749E 08	42	0	1.00000E 00	
43	2.23708E 05	3.80000E 00	6.38036E 08	43	0	1.00000E 00	
44	2.02419E 05	3.90000E 00	6.06919E 08	44	0	1.00000E 00	
45	1.83156E 05	4.00000E 00	5.77319E 08	45	0	1.00000E 00	
46	1.65727E 05	4.10000E 00	5.49164E 08	46	0	1.00000E 00	
47	1.49956E 05	4.20000E 00	5.22381E 08	47	0	1.00000E 00	
48	1.35636E 05	4.30000E 00	4.96903E 08	48	0	1.00000E 00	
49	1.22773E 05	4.40000E 00	4.72669E 08	49	0	1.00000E 00	
50	1.11090E 05	4.50000E 00	4.33068E 08	50	0	1.00000E 00	
51	8.65170E 04	4.75000E 00	3.82181E 08	51	0	1.00000E 00	
52	6.73795E 04	5.00000E 00	3.37274E 08	52	0	1.00000E 00	
53	5.24752E 04	5.25000E 00	2.97643E 08	53	0	1.00000E 00	
54	4.08677E 04	5.50000E 00	2.62669E 08	54	0	1.00000E 00	
55	3.18278E 04	5.75000E 00	2.31805E 08	55	0	1.00000E 00	
56	2.47875E 04	6.00000E 00	2.04567E 08	56	0	1.00000E 00	
57	1.93045E 04	6.25000E 00	1.80530E 08	57	0	1.00000E 00	
58	1.50344E 04	6.50000E 00	1.59317E 08	58	0	1.00000E 00	
59	1.17100E 04	6.75000E 00	1.40597E 08	59	0	1.00000E 00	

60	9.11862E 03	7.00000E 00	1.24076E 08	60	0	1.00000E 00	
61	7.10175E 03	7.25000E 00	1.09497E 08	61	0	1.00000E 00	
62	5.53085E 03	7.50000E 00	9.66305E 07	62	0	1.00000E 00	
63	4.30743E 03	7.75000E 00	8.52762E 07	63	0	1.00000E 00	
64	3.35463E 03	8.00000E 00	7.52562E 07	64	0	1.00000E 00	
65	2.61259E 03	8.25000E 00	6.64132E 07	65	0	1.00000E 00	
66	2.03468E 03	8.50000E 00	5.86094E 07	66	0	1.00000E 00	
67	1.58461E 03	8.75000E 00	5.17226E 07	67	0	1.00000E 00	
68	1.23410E 03	9.00000E 00	4.56452E 07	68	0	1.00000E 00	
69	9.61117E 02	9.25000E 00	4.02818E 07	69	0	1.00000E 00	
70	7.48519E 02	9.50000E 00	3.55485E 07	70	0	1.00000E 00	
71	5.82947E 02	9.75000E 00	3.13713E 07	71	0	1.00000E 00	
72	4.53999E 02	1.00000E 01	2.76951E 07	72	0	1.00000E 00	
73	3.53575E 02	1.02500E 01	2.44321E 07	73	0	1.00000E 00	
74	2.75365E 02	1.05000E 01	2.15613E 07	74	0	1.00000E 00	
75	2.14454E 02	1.07500E 01	1.90277E 07	75	0	1.00000E 00	
76	1.67017E 02	1.10000E 01	1.67919E 07	76	0	1.00000E 00	
77	1.30073E 02	1.12500E 01	1.48186E 07	77	0	1.00000E 00	
78	1.01301E 02	1.15000E 01	1.30775E 07	78	0	1.00000E 00	
79	7.88933E 01	1.17500E 01	1.15409E 07	79	0	1.00000E 00	
80	6.14421E 01	1.20000E 01	1.01848E 07	80	0	1.00000E 00	
81	4.78512E 01	1.22500E 01	8.98604E 06	81	0	1.00000E 00	
82	3.72665E 01	1.25000E 01	7.93192E 06	82	0	1.00000E 00	
83	2.90232E 01	1.27500E 01	6.99969E 06	83	0	1.00000E 00	
84	2.26033E 01	1.30000E 01	6.17736E 06	84	0	1.00000E 00	
85	1.76035E 01	1.32500E 01	5.45154E 06	85	0	1.00000E 00	
86	1.37096E 01	1.35000E 01	4.81045E 06	86	0	1.00000E 00	
87	1.06770E 01	1.37500E 01	4.24565E 06	87	0	1.00000E 00	
88	8.31529E 00	1.40000E 01	3.74677E 06	88	0	1.00000E 00	
89	6.47595E 00	1.42500E 01	3.30652E 06	89	0	1.00000E 00	
90	5.04348E 00	1.45000E 01	2.91799E 06	90	0	1.00000E 00	
91	3.92786E 00	1.47500E 01	2.57512E 06	91	0	1.00000E 00	
92	3.05902E 00	1.50000E 01	2.27253E 06	92	0	1.00000E 00	
93	2.38237E 00	1.52500E 01	2.00651E 06	93	0	1.00000E 00	
94	1.85913E 00	1.54960E 01	1.84661E 06	94	0	1.00000E 00	
95	1.70900E 00	1.55822E 01	1.76924E 06	95	0	1.00000E 00	
96	1.56660E 00	1.56692E 01	1.69260E 06	96	0	1.00000E 00	
97	1.43154E 00	1.57593E 01	1.61076E 06	97	0	1.00000E 00	
98	1.28490E 00	1.58674E 01	1.51953E 06	98	0	1.00000E 00	
99	1.13373E 00	1.59926E 01	1.42694E 06	99	0	1.00000E 00	
100	9.94193E-01	1.61189E 01	1.33975E 06	100	0	1.00000E 00	
101	8.81034E-01	1.62448E 01	1.25459E 06	101	0	1.00000E 00	
102	7.68351E-01	1.63616E 01	1.16507E 06	102	0	1.00000E 00	
103	6.55216E-01	1.65409E 01	1.07106E 06	103	0	1.00000E 00	
104	5.48797E-01	1.67181E 01	9.74248E 05	104	0	1.00000E 00	
105	4.48545E-01	1.69196E 01	8.77658E 05	105	0	1.00000E 00	
106	3.61440E-01	1.71357E 01	7.93328E 05	106	0	1.00000E 00	
107	2.99447E-01	1.73239E 01	7.23011E 05	107	0	1.00000E 00	
108	2.49346E-01	1.75070E 01	6.59115E 05	108	0	1.00000E 00	
109	2.07066E-01	1.76948E 01	6.07598E 05	109	0	1.00000E 00	
110	1.74843E-01	1.78338E 01	5.69511E 05	110	0	1.00000E 00	
111	1.59850E-01	1.79517E 01	5.34765E 05	111	0	1.00000E 00	
112	1.39611E-01	1.80856E 01	4.97563E 05	112	0	1.00000E 00	
113	1.19782E-01	1.82402E 01	4.57276E 05	113	0	1.00000E 00	
114	9.97377E-02	1.84233E 01	4.16335E 05	114	0	1.00000E 00	
115	8.23109E-02	1.86153E 01	3.80934E 05	115	0	1.00000E 00	
116	6.99049E-02	1.87787E 01	3.51847E 05	116	0	1.00000E 00	
117	5.98906E-02	1.89333E 01	3.23343E 05	117	0	1.00000E 00	
118	4.98691E-02	1.91164E 01	2.92007E 05	118	0	1.00000E 00	
119	3.98366E-02	1.93411E 01	2.56695E 05	119	0	1.00000E 00	
120	2.97804E-02	1.96320E 01	2.18925E 05	120	0	1.00000E 00	
121	2.10764E-02	1.99777E 01	1.84095E 05	121	0	1.00000E 00	
122	1.48907E-02	2.03251E 01	1.52133E 05	122	0	1.00000E 00	
123	9.82919E-03	2.07405E 01	1.14283E 05	123	0	1.00000E 00	
124	4.74190E-03	2.14694E 01					

XSDRN 2X2 CELL PWR 17X17 .5144 IN PITCH 3.5 PCT ENR

	MIXTURE BY ZONE	ORDER P(L) BY ZONE	ACTIVITY TABLE MATL NO.	ACTIVITY TABLE REACTION	QUADRATURE CONSTANTS WEIGHTS	DIRECTIONS	REFL DIREC	WT X COS
1	1	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98547E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4					0	-6.04419E-01	6	0
5					5.55952E-02	-5.58410E-01	8	-3.10449E-02
6					5.55952E-02	-2.31301E-01	7	-1.28592E-02
7					5.55952E-02	2.31301E-01	6	1.28593E-02
8					5.55952E-02	5.58411E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01587E-01	14	-3.14537E-02
12					5.22844E-02	-2.20195E-01	13	-1.15128E-02
13					5.22844E-02	2.20197E-01	12	1.15129E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83022E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17360E-01	23	-3.70554E-02
19					4.53355E-02	-5.46143E-01	22	-2.47596E-02
20					4.53355E-02	-1.91779E-01	21	-8.69440E-03
21					4.53355E-02	1.91781E-01	20	8.69447E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70555E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

CONSTANTS FOR P(3) SCATTERING

ANGL	SET 1	SET 2	SET 3	SET 4	SET 5
1	-2.79004E-01	8.83234E-01	6.74143E-02	-6.16918E-01	-1.71701E-02
2	-1.97286E-01	8.83234E-01	0.0	-4.36226E-01	1.21412E-02
3	1.97286E-01	8.83234E-01	0.0	4.36227E-01	-1.21411E-02
4	-6.04419E-01	4.52015E-01	3.16378E-01	-8.04434E-01	-1.74564E-01
5	-5.58410E-01	4.52015E-01	2.23712E-01	-7.43199E-01	-6.68014E-02
6	-2.31301E-01	4.52015E-01	-2.23714E-01	-3.07843E-01	1.61276E-01
7	2.31302E-01	4.52015E-01	-2.23713E-01	3.07845E-01	-1.61276E-01
8	5.58411E-01	4.52015E-01	2.23713E-01	7.43200E-01	6.68026E-02
9	-8.50774E-01	-8.57236E-02	6.26843E-01	-1.98455E-01	-4.86835E-01
10	-6.21784E-01	-8.57236E-02	5.42860E-01	-1.91693E-01	-3.44242E-01
11	-6.01587E-01	-8.57236E-02	0.0	-1.40329E-01	3.44246E-01
12	-2.20195E-01	-8.57236E-02	-5.42863E-01	-5.13637E-02	3.44242E-01
13	2.20198E-01	-8.57236E-02	-5.42861E-01	5.13643E-02	-3.44246E-01
14	6.01588E-01	-8.57236E-02	0.0	1.40329E-01	-3.44244E-01
15	8.21784E-01	-8.57236E-02	5.42862E-01	1.91693E-01	3.44244E-01
16	-9.83022E-01	-4.49528E-01	8.36865E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73179E-01	4.91082E-01	-6.24435E-01
18	-8.17360E-01	-4.49528E-01	3.20258E-01	4.16319E-01	1.46519E-01
19	-5.46144E-01	-4.49528E-01	-3.20264E-01	2.78175E-01	7.36575E-01
20	-1.91779E-01	-4.49528E-01	-7.73181E-01	9.76819E-02	4.17234E-01
21	1.91782E-01	-4.49528E-01	-7.73180E-01	-9.76831E-02	-4.17239E-01
22	5.46144E-01	-4.49528E-01	-3.20261E-01	-2.78176E-01	-7.36574E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16319E-01	-1.46513E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91082E-01	6.24437E-01

INT	RADII	MID PTS	ZONE NO.	AREAS	VOLUMES	DENS FACT	RADIUS MOD	SPEC(INT)
1	0	2.05740E-02	1	0	5.31921E-03	1.00000E 00	0	
2	4.11460E-02	6.17220E-02	1	2.58540E-01	1.59576E-02	1.00000E 00	0	
3	8.22960E-02	1.02870E-01	1	5.17081E-01	2.65960E-02	1.00000E 00	0	
4	1.23444E-01	1.44018E-01	1	7.75621E-01	3.72345E-02	1.00000E 00		
5	1.64592E-01	1.85166E-01	1	1.03416E 00	4.78729E-02	1.00000E 00		
6	2.05740E-01	2.26314E-01	1	1.29270E 00	5.85114E-02	1.00000E 00		
7	2.46888E-01	2.67462E-01	1	1.55124E 00	6.91497E-02	1.00000E 00		
8	2.88036E-01	3.08610E-01	1	1.80978E 00	7.97881E-02	1.00000E 00		
9	3.29184E-01	3.49758E-01	1	2.06832E 00	9.04264E-02	1.00000E 00		
10	3.70332E-01	3.90906E-01	1	2.32686E 00	1.01075E-01	1.00000E 00		
11	4.11480E-01	4.14430E-01	2	2.58540E 00	1.53632E-02	0		
12	4.17380E-01	4.31760E-01	2	2.62247E 00	7.81331E-02	1.00000E 00		
13	4.46180E-01	4.60580E-01	2	2.80343E 00	8.33445E-02	1.00000E 00		
14	4.74980E-01	4.91367E-01	3	2.98439E 00	1.01164E-01	1.00000E 00		
15	5.07754E-01	5.24140E-01	3	3.19031E 00	1.07933E-01	1.00000E 00		
16	5.40527E-01	5.56914E-01	3	3.39623E 00	1.14682E-01	1.00000E 00		
17	5.73301E-01	5.89688E-01	3	3.60216E 00	1.21431E-01	1.00000E 00		
18	6.06075E-01	6.22462E-01	3	3.80808E 00	1.28180E-01	1.00000E 00		
19	6.38849E-01	6.55235E-01	3	4.01400E 00	1.34926E-01	1.00000E 00		
20	6.71622E-01	6.88009E-01	3	4.21993E 00	1.41677E-01	1.00000E 00		
21	7.04396E-01	7.20783E-01	3	4.42585E 00	1.48427E-01	1.00000E 00		
22	7.37170E-01			4.63177E 00				

ELAPSED TIME 0.10 MIN.

OUTER	INNER	BALANCE	UPSCATTER RATIO	EIGENVALUE	LAMBDA1	LAMBDA2	TIME(MIN)
1	1078	1.0000353E 00	1.1527346E 00	1.2376566E 00	1.3412476E 00	0.0	0.8213
2	1994	1.0000353E 00	1.0147219E 00	1.4283403E 00	1.0724707E 00	1.1735172E 00	1.4672
3	2667	1.0000372E 00	1.0006909E 00	1.4456949E 00	1.0054646E 00	1.0195942E 00	2.0145
4	2984	1.0000391E 00	9.9994650E-01	1.4466332E 00	1.0017166E 00	1.0023613E 00	2.3850
5	3471	1.0000381E 00	9.9957722E-01	1.4468039E 00	9.9624226E-01	1.0003748E 00	2.7407
6	4015	1.0000343E 00	9.9995959E-01	1.4484911E 00	9.9995136E-01	9.9955366E-01	3.1215
7	4533	1.0000362E 00	9.9998552E-01	1.4484005E 00	9.9996608E-01	9.9997354E-01	3.6910

GRP. 1 REQUIRED 6 ITERATIONS. MFD OF 9.71933E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 2 REQUIRED 6 ITERATIONS. MFD OF 9.67166E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 3 REQUIRED 6 ITERATIONS. MFD OF 9.88193E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 4 REQUIRED 6 ITERATIONS. MFD OF 9.82023E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 5 REQUIRED 6 ITERATIONS. MFD OF 9.55014E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 6 REQUIRED 6 ITERATIONS. MFD OF 9.76005E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 7 REQUIRED 6 ITERATIONS. MFD OF 8.97473E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 8 REQUIRED 6 ITERATIONS. MFD OF 9.28661E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 9 REQUIRED 6 ITERATIONS. MFD OF 9.58119E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 10 REQUIRED 6 ITERATIONS. MFD OF 8.55321E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 11 REQUIRED 6 ITERATIONS. MFD OF 8.49569E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 12 REQUIRED 6 ITERATIONS. MFD OF 8.19271E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 13 REQUIRED 6 ITERATIONS. MFD OF 7.66863E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 14 REQUIRED 6 ITERATIONS. MFD OF 7.47924E-05 OCCURRED IN INT. 20 COARSE MESH= 1
GRP. 15 REQUIRED 5 ITERATIONS. MFD OF 9.31296E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 16 REQUIRED 6 ITERATIONS. MFD OF 7.41569E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 17 REQUIRED 6 ITERATIONS. MFD OF 8.51808E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 18 REQUIRED 6 ITERATIONS. MFD OF 8.35225E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 19 REQUIRED 6 ITERATIONS. MFD OF 8.80081E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 20 REQUIRED 6 ITERATIONS. MFD OF 7.94798E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 21 REQUIRED 5 ITERATIONS. MFD OF 9.09421E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 22 REQUIRED 6 ITERATIONS. MFD OF 7.64575E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 23 REQUIRED 5 ITERATIONS. MFD OF 9.77454E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 24 REQUIRED 5 ITERATIONS. MFD OF 9.49452E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 25 REQUIRED 5 ITERATIONS. MFD OF 7.13517E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 26 REQUIRED 5 ITERATIONS. MFD OF 8.77616E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 27 REQUIRED 5 ITERATIONS. MFD OF 6.67998E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 28 REQUIRED 5 ITERATIONS. MFD OF 5.90344E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 29 REQUIRED 5 ITERATIONS. MFD OF 7.75649E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 30 REQUIRED 5 ITERATIONS. MFD OF 7.62812E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 31 REQUIRED 5 ITERATIONS. MFD OF 7.23683E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 32 REQUIRED 5 ITERATIONS. MFD OF 6.97206E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 33 REQUIRED 5 ITERATIONS. MFD OF 6.40986E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 34 REQUIRED 5 ITERATIONS. MFD OF 5.23276E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 35 REQUIRED 4 ITERATIONS. MFD OF 7.13251E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 36 REQUIRED 4 ITERATIONS. MFD OF 5.63572E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 37 REQUIRED 4 ITERATIONS. MFD OF 9.09831E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 38 REQUIRED 5 ITERATIONS. MFD OF 4.88051E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 39 REQUIRED 5 ITERATIONS. MFD OF 4.92743E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 40 REQUIRED 5 ITERATIONS. MFD OF 4.76791E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 41 REQUIRED 4 ITERATIONS. MFD OF 9.68339E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 42 REQUIRED 4 ITERATIONS. MFD OF 9.61801E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 43 REQUIRED 4 ITERATIONS. MFD OF 9.31855E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 44 REQUIRED 4 ITERATIONS. MFD OF 8.88574E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 45 REQUIRED 4 ITERATIONS. MFD OF 8.72675E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 46 REQUIRED 4 ITERATIONS. MFD OF 8.51676E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 47 REQUIRED 4 ITERATIONS. MFD OF 8.03985E-05 OCCURRED IN INT. 2 COARSE MESH= 1
GRP. 48 REQUIRED 4 ITERATIONS. MFD OF 7.74179E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 49 REQUIRED 4 ITERATIONS. MFD OF 7.61497E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 50 REQUIRED 4 ITERATIONS. MFD OF 7.07642E-05 OCCURRED IN INT. 2 COARSE MESH= 1
GRP. 51 REQUIRED 4 ITERATIONS. MFD OF 6.67274E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 52 REQUIRED 4 ITERATIONS. MFD OF 6.39383E-05 OCC[illegible]D IN INT. 4 COARSE MESH= 1
GRP. 53 REQUIRED 4 ITERATIONS. MFD OF 5.93778E-05 OC[illegible]D IN INT. 3 COARSE MESH= 1
GRP. 54 REQUIRED 4 ITERATIONS. MFD OF 5.69623E-05 OC[illegible]D IN INT. 2 COARSE MESH= 1
GRP. 55 REQUIRED 4 ITERATIONS. MFD OF 5.67139E-05 OCCURRED IN INT. 3 COARSE MESH= 1
[illegible] OCCURRED IN INT. 2 COARSE MESH= 1

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GRP.  57 REQUIRED   4 ITERATIONS. MFD OF  5.40883E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  58 REQUIRED   4 ITERATIONS. MFD OF  5.23546E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  59 REQUIRED   4 ITERATIONS. MFD OF  5.45397E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  60 REQUIRED   4 ITERATIONS. MFD OF  5.18662E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  61 REQUIRED   4 ITERATIONS. MFD OF  5.18669E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  62 REQUIRED   4 ITERATIONS. MFD OF  5.20307E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  63 REQUIRED   4 ITERATIONS. MFD OF  5.15285E-05 OCCURRED IN INT.  3  COARSE MESH=  1
GRP.  64 REQUIRED   4 ITERATIONS. MFD OF  4.90350E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  65 REQUIRED   4 ITERATIONS. MFD OF  5.23089E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  66 REQUIRED   4 ITERATIONS. MFD OF  5.45244E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  67 REQUIRED   4 ITERATIONS. MFD OF  5.21141E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  68 REQUIRED   4 ITERATIONS. MFD OF  5.34560E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  69 REQUIRED   4 ITERATIONS. MFD OF  5.30734E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  70 REQUIRED   4 ITERATIONS. MFD OF  5.39622E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  71 REQUIRED   4 ITERATIONS. MFD OF  5.20961E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  72 REQUIRED   4 ITERATIONS. MFD OF  5.10208E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  73 REQUIRED   4 ITERATIONS. MFD OF  5.05562E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  74 REQUIRED   4 ITERATIONS. MFD OF  5.15131E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  75 REQUIRED   4 ITERATIONS. MFD OF  6.54503E-05 OCCURRED IN INT.  1  COARSE MESH=  2
GRP.  76 REQUIRED   4 ITERATIONS. MFD OF  4.83507E-05 OCCURRED IN INT.  4  COARSE MESH=  1
GRP.  77 REQUIRED   4 ITERATIONS. MFD OF  2.97701E-05 OCCURRED IN INT. 10  COARSE MESH=  2
GRP.  78 REQUIRED   4 ITERATIONS. MFD OF  4.67824E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  79 REQUIRED   4 ITERATIONS. MFD OF  7.48305E-05 OCCURRED IN INT.  1  COARSE MESH=  2
GRP.  80 REQUIRED   4 ITERATIONS. MFD OF  4.94507E-05 OCCURRED IN INT.  3  COARSE MESH=  1
GRP.  81 REQUIRED   4 ITERATIONS. MFD OF  5.12926E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  82 REQUIRED   4 ITERATIONS. MFD OF  3.53314E-05 OCCURRED IN INT.  6  COARSE MESH=  3
GRP.  83 REQUIRED   4 ITERATIONS. MFD OF  4.57840E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  84 REQUIRED   4 ITERATIONS. MFD OF  3.67983E-05 OCCURRED IN INT.  1  COARSE MESH=  2
GRP.  85 REQUIRED   4 ITERATIONS. MFD OF  4.95581E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  86 REQUIRED   4 ITERATIONS. MFD OF  4.87421E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  87 REQUIRED   4 ITERATIONS. MFD OF  4.83485E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  88 REQUIRED   4 ITERATIONS. MFD OF  6.31331E-05 OCCURRED IN INT.  1  COARSE MESH=  2
GRP.  89 REQUIRED   4 ITERATIONS. MFD OF  4.50312E-05 OCCURRED IN INT.  3  COARSE MESH=  1
GRP.  90 REQUIRED   4 ITERATIONS. MFD OF  5.14596E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  91 REQUIRED   4 ITERATIONS. MFD OF  5.12018E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  92 REQUIRED   4 ITERATIONS. MFD OF  5.15637E-05 OCCURRED IN INT.  1  COARSE MESH=  1
GRP.  93 REQUIRED   4 ITERATIONS. MFD OF  5.05803E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  94 REQUIRED   4 ITERATIONS. MFD OF  4.79356E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP.  95 REQUIRED   3 ITERATIONS. MFD OF  2.33847E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP.  96 REQUIRED   3 ITERATIONS. MFD OF  3.60367E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP.  97 REQUIRED   1 ITERATIONS. MFD OF  6.96253E-05 OCCURRED IN INT.  2  COARSE MESH=  1
GRP.  98 REQUIRED   3 ITERATIONS. MFD OF  5.29226E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP.  99 REQUIRED   3 ITERATIONS. MFD OF  3.67677E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 100 REQUIRED   3 ITERATIONS. MFD OF  4.56922E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 101 REQUIRED   1 ITERATIONS. MFD OF  8.00280E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 102 REQUIRED   1 ITERATIONS. MFD OF  8.53670E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 103 REQUIRED   1 ITERATIONS. MFD OF  9.57809E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 104 REQUIRED   3 ITERATIONS. MFD OF  2.92827E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 105 REQUIRED   3 ITERATIONS. MFD OF  7.27986E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 106 REQUIRED   2 ITERATIONS. MFD OF  5.60710E-05 OCCURRED IN INT. 13  COARSE MESH=  1
GRP. 107 REQUIRED   3 ITERATIONS. MFD OF  6.94895E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 108 REQUIRED   3 ITERATIONS. MFD OF  4.31106E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 109 REQUIRED   4 ITERATIONS. MFD OF  5.85704E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 110 REQUIRED   3 ITERATIONS. MFD OF  5.91404E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 111 REQUIRED   3 ITERATIONS. MFD OF  8.58065E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 112 REQUIRED   4 ITERATIONS. MFD OF  2.13445E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 113 REQUIRED   4 ITERATIONS. MFD OF  2.83318E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 114 REQUIRED   4 ITERATIONS. MFD OF  3.33301E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 115 REQUIRED   4 ITERATIONS. MFD OF  3.11422E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 116 REQUIRED   4 ITERATIONS. MFD OF  2.16031E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 117 REQUIRED   4 ITERATIONS. MFD OF  2.20725E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 118 REQUIRED   4 ITERATIONS. MFD OF  1.97341E-05 OCCURRED IN INT. 21  COARSE MESH=  1
GRP. 119 REQUIRED   4 ITERATIONS. MFD OF  1.68189E-05 OCCURRED IN INT. 20  COARSE MESH=  2
GRP. 120 REQUIRED   3 ITERATIONS. MFD OF  8.55370E-05 OCCURRED IN INT. 21  COARSE MESH=  2
GRP. 121 REQUIRED   4 ITERATIONS. MFD OF  5.05579E-05 OCCURRED IN INT. 21  COARSE MESH=  2
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GRP. 123 REQUIRED   4 ITERATIONS. MFD OF  1.51602E-05 OCCURRED IN INT.  21  COARSE MESH=  2
      B  5055   1.0000353E 00   1.0000029E 00   1.4484262E 00   9.9999142E-01   9.9993087E-01   3.6735
          FINAL MINITOR          LAMBDA  1.4461136E 00          ANGULAR FLUX ON   16

ELAPSED TIME   3.87 MIN.
```

```
NITAWL

    0S ARRAY      9 ENTRIES READ

    1S ARRAY     12 ENTRIES READ

    OT

MSCM    NUMBER OF EXTRA CROSS SECTIONS                          0
MMT     NUMBER OF NUCLIDES FROM MASTER LIBRARY                 11
MWT     NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 2)          0
MXT     NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 3)          5
MCR     ANISN/DOT/MORSE OUTPUT TRIGGER                          0
MXX     TOTAL CROSS SECTION POSITION                            0
MS      WITHIN-GROUP SCATTERING CROSS SECTION POSITION          0
IRES    NUMBER OF RESONANCE CALCULATIONS                        0
IOM     TABLE LENGTH FOR CROSS SECTIONS                         0
IPM     IS AN OLD ANISN LIBRARY MOUNTED ? (0/1:NO/YES)          0
IPP     OUTPUT OPTION TRIGGER                                  -1
IFG     PRINT CONTROL - ANISN OUTPUT                            0

THE STORAGE ALLOCATED FOR THIS CASE IS 349646 WORDS

    2S ARRAY     16 ENTRIES READ

    OT

GENERAL INFORMATION CONCERNING CROSS SECTION LIBRARY
  TAPE IDENTIFICATION NUMBER                    131
  NUMBER OF NUCLIDES ON TAPE                      5
  NUMBER OF NEUTRON ENERGY GROUPS               123
  FIRST THERMAL NEUTRON ENERGY GROUP             94
  NUMBER OF GAMMA ENERGY GROUPS                   0

XSDRN TAPE      0
                SUPER-XSDRN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--      5-900K,6
                -800K,7-850K,8-750K,9-1000K,ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
                MPERATURES ARE DESIRED, CALL C.W. CRAVEN, JR. OR        N. M. GREENE----ALL THER
                MAL DATA IS PO (IFTG=94).  ALSO J. WILSON DATA  AND 3 1/V NUCLIDES       JULY, 1
                968                                          -THIS IS A CONVERTED TAPE

MTD. TAPE     131

XSDRN WEIGHTED TAPE--PARENT CASE ENTITLED-- XSDRN 2X2 CELL PWR 17X17 .5144 IN PI
TCH 3.5 PCT ENR

NUCLIDES FROM XSDRN TAPE
  1   HYDROGEN--THERMUS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          10001
  2   OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K          80003
  3   ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        130000
  4   CHROMIUM       THERMAL TEMP=294.6                                      240003
  5   MANGANESE                          THERMAL TEMP =  900.0 K             250005
  6   IRON           THERMAL TEMP=294.6                                      260001
  7   NICKEL         THERMAL TEMP=294.6                                      280003
  8   SILVER-109                         THERMAL TEMPERATURE= 294.6 K        471090
  9   CADMIUM-113                                                            481131
  10  INDIUM-115                                                             491150
```

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NUCLIDES FROM WTD. TAPE
   12     URANIUM-235                    THERMAL TEMPERATURE = 294.6 K          922351
   13     URANIUM-238R                   THERMAL TEMPERATURE = 294.6 K          922381
   14     HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K            100
   15     OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K          800
   16     ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K      400000

HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          10001

OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         80003

ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K       130000

CHROMIUM       THERMAL TEMP=294.6                                     240003

MANGANESE                          THERMAL TEMP =  900.0 K            250005

IRON           THERMAL TEMP=294.6                                     260001

NICKEL         THERMAL TEMP=294.6                                     280003

SILVER-109                                                            471090

GP  94 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  95 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  96 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  97 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  98 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  99 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 100 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 101 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 102 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 103 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 104 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 105 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 106 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 107 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 108 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 109 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 110 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 111 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 112 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 113 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 114 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE
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THIS XSDRN WORKING TAPE WAS CREATED
THE TITLE OF THE PARENT CASE IS AS FOLLOWS
XSDRN WEIGHTED TAPE--PARENT CASE ENTITLED-- XSDRN 2X2 CELL PWR 17X17 .5144 IN PI
TCH 3.5 PCT ENR

 TAPE ID                          131        NUMBER OF NUCLIDES                16
 NUMBER OF NEUTRON GROUPS         123        NUMBER OF GAMMA GROUPS             0
 FIRST THERMAL GROUP               94
                          TABLE OF CONTENTS
 HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          ID   10001
 OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID   80003
 ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        ID  130000
 CHROMIUM      THERMAL TEMP=294.6                                       ID  240003
 MANGANESE                          THERMAL TEMP = 900.0 K              ID  250005
 IRON          THERMAL TEMP=294.6                                       ID  260001
 NICKEL        THERMAL TEMP=294.6                                       ID  280003
 SILVER-109                                                             ID  471090
 CADMIUM-113                THERMAL TEMPERATURE= 294.6 K                ID  481131
 INDIUM-115                                                             ID  491150
 LEAD       NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID  820000
 URANIUM-235                THERMAL TEMPERATURE = 294.6 K               ID  922351
 URANIUM-238                THERMAL TEMPERATURE = 294.6 K               ID  922381
 HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          ID     100
 OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID     800
 ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        ID  400000
```

```
PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS
NUMBER OF GENERATIONS                  103        START TYPE                          0
NUMBER PER GENERATION                  201        GENERATIONS BETWEEN CHECKPOINTS     0
NUMBER OF GENERATIONS TO BE SKIPPED      3        LIST INPUT X-SECTIONS READ FROM TAPE NO
NUMBER OF ENERGY GROUPS                123        LIST 1-D MIXTURE X SECTIONS         NO
MAX. NUMBER OF ENERGY TRANSFERS         70        LIST 2-D MIXTURE X-SECTIONS         NO
NUMBER OF INPUT NUCLIDES                16        LIST FISS. AND ABS. BY REGION       NO
NUMBER OF MIXTURES                       6        USE X-SECTIONS FROM PREVIOUS CASE   NO
NUMBER OF MIXING TABLE ENTRIES          17        USE GEOMETRY FROM PREVIOUS CASE     NO
NUMBER OF GEOMETRY CARDS               202        USE VELOCITIES FROM PREVIOUS CASE   NO
NUMBER OF BOX TYPES                     44        COMPUTE MATRIX K-EFFECTIVE BY UNIT  YES
NUMBER OF UNITS IN X DIRECTION           2        COMPUTE MATRIX K-EFFECTIVE BY BOX TYPE NO
NUMBER OF UNITS IN Y DIRECTION          22        LIST FISS PROB MATRIX BY UNIT       NO
NUMBER OF UNITS IN Z DIRECTION           1        ADJOINT CALCULATION                 NO
NUMBER OF NUCLIDES READ FROM TAPE      -16        USE EXPONENTIAL TRANSFORM           NO
ALBEDO TYPE                              1        CALCULATE FLUX                      NO
SEARCH TYPE                              0        CALCULATE FISSION DENSITIES         NO
THIS PROBLEM WILL BE RUN WITH SPECULARLY REFLECTING BOUNDARY CONDITION
THE ALBEDOS ARE +X = 0.0      -X = 1.00000E 00 +Y = 0.0      -Y = 1.00000E 00 +Z = 0.0      -Z = 0.0
MAXIMUM TIME =   5.5556 MINUTES
STORAGE LOCATIONS REQUIRED FOR THIS JOB =    343447
REMAINING AVAILABLE LOCATIONS=      6761
```

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PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

      MIXTURE  NUCLIDE   DENSITY
         1     922351   2.41100E-04
         1     922381   6.56250E-03
         1        800   3.43220E-02
         1     400000   3.62480E-03
         1        100   4.14310E-02
         2      10001   6.67430E-02
         2      80003   3.33710E-02
         3     240003   1.67330E-02
         3     250005   1.76140E-03
         3     260001   6.04260E-02
         3     280003   8.36670E-03
         4     471090   2.17070E-02
         4     481131   3.31720E-04
         4     491150   7.60690E-03
         5     820000   3.29930E-02
         6     130000   6.02520E-02
         4      80003   1.00000E-15


CROSS SECTIONS READ FROM TAPE

NUCLIDE =      10001    HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K
NUCLIDE =      80003    OXYGEN      NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     130000    ALUMINUM    NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K

IHC208I IBCOM - PROGRAM INTERRUPT (I) -  UNDERFLOW   OLD PSW IS  FF8501002207E34C

TRACEBACK  ROUTINE  CALLED FROM ISN   REG.  14   REG.  15   REG.   0   REG.   1

           XSTAPE            0030    4207C18A   00007D120   00000000   00078D38

           INPUT             0397    42068730   00078AA0   00000000   000697C0

           KEIN                      52072DC4   000689C0   08002800   00072DE8

           ALOCAT            0070    42060092   00072D50   00000000   .0006CD84

           MAIN                      00013B02   0106CCC0   00000030   80067260

ENTRY POINT=  0106CCC0

STANDARD FIXUP TAKEN , EXECUTION CONTINUING
NUCLIDE =     240003   CHROMIUM      THERMAL TEMP=294.6
NUCLIDE =     250005   MANGANESE                                THERMAL TEMP =  900.0 K
NUCLIDE =     260001   IRON          THERMAL TEMP=294.6
NUCLIDE =     260003   NICKEL        THERMAL TEMP=294.6
NUCLIDE =     471090   SILVER-109                               THERMAL TEMPERATURE= 294.6 K
NUCLIDE =     481131   CADMIUM-113
NUCLIDE =     491150   INDIUM-115
NUCLIDE =     820000   LEAD      NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     922351   URANIUM-235                              THERMAL TEMPERATURE = 294.6 K
NUCLIDE =     922381   URANIUM-238                              THERMAL TEMPERATURE = 294.6 K
NUCLIDE =        100   HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K
NUCLIDE =        800   OXYGEN    NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     400000   ZIRCONIUM NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K
```

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GEOMETRY DESCRIPTION

BOX TYPE 1

REGION

1	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 2

REGION

1	CUBOID	4	+X = 1.1374E 01	-X = 0.0	+Y = 8.2930E-01	-Y = 2.1340E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 9.1400E-02	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 3

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 4

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	= 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 5

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 6

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 7

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 8

REGION

1	CUBOID	4	+X = 1.1374E 01	-X = 0.0	+Y = 7.3790E-01	-Y = 1.2190E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 9

REGION

1	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 2.9195E 00	-Y = 8.9050E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.2325E 01	-X = 0.0	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 10

REGION

1	CUBOID	4	+X = 1.1374E 01	-X = 0.0	+Y = 7.3790E-01	-Y = 1.2190E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 11

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 12

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 14

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 15

REGION

1	CUBOID	1	+X = 1.1374E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.1496E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 1.2120E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 16

REGION

1	CUBOID	4	+X = 1.1374E 01	-X = 0.0	+Y = 7.3790E-01	-Y = 1.2190E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 1.2234E 01	-X = 0.0	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 1.2325E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 17

REGION

1	CUBOID	6	+X = 1.4611E 01	-X = 0.0	+Y = 2.4000E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 18

REGION

1	CUBOID	3	+X = 1.3500E 01	-X = 0.0	+Y = 1.9050E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	5	+X = 1.4611E 01	-X = 0.0	+Y = 1.9050E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 19

REGION

1	CUBOID	5	+X = 1.4611E 01	-X = 0.0	+Y = 7.6200E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 20

REGION

1	CUBOID	5	+X = 1.4611E 01	-X = 0.0	+Y = 7.6200E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 21

REGION

1	CUBOID	3	+X = 1.4611E 01	-X = 0.0	+Y = 5.0800E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 22

REGION

1	CUBOID	2	+X = 1.4611E 01	-X = 0.0	+Y = 1.5240E 01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 23

REGION

1	CUBOID	3	+X = 2.4365E 01	-X = 1.6135E 01	+Y = 3.1750E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	2	+X = 2.4365E 01	-X = 1.6135E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	6	+X = 2.6651E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	2	+X = 2.6742E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	3	+X = 2.6864E 01	-X = 1.4611E 01	1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	4	+X = 2.7480E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

8	CUBOID	1	+X = 5.0350E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 5.0472E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	4	+X = 5.1088E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
11	CUBOID	3	+X = 5.1210E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
12	CUBOID	2	+X = 5.1302E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
13	CUBOID	6	+X = 5.7150E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
14	CUBOID	3	+X = 5.9055E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
15	CUBOID	5	+X = 7.4295E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
16	CUBOID	3	+X = 7.9375E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
17	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 1.0693E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 24

REGION

1	CUBOID	6	+X = 1.6125E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	2	+X = 2.4365E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	6	+X = 2.6651E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	2	+X = 2.6742E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	3	+X = 2.6864E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	4	+X = 2.7480E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 2.7602E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	1	+X = 5.0350E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 5.0472E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	4	+X = 5.1088E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
11	CUBOID	3	+X = 5.1210E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
12	CUBOID	2	+X = 5.1302E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
13	CUBOID	6	+X = 5.7150E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
14	CUBOID	3	+X = 5.9055E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
15	CUBOID	5	+X = 7.4295E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
16	CUBOID	3	+X = 7.9375E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
17	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 25

REGION

1	CUBOID	3	+X = 2.4365E 01	-X = 1.6135E 01	+Y = 4.4882E 00	-Y = 3.8532E 00	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	2	+X = 2.4365E 01	-X = 1.6135E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	6	+X = 2.6651E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	2	+X = 2.6742E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	3	+X = 2.6864E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	4	+X = 2.7480E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 2.7602E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	1	+X = 5.0350E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 5.0472E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	4	+X = 5.1088E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
11	CUBOID	3	+X = 5.1210E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
12	CUBOID	2	+X = 5.1302E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
13	CUBOID	6	+X = 5.6700E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
14	CUBOID	3	+X = 5.8600E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
15	CUBOID	5	+X = 7.4000E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
16	CUBOID	3	+X = 7.9100E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
17	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.4450E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 26

REGION

1	CUBOID	4	+X = 5.0350E 01	-X = 2.7602E 01	+Y = 7.3790E-01	-Y = 1.2190E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 5.1210E 01	-X = 2.6742E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 5.1302E 01	-X = 2.6651E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 5.5900E 01	-X = 2.4365E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 5.5960E 01	-X = 1.6135E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 5.5900E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 5.7800E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	5	+X = 7.3300E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 7.8500E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 27

REGION

1	CUBOID	5	+X = 7.3000E 01	-X = 5.7500E 01	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 7.8200E 01	-X = 5.5500E 01	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	6	+X = 7.8200E 01	-X = 1.4611E 01	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 2.2860E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 28

REGION

1	CUBOID	4	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 8.2930E-01	-Y = 2.1340E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 9.5120E-01	-Y = 9.1400E-02	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 5.5400E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	3	+X = 5.7300E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	5	+X = 7.2900E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 7.8100E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 29

REGION

1	CUBOID	1	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.8433E 01	-X = 1.5441E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 3.9049E 01	-X = 1.4825E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 4.1602E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	2	+X = 4.8128E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	6	+X = 5.3400E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 5.5400E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	5	+X = 7.1400E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
11	CUBOID	3	+X = 7.6700E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
12	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.4552E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

REGION

1	CUBOID	1	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.8433E 01	-X = 1.5441E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 3.9049E 01	-X = 1.4825E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 4.1802E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	2	+X = 4.8128E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	6	+X = 5.0700E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 5.2600E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	5	+X = 6.9400E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
11	CUBOID	3	+X = 7.4900E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
12	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 31

REGION

1	CUBOID	1	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.8433E 01	-X = 1.5441E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 3.9049E 01	-X = 1.4825E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 4.9700E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 5.1900E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	5	+X = 6.8700E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 7.4200E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 3.8100E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 32

REGION

1	CUBOID	1	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.8433E 01	-X = 1.5441E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 3.9049E 01	-X = 1.4825E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	= 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

5	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 4.8600E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 5.0800E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	5	+X = 6.7900E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 7.3400E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 33

REGION

1	CUBOID	1	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.6433E 01	-X = 1.5441E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	4	+X = 3.9049E 01	-X = 1.4825E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	6	+X = 4.5700E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 4.8100E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	5	+X = 6.5900E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
9	CUBOID	3	+X = 7.1600E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
10	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 7.7635E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 34

REGION

1	CUBOID	4	+X = 3.8311E 01	-X = 1.5563E 01	+Y = 7.3790E-01	-Y = 1.2190E-01	+Z = 3.6576E 02	-Z = 0.0
2	CUBOID	3	+X = 3.9171E 01	-X = 1.4703E 01	+Y = 8.5980E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
3	CUBOID	2	+X = 3.9262E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
4	CUBOID	6	+X = 4.2000E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
5	CUBOID	3	+X = 4.4500E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
6	CUBOID	5	+X = 6.3400E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
7	CUBOID	3	+X = 6.9200E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0
8	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0

BOX TYPE 35

REGION

1	CUBOID	6	+X = 4.0400E 01	-X = 1.4611E 01	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
2	CUBOID	3	+X = 4.3100E 01	-X = 1.4611E 01	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
3	CUBOID	5	+X = 6.2400E 01	-X = 1.4611E 01	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
4	CUBOID	3	+X = 6.8300E 01	-X = 1.4611E 01	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
5	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 2.5400E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			

BOX TYPE 36

REGION

1	CUBOID	2	+X = 2.8898E 01	-X = 1.5563E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
2	CUBOID	6	+X = 3.6300E 01	-X = 1.4611E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
3	CUBOID	3	+X = 3.9500E 01	-X = 1.4611E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
4	CUBOID	5	+X = 5.8900E 01	-X = 1.4611E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
5	CUBOID	3	+X = 6.6000E 01	-X = 1.4611E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
6	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 4.7244E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			

BOX TYPE 37

REGION

1	CUBOID	5	+X = 5.5000E 01	-X = 3.1400E 01	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
2	CUBOID	3	+X = 6.1600E 01	-X = 2.7700E 01	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
3	CUBOID	6	+X = 6.1600E 01	-X = 1.4611E 01	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
4	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 6.7691E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			

BOX TYPE 38

REGION

1	CUBOID	5	+X = 5.1900E 01	-X = 2.5600E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
2	CUBOID	3	+X = 5.8900E 01	-X = 2.0900E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
3	CUBOID	6	+X = 5.8900E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
4	CUBOID	2	+X = 9.4615E 01	-X = 1.4611E 01	+Y = 9.5120E-01	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			

BOX TYPE 39

REGION

1	CUBOID	5	+X = 4.9500E 01	-X = 2.0500E 01	2.4000E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			
2	CUBOID	3	+X = 5.6800E 01	-X = 1.4611E 01	2.4000E 00	-Y = 0.0	+Z = 3.6576E 02	-Z = 0.0			

```
  3  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 2.4000E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0

BOX TYPE  40
REGION
  1  CUBOID     5     +X = 4.7600E 01   -X = 1.4611E 01   +Y = 1.9050E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  2  CUBOID     3     +X = 5.4700E 01   -X = 1.4611E 01   +Y = 1.9050E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  3  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 1.9050E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0

BOX TYPE  41
REGION
  1  CUBOID     5     +X = 4.0200E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  2  CUBOID     3     +X = 4.8900E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  3  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0

BOX TYPE  42
REGION
  1  CUBOID     5     +X = 2.4900E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  2  CUBOID     3     +X = 3.7400E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  3  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 7.6200E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0

BOX TYPE  43
REGION
  1  CUBOID     3     +X = 2.2200E 01   -X = 1.4611E 01   +Y = 5.0800E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
  2  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 5.0800E 00   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0

BOX TYPE  44
REGION
  1  CUBOID     2     +X = 9.4615E 01   -X = 1.4611E 01   +Y = 1.5240E 01   -Y = 0.0          +Z = 3.6576E 02   -Z = 0.0
REFLECTOR       2     +X = 0.0          -X = 0.0          +Y = 0.0          -Y = 0.0          +Z = 1.5000E 01   -Z = 1.5000E 01
                WT. ID =  500
                123 GROUP WEIGHTS FOR WATER ------- HAVING 10 INTERVALS, EACH 3.0 CM THICK WERE USED
  1  CORE BOY        0     +X = 4.7307E 01   -X = -4.7307E 01  +Y = 4.7102E 01   -Y = -4.7102E 01  +Z = 1.8288E 02   -Z = -1.8288E 02
  2  CUBOID          2     +X = 4.7307E 01   -X = -4.7307E 01  +Y = 4.7102E 01   -Y = -4.7102E 01  +Z = 1.8588E 02   -Z = -1.8588E 02
                           4.7307E 01        -Y = -4.7307E 01  +Y = 4.7102E 01   -Y = -4.7102E 01  +Z = 1.8888E 02   -Z = -1.8888E 02
```

```
4 CUBOID 2 +X = 4.7307E 01 -X =-4.7307E 01 +Y = 4.7102E 01 -Y =-4.7102E 01 +Z = 1.9188E 02 -Z =-1.9188E 02
5 CUBOID 2 +X = 4.7307E 01 -X =-4.7307E 01 +Y = 4.7102E 01 -Y =-4.7102E 01 +Z = 1.9488E 02 -Z =-1.9488E 02
6 CUBOID 2 +X = 4.7307E 01 -X =-4.7307E 01 +Y = 4.7102E 01 -Y =-4.7102E 01 +Z = 1.9788E 02 -Z =-1.9788E 02
```

PWR 17X17 PINS .5244 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

ARRAY DESCRIPTION

Z = 1

22 44

21 43

20 42

19 41

18 40

17 39

16 38

15 37

14 36

13 35

12 34

11 33

10 32

9 31

8 30

7 29

6 28

5 27

4 26

3 25

2 24

1 23

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PWR 17X17 PINS .9144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

VOLUMES

BOX TYPE     1
        REGION DEFINED BY GEOMETRY CARD      1   VOLUME =   5.71462E 03 CM**3      CUMULATIVE VOLUME =   5.71462E 03 CM**3

BOX TYPE     2
        REGION DEFINED BY GEOMETRY CARD      2   VOLUME =   2.56226E 03 CM**3      CUMULATIVE VOLUME =   2.56226E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD      3   VOLUME =   1.28506E 03 CM**3      CUMULATIVE VOLUME =   3.84732E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD      4   VOLUME =   4.40818E 02 CM**3      CUMULATIVE VOLUME =   4.28814E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD      5   VOLUME =   7.95324E 02 CM**3      CUMULATIVE VOLUME =   5.08346E 03 CM**3

BOX TYPE     3
        REGION DEFINED BY GEOMETRY CARD      6   VOLUME =   3.92930E 04 CM**3      CUMULATIVE VOLUME =   3.92930E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD      7   VOLUME =   4.21113E 02 CM**3      CUMULATIVE VOLUME =   3.97141E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD      8   VOLUME =   2.15498E 03 CM**3      CUMULATIVE VOLUME =   4.18691E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD      9   VOLUME =   3.94168E 02 CM**3      CUMULATIVE VOLUME =   4.22632E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     10   VOLUME =   3.16098E 02 CM**3      CUMULATIVE VOLUME =   4.25793E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     11   VOLUME =   7.89721E 03 CM**3      CUMULATIVE VOLUME =   5.04765E 04 CM**3

BOX TYPE     4
        REGION DEFINED BY GEOMETRY CARD     12   VOLUME =   3.95717E 03 CM**3      CUMULATIVE VOLUME =   3.95717E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     13   VOLUME =   4.24104E 01 CM**3      CUMULATIVE VOLUME =   3.99958E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     14   VOLUME =   2.17025E 02 CM**3      CUMULATIVE VOLUME =   4.21661E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     15   VOLUME =   3.96953E 01 CM**3      CUMULATIVE VOLUME =   4.25630E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     16   VOLUME =   3.18359E 01 CM**3      CUMULATIVE VOLUME =   4.28814E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     17   VOLUME =   7.95324E 02 CM**3      CUMULATIVE VOLUME =   5.08346E 03 CM**3

BOX TYPE     5
        REGION DEFINED BY GEOMETRY CARD     18   VOLUME =   9.51018E 03 CM**3      CUMULATIVE VOLUME =   9.51018E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     19   VOLUME =   1.01926E 02 CM**3      CUMULATIVE VOLUME =   9.61211E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     20   VOLUME =   5.21570E 02 CM**3      CUMULATIVE VOLUME =   1.01337E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     21   VOLUME =   9.54023E 01 CM**3      CUMULATIVE VOLUME =   1.02291E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     22   VOLUME =   7.65039E 01 CM**3      CUMULATIVE VOLUME =   1.03056E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     23   VOLUME =   1.91139E 03 CM**3      CUMULATIVE VOLUME =   1.22170E 04 CM**3

BOX TYPE     6
        REGION DEFINED BY GEOMETRY CARD     24   VOLUME =   3.95717E 03 CM**3      CUMULATIVE VOLUME =   3.95717E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     25   VOLUME =   4.24104E 01 CM**3      CUMULATIVE VOLUME =   3.99958E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     26   VOLUME =   2.17025E 02 CM**3      CUMULATIVE VOLUME =   4.21661E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     27   VOLUME =   3.96953E 01 CM**3      CUMULATIVE VOLUME =   4.25630E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     28   VOLUME =   3.18359E 01 CM**3      CUMULATIVE VOLUME =   4.28814E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     29   VOLUME =   7.95324E 02 CM**3      CUMULATIVE VOLUME =   5.08346E 03 CM**3

BOX TYPE     7
        REGION DEFINED BY GEOMETRY CARD     30   VOLUME =   3.93354E 04 CM**3      CUMULATIVE VOLUME =   3.93354E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     31   VOLUME =   4.21570E 02 CM**3      CUMULATIVE VOLUME =   3.97570E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     32   VOLUME =   2.15730E 03 CM**3      CUMULATIVE VOLUME =   4.19143E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     33   VOLUME =   3.94598E 02 CM**3      CUMULATIVE VOLUME =   4.23089E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     34   VOLUME =   3.16434E 02 CM**3      CUMULATIVE VOLUME =   4.26253E 04 CM**3
        REGION DEFINED BY GEOMETRY CARD     35   VOLUME =   7.90575E 03 CM**3      CUMULATIVE VOLUME =   5.05311E 04 CM**3

BOX TYPE     8
        REGION DEFINED BY GEOMETRY CARD     36   VOLUME =   2.56268E 03 CM**3      CUMULATIVE VOLUME =   2.56268E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     37   VOLUME =   1.28464E 03 CM**3      CUMULATIVE VOLUME =   3.84732E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     38   VOLUME =   2.87751E 01 CM**3      CUMULATIVE VOLUME =   3.87609E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     39   VOLUME =   7.18902E 02 CM**3      CUMULATIVE VOLUME =   4.59500E 03 CM**3

BOX TYPE     9
        REGION DEFINED BY GEOMETRY CARD     40   VOLUME =   9.14700E 03 CM**3      CUMULATIVE VOLUME =   9.14700E 03 CM**3
        REGION DEFINED BY GEOMETRY CARD     41   VOLUME =   8.02899E 03 CM**3      CUMULATIVE VOLUME =   1.71760E 04 CM
        REGION DEFINED BY GEOMETRY CARD     42   VOLUME =   3.16564E 03 CM**3      CUMULATIVE VOLUME =   2.03616E 04 CM
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BOX TYPE    10
REGION DEFINED BY GEOMETRY CARD    43   VOLUME =   2.56268E 03 CM**3   CUMULATIVE VOLUME =   2.56268E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    44   VOLUME =   1.28464E 03 CM**3   CUMULATIVE VOLUME =   3.84732E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    45   VOLUME =   2.87751E 01 CM**3   CUMULATIVE VOLUME =   3.87609E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    46   VOLUME =   7.18902E 02 CM**3   CUMULATIVE VOLUME =   4.59500E 03 CM**3

BOX TYPE    11
REGION DEFINED BY GEOMETRY CARD    47   VOLUME =   3.22976E 04 CM**3   CUMULATIVE VOLUME =   3.22976E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    48   VOLUME =   3.46141E 02 CM**3   CUMULATIVE VOLUME =   3.26438E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    49   VOLUME =   1.77133E 03 CM**3   CUMULATIVE VOLUME =   3.44151E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    50   VOLUME =   3.23996E 02 CM**3   CUMULATIVE VOLUME =   3.47391E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    51   VOLUME =   2.59820E 02 CM**3   CUMULATIVE VOLUME =   3.49989E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    52   VOLUME =   6.49127E 03 CM**3   CUMULATIVE VOLUME =   4.14902E 04 CM**3

BOX TYPE    12
REGION DEFINED BY GEOMETRY CARD    53   VOLUME =   3.95717E 03 CM**3   CUMULATIVE VOLUME =   3.95717E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    54   VOLUME =   4.24104E 01 CM**3   CUMULATIVE VOLUME =   3.99958E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    55   VOLUME =   2.17025E 02 CM**3   CUMULATIVE VOLUME =   4.21661E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    56   VOLUME =   3.96953E 01 CM**3   CUMULATIVE VOLUME =   4.25630E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    57   VOLUME =   3.18359E 01 CM**3   CUMULATIVE VOLUME =   4.28814E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    58   VOLUME =   7.95324E 02 CM**3   CUMULATIVE VOLUME =   5.08346E 03 CM**3

BOX TYPE    13
REGION DEFINED BY GEOMETRY CARD    59   VOLUME =   1.05669E 04 CM**3   CUMULATIVE VOLUME =   1.05669E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    60   VOLUME =   1.13250E 02 CM**3   CUMULATIVE VOLUME =   1.06801E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    61   VOLUME =   5.79531E 02 CM**3   CUMULATIVE VOLUME =   1.12597E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    62   VOLUME =   1.06000E 02 CM**3   CUMULATIVE VOLUME =   1.13657E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    63   VOLUME =   8.50069E 01 CM**3   CUMULATIVE VOLUME =   1.14507E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    64   VOLUME =   2.12377E 03 CM**3   CUMULATIVE VOLUME =   1.35744E 04 CM**3

BOX TYPE    14
REGION DEFINED BY GEOMETRY CARD    65   VOLUME =   1.96544E 04 CM**3   CUMULATIVE VOLUME =   1.96544E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    66   VOLUME =   2.10648E 02 CM**3   CUMULATIVE VOLUME =   1.98650E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    67   VOLUME =   1.07792E 03 CM**3   CUMULATIVE VOLUME =   2.09430E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    68   VOLUME =   1.97164E 02 CM**3   CUMULATIVE VOLUME =   2.11401E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    69   VOLUME =   1.58109E 02 CM**3   CUMULATIVE VOLUME =   2.12982E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    70   VOLUME =   3.95020E 03 CM**3   CUMULATIVE VOLUME =   2.52484E 04 CM**3

BOX TYPE    15
REGION DEFINED BY GEOMETRY CARD    71   VOLUME =   2.81607E 04 CM**3   CUMULATIVE VOLUME =   2.81607E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    72   VOLUME =   3.01809E 02 CM**3   CUMULATIVE VOLUME =   2.84625E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    73   VOLUME =   1.54445E 03 CM**3   CUMULATIVE VOLUME =   3.00070E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    74   VOLUME =   2.82496E 02 CM**3   CUMULATIVE VOLUME =   3.02895E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    75   VOLUME =   2.26539E 02 CM**3   CUMULATIVE VOLUME =   3.05160E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    76   VOLUME =   5.65983E 03 CM**3   CUMULATIVE VOLUME =   3.61758E 04 CM**3

BOX TYPE    16
REGION DEFINED BY GEOMETRY CARD    77   VOLUME =   2.56268E 03 CM**3   CUMULATIVE VOLUME =   2.56268E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    78   VOLUME =   1.28464E 03 CM**3   CUMULATIVE VOLUME =   3.84732E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    79   VOLUME =   4.40818E 02 CM**3   CUMULATIVE VOLUME =   4.28814E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    80   VOLUME =   7.95324E 02 CM**3   CUMULATIVE VOLUME =   5.08346E 03 CM**3

BOX TYPE    17
REGION DEFINED BY GEOMETRY CARD    81   VOLUME =   1.28262E 04 CM**3   CUMULATIVE VOLUME =   1.28262E 04 CM**3

BOX TYPE    18
REGION DEFINED BY GEOMETRY CARD    82   VOLUME =   9.40642E 03 CM**3   CUMULATIVE VOLUME =   9.40642E 03 CM**3
REGION DEFINED BY GEOMETRY CARD    83   VOLUME =   7.74395E 02 CM**3   CUMULATIVE VOLUME =   1.01808E 04 CM**3

BOX TYPE    19
REGION DEFINED BY GEOMETRY CARD    84   VOLUME =   4.07233E 04 CM**3   CUMULATIVE VOLUME =   4.07233E 04 CM**3

BOX TYPE    20
REGION DEFINED BY GEOMETRY CARD    85   VOLUME =   4.07233E 04 CM**3   CUMULATIVE VOLUME =   4.07233E 04 CM**3

BOX TYPE    21
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	REGION DEFINED BY GEOMETRY CARD	86	VOLUME =	2.71488E 04 CM**3	CUMULATIVE VOLUME = 2.71488E 04 CM**3
BOX TYPE 22					
	REGION DEFINED BY GEOMETRY CARD	87	VOLUME =	8.14465E 04 CM**3	CUMULATIVE VOLUME = 8.14465E 04 CM**3
BOX TYPE 23					
	REGION DEFINED BY GEOMETRY CARD	88	VOLUME =	9.55692E 02 CM**3	CUMULATIVE VOLUME = 9.55692E 02 CM**3
	REGION DEFINED BY GEOMETRY CARD	89	VOLUME =	2.26296E 03 CM**3	CUMULATIVE VOLUME = 3.21865E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	90	VOLUME =	1.49011E 03 CM**3	CUMULATIVE VOLUME = 4.70876E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	91	VOLUME =	3.57461E 01 CM**3	CUMULATIVE VOLUME = 4.74451E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	92	VOLUME =	4.77168E 01 CM**3	CUMULATIVE VOLUME = 4.79223E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	93	VOLUME =	2.40879E 02 CM**3	CUMULATIVE VOLUME = 5.03311E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	94	VOLUME =	4.76797E 01 CM**3	CUMULATIVE VOLUME = 5.08079E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	95	VOLUME =	8.89697E 03 CM**3	CUMULATIVE VOLUME = 1.39776E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	96	VOLUME =	4.76719E 01 CM**3	CUMULATIVE VOLUME = 1.40254E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	97	VOLUME =	2.40922E 02 CM**3	CUMULATIVE VOLUME = 1.42664E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	98	VOLUME =	4.76758E 01 CM**3	CUMULATIVE VOLUME = 1.43140E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	99	VOLUME =	3.57891E 01 CM**3	CUMULATIVE VOLUME = 1.43498E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	100	VOLUME =	2.28731E 03 CM**3	CUMULATIVE VOLUME = 1.66371E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	101	VOLUME =	7.45059E 02 CM**3	CUMULATIVE VOLUME = 1.73822E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	102	VOLUME =	5.96047E 03 CM**3	CUMULATIVE VOLUME = 2.33427E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	103	VOLUME =	1.95682E 03 CM**3	CUMULATIVE VOLUME = 2.53295E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	104	VOLUME =	5.96047E 03 CM**3	CUMULATIVE VOLUME = 3.12899E 04 CM**3
BOX TYPE 24					
	REGION DEFINED BY GEOMETRY CARD	105	VOLUME =	5.30213E 02 CM**3	CUMULATIVE VOLUME = 5.30213E 02 CM**3
	REGION DEFINED BY GEOMETRY CARD	106	VOLUME =	2.86317E 03 CM**3	CUMULATIVE VOLUME = 3.39338E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	107	VOLUME =	7.95321E 02 CM**3	CUMULATIVE VOLUME = 4.18870E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	108	VOLUME =	3.17969E 01 CM**3	CUMULATIVE VOLUME = 4.22050E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	109	VOLUME =	4.24492E 01 CM**3	CUMULATIVE VOLUME = 4.26295E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	110	VOLUME =	2.14273E 02 CM**3	CUMULATIVE VOLUME = 4.47722E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	111	VOLUME =	4.24141E 01 CM**3	CUMULATIVE VOLUME = 4.51963E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	112	VOLUME =	7.91434E 03 CM**3	CUMULATIVE VOLUME = 1.24340E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	113	VOLUME =	4.24102E 01 CM**3	CUMULATIVE VOLUME = 1.24764E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	114	VOLUME =	2.14313E 02 CM**3	CUMULATIVE VOLUME = 1.26907E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	115	VOLUME =	4.24102E 01 CM**3	CUMULATIVE VOLUME = 1.27331E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	116	VOLUME =	3.18320E 01 CM**3	CUMULATIVE VOLUME = 1.27649E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	117	VOLUME =	2.03468E 03 CM**3	CUMULATIVE VOLUME = 1.47996E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	118	VOLUME =	6.62773E 02 CM**3	CUMULATIVE VOLUME = 1.54624E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	119	VOLUME =	5.30216E 03 CM**3	CUMULATIVE VOLUME = 2.07646E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	120	VOLUME =	1.76739E 03 CM**3	CUMULATIVE VOLUME = 2.25319E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	121	VOLUME =	5.30215E 03 CM**3	CUMULATIVE VOLUME = 2.78341E 04 CM**3
BOX TYPE 25					
	REGION DEFINED BY GEOMETRY CARD	122	VOLUME =	1.91138E 03 CM**3	CUMULATIVE VOLUME = 1.91138E 03 CM**3
	REGION DEFINED BY GEOMETRY CARD	123	VOLUME =	2.65186E 04 CM**3	CUMULATIVE VOLUME = 2.84300E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	124	VOLUME =	1.31620E 04 CM**3	CUMULATIVE VOLUME = 4.15920E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	125	VOLUME =	3.15750E 02 CM**3	CUMULATIVE VOLUME = 4.19077E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	126	VOLUME =	4.21496E 02 CM**3	CUMULATIVE VOLUME = 4.23292E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	127	VOLUME =	2.12765E 03 CM**3	CUMULATIVE VOLUME = 4.44569E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	128	VOLUME =	4.21125E 02 CM**3	CUMULATIVE VOLUME = 4.46780E 04 CM**3
	REGION DEFINED BY GEOMETRY CARD	129	VOLUME =	7.85858E 04 CM**3	CUMULATIVE VOLUME = 1.23464E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	130	VOLUME =	4.21125E 02 CM**3	CUMULATIVE VOLUME = 1.23885E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	131	VOLUME =	2.12600E 03 CM**3	CUMULATIVE VOLUME = 1.26013E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	132	VOLUME =	4.21125E 02 CM**3	CUMULATIVE VOLUME = 1.26434E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	133	VOLUME =	3.16250E 02 CM**3	CUMULATIVE VOLUME = 1.26750E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	134	VOLUME =	1.86489E 04 CM**3	CUMULATIVE VOLUME = 1.45399E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	135	VOLUME =	6.56381E 03 CM**3	CUMULATIVE VOLUME = 1.51963E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	136	VOLUME =	5.32008E 04 CM**3	CUMULATIVE VOLUME = 2.05164E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	137	VOLUME =	1.76184E 04 CM**3	CUMULATIVE VOLUME = 2.22782E 05 CM**3
	REGION DEFINED BY GEOMETRY CARD	138	VOLUME =	5.35982E 04 CM**3	CUMULATIVE VOLUME = 2.76380E 05 CM**3
BOX TYPE 26					
	REGION DEFINED BY GEOMETRY CARD	139	VOLUME =	5.12535E 03 CM**3	CUMULATIVE VOLUME = 5.12535E 03 CM
	REGION DEFINED BY GEOMETRY CARD	140	VOLUME =	2.56929E 03 CM**3	CUMULATIVE VOLUME = 7.69464E 03 CM
	REGION DEFINED BY GEOMETRY CARD	141	VOLUME =	8.81605E 02 CM**3	CUMULATIVE VOLUME = 8.57624E 03 CM

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REGION DEFINED BY GEOMETRY CARD   142   VOLUME =   2.39512E 03 CM**3   CUMULATIVE VOLUME =   1.09714E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   143   VOLUME =   2.86316E 03 CM**3   CUMULATIVE VOLUME =   1.38345E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   144   VOLUME =   5.30211E 02 CM**3   CUMULATIVE VOLUME =   1.43647E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   145   VOLUME =   6.61027E 02 CM**3   CUMULATIVE VOLUME =   1.50258E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   146   VOLUME =   5.39262E 03 CM**3   CUMULATIVE VOLUME =   2.04184E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   147   VOLUME =   1.80914E 03 CM**3   CUMULATIVE VOLUME =   2.22275E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   148   VOLUME =   5.60657E 03 CM**3   CUMULATIVE VOLUME =   2.78341E 04 CM**3

BOX TYPE    27
REGION DEFINED BY GEOMETRY CARD   149   VOLUME =   1.29600E 04 CM**3   CUMULATIVE VOLUME =   1.29600E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   150   VOLUME =   6.02011E 03 CM**3   CUMULATIVE VOLUME =   1.89801E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   151   VOLUME =   3.41880E 04 CM**3   CUMULATIVE VOLUME =   5.31681E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   152   VOLUME =   1.37250E 04 CM**3   CUMULATIVE VOLUME =   6.68931E 04 CM**3

BOX TYPE    28
REGION DEFINED BY GEOMETRY CARD   153   VOLUME =   5.12452E 03 CM**3   CUMULATIVE VOLUME =   5.12452E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   154   VOLUME =   2.57012E 03 CM**3   CUMULATIVE VOLUME =   7.69463E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   155   VOLUME =   8.61598E 02 CM**3   CUMULATIVE VOLUME =   8.57023E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   156   VOLUME =   5.61455E 03 CM**3   CUMULATIVE VOLUME =   1.41908E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   157   VOLUME =   6.61031E 02 CM**3   CUMULATIVE VOLUME =   1.48518E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   158   VOLUME =   5.42740E 03 CM**3   CUMULATIVE VOLUME =   2.02792E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   159   VOLUME =   1.80914E 03 CM**3   CUMULATIVE VOLUME =   2.20884E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   160   VOLUME =   5.74574E 03 CM**3   CUMULATIVE VOLUME =   2.78341E 04 CM**3

BOX TYPE    29
REGION DEFINED BY GEOMETRY CARD   161   VOLUME =   7.86708E 04 CM**3   CUMULATIVE VOLUME =   7.86709E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   162   VOLUME =   8.43125E 02 CM**3   CUMULATIVE VOLUME =   7.95139E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   163   VOLUME =   4.26031E 03 CM**3   CUMULATIVE VOLUME =   8.37742E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   164   VOLUME =   8.43500E 02 CM**3   CUMULATIVE VOLUME =   8.46177E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   165   VOLUME =   6.32500E 02 CM**3   CUMULATIVE VOLUME =   8.52502E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   166   VOLUME =   8.78413E 03 CM**3   CUMULATIVE VOLUME =   9.40343E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   167   VOLUME =   2.18757E 04 CM**3   CUMULATIVE VOLUME =   1.15910E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   168   VOLUME =   1.82337E 04 CM**3   CUMULATIVE VOLUME =   1.34144E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   169   VOLUME =   6.91669E 03 CM**3   CUMULATIVE VOLUME =   1.41060E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   170   VOLUME =   5.53333E 04 CM**3   CUMULATIVE VOLUME =   1.96394E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   171   VOLUME =   1.83291E 04 CM**3   CUMULATIVE VOLUME =   2.14723E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   172   VOLUME =   6.19560E 04 CM**3   CUMULATIVE VOLUME =   2.76679E 05 CM**3

BOX TYPE    30
REGION DEFINED BY GEOMETRY CARD   173   VOLUME =   7.15385E 03 CM**3   CUMULATIVE VOLUME =   7.15385E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   174   VOLUME =   7.66719E 01 CM**3   CUMULATIVE VOLUME =   7.23052E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   175   VOLUME =   3.87402E 02 CM**3   CUMULATIVE VOLUME =   7.61793E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   176   VOLUME =   7.67070E 01 CM**3   CUMULATIVE VOLUME =   7.69463E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   177   VOLUME =   5.75117E 01 CM**3   CUMULATIVE VOLUME =   7.75214E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   178   VOLUME =   7.98781E 02 CM**3   CUMULATIVE VOLUME =   8.55093E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   179   VOLUME =   1.98925E 03 CM**3   CUMULATIVE VOLUME =   1.05402E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   180   VOLUME =   8.08969E 02 CM**3   CUMULATIVE VOLUME =   1.13491E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   181   VOLUME =   6.60406E 02 CM**3   CUMULATIVE VOLUME =   1.20096E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   182   VOLUME =   5.22038E 03 CM**3   CUMULATIVE VOLUME =   1.72299E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   183   VOLUME =   1.72964E 03 CM**3   CUMULATIVE VOLUME =   1.69596E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   184   VOLUME =   6.19998E 03 CM**3   CUMULATIVE VOLUME =   2.51595E 04 CM**3

BOX TYPE    31
REGION DEFINED BY GEOMETRY CARD   185   VOLUME =   3.17006E 04 CM**3   CUMULATIVE VOLUME =   3.17006E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   186   VOLUME =   3.39754E 02 CM**3   CUMULATIVE VOLUME =   3.20404E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   187   VOLUME =   1.71669E 03 CM**3   CUMULATIVE VOLUME =   3.37570E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   188   VOLUME =   3.39902E 02 CM**3   CUMULATIVE VOLUME =   3.40969E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   189   VOLUME =   2.54863E 02 CM**3   CUMULATIVE VOLUME =   3.43518E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   190   VOLUME =   1.45457E 04 CM**3   CUMULATIVE VOLUME =   4.88975E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   191   VOLUME =   3.06579E 03 CM**3   CUMULATIVE VOLUME =   5.19633E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   192   VOLUME =   2.34115E 04 CM**3   CUMULATIVE VOLUME =   7.53748E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   193   VOLUME =   7.66450E 03 CM**3   CUMULATIVE VOLUME =   8.30393E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   194   VOLUME =   2.84492E 04 CM**3   CUMULATIVE VOLUME =   1.11489E 05 CM**3

BOX TYPE    32
REGION DEFINED BY GEOMETRY CARD   195   VOLUME =   7.15385E 03 CM**3   CUMULATIVE VOLUME =   7.15385E 03 CM**3
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REGION DEFINED BY GEOMETRY CARD   196   VOLUME =   7.66719E 01 CM**3   CUMULATIVE VOLUME =   7.23052E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   197   VOLUME =   3.87402E 02 CM**3   CUMULATIVE VOLUME =   7.61793E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   198   VOLUME =   7.67070E 01 CM**3   CUMULATIVE VOLUME =   7.69463E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   199   VOLUME =   5.75117E 01 CM**3   CUMULATIVE VOLUME =   7.75214E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   200   VOLUME =   2.93659E 03 CM**3   CUMULATIVE VOLUME =   1.06887E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   201   VOLUME =   6.91855E 02 CM**3   CUMULATIVE VOLUME =   1.13806E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   202   VOLUME =   5.37762E 03 CM**3   CUMULATIVE VOLUME =   1.67582E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   203   VOLUME =   1.72964E 03 CM**3   CUMULATIVE VOLUME =   1.84878E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   204   VOLUME =   6.67170E 03 CM**3   CUMULATIVE VOLUME =   2.51595E 04 CM**3

BOX TYPE   33
REGION DEFINED BY GEOMETRY CARD   205   VOLUME =   6.45952E 04 CM**3   CUMULATIVE VOLUME =   6.45952E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   206   VOLUME =   6.92301E 02 CM**3   CUMULATIVE VOLUME =   6.52875E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   207   VOLUME =   3.49802E 03 CM**3   CUMULATIVE VOLUME =   6.87855E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   208   VOLUME =   6.92625E 02 CM**3   CUMULATIVE VOLUME =   6.94781E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   209   VOLUME =   5.19313E 02 CM**3   CUMULATIVE VOLUME =   6.99974E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   210   VOLUME =   1.82809E 04 CM**3   CUMULATIVE VOLUME =   8.82784E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   211   VOLUME =   6.81494E 03 CM**3   CUMULATIVE VOLUME =   9.50933E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   212   VOLUME =   5.05444E 04 CM**3   CUMULATIVE VOLUME =   1.45638E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   213   VOLUME =   1.61856E 04 CM**3   CUMULATIVE VOLUME =   1.61823E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   214   VOLUME =   6.53529E 04 CM**3   CUMULATIVE VOLUME =   2.27176E 05 CM**3

BOX TYPE   34
REGION DEFINED BY GEOMETRY CARD   215   VOLUME =   5.12535E 03 CM**3   CUMULATIVE VOLUME =   5.12535E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   216   VOLUME =   2.56929E 03 CM**3   CUMULATIVE VOLUME =   7.69463E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   217   VOLUME =   8.81598E 02 CM**3   CUMULATIVE VOLUME =   8.57623E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   218   VOLUME =   9.52547E 02 CM**3   CUMULATIVE VOLUME =   9.52878E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   219   VOLUME =   8.69781E 02 CM**3   CUMULATIVE VOLUME =   1.03966E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   220   VOLUME =   6.57551E 03 CM**3   CUMULATIVE VOLUME =   1.69741E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   221   VOLUME =   2.01788E 03 CM**3   CUMULATIVE VOLUME =   1.89919E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   222   VOLUME =   8.84215E 03 CM**3   CUMULATIVE VOLUME =   2.78341E 04 CM**3

BOX TYPE   35
REGION DEFINED BY GEOMETRY CARD   223   VOLUME =   2.39584E 04 CM**3   CUMULATIVE VOLUME =   2.39584E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   224   VOLUME =   2.50838E 03 CM**3   CUMULATIVE VOLUME =   2.64667E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   225   VOLUME =   1.79303E 04 CM**3   CUMULATIVE VOLUME =   4.43970E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   226   VOLUME =   5.48127E 03 CM**3   CUMULATIVE VOLUME =   4.98783E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   227   VOLUME =   2.44474E 04 CM**3   CUMULATIVE VOLUME =   7.43257E 04 CM**3

BOX TYPE   36
REGION DEFINED BY GEOMETRY CARD   228   VOLUME =   2.30428E 04 CM**3   CUMULATIVE VOLUME =   2.30428E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   229   VOLUME =   1.44350E 04 CM**3   CUMULATIVE VOLUME =   3.74776E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   230   VOLUME =   5.18398E 03 CM**3   CUMULATIVE VOLUME =   4.26618E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   231   VOLUME =   3.38687E 04 CM**3   CUMULATIVE VOLUME =   7.65304E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   232   VOLUME =   1.22688E 04 CM**3   CUMULATIVE VOLUME =   8.87993E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   233   VOLUME =   4.94465E 04 CM**3   CUMULATIVE VOLUME =   1.38246E 05 CM**3

BOX TYPE   37
REGION DEFINED BY GEOMETRY CARD   234   VOLUME =   5.84304E 04 CM**3   CUMULATIVE VOLUME =   5.84304E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   235   VOLUME =   2.55013E 04 CM**3   CUMULATIVE VOLUME =   8.39318E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   236   VOLUME =   3.24056E 04 CM**3   CUMULATIVE VOLUME =   1.16337E 05 CM**3
REGION DEFINED BY GEOMETRY CARD   237   VOLUME =   8.17406E 04 CM**3   CUMULATIVE VOLUME =   1.98078E 05 CM**3

BOX TYPE   38
REGION DEFINED BY GEOMETRY CARD   238   VOLUME =   9.15005E 03 CM**3   CUMULATIVE VOLUME =   9.15005E 03 CM**3
REGION DEFINED BY GEOMETRY CARD   239   VOLUME =   4.07055E 03 CM**3   CUMULATIVE VOLUME =   1.32206E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   240   VOLUME =   2.18787E 03 CM**3   CUMULATIVE VOLUME =   1.54085E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   241   VOLUME =   1.24256E 04 CM**3   CUMULATIVE VOLUME =   2.78341E 04 CM**3

BOX TYPE   39
REGION DEFINED BY GEOMETRY CARD   242   VOLUME =   2.54569E 04 CM**3   CUMULATIVE VOLUME =   2.54569E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   243   VOLUME =   1.15773E 04 CM**3   CUMULATIVE VOLUME =   3.70341E 04 CM**3
REGION DEFINED BY GEOMETRY CARD   244   VOLUME =   3.31949E 04 CM**3   CUMULATIVE VOLUME =   7.02290E 04 CM**3

BOX TYPE   40
REGION DEFINED BY GEOMETRY CARD   245   VOLUME =   2.29855E 04 CM**3   CUMULATIVE VOLUME =   2.29855E 04 CM**3
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REGION DEFINED BY GEOMETRY CARD    246   VOLUME =    4.94709E 03 CM**3        CUMULATIVE VOLUME =    2.79326E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    247   VOLUME =    2.76117E 04 CM**3        CUMULATIVE VOLUME =    5.57443E 04 CM**3

BOX TYPE   41
REGION DEFINED BY GEOMETRY CARD    248   VOLUME =    7.13177E 04 CM**3        CUMULATIVE VOLUME =    7.13177E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    249   VOLUME =    2.42476E 04 CM**3        CUMULATIVE VOLUME =    9.55653E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    250   VOLUME =    1.27412E 05 CM**3        CUMULATIVE VOLUME =    2.22977E 05 CM**3

BOX TYPE   42
REGION DEFINED BY GEOMETRY CARD    251   VOLUME =    2.86752E 04 CM**3        CUMULATIVE VOLUME =    2.86752E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    252   VOLUME =    3.48386E 04 CM**3        CUMULATIVE VOLUME =    6.35138E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    253   VOLUME =    1.59463E 05 CM**3        CUMULATIVE VOLUME =    2.22977E 05 CM**3

BOX TYPE   43
REGION DEFINED BY GEOMETRY CARD    254   VOLUME =    1.41001E 04 CM**3        CUMULATIVE VOLUME =    1.41001E 04 CM**3
REGION DEFINED BY GEOMETRY CARD    255   VOLUME =    1.34551E 05 CM**3        CUMULATIVE VOLUME =    1.48651E 05 CM**3

BOX TYPE   44
REGION DEFINED BY GEOMETRY CARD    256   VOLUME =    4.45954E 05 CM**3        CUMULATIVE VOLUME =    4.45954E 05 CM**3

REFLECTOR VOLUMES -  GEOMETRY CARD    257 IS THE CORE BOUNDARY CARD
REGION DEFINED BY GEOMETRY CARD    258   VOLUME =    5.34790E 04 CM**3        CUMULATIVE VOLUME =    3.31350E 06 CM**3
REGION DEFINED BY GEOMETRY CARD    259   VOLUME =    5.34780E 04 CM**3        CUMULATIVE VOLUME =    3.36698E 06 CM**3
REGION DEFINED BY GEOMETRY CARD    260   VOLUME =    5.34780E 04 CM**3        CUMULATIVE VOLUME =    3.42046E 06 CM**3
REGION DEFINED BY GEOMETRY CARD    261   VOLUME =    5.34780E 04 CM**3        CUMULATIVE VOLUME =    3.47394E 06 CM**3
REGION DEFINED BY GEOMETRY CARD    262   VOLUME =    5.34780E 04 CM**3        CUMULATIVE VOLUME =    3.52741E 06 CM**3

TOTAL VOLUMES
   1      5.71462E 03
   2      2.56226E 03
   3      1.26506E 03
   4      4.40618E 02
   5      7.95324E 02
   6      3.92930E 04
   7      4.21113E 02
   8      2.15496E 03
   9      3.94166E 02
  10      3.16096E 04
  11      7.64721E 03
  12      3.95717E 03
  13      4.24104E 01
  14      2.17025E 02
  15      3.96953E 01
  16      3.18359E 01
  17      7.95324E 02
  18      9.51018E 03
  19      1.01926E 02
  20      5.22570E 02
  21      9.54023E 01
  22      7.65039E 01
  23      1.91134E 03
  24      3.95717E 03
  25      4.24104E 01
  26      2.17025E 02
  27      3.96953E 01
  28      3.18359E 01
  29      7.95324E 02
  30      3.93354E 04
  31      4.21570E 02
  32      2.15730E 03
  33      3.94598E 02
  34      3.16434E 02
  35      7.90575E 03
  36      2.56268E 03
  37      1.28464E 03
  38      2.87751E 01
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PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GENERATION	K-EFFECTIVE	ELAPSED TIME(MIN)	AVG. K-EFF	DEVIATION	MATRIX K-EFF
1	9.19238E-01	4.88333E-02	1.00000E 00	0.0	1.02425E 00
2	8.79345E-01	9.23333E-02	1.00000E 00	0.0	1.02142E 00
3	9.56277E-01	1.36333E-01	9.56277E-01	0.0	9.15876E-01
4	9.33963E-01	1.82833E-01	9.62620E-01	2.36489E-02	9.12228E-01
5	9.98872E-01	2.30667E-01	9.72371E-01	1.67819E-02	9.31670E-01
6	1.00530E 00	2.76833E-01	9.80602E-01	1.44406E-02	9.50065E-01
7	8.91746E-01	3.20000E-01	9.62931E-01	2.09982E-02	9.40110E-01
8	9.29601E-01	3.61667E-01	9.57292E-01	1.80175E-02	9.39813E-01
9	9.33862E-01	4.05500E-01	9.53945E-01	1.55922E-02	9.36716E-01

WARNING - ONLY 199 INDEPENDENT FISSION POINTS WERE GENERATED.

10	8.69096E-01	4.52500E-01	9.45914E-01	1.57124E-02	9.30842E-01
11	8.66965E-01	4.96500E-01	9.39364E-01	1.53263E-02	9.25543E-01
12	8.94250E-01	5.40000E-01	9.34852E-01	1.44321E-02	9.23289E-01
13	9.46844E-01	5.89000E-01	9.36124E-01	1.31163E-02	9.25951E-01
14	9.53910E-01	6.32667E-01	9.37606E-01	1.20653E-02	9.27649E-01
15	9.47839E-01	6.81667E-01	9.38378E-01	1.11252E-02	9.29372E-01
16	9.47943E-01	7.23500E-01	9.39061E-01	1.03225E-02	9.30693E-01
17	1.03184E 00	7.70333E-01	9.45247E-01	1.14283E-02	9.36377E-01
18	8.60842E-01	8.13000E-01	9.39959E-01	1.19266E-02	9.31859E-01
19	9.06316E-01	8.60333E-01	9.37960E-01	1.13766E-02	9.30936E-01
20	9.43751E-01	9.01000E-01	9.36500E-01	1.07324E-02	9.31793E-01
21	9.53673E-01	9.55000E-01	9.36057E-01	1.01548E-02	9.30850E-01
22	9.76329E-01	9.97000E-01	9.39970E-01	9.82440E-03	9.33358E-01
23	1.10567E 00	1.04217E 00	9.47869E-01	1.22374E-02	9.40017E-01
24	9.08537E-01	1.08900E 00	9.48809E-01	1.17059E-02	9.41609E-01
25	9.94851E-01	1.13317E 00	9.50810E-01	1.13635E-02	9.43511E-01
26	9.69761E-01	1.17717E 00	9.51600E-01	1.09082E-02	9.45010E-01
27	9.05436E-01	1.22100E 00	9.49753E-01	1.06255E-02	9.45931E-01
28	9.61886E-01	1.26700E 00	9.48846E-01	1.02498E-02	9.45280E-01

WARNING - ONLY 180 INDEPENDENT FISSION POINTS WERE GENERATED.

29	8.11300E-01	1.31367E 00	9.43752E-01	1.11011E-02	9.38863E-01
30	9.16981E-01	1.36100E 00	9.42795E-01	1.07402E-02	9.37267E-01
31	9.49039E-01	1.41017E 00	9.43011E-01	1.03653E-02	9.37886E-01
32	9.65532E-01	1.46300E 00	9.43761E-01	1.00421E-02	9.38994E-01
33	9.71670E-01	1.50967E 00	9.44661E-01	9.75473E-03	9.39690E-01
34	9.21704E-01	1.55583E 00	9.43946E-01	9.47198E-03	9.39398E-01
35	9.50109E-01	1.60417E 00	9.43527E-01	9.19071E-03	9.39443E-01
36	9.97098E-01	1.65517E 00	9.45102E-01	9.05547E-03	9.41611E-01
37	8.99566E-01	1.70333E 00	9.43793E-01	8.89090E-03	9.41144E-01
38	9.10640E-01	1.74783E 00	9.44817E-01	8.70084E-03	9.41010E-01
39	9.96528E-01	1.79233E 00	9.46214E-01	8.57741E-03	9.41964E-01
40	9.73610E-01	1.83650E 00	9.46935E-01	8.37988E-03	9.42525E-01
41	9.49059E-01	1.88183E 00	9.46989E-01	8.16283E-03	9.43102E-01
42	9.33729E-01	1.93233E 00	9.46657E-01	7.96372E-03	9.42889E-01
43	9.97866E-01	1.98500E 00	9.47906E-01	7.86677E-03	9.43836E-01
44	9.78288E-01	2.03133E 00	9.48629E-01	7.71117E-03	9.44126E-01
45	9.82760E-01	2.07717E 00	9.49423E-01	7.57108E-03	9.44835E-01
46	9.28394E-01	2.12767E 00	9.48945E-01	7.41245E-03	9.44044E-01
47	8.81316E-01	2.17650E 00	9.47442E-01	7.40049E-03	9.42490E-01
48	9.40918E-01	2.21683E 00	9.47291E-01	7.24000E-03	9.42730E-01
49	1.02622E 00	2.26633E 00	9.49013E-01	7.29035E-03	9.43926E-01
50	9.31372E-01	2.31217E 00	9.48645E-01	7.14649E-03	9.43528E-01
51	9.36777E-01	2.35667E 00	9.48403E-01	7.00381E-03	9.43507E-01
52	8.98729E-01	2.40183E 00	9.47409E-01	6.93401E-03	9.42859E-01
53	8.93324E-01	2.44650E 00	9.46348E-01	6.87957E-03	9.42040E-01
54	1.00362E 00	2.49067E 00	9.47449E-01	6.83577E-03	9.43263E-01
55	9.55097E-01	2.53950E 00	9.47594E-01	6.70695E-03	9.43568E-01
56	9.86495E-01	2.59017E 00	9.48314E-01	6.62125E-03	9.44346E-01
57	8.64961E-01	2.63867E 00	9.46798[illegible]	6.67400E-03	9.43065E-01
58	9.42703E-01	2.68383E 00	9.46725[illegible]	6.55412E-03	9.42797E-01

WARNING - ONLY 198 INDEPENDENT FISSION POINTS WERE GENERATED.

59	8.30591E-01	2.72417E 00	9.44689E-01	6.75204E-03	9.40864E-01
60	9.09330E-01	2.77403E 00	9.44060E-01	6.66241E-03	9.40339E-01
61	9.63573E-01	2.81567E 00	9.44411E-01	6.55725E-03	9.40460E-01
62	9.54343E-01	2.86150E 00	9.44576E-01	6.44957E-03	9.40774E-01
63	9.29814E-01	2.90717E 00	9.44334E-01	6.34758E-03	9.40720E-01
64	6.44382E-01	2.95200E 00	9.42722E-01	6.44913E-03	9.39315E-01
65	1.00390E 00	2.99617E 00	9.43693E-01	6.42002E-03	9.40207E-01
66	1.04305E 00	3.04050E 00	9.45245E-01	6.50671E-03	9.41732E-01
67	8.72399E-01	3.09250E 00	9.44124E-01	6.50340E-03	9.40741E-01
68	9.61537E-01	3.14017E 00	9.44318E-01	6.40962E-03	9.41124E-01
69	9.79952E-01	3.18450E 00	9.44919E-01	6.33555E-03	9.41606E-01
70	9.23684E-01	3.23633E 00	9.44609E-01	6.24971E-03	9.41733E-01
71	8.54122E-01	3.28650E 00	9.43298E-01	6.29691E-03	9.40720E-01
72	9.98767E-01	3.33683E 00	9.44090E-01	6.25664E-03	9.41285E-01
73	9.08601E-01	3.38367E 00	9.43590E-01	6.18796E-03	9.40435E-01
74	9.41253E-01	3.43033E 00	9.43556E-01	6.10193E-03	9.40709E-01
75	9.84209E-01	3.47500E 00	9.44114E-01	6.04340E-03	9.41475E-01
76	9.00267E-01	3.52583E 00	9.43522E-01	5.99077E-03	9.40850E-01
77	9.78500E-01	3.56933E 00	9.43966E-01	5.92852E-03	9.41233E-01
78	9.48110E-01	3.61567E 00	9.44041E-01	5.85021E-03	9.41232E-01
79	1.05532E 00	3.66550E 00	9.45226E-01	5.89447E-03	9.42426E-01
80	9.20004E-01	3.71167E 00	9.44902E-01	5.82758E-03	9.42196E-01
81	1.01634E 00	3.76033E 00	9.45807E-01	5.82406E-03	9.42936E-01
82	1.04295E 00	3.81217E 00	9.47022E-01	5.87750E-03	9.44143E-01
83	1.03395E 00	3.85667E 00	9.48218E-01	5.92664E-03	9.45396E-01
84	9.93903E-01	3.90167E 00	9.48285E-01	5.85454E-03	9.45468E-01
85	8.67833E-01	3.95133E 00	9.47313E-01	5.86427E-03	9.44565E-01
86	8.98860E-01	4.00117E 00	9.46736E-01	5.82268E-03	9.43995E-01
87	1.00074E 00	4.04600E 00	9.47371E-01	5.78902E-03	9.44655E-01
88	9.11655E-01	4.09617E 00	9.46956E-01	5.73619E-03	9.44249E-01
89	9.86381E-01	4.14233E 00	9.47409E-01	5.68814E-03	9.45036E-01
90	1.02646E 00	4.18317E 00	9.48308E-01	5.69447E-03	9.45802E-01
91	9.31274E-01	4.23433E 00	9.48116E-01	5.63360E-03	9.45597E-01

WARNING - ONLY 200 INDEPENDENT FISSION POINTS WERE GENERATED.

92	8.40326E-01	4.26100E 00	9.46918E-01	5.69817E-03	9.44386E-01
93	9.82506E-01	4.32267E 00	9.47309E-01	5.64887E-03	9.44751E-01
94	9.40881E-01	4.36767E 00	9.47848E-01	5.61307E-03	9.45213E-01
95	9.25340E-01	4.41767E 00	9.47606E-01	5.55760E-03	9.45017E-01
96	9.59019E-01	4.46667E 00	9.47728E-01	5.49966E-03	9.45170E-01
97	8.52760E-01	4.51033E 00	9.46728E-01	5.53259E-03	9.44194E-01
98	9.56716E-01	4.55483E 00	9.46832E-01	5.47573E-03	9.44117E-01
99	9.27593E-01	4.60017E 00	9.46634E-01	5.42275E-03	9.44007E-01
100	9.50151E-01	4.64267E 00	9.46670E-01	5.36737E-03	9.43996E-01
101	9.72570E-01	4.68133E 00	9.46941E-01	5.31932E-03	9.44206E-01
102	9.52870E-01	4.72500E 00	9.46991E-01	5.26633E-03	9.44314E-01
103	9.64425E-01	4.77017E 00	9.47213E-01	5.21862E-03	9.44493E-01

THE MATRIX K-EFF IS THE LARGEST EIGENVALUE OF THE MATRIX OF FISSION PROBABILITIES BY UNIT.
THERE ARE NBXMAX * NBYMAX * NBZMAX UNITS IN AN ARRAY.

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

LIFETIME = 3.53918E-05 + OR - 5.86931E-07 GENERATION TIME = 2.32576E-05 + OR - 1.95365E-07

NO. OF INITIAL GENERATIONS SKIPPED	AVERAGE K-EFFECTIVE	DEVIATION	67 PER CENT CONFIDENCE INTERVAL	95 PER CENT CONFIDENCE INTERVAL	99 PER CENT CONFIDENCE INTERVAL	NUMBER OF HISTORIES
3	0.94682	+ OR - 0.00525	0.94157 TO 0.95207	0.93632 TO 0.95732	0.93107 TO 0.96257	20100
4	0.94690	+ OR - 0.00530	0.94160 TO 0.95220	0.93629 TO 0.95751	0.93099 TO 0.96281	19899
5	0.94644	+ OR - 0.00534	0.94111 TO 0.95178	0.93577 TO 0.95712	0.93043 TO 0.96246	19698
6	0.94584	+ OR - 0.00536	0.94048 TO 0.95119	0.93512 TO 0.95655	0.92976 TO 0.96191	19497
7	0.94640	+ OR - 0.00538	0.94102 TO 0.95178	0.93563 TO 0.95717	0.93025 TO 0.96255	19296
8	0.94658	+ OR - 0.00544	0.94114 TO 0.95201	0.93570 TO 0.95745	0.93026 TO 0.96289	19095
9	0.94671	+ OR - 0.00549	0.94122 TO 0.95221	0.93572 TO 0.95770	0.93023 TO 0.96320	18894
10	0.94732	+ OR - 0.00552	0.94181 TO 0.95284	0.93629 TO 0.95836	0.93077 TO 0.96388	18693
11	0.94798	+ OR - 0.00554	0.94244 TO 0.95352	0.93690 TO 0.95906	0.93136 TO 0.96460	18492
12	0.94857	+ OR - 0.00557	0.94300 TO 0.95414	0.93743 TO 0.95971	0.93186 TO 0.96528	18291
17	0.94756	+ OR - 0.00581	0.94174 TO 0.95337	0.93593 TO 0.95918	0.93012 TO 0.96499	17286
22	0.94900	+ OR - 0.00604	0.94296 TO 0.95504	0.93692 TO 0.96109	0.93088 TO 0.96713	16281
27	0.94638	+ OR - 0.00602	0.94036 TO 0.95240	0.93434 TO 0.95842	0.92832 TO 0.96444	15276
32	0.94667	+ OR - 0.00612	0.94255 TO 0.95460	0.93643 TO 0.96092	0.93030 TO 0.96704	14271
37	0.94903	+ OR - 0.00648	0.94255 TO 0.95550	0.93608 TO 0.96198	0.92960 TO 0.96846	13266
42	0.94758	+ OR - 0.00693	0.94065 TO 0.95451	0.93372 TO 0.96144	0.92679 TO 0.96837	12261
47	0.94703	+ OR - 0.00735	0.93968 TO 0.95438	0.93234 TO 0.96172	0.92499 TO 0.96907	11256
52	0.94702	+ OR - 0.00784	0.93918 TO 0.95487	0.93133 TO 0.96271	0.92349 TO 0.97056	10251
57	0.94771	+ OR - 0.00830	0.93942 TO 0.95601	0.93112 TO 0.96430	0.92282 TO 0.97260	9246
62	0.95107	+ OR - 0.00878	0.94229 TO 0.95986	0.93351 TO 0.96864	0.92473 TO 0.97742	8241
67	0.95279	+ OR - 0.00878	0.94401 TO 0.96157	0.93523 TO 0.97035	0.92645 TO 0.97913	7236
72	0.95427	+ OR - 0.00948	0.94479 TO 0.96375	0.93531 TO 0.97322	0.92583 TO 0.98270	6231
77	0.95652	+ OR - 0.01087	0.94566 TO 0.96739	0.93479 TO 0.97826	0.92392 TO 0.98913	5226
82	0.94795	+ OR - 0.01160	0.93634 TO 0.95955	0.92474 TO 0.97115	0.91314 TO 0.98276	4221
87	0.94638	+ OR - 0.01219	0.93419 TO 0.95856	0.92200 TO 0.97075	0.90981 TO 0.98294	3216
92	0.94963	+ OR - 0.01161	0.93801 TO 0.96124	0.92640 TO 0.97286	0.91479 TO 0.98447	2211

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

NO. OF INITIAL GENERATIONS SKIPPED	AVERAGE K-EFFECTIVE	DEVIATION	67 PER CENT CONFIDENCE INTERVAL	95 PER CENT CONFIDENCE INTERVAL	99 PER CENT CONFIDENCE INTERVAL	NUMBER OF HISTORIES
97	0.95489	+ OR - 0.00658	0.94831 TO 0.96147	0.94173 TO 0.96805	0.93515 TO 0.97463	1206

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GROUP	REGION	LEAKAGE	ABSORPTIONS	FISSIONS	WITH 3 GENERATIONS SKIPPED
1		0.0	0.0	0.0	
2		0.0	8.80875D-06	1.14297D-05	
3		0.0	5.29349D-05	7.39567D-05	
4		0.0	1.52892D-04	2.03264D-04	
5		0.0	2.42764D-04	3.09955D-04	
6		0.0	3.63298D-04	5.61034D-04	
7		0.0	4.26581D-04	7.42437D-04	
8		0.0	7.30049D-04	1.16248D-03	
9		0.0	8.62489D-04	1.34061D-03	
10		0.0	6.48856D-04	1.33347D-03	
11		4.55740D-05	1.16089D-03	2.01835D-03	
12		0.0	1.32958D-03	2.39766D-03	
13		0.0	1.67306D-03	2.74443D-03	
14		0.0	1.30899D-03	2.71964D-03	
15		0.0	1.22623D-03	3.14024D-03	
16		0.0	1.63979D-03	4.10656D-03	
17		0.0	1.90305D-03	4.67504D-03	
18		4.97512D-05	2.04091D-03	4.90527D-03	
19		0.0	2.11044D-03	4.98927D-03	
20		0.0	1.89313D-03	4.36716D-03	
21		0.0	1.74205D-03	3.84797D-03	
22		0.0	1.38017D-03	2.72446D-03	
23		0.0	9.83828D-04	1.60517D-03	
24		0.0	8.17819D-04	9.34027D-04	
25		0.0	6.29336D-04	5.28661D-04	
26		0.0	7.46174D-04	4.98875D-04	
27		0.0	6.59386D-04	3.53899D-04	

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GROUP	REGION	LEAKAGE	ABSORPTIONS	FISSIONS	WITH 3 GENERATIONS SKIPPED
28		0.0	8.49724D-04	3.14655D-04	
29		0.0	8.29098D-04	3.52951D-04	
30		0.0	9.39357D-04	3.71661D-04	
31		0.0	8.01612D-04	3.00612D-04	
32		0.0	7.82855D-04	2.83302D-04	
33		0.0	7.47950D-04	2.56618D-04	
34		0.0	6.99641D-04	2.38920D-04	
35		0.0	5.11464D-04	1.85302D-04	
36		0.0	4.68119D-04	1.70973D-04	
37		0.0	6.13641D-04	2.29339D-04	
38		0.0	8.29849D-04	2.67408D-04	
39		0.0	6.67065D-04	2.28594D-04	
40		0.0	6.52330D-04	2.03475D-04	
41		0.0	6.66617D-04	2.00551D-04	
42		0.0	6.39248D-04	1.85370D-04	
43		0.0	6.69550D-04	1.77283D-04	
44		0.0	7.11048D-04	1.82086D-04	
45		0.0	7.10334D-04	1.66455D-04	
46		0.0	6.87738D-04	1.66372D-04	
47		0.0	6.54234D-04	1.58382D-04	
48		0.0	7.86364D-04	1.69811D-04	
49		0.0	7.27570D-04	1.52673D-04	
50		0.0	1.69695D-03	3.67286D-04	
51		0.0	2.48475D-03	3.58193D-04	
52		4.74221D-05	2.05312D-03	3.59099D-04	
53		0.0	2.05646D-03	3.57811D-04	
54		0.0	1.71670D-03	3.51987D-04	

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GROUP	REGION	LEAKAGE	ABSORPTIONS	FISSIONS	WITH 3 GENERATIONS SKIPPED
55		0.0	2.64827D-03	3.87364D-04	
56		0.0	2.31950D-03	3.91829D-04	
57		0.0	2.23806D-03	4.10396D-04	
58		0.0	2.24385D-03	4.17783D-04	
59		0.0	2.48339D-03	4.73458D-04	
60		0.0	2.45150D-03	4.78287D-04	
61		0.0	2.45607D-03	5.33763D-04	
62		0.0	2.98505D-03	5.81778D-04	
63		0.0	2.88195D-03	6.20309D-04	
64		0.0	3.05891D-03	7.07952D-04	
65		0.0	3.09786D-03	7.57922D-04	
66		0.0	3.21835D-03	9.00511D-04	
67		0.0	3.57959D-03	9.88113D-04	
68		0.0	4.08587D-03	1.04540D-03	
69		0.0	4.66096D-03	1.13311D-03	
70		0.0	5.18033D-03	1.46525D-03	
71		0.0	5.03135D-03	1.70636D-03	
72		0.0	5.07551D-03	1.67465D-03	
73		0.0	8.77474D-03	1.96858D-03	
74		0.0	6.74940D-03	2.93670D-03	
75		0.0	7.46570D-03	2.32407D-03	
76		0.0	9.94126D-03	2.59446D-03	
77		0.0	7.79806D-03	2.17164D-03	
78		4.94402D-05	7.92194D-03	2.50832D-03	
79		0.0	1.33636D-02	2.48474D-03	
80		0.0	8.39902D-03	6.18582D-03	
81		0.0	1.06266D-02	3.81594D-03	

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PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GROUP	REGION	LEAKAGE	ABSORPTIONS	FISSIONS	WITH 3 GENERATIONS SKIPPED
82		0.0	1.69429D-02	4.57980D-03	
83		0.0	5.48022D-03	4.73408D-03	
84		0.0	1.53738D-02	5.37637D-03	
85		0.0	3.32183D-03	3.39042D-03	
86		0.0	6.37904D-03	4.69466D-03	
87		0.0	1.23824D-02	9.74310D-03	
88		0.0	2.13346D-02	1.07230D-03	
89		0.0	1.70254D-02	2.22298D-03	
90		0.0	9.30005D-03	4.24498D-04	
91		0.0	8.04433D-03	2.73267D-03	
92		0.0	6.56127D-03	1.16798D-03	
93		0.0	6.96949D-03	1.21612D-03	
94		0.0	3.56222D-03	4.50492D-04	
95		0.0	2.94348D-03	4.67014D-04	
96		0.0	2.88174D-03	5.10437D-04	
97		0.0	3.89503D-03	8.39405D-04	
98		0.0	4.51451D-03	2.81837D-03	
99		0.0	5.29120D-03	3.64950D-03	
100		0.0	3.94976D-03	2.73741D-03	
101		0.0	4.22705D-03	2.49102D-03	
102		0.0	5.72739D-03	3.86590D-03	
103		0.0	5.95760D-03	4.23056D-03	
104		0.0	7.39308D-03	6.27023D-03	
105		0.0	1.05123D-02	1.08370D-02	
106		0.0	8.13109D-03	9.64008D-03	
107		0.0	1.08337D-02	1.21117D-02	
108		0.0	1.33602D-02	1.44873D-02	

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

GROUP	REGION	LEAKAGE	ABSORPTIONS	FISSIONS	WITH 3 GENERATIONS SKIPPED
109		0.0	7.38300D-03	7.75871D-03	
110		2.56781D-05	9.30794D-03	1.01817D-02	
111		1.13116D-05	1.26146D-02	1.39682D-02	
112		1.84469D-05	1.76481D-02	2.01150D-02	
113		0.0	2.69758D-02	3.11321D-02	
114		1.68347D-05	4.37784D-02	5.07735D-02	
115		0.0	3.16492D-02	3.77700D-02	
116		0.0	4.07132D-02	4.87087D-02	
117		0.0	5.26301D-02	6.39357D-02	
118		0.0	6.40502D-02	7.91988D-02	
119		0.0	7.51257D-02	9.59850D-02	
120		2.47556D-05	8.43041D-02	1.10178D-01	
121		2.17535D-05	4.34650D-02	5.76531D-02	
122		0.0	4.14241D-02	5.49505D-02	
123		0.0	3.53661D-02	4.70390D-02	
TOTAL =		3.10968D-04	1.00113D 00	9.46828D-01	

ELAPSED TIME 4.77017MINUTES

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

UNIT NUMBER	POSITION X	Y	Z	BOX TYPE	COFACTOR K-EFFECTIVE
1	1	1	1	1	9.44532E-01
2	2	1	1	23	9.36745E-01
3	1	2	1	2	9.45126E-01
4	2	2	1	24	9.37097E-01
5	1	3	1	3	9.13030E-01
6	2	3	1	25	9.29619E-01
7	1	4	1	4	9.30904E-01
8	2	4	1	26	9.44272E-01
9	1	5	1	5	9.16520E-01
10	2	5	1	27	9.44316E-01
11	1	6	1	6	9.30056E-01
12	2	6	1	28	9.44250E-01
13	1	7	1	7	9.04651E-01
14	2	7	1	29	8.95364E-01
15	1	8	1	8	9.45251E-01
16	2	8	1	30	9.30365E-01
17	1	9	1	9	9.45254E-01
18	2	9	1	31	9.08238E-01
19	1	10	1	10	9.45410E-01
20	2	10	1	32	9.32136E-01
21	1	11	1	11	9.26692E-01
22	2	11	1	33	9.12771E-01
23	1	12	1	12	9.39279E-01
24	2	12	1	34	9.45293E-01
25	1	13	1	13	9.33769E-01
26	2	13	1	35	9.45123E-01
27	1	14	1	14	9.32161E-01
28	2	14	1	36	9.45149E-01
29	1	15	1	15	9.34659E-01
30	2	15	1	37	9.45134E-01
31	1	16	1	16	9.45099E-01
32	2	16	1	38	9.45063E-01
33	1	17	1	17	9.45034E-01
34	2	17	1	39	9.45006E-01
35	1	18	1	18	9.44986E-01
36	2	18	1	40	9.44967E-01
37	1	19	1	19	9.44951E-01
38	2	19	1	41	9.44937E-01
39	1	20	1	20	9.44926E-01
40	2	20	1	42	9.44915E-01
41	1	21	1	21	9.44907E-01
42	2	21	1	43	9.44900E-01
43	1	22	1	22	9.44893E-01
44	2	22	1	44	9.44888E-01

PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HOMOG FUEL XTRA SS

SOURCE VECTOR BY UNIT

UNIT	VECTOR
1	0.0
2	1.60763E-02
3	0.0
4	1.56206E-02
5	1.16027E-01
6	1.28141E-01
7	1.43985E-02
8	0.0
9	3.61693E-02
10	0.0
11	1.46872E-02
12	0.0
13	1.08925E-01
14	1.50790E-01
15	0.0
16	1.70191E-02
17	0.0
18	7.67186E-02
19	0.0
20	1.77564E-02
21	5.73626E-02
22	1.07209E-01
23	9.30356E-03
24	0.0
25	2.42298E-02
26	0.0
27	4.41865E-02
28	0.0
29	4.31820E-02
30	0.0
31	0.0
32	0.0
33	0.0
34	0.0
35	0.0
36	0.0
37	0.0
38	0.0
39	0.0
40	0.0
41	0.0
42	0.0
43	0.0
44	0.0

AVERAGE UNIT SELF MULTIPLICATION = 1.13735E-01 +OR- 2.80331E-02 (THE PROBABILITY THAT A NEUTRON BORN IN A UNIT PRODUCES A FISSION IN THAT SAME UNIT.)

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PWR 17X17 PINS .5144 IN PITCH 3.5 PCT ENR FULL CASK HUMJG FUEL XTRA SS
                                   FREQUENCY FOR GENERATIONS    4 TO  103
0.7916 TO 0.8199   *
0.8199 TO 0.8481   ***
0.8481 TO 0.8763   ******
0.8763 TO 0.9045   **********
0.9045 TO 0.9327   ******************
0.9327 TO 0.9609   ************************
0.9609 TO 0.9891   ********************
0.9891 TO 1.0174   *************
1.0174 TO 1.0456   *******
1.0456 TO 1.0738
1.0738 TO 1.1020
1.1020 TO 1.1302   *
                                   FREQUENCY FOR GENERATIONS   29 TO  103
0.7916 TO 0.8199   *
0.8199 TO 0.8481   ***
0.8481 TO 0.8763   *****
0.8763 TO 0.9045   ******
0.9045 TO 0.9327   ***************
0.9327 TO 0.9609   ****************
0.9609 TO 0.9891   ******************
0.9891 TO 1.0174   *********
1.0174 TO 1.0456   ******
1.0456 TO 1.0738
1.0738 TO 1.1020
1.1020 TO 1.1302
                                   FREQUENCY FOR GENERATIONS   54 TO  103
0.7916 TO 0.8199
0.8199 TO 0.8481   ***
0.8481 TO 0.8763   *****
0.8763 TO 0.9045   **
0.9045 TO 0.9327   *********
0.9327 TO 0.9609   **********
0.9609 TO 0.9891   ***********
0.9891 TO 1.0174   ******
1.0174 TO 1.0456   *****
1.0456 TO 1.0738
1.0738 TO 1.1020
1.1020 TO 1.1302
                                   FREQUENCY FOR GENERATIONS   79 TO  103
0.7916 TO 0.8199
0.8199 TO 0.8481   *
0.8481 TO 0.8763   **
0.8763 TO 0.9045   *
0.9045 TO 0.9327   *****
0.9327 TO 0.9609   *****
0.9609 TO 0.9891   ****
0.9891 TO 1.0174   ***
1.0174 TO 1.0456   ****
1.0456 TO 1.0738
1.0738 TO 1.1020
1.1020 TO 1.1302

********** END OF FILE ON UNIT    5 **********
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EXHIBIT 4

BWR 8x8, Full Cask Model

Generalized Geometry

2.8% U-235 Enrichment

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THIS IS THE TOP OF AMPX

MODULE CONVERT  HAS BEEN CALLED

* CONVERT
1$$ 14 94 2$$ 47 1 T
4$$ 10001 86C03 130CCC 240003 250005 260001 280003 400000 471090 481131
491150 820000 922351 922381 T

MODULE CONVERT  IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE NITAWL   HAS BEEN CALLED

* NITAWL
1$$ 0 7 52 1 22 -1 0 T
2$$ 10001 -100 8C003 -800 400000 922351 922381
3** 922381 255 2 .528 .0832 53.9 .0243 1 16 7.63 1 32 .2608 T

MODULE NITAWL   IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE XSDRNPM  HAS BEEN CALLED

BWR 848 PINS .7219 IN PITCH 2.8 PCT 200 KG U 144 IN LONG
1$$ 2 3 21 1 3 3 6 8 3 1 10 10 F0 2$$ -2 -1 -1 F0 3$$ 1 62 1 22 1 0
4$$ -1 123 0 -2 E T
13$$ 3R1 2 2R3 14$$ 922351 922381 8CC 400000 100 8C0
15** 7.101-4 .024339 .056298 .042257 .066743 .033371 T
33** F1 T
35** 910 .52632 11.53475 71.62611 1.03446 3E$$ 10R1 3R2 8R3
38** 10R1 0 F1 39$$ 1 2 3 40$$ F3 51$$ 12111 123 T

MODULE XSDRNPM  IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE NITAWL   HAS BEEN CALLED

* NITAWL
1$$ 0 11 0 5 62 -1 0 T
2$$ 10001 86C03 130CCC 240003 250005 260001 280003 471090 481131 491150
820000 100 8CC 400000 922351 922381 T

MODULE NITAWL   IS FINISHED. USER CODE 0000   SYSTEM CODE 000

MODULE KENO     HAS BEEN CALLED

BWR 848 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM
22.  70  300    3   123   80   16   7   19   12   1   1   1   1   -16
0   0   2000   0   1   82
1   -922351  1.823-4
1    922381  6.2491-3
1    800     3.4252-2
1   400000   3.9138-3
1    100     4.2616-2
2   80003            1.0E-10
2   481131           .3317186E-3
2   491150           7.8068568E-3
2   471090           2.17075E-2
3   130000  .060252
4   240003  .016733
4   250005  .0017614
4   260001  .060416
4   280003  .0063667
5   820000  .032993
6   10001   .066743
```

```
6     [illegible]    .053371
7    -922351    .00010523
7     922351    .047725
GENERAL  1 6Z 123R.5
GENERAL  2 6Z 123R.5
GENERAL  3 6Z 123R.5
GENERAL  4 6Z 123R.5
GENERAL  5 6Z 123R.5
GENERAL  6 6Z 123R.5
GENERAL  7 6Z 123R.5
GENERAL  4 6Z 123R.5
GENERAL  6 6Z 123R.5
GENERAL  0 6Z 123R.5
GENERAL  0 6Z 123R.5
CUBOID     0  102.1  -102.1   102.1   -102.1   252.73   -250.19 123R.5
    2     MALE
X ZONE     -102.10   ,102.10
Y ZONE     -102.10   ,   0.0    , 102.10
Z ZONE     -250.19   ,-102.88   ,102.88    ,252.73
ZONE     1    1    1
X BLOCK    -102.10   ,102.10
Y BLOCK    -102.10   ,   0.0
Z BLOCK    -250.19   ,-102.88
BLOCK    1    1    1
MEDIA          6,    8,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES       1,    8,   13,   20,   69,   70,   71,   72,  133
SECTOR  1  0  0  0 -1  0  0  0  0
SECTOR -1  1  0  0  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0 -1  0  0
SECTOR  0  0 -1  1  0  0  0 -1  0
SECTOR  0  0  0 -1  0  0  0  0 -1
SECTOR  1  0  0  0  1 -1  0  0  0
SECTOR  1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1
ZONE     1    2    1
X BLOCK    -102.10   , 102.10
Y BLOCK       0.0    , 102.10
Z BLOCK    -250.19   ,-102.88
BLOCK    1    1    1
MEDIA          6,    8,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES       1,    8,   13,   20,   69,   70,   71,   72,  133
SECTOR  1  0  0  0 -1  0  0  0  0
SECTOR -1  1  0  0  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0 -1  0  0
SECTOR  0  0 -1  1  0  0  0 -1  0
SECTOR  0  0  0 -1  0  0  0  0 -1
SECTOR  1  0  0  0  1 -1  0  0  0
SECTOR  1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1
ZONE     1    1    2
X BLOCK    -102.10   ,-52.46497 ,-33.96488 ,-16.25    ,   0.0    ,
16.25    ,33.96488  ,52.46497  ,102.10
Y BLOCK    -102.10   , -52.46497, -34.02782, -16.83766,   0.0
Z BLOCK    -102.88   ,102.88
BLOCK    1    1    1
MEDIA          5,    8,    9,   11
SURFACES      71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK    2    1    1
```

```
MEDIA          5,   6,   9,  11
SURFACES      71,  72, 133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK    3    1    1
MEDIA          3,   4,   5,   8,   9,  10,  11
SURFACES      55,  69,  70,  71,  72, 133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK    4    1    1
MEDIA          3,   4,   5,   8,   9,  10,  10,  11
SURFACES      54,  55,  69,  70,  71,  72, 133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1
BLOCK    5    1    1
MEDIA          3,   4,   5,   8,   9,  10,  10,  11
SURFACES      53,  54,  69,  70,  71,  72, 133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1
BLOCK    6    1    1
MEDIA          3,   4,   5,   8,   9,  10,  11
SURFACES      53,  69,  70,  71,  72, 133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK    7    1    1
MEDIA          5,   6,   9,  11
SURFACES      71,  72, 133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK    8    1    1
MEDIA          5,   6,   9,  11
SURFACES      71,  72, 133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK    1    2    1
MEDIA          5,   8,   9,  11
SURFACES      71,  72, 133
SECTOR -1  0  0
```

```
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     2    2    1
MEDIA          3,    4,    5,    8,    9,   10,   11,   10
SURFACES       56,   69,   70,   71,   72,  133,   57
SECTOR  0 -1  0  0  0  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  1  0  1 -1  0  0  1
SECTOR  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR -1  0  1  0  0  0  0
SECTOR  0  0  0  0  0  1  0
SECTOR  0  0  1  0  0  0 -1
BLOCK     3    2    1
MEDIA          3,    3,    3,    4,    4,    5,    6,   10
SURFACES       56,   69,   70,  259,  261,  262,  264
SECTOR  0  0  0  0  0  0  1
SECTOR  0 -1  0  0  0  1  0
SECTOR  0 -1  0  0  1  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  0  0  0 -1  0  0  0
SECTOR  1  0  1  0  0  0  0
SECTOR  0  0  0  1 -1 -1 -1
SECTOR -1  0  1  0  0  0  0
BLOCK     4    2    1
MEDIA          1,    2,    3,    3,    3,    4,    4,    4,    4,    4,
    4,    4,    6,    6,    6,    6
SURFACES       75,   78,   81,   95,   96,  116,  117,  118,  148,  149,
   150,  160,  161,  162,  163
SECTOR  0  0 -1  0  0  1  0  0  0  0  1 -1  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  0  1 -1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0 -1  0  0  0  0  0  0
SECTOR -1  1  0  0  0  0  0  0  1  0  0  0  0 -1  0
SECTOR -1  0  0  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0 -1 -1  1  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0 -1  0  0  0  0  1  0  0
SECTOR -1  1  0  0  0  0  0 -1  0  0  0  0  0  0  1
SECTOR -1  0  0  1  0  0  0 -1  1  0  0  0  0  0  0
SECTOR  0  1  0  0 -1  0  0 -1  1  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  0  0  1  0  0 -1  0  0
SECTOR  0 -1  0  0  0  0  1  0  0  1 -1  0  0  0  0
SECTOR  0 -1  0  0  0  0  1  0  0  0  0  1 -1  0  0
BLOCK     5    2    1
MEDIA          1,    3,    3,    3,    3,    4,    4,    4,    4,    6,
    6,    6,    6
SURFACES       42,   79,   80,  241,   82,   83,   84,  164,  165,  184,
  169,  160
SECTOR  0  0  0 -1  1  0  0  0  1 -1  0  0
SECTOR  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR  1 -1  1  0  0  0  0  0  0  0  0 -1
SECTOR  1  0  0  0  0 -1  1  0  0  0  0 -1
SECTOR  1 -1  0  0  0  0  1 -1  0  0  0  0
SECTOR  0 -1  0  0  0  0  1  0  0  0  1 -1
SECTOR  0  0 -1  1  0  0  0  1  0  0 -1  0
SECTOR  0  0  0  0 -1  1  0  1  0  0 -1  0
SECTOR  0  0 -1  0  0  1  0  1 -1  0  0  0
SECTOR  0  0 -1  0  0  1  0  0  0  1 -1  0
BLOCK     6    2    1
MEDIA          3,    3,    3,    4,    4,    5,    6,   10
```

```
SURFACES        52,   69,   70,  260,  261,  263,  264
SECTOR  0  0  0  0  0  0  1
SECTOR  0 -1  0  0  0 -1  0
SECTOR  0 -1  0  0  1  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  0  0  0 -1  0  0  0
SECTOR  1  0  1  0  0  0  0
SECTOR  0  0  0  1 -1  1 -1
SECTOR -1  0  1  0  0  0  0
BLOCK     7    2    1
MEDIA           3,    4,    5,    8,    9,   10,   11,   10
SURFACES        52,   69,   70,   71,   72,  133,   51
SECTOR  0 -1  0  0  0  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  1  0  1 -1  0  0  1
SECTOR  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR -1  0  1  0  0  0  0
SECTOR  0  0  0  0  0  1  0
SECTOR  0  0  1  0  0  0 -1
BLOCK     8    2    1
MEDIA           5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     1    3    1
MEDIA           3,    4,    5,    8,    9,   10,   11
SURFACES        56,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     2    3    1
MEDIA           3,    3,    3,    4,    5,    6,   10
SURFACES        57,   69,   70,   47,  126,  261
SECTOR  0  0  0  1  0  0
SECTOR  0 -1  0  0  0  1
SECTOR  0  0  0  0  1  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1  0  0  0
SECTOR  0  0  0 -1 -1 -1
SECTOR -1  0  1  0  0  0
BLOCK     3    3    1
MEDIA           1,    2,    2,    3,    4,    4,    4,    4,    4,    4,
    4,    4,    4,    4,    6,    6,    6,    6
SURFACES        44,   45,   46,   47,   48,   93,   94,  114,  115,  243,
  244,  245,  136,  137,  138,  207,  208
SECTOR  0  0  0  0 -1  0  0  1  0  0  0  0  1 -1  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0 -1  1  0  0  1 -1  0  0  0  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  0  0  0 -1  0
SECTOR -1  0  0  0  0  0  0  0  0 -1  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  1  0  0  0  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0 -1  0  0  0  0 -1  0  0  0  0  0
```

```
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0  0  0 -1  1  0  0  1  0  0 -1  0  0
SECTOR  0  0  0 -1  0  0  0  0  0  1  0  0  1 -1  0  0  0
SECTOR  0  0  0 -1  0  0  0  0  1  0  0  0  0  1 -1  0  0
BLOCK     4    3    1
MEDIA          1,   2,   3,   3,   4,   4,   4,   4,   4,   4,
    4,   4,   4,   4,   6
SURFACES       44,  45,  46,  47,  48,  114, 115, 139, 140, 155,
  157, 156, 211, 212
SECTOR  0  0  0  0 -1  1  0  0  1  0 -1  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  1  0  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0 -1  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0 -1  0  0  0  0
SECTOR -1  0  0  1  0  0  0  0  0 -1  0  0  0  1
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0 -1  0
SECTOR -1  0  0  0  0  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0 -1  0  0 -1  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0 -1  0  1  0  0
SECTOR  0  0  0 -1  1  0  0  1  0  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  1  0  0  0 -1  0  0
SECTOR  0  0  0 -1  0  0  1  1 -1  0  0  0  0  0
SECTOR  0  0  0 -1  0  0  1  0  0  0  1 -1  0  0
BLOCK     5    3    1
MEDIA          1,   2,   2,   3,   3,   4,   4,   4,   4,   4,
    4,   4,   4,   4,   4,   6,   6,   6,   6
SURFACES       44,  74,  75,  76,  77,  112, 113, 170, 173, 174,
  175, 176, 177, 178, 215, 216, 229, 230
SECTOR  0  1  0  0  0  0 -1  0  0  0  0  1 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  1 -1  0  0  0  0  0 -1  1
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
SECTOR -1  0  0  0  0  1  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  1 -1  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  1 -1  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0  1  0
SECTOR  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0  0 -1
SECTOR  0  0 -1  1  0  0  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  1  0  0  0  0  0  0 -1  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0  0  0  0  0 -1  1  0  0  0  1  0  0 -1  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0
SECTOR  0  0  1  0  0 -1  0  0  0  0  0  0  1 -1  0  0  0  0
BLOCK     6    3    1
MEDIA          1,   2,   3,   4,   4,   4,   4,   4,   4,   4,
    6,   6,   6,   6
SURFACES       44,  74,  75,  76,  77,  112, 113, 179, 180, 191,
  192, 219, 220
SECTOR  0  1  0  0  0  0 -1  0  1 -1  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  1 -1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR -1  0  0  0  0  1  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0 -1  0  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0  1
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  1  0  0 -1  0  1 -1  0  0  0  0
```

```
SECTOR  0  0  1  0  0 -1  0  0  0  1 -1  0  0
BLOCK     7    3    1
MEDIA            3,    3,    3,    4,    5,    6,   10
SURFACES        51,   69,   70,   47,  157,  261
SECTOR  0  0  0  1  0  0
SECTOR  0 -1  0  0  0  1
SECTOR  0  0  0  0 -1  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1  0  0  0
SECTOR  0  0  0 -1  1 -1
SECTOR -1  0  1  0  0  0
BLOCK     8    3    1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        50,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     1    4    1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        55,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     2    4    1
MEDIA            1,    2,    3,    3,    3,    4,    4,    4,    4,    4,
    4,    4,    6,    6,    6,    6
SURFACES        32,    2,  266,  267,  248,  119,  120,  242,  268,  126,
  253,  254,  255,  256,  247
SECTOR  0  0  0  0 -1  0  1 -1  0  0  0  0  1  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  1 -1  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  0  0 -1
SECTOR -1  0  0  0  0 -1  0  0  0  0  0  0  0  0  1
SECTOR -1  1  0  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0 -1  0  1  0  0  1
SECTOR  0  0 -1  0  0  0  0  0  1 -1  0  0  0  0  1
SECTOR -1  0  0  1  0  0  0  0  0  0 -1  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  1  0 -1  0  0  0  1
SECTOR  0  0  0  0  0  0  0  0  0 -1  0  0  0 -1  1
SECTOR  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0 -1  0  0  0 -1  1  0
SECTOR  0  0  0 -1  0  1 -1  0  0  0  0  0  0  1  0
SECTOR  0  0  0 -1  0  0  0  1 -1  0  0  0  0  1  0
BLOCK     3    4    1
MEDIA            1,    2,    3,    4,    4,    4,    4,    4,    4,    4,
    6,    6,    6,    6
SURFACES        32,   33,   34,   36,   37,  110,  111,  131,  132,  141,
  142,  205,  206
SECTOR  0  0  0  0 -1  1  0  0  1 -1  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  1 -1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  1  0  0  0  0  0  0  0 -1  0
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  1
```

```
SECTOR  0  0  0  0  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0
SECTOR  0  0  0 -1  0  0  1  1 -1  0  0  0  0
SECTOR  0  0  0 -1  0  0  1  0  0  1 -1  0  0
BLOCK     4    4    1
MEDIA          1,    2,    2,    3,    3,    4,    4,    4,    4,    4,
   4,    4,    4,    4,    4,    6,    6,    6,    6,
SURFACES       32,   33,   34,   36,   37,   91,   92,  110,  111,  143,
  144,  151,  152,  153,  154,  155,  205,  210
SECTOR  0  0  0  0 -1  0  0  1  0  0  1 -1  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0 -1  1  0  0  0  0  0  0  1 -1  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  0  0  0 -1  1
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  0  0  0 -1  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0  0  0  1 -1  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0  1 -1  0  0  0
SECTOR -1  0  0  0  0  1  0  0  0  0  0  0  1  0  0 -1  0
SECTOR  0  0  0  0  0  0 -1  0  0  0  0  0  1  0  0 -1  0
SECTOR  0  0  0  0  0  0  0  0 -1  0  0  0  0  0  0 -1  0
SECTOR -1  0  0  0  0  0  0  0  0 -1  0  0  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  1  0  0 -1  0  0  0  0
SECTOR  0  0  0  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0
SECTOR  0  0  0 -1  0  0  0  0  1  1 -1  0  0  0  0  0  0
SECTOR  0  0  0 -1  0  0  0  0  1  0  0  1 -1  0  0  0  0
BLOCK     5    4    1
MEDIA          1,    2,    3,    3,    4,    4,    4,    4,    4,    4,
   4,    6,    6,    6,    6
SURFACES       32,   38,   39,   40,   41,  108,  109,  170,  171,  172,
  181,  182,  213,  214
SECTOR  0  1  0  0  0  0 -1  0  0  1 -1  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  1 -1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0  0  0
SECTOR -1  0  0  0  0  1  0  1  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0  0 -1  1  0  0  0  1  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  1  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  1  0  0  0  0 -1  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0  0  1
SECTOR  0  0  0  0  0 -1  1  0  1  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  1  0  0 -1  0  0  1 -1  0  0  0  0
SECTOR  0  0  1  0  0 -1  0  0  0  0  1 -1  0  0
BLOCK     6    4    1
MEDIA          1,    2,    2,    3,    4,    4,    4,    4,    4,    4,
   4,    4,    4,    4,    6,    6,    6,    6,
SURFACES       32,   38,   39,   40,   41,  108,  109,  183,  184,  193,
  194,  195,  196,  217,  218,  227,  228
SECTOR  0  1  0  0  0  0 -1  0  1 -1  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  1 -1  0  0 -1  1
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0 -1  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
```

```
SECTOR -1  0  0  0  0  0  0  0  0  0  1  0  0  0  0  1  0
SECTOR  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  0 -1
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  1  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  1  0  0 -1  0  1 -1  0  0  0  0  0  0  0  0
SECTOR  0  0  1  0  0 -1  0  0  0  1 -1  0  0  0  0  0  0
BLOCK     7    4    1
MEDIA          1,    3,    3,    3,    3,    4,    4,    4,    4,    6,
    6,    6,    6
SURFACES       32,  108,  249,  197,  194,  194,  202,  203,  231,  232,
  233,  204
SECTOR  0  0 -1  0  0  1 -1  0  1  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR -1  1  0  1  0  0  0  0  0  0  0 -1
SECTOR -1  0  0  1 -1  0  0  0  0  0  1  0
SECTOR  0  0  0  1  0  0  0  0  0 -1  1 -1
SECTOR -1  0  0  0  0  0  0  1  0  0  1 -1
SECTOR  0 -1  1  0  1  0  0 -1  0  0  0  0
SECTOR  0  0  0  0  1  0  0 -1 -1  1  0  0
SECTOR  0 -1  0  0  1 -1  0  0  0  1  0  0
SECTOR  0 -1  0  0  0  0  1 -1  0  1  0  0
BLOCK     8    4    1
MEDIA          3,    4,    5,    8,    9,   10,   11
SURFACES       49,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
ZONE      1    2    2
X BLOCK     -102.10   , -52.46497, -33.56488, -18.25   ,   0.0   ,
  18.25   ,  33.56488,  52.46497, 102.10
Y BLOCK       0.0     ,  14.83766,  34.62782,  52.46497, 102.10
Z BLOCK    -182.88    , 182.88
BLOCK     1    1    1
MEDIA          3,    4,    5,    8,    9,   10,   11
SURFACES       59,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     2    1    1
MEDIA          1,    3,    3,    3,    3,    4,    4,    4,    4,    6,
    6,    6,    6
SURFACES       31,  250,  107,  121,  122,  123,  124,  125,  126,  235,
  236,  234
SECTOR  0  1  0  0  0  1 -1  0  0  0 -1  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR -1  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  1  0  0  0
SECTOR  0  0  0  1  0  0  0  0 -1  1  0 -1
SECTOR  1  0 -1  1  0  0  0  0 -1  0  0  0
SECTOR  1  0  0  1 -1  0  0  0  0  0  0 -1
SECTOR  1  0  0  0  0  0  0  1 -1  0  0 -1
SECTOR  0  0  0  0  1  0  0 -1  0 -1  1  0
SECTOR  0 -1  1  0  1  0  0 -1  0  0  0  0
SECTOR  0  0  1  0  1 -1  0  0  0 -1  0  0
```

```
SECTOR  0  0  1  0  0  0  1 -1  0 -1  0  0
BLOCK     3     1     1
MEDIA            1,    2,    2,    3,    4,    4,    4,    4,    4,    4,
    4,    4,    4,    4,    6,    6,    6,    6
SURFACES         22,   23,   24,   25,   31,  106,  107,   89,   90,  243,
  244,  245,  136,  137,  138,  207,  208
SECTOR  0  0  0 -1  0  1  0  0  0  0  0  0  1 -1  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0 -1  1  1 -1  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0  0  0  1  0  0  0  0 -1  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  1  0  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0 -1  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  1  0 -1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0 -1  0  0  0  1  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0 -1  0  0  0  1  0  0  0  0  0  0  1 -1  0  0
BLOCK     4     1     1
MEDIA            1,    2,    3,    3,    4,    4,    4,    4,    4,    4,
    4,    6,    6,    6,    6
SURFACES         22,   23,   24,   25,   31,  106,  107,  139,  140,  155,
  157,  156,  211,  212
SECTOR  0  0  0 -1  0  1  0  0  1  0 -1  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  1  0  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0 -1  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0 -1  0  0  0  0
SECTOR  0  0  1  0  0  0  0  0  0 -1  0  0  0  1
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0  0  0  1  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0 -1  0  0 -1  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0 -1  0  1  0  0
SECTOR  0  0 -1  1  0  0  0  1  0  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  1  0  0  0 -1  0  0
SECTOR  0  0 -1  0  0  0  1  1 -1  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  1  0  0  0  1 -1  0  0
BLOCK     5     1     1
MEDIA            1,    2,    2,    3,    3,    4,    4,    4,    4,    4,
    4,    4,    4,    4,    4,    6,    6,    6,    6
SURFACES         27,   28,   29,   30,   31,  104,  105,  170,  173,  174,
  175,  176,  177,  178,  215,  216,  225,  226
SECTOR  1  0  0  0  0  0 -1  0  0  0  0  1 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  1 -1  0  0  0  0  0  0 -1  1
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0  1 -1  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  1 -1  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0  1  0  0
SECTOR  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0  0  0 -1
SECTOR  0 -1  1  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  0  0  1  0  0  1  0  0  0  0  0  0 -1  0  0  0
SECTOR  0 -1  0  0  1  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  1  0  0  0  0  0
SECTOR  0  0  0  0  0 -1  1  0  0  0  1  0  0 -1  0  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  1  0  0 -1  0  0  0  0
```

```
SECTOR  0  1  0  0  0 -1  0  0  0  0  1 -1  0  0  0  0  0  0
SECTOR  0  1  0  0  0 -1  0  0  0  0  0  0  1 -1  0  0  0  0
BLOCK     6    1    1
MEDIA            1,   2,   3,   4,   5,   4,   4,   4,   4,   4,
   6,   6,   6,   6
SURFACES         27,  28,  29,  30,  31, 104, 105, 179, 180, 191,
  192, 219, 220
SECTOR  1  0  0  0  0  0 -1  0  1 -1  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  1  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  0  0  0  0  0  0  0  0  0 -1  0
SECTOR  0 -1  0  0  1  0  0  0  0  0  0  0  1
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0
SECTOR -1  1  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  1  0  0  0 -1  0  1 -1  0  0  0  0
SECTOR  0  1  0  0  0 -1  0  0  0  1 -1  0  0
BLOCK     7    1    1
MEDIA            1,   2,   3,   3,   3,   4,   4,   4,   4,   4,
   4,   4,   4,   4,   4,   4
SURFACES         251, 127, 128, 129,  31, 197, 130, 246, 200, 201,
  221, 222, 237, 238, 239
SECTOR  1  0  0  0  0  0  0  1 -1  0  0  0  0  0 -1
SECTOR  0  0 -1  1  0  0  0  0  0  0  1 -1  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0  0  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0  0  0  0  0 -1  1  0
SECTOR  0  0  0  0  1  1  0  0  0  0 -1  0 -1  0  0
SECTOR  0  0  1  0  0  1 -1  0  0  0  0  0 -1  0  0
SECTOR  0  0  0 -1  1  1 -1  0  0  0  0  0  0  0  0
SECTOR  0 -1  0  0  1  1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0 -1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  1  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0  0  1  0  0 -1  0  0  0 -1  1
SECTOR -1  1  0  0  0  0  1  0  0 -1  0  0  0  0  0
SECTOR  0  1  0  0  0  0  1 -1  0  0  0  0  0 -1  0
SECTOR  0  1  0  0  0  0  0  0  1 -1  0  0  0 -1  0
BLOCK     8    1    1
MEDIA            3,   4,   5,   8,   9,  10,  11
SURFACES         45,  69,  70,  71,  72, 133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     1    2    1
MEDIA            3,   4,   5,   8,   9,  10,  11
SURFACES         60,  69,  70,  71,  72, 133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     2    2    1
MEDIA            3,   3,   3,   4,   5,   6,  10
SURFACES         61,  69,  70, 134, 135, 252
SECTOR  0 -1  0  1  0  0
```

```
SECTOR  0 -1  0  0 -1  0
SECTOR  0  0  0  0  0 -1
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1  0  0  0
SECTOR  0  0  0 -1  1  1
SECTOR -1  0  1  0  0  0
BLOCK     3     2     1
MEDIA            1,    2,    3,    4,    4,    4,    4,    4,    4,    4,
    6,    6,    6,    6
SURFACES        10,   11,   12,   14,   19,  102,  103,  131,  132,  161,
  142,  205,  206
SECTOR  0  0  0 -1  0  1  0  0  1 -1  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  1  0  0  0  0  0  0  0  0 -1  0
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  1  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  1  0  0
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0  1
SECTOR  0  0 -1  1  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0
SECTOR  0  0 -1  0  0  0  1  1 -1  0  0  0  0
SECTOR  0  0 -1  0  0  0  1  0  0  1 -1  0  0
BLOCK     4     2     1
MEDIA            1,    2,    2,    3,    3,    4,    4,    4,    4,    4,
    4,    4,    4,    4,    4,    6,    6,    6,    6
SURFACES        10,   11,   12,   14,   19,   37,   88,  102,  103,  143,
  144,  151,  152,  153,  154,  155,  209,  210
SECTOR  0  0  0 -1  0  0  0  1  0  0  1 -1  0  0  0  0  0  0
SECTOR -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0 -1  1  0  0  0  0  0  0  1 -1  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0 -1  0  0
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0 -1  0  1
SECTOR  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 -1  0  0
SECTOR  0  0  0  0  1  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  1  0 -1  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  1 -1  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  1  0  0 -1  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  1  1 -1  0  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  1  0  0  1 -1  0  0  0  0  0
BLOCK     5     2     1
MEDIA            1,    2,    3,    3,    4,    4,    4,    4,    4,    4,
    4,    6,    6,    6,    6
SURFACES        15,   16,   17,   18,   19,  100,  101,  170,  171,  172,
  181,  182,  213,  214
SECTOR  1  0  0  0  0  0 -1  0  0  1 -1  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  1  0  0  0  0  1  0  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  1  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  1 -1  0  0  0  0  0
SECTOR  0 -1  0  0  1  0  0  1  0  0  0  0 -1  0
SECTOR  0  0  0  0  0  1  0  1  0  0  0  0  0  0
ECTOR  0  0  0  0  1  0  0  0  0  0  0  1  0  0
ECTOR  0 -1  0  0  1  0  0  0  0  0  0  0  0  1
SECTOR  0  0  0  0  0 -1  1  0  1  0  0 -1  0  0
```

```
SECTOR -1  1  0  0  0  0  0  0  1  0  0 -1  0  0
SECTOR  0  1  0  0  0 -1  0  0  1 -1  0  0  0  0
SECTOR  0  1  0  0  0 -1  0  0  0  0  1 -1  0  0
BLOCK     6     2     1
MEDIA            1,    2,    2,    3,    4,    4,    4,    4,    4,    4,
   4,    4,    4,    4,    6,    6,    6,    6
SURFACES        15,   16,   17,   18,   19,  100,  101,  183,  184,  193,
  194,  195,  196,  217,  218,  223,  224
SECTOR  1  0  0  0  0  0 -1  0  1 -1  0  0  0  0  0  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  1 -1  0  0 -1  1
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0 -1  0  0  1  0  0  0  0  0  0  0  0 -1  0  0  0
SECTOR  0 -1  0  0  1  0  0  0  0  0  0  0  0  0  1  0  0
SECTOR  0 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  1 -1  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  1  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  1  0  0  0  0  0 -1
SECTOR  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  1  0
SECTOR  0  0  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0  0
SECTOR -1  1  0  0  0  0  0  1  0  0 -1  0  0  0  0  0  0
SECTOR  0  1  0  0  0 -1  0  1 -1  0  0  0  0  0  0  0  0
SECTOR  0  1  0  0  0 -1  0  0  0  1 -1  0  0  0  0  0  0
BLOCK     7     2     1
MEDIA            2,    3,    3,    4,    5,    6,   10
SURFACES        67,   69,   70,   16,  157,  261
SECTOR  0  0  0 -1  0  0
SECTOR  0 -1  0  0  0  1
SECTOR  0  0  0  0 -1  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1  0  0  0
SECTOR  0  0  0  1  1 -1
SECTOR -1  0  1  0  0  0
BLOCK     6     2     1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        66,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     1     3     1
MEDIA            9,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     2     3     1
MEDIA            3,    4,    5,    8,    9,   10,   11,   10
SURFACES        62,   69,   70,   71,   72,  133,   61
SECTOR  0 -1  0  0  0  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  1  0  1 -1  0  0  1
SECTOR  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR -1  0  1  0  0  0  0
SECTOR  0  0  0  0  0  1  0
SECTOR  0  0  1  0  0  0 -1
BLOCK     3     3     1
MEDIA            3,    3,    3,    4,    4,    5,    6,   10
```

```
SURFACES        62,   69,   70,  258,  261,  262,  265
SECTOR  0  0  0  0  0  0 -1
SECTOR  0 -1  0  0  0  1  0
SECTOR  0 -1  0  0  1  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  0  0  0 -1  0  0  0
SECTOR  1  0  1  0  0  0  0
SECTOR  0  0  0  1 -1 -1  1
SECTOR -1  0  1  0  0  0  0
BLOCK    4    3    1
MEDIA           1,   3,   3,   3,   3,   4,   4,   4,   4,   6,
   6,   6,   6
SURFACES       240,   6,   7,  21,  97,  98,  99, 145, 146, 147,
  150, 159
SECTOR  1  0  0  0  0  0 -1  0  0  1 -1  0
SECTOR  0  0  0  1  0  0  0  0  0  0  0  0
SECTOR  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0 -1  0  0  0  0
SECTOR  0 -1  1 -1  0  0  0  1  0  0  0  0
SECTOR  0  0  0 -1 -1  1  0  1  0  0  0  0
SECTOR  0  0  1  0 -1  0  0  1 -1  0  0  0
SECTOR  0  0  1 -1 -1  0  0  0  0  0  0  1
SECTOR  0  0  0  0  0 -1  1  0  1  0  0 -1
SECTOR -1  1  0  0  0  0  0  0  1  0  0 -1
SECTOR  0  1  0  0  0 -1  0  0  1 -1  0  0
SECTOR  0  1  0  0  0 -1  0  0  0  0  1 -1
BLOCK    5    3    1
MEDIA           1,   2,   3,   3,   3,   4,   4,   4,   4,   4,
   4,   4,   6,   6,   6,   6
SURFACES        3,   4,   5,   9,   7,  42,  85,  86, 166, 167,
  168, 169, 185, 186, 167
SECTOR  0 -1  1  0  0  0  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  0  0  0 -1  1  1 -1  0  0  0  0  0
SECTOR  0  0  0  0 -1  0  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0 -1  0  0  0  0  0  0  0  0  0
SECTOR  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
SECTOR  1  0  0  0  0  1  0  0  0  0  0  0  0  0 -1
SECTOR  0  0  0 -1  1  1  0  0 -1  0  0  0  0  0  0
SECTOR  0  0  0  0  1  0  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  1  1  0  0  0  0 -1  0  0  0  0
SECTOR  0  0  0 -1  1  0  0  0  0  1  0  0  0  0 -1
SECTOR  0  0  0 -1  0  1  1  0  0  0  0  0  0  0 -1
SECTOR  0  0  0  0  1  1  0 -1  0  0  0  0  0  0 -1
SECTOR -1  1  0  0  0  0  0  0  0  0  1  0  0 -1  0
SECTOR  0  0 -1  1  0  0  0  0  0  0  1  0  0 -1  0
SECTOR -1  0  0  1  0  0  0  0  0  0  1 -1  0  0  0
SECTOR -1  0  0  1  0  0  0  0  0  0  0  0  1 -1  0
BLOCK    6    3    1
MEDIA           3,   3,   3,   4,   4,   5,   6,  10
SURFACES        66,   69,   70,  257,  201,  263,  265
SECTOR  0  0  0  0  0  0 -1
SECTOR  0 -1  0  0  0 -1  0
SECTOR  0 -1  0  0  1  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  0  0  0 -1  0  0  0
SECTOR  1  0  1  0  0  0  0
SECTOR  0  0  0  1 -1  1  1
SECTOR -1  0  1  0  0  0  0
BLOCK    7    3    1
MEDIA           3,   4,   5,   8,   9,  10,  11,  10
SURFACES        66,   69,   70,   71,   72,  133,   67
SECTOR  0 -1  0  0  0  0  0
SECTOR  0  1 -1  0  0  0  0
SECTOR  1  0  1 -1  0  0  1
SECTOR  0  0  0  1 -1  0  0
```

```
SECTOR  0  0  0  0  1 -1  0
SECTOR -1  0  1  0  0  0  0
SECTOR  0  0  0  0  0  1  0
SECTOR  0  0  1  0  0  0 -1
BLOCK     0    3    1
MEDIA            5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     1    4    1
MEDIA            5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     2    4    1
MEDIA            5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     3    4    1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        63,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1
BLOCK     4    4    1
MEDIA            3,    4,    5,    8,    9,   10,   10,   11
SURFACES        63,   64,   69,   70,   71,   72,  133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1
BLOCK     5    4    1
MEDIA            3,    4,    5,    8,    9,   10,   10,   11
SURFACES        64,   65,   69,   70,   71,   72,  133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1
BLOCK     6    4    1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        65,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
```

```
SECTOR  0  0  0  0  0  1
BLOCK     7    4    1
MEDIA              5,    8,    9,   11
SURFACES          71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
BLOCK     8    4    1
MEDIA              5,    8,    9,   11
SURFACES          71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1
ZONE      1    1    3
X BLOCK     -102.10   ,102.10
Y BLOCK     -102.10   ,   0.0
Z BLOCK     162.88    ,252.73
BLOCK     1    1    1
MEDIA              6,    4,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES          26,   35,   43,   73,   69,   70,   71,   72,  133
SECTOR -1  0  0  0 -1  0  0  0  0
SECTOR  1 -1  0  0  0  0 -1  0  0
SECTOR  0  1 -1  0  0  0 -1  0  0
SECTOR  0  0  1 -1  0  0  0 -1  0
SECTOR  0  0  0  1  0  0  0  0 -1
SECTOR -1  0  0  0  1 -1  0  0  0
SECTOR -1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0 -1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1
ZONE      1    2    3
X BLOCK     -102.10   , 102.10
Y BLOCK        0.0    , 162.10
Z BLOCK     162.88    , 252.73
BLOCK     1    1    1
MEDIA              6,    4,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES          26,   35,   43,   73,   69,   70,   71,   72,  133
SECTOR -1  0  0  0 -1  0  0  0  0
SECTOR  1 -1  0  0  0  0 -1  0  0
SECTOR  0  1 -1  0  0  0 -1  0  0
SECTOR  0  0  1 -1  0  0  0 -1  0
SECTOR  0  0  0  1  0  0  0  0 -1
SECTOR -1  0  0  0  1 -1  0  0  0
SECTOR -1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0 -1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1
  266 QUADRIC SURFACES
1.0      Z      222.25        $
1.0      Y        1.73354     $
1.0      Y      -51.98872     $
1.0      Y      -51.84115     $
1.0      Y      -37.46779     $
1.0      Y      -37.13588     $
1.0      Y      -36.66363     $
1.0      Z      227.33        $
1.0      Y      -37.32022     $
1.0      Y      -34.50546     $
1.0      Y      -34.09315     $
1.0      Y      -33.97123     $
1.0      Z      233.68        $
1.0      Y      -33.78175     $
1.0      Y      -19.58673     $
1.0      Y      -19.39925     $
```

```
1.0      Y      -19.27733     $
1.0      Y      -18.66458     $
1.0      Y      -18.74266     $
1.0      Z      243.84        $
1.0      X        1.905       $
1.0      Y      -16.71574     $
1.0      Y      -16.30299     $
1.0      Y      -16.18107     $
1.0      Y      -15.59159     $
1.0      Z     -227.33        $
1.0      Y       -1.79657     $
1.0      Y       -1.60509     $
1.0      Y       -1.48717     $
1.0      Y       -1.07442     $
1.0      Y       -0.9525      $
1.0      Y        0.5525      $
1.0      Y        1.07442     $
1.0      Y        1.48717     $
1.0      Z     -229.235       $
1.0      Y        1.60509     $
1.0      Y        1.79657     $
1.0      Y       15.59159     $
1.0      Y       16.18107     $
1.0      Y       16.30299     $
1.0      Y       16.71574     $
1.0      X       -1.905       $
1.0      Z     -236.855       $
1.0      Y       18.74266     $
1.0      Y       18.66458     $
1.0      Y       19.27733     $
1.0      Y       19.59925     $
1.0      Y       19.58873     $
1.0      XSQ   1.0      YSQ   -117.71884X     3462.65310     $
1.0      XSQ   1.0      YSQ   -111.95768X       36.37748Y
3462.68257     $
1.0      XSQ   1.0      YSQ    -95.23690X       69.19396Y
3462.68958     $
1.0      XSQ   1.0      YSQ    -69.19396X       95.23690Y
3462.68958     $
1.0      XSQ   1.0      YSQ    -36.37748X      111.95768Y
3462.68257     $
1.0      XSQ   1.0      YSQ    117.71884Y     3462.65310     $
1.0      XSQ   1.0      YSQ     36.37748X      111.95768Y
3462.68257     $
1.0      XSQ   1.0      YSQ     69.19396X       95.23690Y
3462.68958     $
1.0      XSQ   1.0      YSQ     95.23690X       69.19396Y
3462.68958     $
1.0      XSQ   1.0      YSQ    111.95768X       36.37748Y
3462.68257     $
1.0      XSQ   1.0      YSQ    117.71884X     3462.65310     $
1.0      XSQ   1.0      YSQ    111.95768X      -36.37748Y
3462.68257     $
1.0      XSQ   1.0      YSQ     95.23690X      -69.19396Y
3462.68958     $
1.0      XSQ   1.0      YSQ     69.19396X      -95.23690Y
3462.68958     $
1.0      XSQ   1.0      YSQ     36.37748X     -111.95768Y
3462.68257     $
1.0      XSQ   1.0      YSQ   -117.71884Y     3462.65310     $
1.0      XSQ   1.0      YSQ    -36.37748X     -111.95768Y
3462.68257     $
1.0      XSQ   1.0      YSQ    -69.19396X      -95.23690Y
3462.68958     $
1.0      XSQ   1.0      YSQ    -95.23690X      -69.19396Y
3462.68958     $
```

```
1.0      XSQ   1.0      YSQ   -111.95763X      -36.37748Y
3462.66257     $
1.0      XSQ   1.0      YSQ   -3243.8660     $
1.0      XSQ   1.0      YSQ   -3464.4313     $
1.0      XSQ   1.0      YSQ   -5490.7240     $
1.0      XSQ   1.0      YSQ   -6269.3806     $
1.0      Z     -246.34      $
1.0      Y       33.74175   $
1.0      Y       33.97123   $
1.0      Y       34.69315   $
1.0      Y       34.50590   $
1.0      Y       37.32022   $
1.0      Y       36.66363   $
1.0      Y       37.13988   $
1.0      Y       37.46779   $
1.0      Y       51.66081   $
1.0      Y       51.80838   $
1.0      Y       52.28463   $
1.0      Y      -37.19630   $
1.0      Y      -36.78555   $
1.0      Y      -33.66643   $
1.0      Y      -19.52371   $
1.0      Y      -15.67627   $
1.0      Y       -1.73355   $
1.0      Y        1.91389   $
1.0      Y       16.05661   $
1.0      Y       19.70405   $
1.0      Y       33.66677   $
1.0      Y       36.78555   $
1.0      Y       37.19630   $
1.0      Y      -52.28462   $
1.0      Y      -51.80637   $
1.0      Y      -51.66080   $
1.0      Y      -34.15157   $
1.0      Y      -33.96209   $
1.0      Y      -19.40639   $
1.0      Y      -19.21891   $
1.0      Y      -16.36141   $
1.0      Y      -16.17193   $
1.0      Y       -1.61823   $
1.0      Y       -1.42375   $
1.0      Y        1.42675   $
1.0      Y        1.61823   $
1.0      Y       16.17193   $
1.0      Y       16.36141   $
1.0      Y       19.21891   $
1.0      Y       19.40639   $
1.0      Y       33.96209   $
1.0      Y       34.15157   $
1.0      Y       51.84115   $
1.0      Y       51.98672   $
1.0      X        1.965     $
1.0      X       51.98672   $
1.0      X       51.84115   $
1.0      X       52.28463   $
1.0      X       51.80838   $
1.0      X       51.66081   $
1.0      X       37.26745   $
1.0      X       37.13988   $
1.0      X       36.66363   $
1.0      Y       -1.42675   $
1.0      Y      -15.67627   $
1.0      Y       -1.73354   $
1.0      X      -37.32022   $
1.0      X       33.48663   $
1.0      X       33.18167   $
```

```
1.0       XSQ   1.0       YSQ   -10412.043   $
0.47193   X     1.0       Y     -2.19399     $
0.47193   X     1.0       Y      2.19399     $
1.0       X      33.00133   $
1.0       X      18.62798   $
1.0       X      18.32102   $
1.0       X      16.00352   $
1.0       X      17.49656   $
1.0       X      18.60832   $
1.0       X      18.50136   $
1.0       X      18.18386   $
1.0       X      17.87690   $
1.0       X      17.52600   $
1.0       X      17.04975   $
1.0       X      16.90218   $
1.0       X      17.00581   $
1.0       X      17.13356   $
1.0       X      16.94408   $
1.0       X       3.50355   $
1.0       X       3.19059   $
1.0       X       3.07467   $
1.0       X       2.66152   $
1.0       X       2.54      $
1.0       X       3.01625   $
1.0       X       3.52321   $
1.0       X       2.52802   $
1.0       X       2.38125   $
1.0       X       2.57073   $
1.0       X       2.38125   $
1.0       X      16.82677   $
1.0       X       2.66604   $
1.0       X      -2.38125   $
1.0       X      -2.52802   $
1.0       X      -2.66604   $
1.0       X     -16.82677   $
1.0       X      -2.38125   $
1.0       X      -2.57073   $
1.0       X      -2.54      $
1.0       X      -3.01625   $
1.0       X      -3.52321   $
1.0       X      -2.66192   $
1.0       X      -3.07467   $
1.0       X      -3.19059   $
1.0       X      -3.50355   $
1.0       X     -17.87690   $
1.0       X     -18.18386   $
1.0       X     -18.50136   $
1.0       X     -18.60832   $
1.0       X     -17.49656   $
1.0       X     -16.00352   $
1.0       X     -18.32102   $
1.0       X     -18.62798   $
1.0       X     -16.94408   $
1.0       X     -17.13356   $
1.0       X     -17.00581   $
1.0       X     -16.90218   $
1.0       X     -17.04975   $
1.0       X     -17.526     $
1.0       X     -33.18167   $
1.0       X     -33.48463   $
1.0       X     -33.00133   $
1.0       X     -33.30829   $
1.0       X     -35.45021   $
1.0       X     -33.84296   $
1.0       X     -36.66363   $
```

```
1.0      X      -37.28745      $
1.0      X      -51.84115      $
1.0      X      -51.58872      $
1.0      X      -51.60081      $
1.0      X      -51.60838      $
1.0      X      -52.28463      $
1.0      X       33.06635      $
1.0      X       18.92364      $
1.0      X       32.66601      $
1.0      X       18.74329      $
1.0      X       17.76158      $
1.0      X        3.61887      $
1.0      X       17.58124      $
1.0      X        3.43853      $
1.0      X       -3.43853      $
1.0      X      -17.58124      $
1.0      X       -3.61887      $
1.0      X      -17.76158      $
1.0      X      -18.74330      $
1.0      X      -32.62601      $
1.0      X      -18.92364      $
1.0      X      -33.06635      $
1.0      X      -36.78555      $
1.0      X      -37.19830      $
1.0      Y      -33.64677      $
1.0      Y      -19.70405      $
1.0      Y      -16.65601      $
1.0      Y       -1.91389      $
1.0      Y        1.73395      $
1.0      Y       19.97427      $
1.0      Y       19.52371      $
1.0      Y       33.66643      $
1.0      Y       15.94968      $
1.0      Y       16.09725      $
1.0      Y       16.57350      $
1.0      Y      -16.57350      $
1.0      Y      -16.09725      $
1.0      Y      -15.94968      $
1.0      Y      -16.65731      $
1.0      Y      -16.18106      $
1.0      Y      -15.99158      $
1.0      Y      -37.23745      $
1.0      Y       37.28745      $
1.0      X       37.46779      $
1.0      X       33.64296      $
1.0      X       33.49021      $
1.0      X       33.30829      $
1.0      X      -37.46779      $
1.0      Y       16.65731      $
1.0      Y        1.61823      $
1.0      Y        1.57632      $
1.0      Y       -1.57632      $
1.0      Y       -1.61823      $
1.0      XSQ   1.0      YSQ   -2807.4812      $
1.0      X       37.19830      $
1.0      X       36.78555      $
1.0      Y       15.99158      $
1.0      Y       16.18106      $
1.0      XSQ   1.0      YSQ    -53.34   X     -85.09   Y
2518.84577      $
1.0      XSQ   1.0      YSQ     53.34   X     -85.09   Y
2518.84577      $
1.0      XSQ   1.0      YSQ     53.34   X      85.09   Y
2518.84577      $
1.0      XSQ   1.0      YSQ    -53.34   X      85.09   Y
2518.84577      $
```

```
1.0      XSQ   1.0        YSQ   -2966.9291     S
1.0      X      20.14981      S
1.0      X     -20.14981      S
1.0      Y      37.16782      S
1.0      Y     -37.16782      S
1.0      Y      15.87627      S
1.0      Y       1.42675      S
1.0      X      37.32022      S

MODULE KEND     IS FINISHED. USER CODE 0000   SYSTEM CODE 000
```

```
NITANL

    1$ ARRAY      12 ENTRIES READ

    OT

  NSCM     NUMBER OF EXTRA CROSS SECTIONS                          0
  PMT      NUMBER OF NUCLIDES FROM MASTER LIBRARY                  7
  MWT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 2)          0
  MXT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 3)          0
  MCR      ANISN/CUT/MORSE OUTPUT TRIGGER                          0
  MAX      TOTAL CROSS SECTION POSITION                            0
  MS       WITHIN-GROUP SCATTERING CROSS SECTION POSITION          0
  IRES     NUMBER OF RESONANCE CALCULATIONS                        1
  ICM      TABLE LENGTH FOR CROSS SECTIONS                         0
  IPM      IS AN OLD ANISN LIBRARY MOUNTED ? (0/1:NO/YES)          0
  IPP      OUTPUT OPTION TRIGGER                                  -1
  IPG      PRINT CONTROL - ANISN OUTPUT                            0

THE STORAGE ALLOCATED FOR THIS CASE IS 157032 WORDS

    2$ ARRAY      7 ENTRIES READ

    3* ARRAY      15 ENTRIES READ

    OT

GENERAL INFORMATION CONCERNING CROSS SECTION LIBRARY
  TAPE IDENTIFICATION NUMBER                  0
  NUMBER OF NUCLIDES ON TAPE                 14
  NUMBER OF NEUTRON ENERGY GROUPS           123
  FIRST THERMAL NEUTRON ENERGY GROUP         94
  NUMBER OF GAMMA ENERGY GROUPS               0

XSDRN TAPE      0
                    SUPER-XSDRN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--        5-900K,6
                    -900K,7-650K,8-750K,9-1000K,ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
                    MPERATURES ARE DESIRED, CALL C.W. CRAVEN, JR. OR        N. M. GREENE----ALL THER
                    MAL DATA IS PO (IFTG=94).  ALSO J. WILSON DATA  AND 3 1/V NUCLIDES        JULY, 1
                    968                                  -THIS IS A CONVERTED TAPE

NUCLIDES FROM XSDRN TAPE
    1     URANIUM-235                      THERMAL TEMPERATURE = 294.6 K          922351
    2     URANIUM-238                      THERMAL TEMPERATURE = 294.6 K          922381
    3     HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K            10001
    4     HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K              100
    5     OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K          80003
    6     OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K            800
    7     ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        400000

URANIUM-235                    THERMAL TEMPERATURE = 294.6 K          922351

URANIUM-238                    THERMAL TEMPERATURE = 294.6 K          922381

RESONANCE DATA FOR THIS NUCLIDE

MASS NUMBER (A)        =    238.000          TEMPERATURE(KELVIN)      =    295.000

POTENTIAL SCATTER SIGMA=      9.500           LUMPED NUCLEAR DENSITY   = 0.2430000E-01

SPIN (G)               =      1.000          LUMP DIMENSION (A-BAR)   = 0.5280000E 00
```


9/75

```
SIGMA-MLEFFECTIVE1      = 0.5389999E 02          DANCOFF CORRECTION (C) = 0.8319998E-01
THE ABSORBER WILL BE TREATED BY THE NORDHEIM INTEGRAL METHOD.
MASS OF MODERATOR=1     =     16.000             SIGMAEPER ABSORBER ATOM= 0.7629999E 01
MODERATOR=1 WILL BE TREATED BY THE NORDHEIM INTEGRAL METHOD.
THIS RESONANCE MATERIAL WILL BE TREATED AS A 2-DIMENSIONAL OBJECT.
VOLUME FRACTION OF LUMP IN CELL USED TO ACCOUNT FOR SPATIAL SELF-SHIELDING=0.26080
IHC2091 IHCOM - PROGRAM INTERRUPT (1) - DIVIDE CHECK OLD PSW IS  FFE50353220D0304
TRACEBACK  ROUTINE  CALLED FROM ISN   REG. 14   REG. 15   REG.  0   REG.  1
           RSNANC          0C78   4204A1DA   C004C090   00028024   3C04925C
           MSTPED          0162   42047006   0004901A   0000000F   33045C0C
           TAPERD          0219   5203CC70   00045948   03064184   3003B5C8
           NITAW                  52C3CE6C   0003B08C   08002800   3003CE90
           ALOCAT          0073   52033056   0003CEEA   03000030   3303ACC4
             MAIN                 00015994   0103AC18   00000030   3003A260
ENTRY POINT=  0103AC18
STANDARD FIXUP TASEN , EXECUTION CONTINUING
```

GROUP	RES.ABS	RES FISS
50	4.474137E-02	0.0
51	5.600762E-02	0.0
52	6.996152E-02	0.0
53	8.713162E-02	0.0
54	1.080052E-01	0.0
55	1.333635E-01	0.0
56	1.638111E-01	0.0
57	2.000051E-01	0.0
58	2.424911E-01	0.0
59	2.910748E-01	0.0
60	3.463417E-01	0.0
61	4.119364E-01	0.0
62	4.824317E-01	0.0
63	5.591865E-01	0.0
64	6.409038E-01	0.0
65	6.626634E-01	0.0
66	7.496835E-01	0.0
67	7.487025E-01	0.0
68	9.472212E-01	0.0
69	1.130644E 00	0.0
70	1.115628E 00	0.0
71	1.095673E 00	0.0
72	1.036525E 00	0.0
73	1.043663E 00	0.0
74	1.206652E 00	0.0
75	1.927948E 00	0.0
76	1.136562E 00	0.0
77	3.559273E 00	0.0
78	1.684132E 00	0.0
79	3.557517E 00	0.0
80	7.848405E-02	0.0
81	1.905123E 00	0.0

82	7.538610E 00	0.0
83	8.371791E-01	0.0
84	1.116359E 01	0.0
85	3.881360E-01	0.0
86	0.0	0.0
87	6.172658E-01	0.0
88	1.748503E 01	0.0
89	7.412817E 00	0.0
90	5.633116E-01	0.0
91	5.073932E-01	0.0
92	1.504756E-01	0.0

EXCESS RESONANCE INTEGRALS

	RESOLVED	UNRESOLVED	TOTAL
ABSORPTION	0.16517E 02	0.10962E 01	0.18013E 02
FISSION	0.0	0.0	0.0

ELAPSED TIME 0.25 MIN.

HYDROGEN--THERMCS ID=1603(X-640) THERMAL TEMPERATURE= 294.6 K 10001

HYDROGEN--THERMCS ID=1603(X-640) THERMAL TEMPERATURE= 294.6 K 100

OXYGEN NATURAL BROWN - ST. JOHN KERNEL TEMP. = 293.5 K 80003

OXYGEN NATURAL BROWN - ST. JOHN KERNEL TEMP. = 293.6 K 800

ZIRCONIUM NATURAL BROWN - ST. JOHN KERNEL TEMP. = 627.13 K 400000

ELAPSED TIME 0.30 MIN.

```
THIS XSDRN WORKING TAPE HAS CREATED
THE TITLE OF THE PARENT CASE IS AS FOLLOWS
SUPER-XSDRN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--        5-900K,6
-800K, 7-850K, 8-750K, 9-1000K, ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
MPERATURES ARE DESIRED, CALL C.M. CRAVEN, JR. OR        N. M. GREENE----ALL THER
    TAPE ID                                  0          NUMBER OF NUCLIDES                    7
    NUMBER OF NEUTRON GROUPS               123          NUMBER OF GAMMA GROUPS                0
    FIRST THERMAL GROUP                     94
                                   TABLE OF CONTENTS
    URANIUM-235                    THERMAL TEMPERATURE = 294.6 K                ID    922351
    URANIUM-238                    THERMAL TEMPERATURE = 294.6 K                ID    922381
    HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K               ID     10001
    HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K               ID       100
    OXYGEN      NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K             ID     80003
    OXYGEN      NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K             ID       800
    ZIRCONIUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K            ID    400000
```

```
                    BWR 8X8 PINS .7219 IN PITCH 2.8 PCT 200 KG U 144 IN LONG

     1$ ARRAY      15 ENTRIES READ

     2$ ARRAY      10 ENTRIES READ

     3$ ARRAY      12 ENTRIES READ

     4$ ARRAY       9 ENTRIES READ

     0T

          THE FOLLOWING DIRECT ACCESS SPACE IS REQUIRED
     LOGICAL UNIT  8 HAS     176 BLOCKS OF LENGTH  800 WORDS
     LOGICAL UNIT  9 HAS     132 BLOCKS OF LENGTH  880 WORDS
     LOGICAL UNIT 10 HAS     492 BLOCKS OF LENGTH  105 WORDS

GENERAL PROBLEM DESCRIPTION DATA BLOCK

                         GENERAL PROBLEM DATA

IGE  1/2/3 = PLANE/CYLINDER/SPHERE          2     ISN  QUADRATURE ORDER                    8
IZM  NUMBER OF ZONES                        3     ISCT ORDER OF SCATTERING                 3
IM   NUMBER OF SPACIAL INTERVALS           21     IEVT 0/1/2/3/4/5/6=Q/S/ALPHA/C/Z/R/H     1
IBL  0/1/2/3 = VACUUM/REFL/PER/WHITE        1     IIM  INNER ITERATION MAXIMUM            10
IBR  RIGHT BOUNDARY CONDITION               3     ICM  OUTER ITERATION MAXIMUM            10
MXX  NUMBER OF MIXTURES                     3     ICLC -1/0/N--FLAT RES/SN/OPT             0
MS   MIXING TABLE LENGTH                    6     ITM  0/1 = FORWARD/ADJOINT               0
IGM  NUMBER OF ENERGY GROUPS              123     IFLU 0/1/2/3/4=L-S/L/S/W/L-W             0
NNG  NUMBER OF NEUTRON GROUPS             123     IPRT -2/-1/0/N=MIXTURE XSEC PRINT       -2
NGG  NUMBER OF GAMMA GROUPS                 0     IDT  0/1/2/3=NO/PRT NO/PCH N/BOTH       -1
IFTG NUMBER OF FIRST THERMAL GROUP         94     IPBT -1/0/1=NONE/FINE/ALL BAL. PRT      -1

                         SPECIAL OPTIONS

IFG  0/1 = NONE/WEIGHTING CALCULATION       1     IPN  DUMMY PARAMETER                     0
IQM  VOLUMETRIC SOURCES (0/N=NO/YES)        0     IDFM 0/1 = NONE/DENSITY FACTORS 38#      1
IPM  BOUNDARY SOURCES (0/N=NO/YES)          0     IAZ  0/N = NONE/N ACTIVITIES BY ZONE     0
IFM  0/1/2 = INPUT 33*/34*/USE LAST         0     IAI  0/1=NONE/ACTIVITIES BY INTERVAL     0
ITMX MAXIMUM TIME (MINUTES)                 0     IFCT 0/1=NO/YES UPSCATTER SCALING        1
IDT1 0/1/2/3=NO/XSECT/SPCE/FLUX--OUT        0     IPVT 0/1/2=NO/K/ALPHA PARAMETRIC SRCH    0

                    WEIGHTING DATA (IFG=1)

ICCM -1/0/1=CELL/ZONE/REGION WEIGHT        -1     IHTF TOTAL XSECT PSN IN BRO GP TABLES    3
IGMF NUMBER OF BROAD GROUPS               123     NDSF PSN G-G OR FILE NUMBER              4
ITP  0/10/20/30/40 G/C/E/AC/A               0     NUSF TABLE LENGTH OR MAX ORDER         126
IPP  -2/-1/0/N=WGTED XSECT PRINT           -2     NSCM EXTRA 1-D X-SECT POSITIONS          0
IAP  -1/N ANISM XSECT PRINT                -1

                    FLOATING POINT PARAMETERS

EV   EIGENVALUE GUESS          0.0          PV   IPVT=1/2--K/ALPHA          0.0
EVM  EIGENVALUE MODIFIER       0.0          EPS  OVERALL CONVERGENCE        1.00000E-04
BF   BUCKLING FACTOR=1.420892  1.42089E 00  PTC  POINT CONVERGENCE          1.00000E-04
DY   CYL/PLA HT FOR BUCKLING   0.0          XNF  NORMALIZATION FACTOR       1.00000E 00
DZ   PLANE DEPTH FOR BUCKLING  0.0          EQL  EV CHANGE EPS FOR SEARCH   1.00000E-03
VSC  VOID STREAMING CORRECTION 0.0          XNPM NEW PARAM MOD FOR SEARCH   7.50000E-01
     THIS CASE WILL REQUIRE      17717 LOCATIONS FOR MIXING
     THIS CASE HAS BEEN ALLOCATED 198144 LOCATIONS
```

BWR 8X8 PINS .7219 IN PITCH 2.8 PCT 200 KG J 144 IN LONG

13$ ARRAY 6 ENTRIES READ

14$ ARRAY 6 ENTRIES READ

15* ARRAY 6 ENTRIES READ

OT

DATA BLOCK 2 (MIXING TABLE, ETC.)

INCLUDES ON TAPE	CCCC IDENTIFICATION	MIXTURE	MIXING TABLE COMPONENT	ATOM DENSITY	EXTRA XSECT ID'S
1 922351		1	922351	7.10100E-04	
2 922381		1	922381	2.43390E-02	
3 10001		1	800	5.02980E-02	
4 100		2	400000	4.22570E-02	
5 80003		3	100	6.67430E-02	
6 800		3	800	3.33710E-02	
7 400000					

ELAPSED TIME 0.06 MIN.

84559 LOCATIONS WILL BE USED

33* ARRAY 2583 ENTRIES READ

OT

35* ARRAY 22 ENTRIES READ

36$ ARRAY 21 ENTRIES READ

38* ARRAY 21 ENTRIES READ

39$ ARRAY 3 ENTRIES READ

40$ ARRAY 3 ENTRIES READ

51$ ARRAY 123 ENTRIES READ

OT

B&W 8X8 PINS ,7214 IN PITCH 2.8 PCT 200 KG U 144 IN LONG
NEUTRON GROUP PARAMETERS

GP	ENERGY BOUNDARIES	LETHARGY BOUNDARIES	MID PT VELOCITIES	BROAD GP NUMBERS	CALC TYPE	RIGHT ALBEDO	LEFT ALBEDO
1	1.47182E 07	-3.99997E-01	5.21031E 09	1	0	1.00000E 00	
2	1.34588E 07	-3.00001E-01	4.95629E 09	2	0	1.00000E 00	
3	1.22140E 07	-1.99998E-01	4.71448E 09	3	0	1.00000E 00	
4	1.10517E 07	-5.99992E-02	4.48695E 09	4	0	1.00000E 00	
5	1.00000E 07	0	4.26564E 09	5	0	1.00000E 00	
6	9.04837E 06	1.00000E-01	4.05780E 09	6	0	1.00000E 00	
7	8.18731E 06	2.00000E-01	3.85990E 09	7	0	1.00000E 00	
8	7.40818E 06	3.00000E-01	3.67165E 09	8	0	1.00000E 00	
9	6.70320E 06	4.00000E-01	3.49250E 09	9	0	1.00000E 00	
10	6.06531E 06	4.99999E-01	3.32224E 09	10	0	1.00000E 00	
11	5.48812E 06	5.99999E-01	3.16021E 09	11	0	1.00000E 00	
12	4.96585E 06	7.00001E-01	3.00609E 09	12	0	1.00000E 00	
13	4.49329E 06	8.00000E-01	2.85948E 09	13	0	1.00000E 00	
14	4.06570E 06	8.99999E-01	2.72002E 09	14	0	1.00000E 00	
15	3.67879E 06	1.00000E 00	2.58730E 09	15	0	1.00000E 00	
16	3.32871E 06	1.10000E 00	2.46118E 09	16	0	1.00000E 00	
17	3.01194E 06	1.20000E 00	2.34115E 09	17	0	1.00000E 00	
18	2.72532E 06	1.30000E 00	2.22697E 09	18	0	1.00000E 00	
19	2.46597E 06	1.40000E 00	2.11835E 09	19	0	1.00000E 00	
20	2.23130E 06	1.50000E 00	2.01504E 09	20	0	1.00000E 00	
21	2.01897E 06	1.60000E 00	1.91677E 09	21	0	1.00000E 00	
22	1.82684E 06	1.70000E 00	1.82325E 09	22	0	1.00000E 00	
23	1.65299E 06	1.80000E 00	1.73436E 09	23	0	1.00000E 00	
24	1.49596E 06	1.90000E 00	1.64978E 09	24	0	1.00000E 00	
25	1.35335E 06	2.00000E 00	1.56931E 09	25	0	1.00000E 00	
26	1.22456E 06	2.10000E 00	1.49279E 09	26	0	1.00000E 00	
27	1.10803E 06	2.20000E 00	1.41998E 09	27	0	1.00000E 00	
28	1.00259E 06	2.30000E 00	1.35072E 09	28	0	1.00000E 00	
29	9.07181E 05	2.40000E 00	1.28485E 09	29	0	1.00000E 00	
30	8.20650E 05	2.50000E 00	1.22216E 09	30	0	1.00000E 00	
31	7.42736E 05	2.60000E 00	1.16250E 09	31	0	1.00000E 00	
32	6.72055E 05	2.70000E 00	1.10584E 09	32	0	1.00000E 00	
33	6.08101E 05	2.80000E 00	1.05194E 09	33	0	1.00000E 00	
34	5.50232E 05	2.90000E 00	1.00064E 09	34	0	1.00000E 00	
35	4.97871E 05	3.00000E 00	9.51839E 08	35	0	1.00000E 00	
36	4.50492E 05	3.10000E 00	9.05417E 08	36	0	1.00000E 00	
37	4.07622E 05	3.20000E 00	8.61256E 08	37	0	1.00000E 00	
38	3.68832E 05	3.30000E 00	8.19255E 08	38	0	1.00000E 00	
39	3.33733E 05	3.40000E 00	7.79300E 08	39	0	1.00000E 00	
40	3.01974E 05	3.50000E 00	7.41293E 08	40	0	1.00000E 00	
41	2.73237E 05	3.60000E 00	7.05139E 08	41	0	1.00000E 00	
42	2.47235E 05	3.70000E 00	6.70749E 08	42	0	1.00000E 00	
43	2.23708E 05	3.80000E 00	6.38036E 08	43	0	1.00000E 00	
44	2.02419E 05	3.90000E 00	6.06919E 08	44	0	1.00000E 00	
45	1.83156E 05	4.00000E 00	5.77319E 08	45	0	1.00000E 00	
46	1.65727E 05	4.10000E 00	5.49164E 08	46	0	1.00000E 00	
47	1.49956E 05	4.20000E 00	5.22381E 08	47	0	1.00000E 00	
48	1.35686E 05	4.30000E 00	4.96903E 08	48	0	1.00000E 00	
49	1.22773E 05	4.40000E 00	4.72669E 08	49	0	1.00000E 00	
50	1.11090E 05	4.50000E 00	4.33068E 08	50	0	1.00000E 00	
51	8.65170E 04	4.75000E 00	3.82181E 08	51	0	1.00000E 00	
52	6.73795E 04	5.00000E 00	3.37274E 08	52	0	1.00000E 00	
53	5.24752E 04	5.25000E 00	2.97643E 08	53	0	1.00000E 00	
54	4.08677E 04	5.50000E 00	2.62605E 08	54	0	1.00000E 00	
55	3.18278E 04	5.75000E 00	2.31805E 08	55	0	1.00000E 00	
56	2.47875E 04	6.00000E 00	2.04567E 08	56	0	1.00000E 00	
57	1.93045E 04	6.25000E 00	1.80530E 08	57	0	1.00000E 00	
58	1.50344E 04	6.50000E 00	1.59317E 08	58	0	1.00000E 00	

59	1.17066E 04	6.75000E 00	1.40557E 08	59	0	1.00000E 00
60	9.11892E 03	7.00000E 00	1.24076E 08	60	0	1.00000E 00
61	7.10175E 03	7.25000E 00	1.05447E 08	61	0	1.00000E 00
62	5.53085E 03	7.50000E 00	9.66306E 07	62	0	1.00000E 00
63	4.30743E 03	7.75000E 00	8.52762E 07	63	0	1.00000E 00
64	3.35463E 03	8.00000E 00	7.52562E 07	64	0	1.00000E 00
65	2.61259E 03	8.25000E 00	6.64132E 07	65	0	1.00000E 00
66	2.03468E 03	8.50000E 00	5.86094E 07	66	0	1.00000E 00
67	1.58461E 03	8.75000E 00	5.17226E 07	67	0	1.00000E 00
68	1.23410E 03	9.00000E 00	4.56452E 07	68	0	1.00000E 00
69	9.61117E 02	9.25000E 00	4.02810E 07	69	0	1.00000E 00
70	7.48519E 02	9.50000E 00	3.55485E 07	70	0	1.00000E 00
71	5.82947E 02	9.75000E 00	3.13713E 07	71	0	1.00000E 00
72	4.53954E 02	1.00000E 01	2.76851E 07	72	0	1.00000E 00
73	3.53575E 02	1.02500E 01	2.44321E 07	73	0	1.00000E 00
74	2.75365E 02	1.05000E 01	2.15613E 07	74	0	1.00000E 00
75	2.14454E 02	1.07500E 01	1.90277E 07	75	0	1.00000E 00
76	1.67017E 02	1.10000E 01	1.67915E 07	76	0	1.00000E 00
77	1.30073E 02	1.12500E 01	1.48188E 07	77	0	1.00000E 00
78	1.01301E 02	1.15000E 01	1.30775E 07	78	0	1.00000E 00
79	7.88933E 01	1.17500E 01	1.15406E 07	79	0	1.00000E 00
80	6.14421E 01	1.20000E 01	1.01848E 07	80	0	1.00000E 00
81	4.78512E 01	1.22500E 01	8.95804E 06	81	0	1.00000E 00
82	3.72665E 01	1.25000E 01	7.93192E 06	82	0	1.00000E 00
83	2.90232E 01	1.27500E 01	6.99865E 06	83	0	1.00000E 00
84	2.26033E 01	1.30000E 01	6.17738E 06	84	0	1.00000E 00
85	1.76035E 01	1.32500E 01	5.45154E 06	85	0	1.00000E 00
86	1.37096E 01	1.35000E 01	4.81055E 06	86	0	1.00000E 00
87	1.06770E 01	1.37500E 01	4.24565E 06	87	0	1.00000E 00
88	8.31529E 00	1.40000E 01	3.74677E 06	88	0	1.00000E 00
89	6.47595E 00	1.42500E 01	3.30652E 06	89	0	1.00000E 00
90	5.04346E 00	1.45000E 01	2.91759E 06	90	0	1.00000E 00
91	3.92786E 00	1.47500E 01	2.57512E 06	91	0	1.00000E 00
92	3.05902E 00	1.50000E 01	2.27253E 06	92	0	1.00000E 00
93	2.38237E 00	1.52500E 01	2.00651E 06	93	0	1.00000E 00
94	1.85913E 00	1.54960E 01	1.76401E 06	94	0	1.00000E 00
95	1.70500E 00	1.55822E 01	1.70924E 06	95	0	1.00000E 00
96	1.59660E 00	1.56492E 01	1.65260E 06	96	0	1.00000E 00
97	1.43154E 00	1.57593E 01	1.61076E 06	97	0	1.00000E 00
98	1.26496E 00	1.58074E 01	1.51953E 06	98	0	1.00000E 00
99	1.13373E 00	1.59926E 01	1.42654E 06	99	0	1.00000E 00
100	9.99193E-01	1.61189E 01	1.33979E 06	100	0	1.00000E 00
101	8.81034E-01	1.62446E 01	1.25459E 06	101	0	1.00000E 00
102	7.63351E-01	1.63816E 01	1.16507E 06	102	0	1.00000E 00
103	6.55210E-01	1.65409E 01	1.07106E 06	103	0	1.00000E 00
104	5.48757E-01	1.67161E 01	9.74246E 05	104	0	1.00000E 00
105	4.48545E-01	1.69198E 01	8.77658E 05	105	0	1.00000E 00
106	3.61490E-01	1.71357E 01	7.93324E 05	106	0	1.00000E 00
107	2.99447E-01	1.73239E 01	7.23011E 05	107	0	1.00000E 00
108	2.49344E-01	1.75070E 01	6.59115E 05	108	0	1.00000E 00
109	2.07006E-01	1.76928E 01	6.07558E 05	109	0	1.00000E 00
110	1.79643E-01	1.78338E 01	5.69511E 05	110	0	1.00000E 00
111	1.59630E-01	1.79517E 01	5.34765E 05	111	0	1.00000E 00
112	1.34811E-01	1.80856E 01	4.97563E 05	112	0	1.00000E 00
113	1.19782E-01	1.82402E 01	4.57275E 05	113	0	1.00000E 00
114	9.97377E-02	1.84233E 01	4.16325E 05	114	0	1.00000E 00
115	8.23109E-02	1.86153E 01	3.80539E 05	115	0	1.00000E 00
116	6.99047E-02	1.87787E 01	3.51227E 05	116	0	1.00000E 00
117	5.98906E-02	1.89333E 01	3.23343E 05	117	0	1.00000E 00
118	4.98651E-02	1.91164E 01	2.92007E 05	118	0	1.00000E 00
119	3.98366E-02	1.93411E 01	2.56655E 05	119	0	1.00000E 00
120	2.97804E-02	1.96320E 01	2.18525E 05	120	0	1.00000E 00
121	2.10764E-02	1.99777E 01	1.84095E 05	121	0	1.00000E 00
122	1.48907E-02	2.03251E 01	1.52133E 05	122	0	1.00000E 00
123	9.82519E-03	2.07405E 01	1.14283E 05	123	0	1.00000E 00
124	4.74190E-03	2.14694E 01				

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BWR 8X8 PINS .7219 IN PITCH 2.8 PCT 200 KG U .144 IN LONG

	MIXTURE BY ZONE	ORDER PILE BY ZONE	ACTIVITY TABLE MATL NO.	REACTION	WEIGHTS	DIRECTIONS	REFL DIREC	WT X COS
1	1	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98547E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4					0	-6.04419E-01	8	0
5					5.55952E-02	-5.58410E-01	8	-3.10449E-02
6					5.55952E-02	-2.31301E-01	7	-1.28592E-02
7					5.55952E-02	2.31301E-01	6	1.28593E-02
8					5.55952E-02	5.58411E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21764E-01	15	-4.29665E-02
11					5.22844E-02	-6.01587E-01	14	-3.14537E-02
12					5.22844E-02	-2.20195E-01	13	-1.15128E-02
13					5.22844E-02	2.20197E-01	12	1.15129E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21764E-01	10	4.29665E-02
16					0	-9.83032E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17360E-01	23	-3.70554E-02
19					4.53355E-02	-5.46143E-01	22	-2.47596E-02
20					4.53355E-02	-1.91779E-01	21	-8.69440E-03
21					4.53355E-02	1.91781E-01	20	8.69447E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70555E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

CONSTANTS FOR P(3) SCATTERING

ANGL	SET 1	SET 2	SET 3	SET 4	SET 5
1	-2.79004E-01	8.83234E-01	6.74143E-02	-6.16918E-01	-1.71701E-02
2	-1.97286E-01	8.83234E-01	0.0	-4.36226E-01	1.21412E-02
3	1.97286E-01	8.83234E-01	0.0	4.36227E-01	-1.21411E-02
4	-6.04419E-01	4.52015E-01	3.16576E-01	-8.04434E-01	-1.74564E-01
5	-5.58410E-01	4.52015E-01	2.23712E-01	-7.43199E-01	-6.68014E-02
6	-2.31301E-01	4.52015E-01	-2.23714E-01	-3.07843E-01	1.61276E-01
7	2.31302E-01	4.52015E-01	-2.23713E-01	3.07845E-01	-1.61276E-01
8	5.58411E-01	4.52015E-01	2.23713E-01	7.43200E-01	6.68026E-02
9	-8.50774E-01	-8.57236E-02	6.26843E-01	-1.98455E-01	-4.86835E-01
10	-8.21764E-01	-8.57236E-02	5.42860E-01	-1.91693E-01	-3.44242E-01
11	-6.01587E-01	-8.57236E-02	0.0	-1.40329E-01	3.44246E-01
12	-2.20195E-01	-8.57236E-02	-5.42863E-01	-5.13637E-02	3.44242E-01
13	2.20196E-01	-8.57236E-02	-5.42861E-01	5.13643E-02	-3.44246E-01
14	6.01588E-01	-8.57236E-02	0.0	1.40329E-01	-3.44244E-01
15	8.21764E-01	-8.57236E-02	5.42862E-01	1.91693E-01	3.44244E-01
16	-9.83032E-01	-4.49528E-01	6.36885E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73179E-01	4.91082E-01	-6.24435E-01
18	-8.17360E-01	-4.49528E-01	3.20258E-01	4.16319E-01	1.46519E-01
19	-5.46142E-01	-4.49528E-01	-3.20264E-01	2.78175E-01	7.36575E-01
20	-1.91779E-01	-4.49528E-01	-7.73181E-01	9.76819E-02	4.17234E-01
21	1.91782E-01	-4.49528E-01	-7.73180E-01	-9.76831E-02	-4.17239E-01
22	5.46144E-01	-4.49528E-01	-3.20261E-01	-2.78176E-01	-7.36574E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16319E-01	-1.46513E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91082E-01	6.24437E-01

INT	RADII	MID PTS	ZONE NO.	AREAS	VOLUMES	DENS FACT	RADIUS MOD	SPEC(INT)
1	0	2.64160E-02	1	0	8.75888E-03	1.00000E 00	0	
2	5.26320E-02	7.92480E-02	1	3.31453E-01	2.63660E-02	1.00000E 00	0	
3	1.05264E-01	1.32080E-01	1	6.63906E-01	4.38444E-02	1.00000E 00	0	
4	1.58456E-01	1.84912E-01	1	9.95859E-01	6.13821E-02	1.00000E 00		
5	2.11328E-01	2.37744E-01	1	1.32781E 00	7.89198E-02	1.00000E 00		
6	2.64160E-01	2.90576E-01	1	1.65977E 00	9.64577E-02	1.00000E 00		
7	3.16992E-01	3.43408E-01	1	1.99172E 00	1.13995E-01	1.00000E 00		
8	3.69824E-01	3.96240E-01	1	2.32367E 00	1.31533E-01	1.00000E 00		
9	4.22656E-01	4.49072E-01	1	2.65563E 00	1.49071E-01	1.00000E 00		
10	4.75488E-01	5.01904E-01	1	2.98758E 00	1.66609E-01	1.00000E 00		
11	5.28320E-01	5.34035E-01	2	3.31953E 00	3.83525E-02	0		
12	5.39750E-01	5.61340E-01	2	3.35139E 00	1.92296E-01	1.00000E 00		
13	5.82930E-01	6.04520E-01	2	3.66266E 00	1.54011E-01	1.00000E 00		
14	6.26111E-01	6.51035E-01	3	3.93396E 00	2.39000E-01	1.00000E 00		
15	6.77156E-01	7.02679E-01	3	4.25470E 00	2.25372E-01	1.00000E 00		
16	7.28202E-01	7.53726E-01	3	4.57543E 00	2.41745E-01	1.00000E 00		
17	7.79249E-01	8.04771E-01	3	4.89616E 00	2.58117E-01	1.00000E 00		
18	8.30295E-01	8.55818E-01	3	5.21690E 00	2.74489E-01	1.00000E 00		
19	8.81341E-01	9.06864E-01	3	5.53763E 00	2.90862E-01	1.00000E 00		
20	9.32387E-01	9.57911E-01	3	5.85836E 00	3.07233E-01	1.00000E 00		
21	9.83434E-01	1.00896E 00	3	6.17910E 00	3.23601E-01	1.00000E 00		
22	1.03446E 00			6.49982E 00				

ELAPSED TIME 0.07 MIN.

OUTER	INNER	BALANCE	UPSCATTER RATIO	EIGENVALUE	LAMBDA1	LAMBDA2	TIME(MIN)
1	1005	1.0000324E 00	1.1673756E 00	1.2732630E 00	1.3777945E 00	0.0	0.8175
2	1774	1.0000305E 00	1.0941127E 00	1.4065143E 00	1.0220851E 00	1.2257614E 00	1.4427
3	2223	1.0000315E 00	1.0000553E 00	1.4090700E 00	1.0007982E 00	1.0110331E 00	1.9110
4	2711	1.0000296E 00	9.9976002E-01	1.4094572E 00	9.9836427E-01	1.0004640E 00	2.3017
5	3226	1.0000286E 00	9.9995069E-01	1.4093255E 00	1.0000334E 00	9.9952447E-01	2.7025
6	3731	1.0000296E 00	9.9999779E-01	1.4099170E 00	9.9998833E-01	1.0000006E 00	3.0943

GRP. 1 REQUIRED 6 ITERATIONS. MFD OF 8.54540E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 2 REQUIRED 6 ITERATIONS. MFD OF 6.07150E-05 OCCURRED IN INT. 20 COARSE MESH= 1
GRP. 3 REQUIRED 6 ITERATIONS. MFD OF 8.31818E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 4 REQUIRED 6 ITERATIONS. MFD OF 8.51213E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 5 REQUIRED 6 ITERATIONS. MFD OF 8.29914E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 6 REQUIRED 6 ITERATIONS. MFD OF 7.73780E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 7 REQUIRED 6 ITERATIONS. MFD OF 7.64515E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 8 REQUIRED 6 ITERATIONS. MFD OF 7.59555E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 9 REQUIRED 6 ITERATIONS. MFD OF 7.61861E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 10 REQUIRED 6 ITERATIONS. MFD OF 7.27890E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 11 REQUIRED 5 ITERATIONS. MFD OF 9.97617E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 12 REQUIRED 5 ITERATIONS. MFD OF 9.59825E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 13 REQUIRED 5 ITERATIONS. MFD OF 8.73641E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 14 REQUIRED 5 ITERATIONS. MFD OF 8.14923E-05 OCCURRED IN INT. 20 COARSE MESH= 1
GRP. 15 REQUIRED 5 ITERATIONS. MFD OF 7.61595E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 16 REQUIRED 5 ITERATIONS. MFD OF 8.43543E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 17 REQUIRED 5 ITERATIONS. MFD OF 9.54283E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 18 REQUIRED 5 ITERATIONS. MFD OF 9.49913E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 19 REQUIRED 5 ITERATIONS. MFD OF 9.44872E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 20 REQUIRED 5 ITERATIONS. MFD OF 8.65960E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 21 REQUIRED 5 ITERATIONS. MFD OF 7.33684E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 22 REQUIRED 5 ITERATIONS. MFD OF 7.40928E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 23 REQUIRED 5 ITERATIONS. MFD OF 6.62486E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 24 REQUIRED 5 ITERATIONS. MFD OF 6.46597E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 25 REQUIRED 4 ITERATIONS. MFD OF 9.09218E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 26 REQUIRED 5 ITERATIONS. MFD OF 5.46256E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 27 REQUIRED 4 ITERATIONS. MFD OF 7.70157E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 28 REQUIRED 4 ITERATIONS. MFD OF 7.55080E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 29 REQUIRED 4 ITERATIONS. MFD OF 9.61720E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 30 REQUIRED 4 ITERATIONS. MFD OF 9.35225E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 31 REQUIRED 4 ITERATIONS. MFD OF 9.00858E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 32 REQUIRED 4 ITERATIONS. MFD OF 8.55061E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 33 REQUIRED 4 ITERATIONS. MFD OF 7.78710E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 34 REQUIRED 4 ITERATIONS. MFD OF 6.57270E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 35 REQUIRED 4 ITERATIONS. MFD OF 3.30106E-05 OCCURRED IN INT. 20 COARSE MESH= 1
GRP. 36 REQUIRED 4 ITERATIONS. MFD OF 1.93436E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 37 REQUIRED 4 ITERATIONS. MFD OF 5.02004E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 38 REQUIRED 4 ITERATIONS. MFD OF 5.61433E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 39 REQUIRED 4 ITERATIONS. MFD OF 5.69064E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 40 REQUIRED 4 ITERATIONS. MFD OF 5.31461E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 41 REQUIRED 4 ITERATIONS. MFD OF 5.08440E-05 OCCURRED IN INT. 21 COARSE MESH= 1
GRP. 42 REQUIRED 4 ITERATIONS. MFD OF 4.70767E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 43 REQUIRED 4 ITERATIONS. MFD OF 4.78757E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 44 REQUIRED 4 ITERATIONS. MFD OF 4.73802E-05 OCCURRED IN INT. 4 COARSE MESH= 1
GRP. 45 REQUIRED 4 ITERATIONS. MFD OF 4.48889E-05 OCCURRED IN INT. 6 COARSE MESH= 1
GRP. 46 REQUIRED 4 ITERATIONS. MFD OF 4.62569E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 47 REQUIRED 4 ITERATIONS. MFD OF 4.20358E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 48 REQUIRED 4 ITERATIONS. MFD OF 4.00811E-05 OCCURRED IN INT. 2 COARSE MESH= 1
GRP. 49 REQUIRED 4 ITERATIONS. MFD OF 3.68813E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 50 REQUIRED 4 ITERATIONS. MFD OF 3.78514E-05 OCCURRED IN INT. 3 COARSE MESH= 1
GRP. 51 REQUIRED 4 ITERATIONS. MFD OF 3.46293E-05 OCCURRED IN INT. 2 COARSE MESH= 1
GRP. 52 REQUIRED 4 ITERATIONS. MFD OF 3.56709E-05 OCCURRED IN INT. 4 COARSE MESH= 1
GRP. 53 REQUIRED 4 ITERATIONS. MFD OF 3.49558E-05 OCCURRED IN INT. 2 COARSE MESH= 1
GRP. 54 REQUIRED 4 ITERATIONS. MFD OF 3.47181E-05 OCCURRED IN INT. 1 COARSE MESH= 1
GRP. 55 REQUIRED 4 ITERATIONS. MFD OF 3.16679E-05 OCCURRED IN INT. [illegible] COARSE MESH= [illegible]

9/75

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GRP.  57 REQUIRED  4 ITERATIONS. MFD OF  3.32372E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  58 REQUIRED  4 ITERATIONS. MFD OF  3.28249E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  59 REQUIRED  4 ITERATIONS. MFD OF  3.21692E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  60 REQUIRED  4 ITERATIONS. MFD OF  3.20613E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  61 REQUIRED  4 ITERATIONS. MFD OF  3.17009E-05 OCCURRED IN INT.   2  COARSE MESH=  1
GRP.  62 REQUIRED  4 ITERATIONS. MFD OF  3.34794E-05 OCCURRED IN INT.   3  COARSE MESH=  1
GRP.  63 REQUIRED  4 ITERATIONS. MFD OF  3.21145E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  64 REQUIRED  4 ITERATIONS. MFD OF  2.78563E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  65 REQUIRED  4 ITERATIONS. MFD OF  3.25553E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  66 REQUIRED  4 ITERATIONS. MFD OF  3.40602E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  67 REQUIRED  4 ITERATIONS. MFD OF  3.13215E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  68 REQUIRED  4 ITERATIONS. MFD OF  4.02947E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  69 REQUIRED  4 ITERATIONS. MFD OF  3.59043E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  70 REQUIRED  4 ITERATIONS. MFD OF  3.67064E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  71 REQUIRED  4 ITERATIONS. MFD OF  2.86412E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  72 REQUIRED  4 ITERATIONS. MFD OF  2.64964E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  73 REQUIRED  4 ITERATIONS. MFD OF  3.72117E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  74 REQUIRED  4 ITERATIONS. MFD OF  3.28675E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  75 REQUIRED  4 ITERATIONS. MFD OF  2.47811E-05 OCCURRED IN INT.   1  COARSE MESH=  2
GRP.  76 REQUIRED  4 ITERATIONS. MFD OF  2.40386E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  77 REQUIRED  4 ITERATIONS. MFD OF  7.16480E-05 OCCURRED IN INT.   8  COARSE MESH=  3
GRP.  78 REQUIRED  4 ITERATIONS. MFD OF  2.13242E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  79 REQUIRED  4 ITERATIONS. MFD OF  4.86109E-05 OCCURRED IN INT.   1  COARSE MESH=  2
GRP.  80 REQUIRED  4 ITERATIONS. MFD OF  2.20364E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  81 REQUIRED  4 ITERATIONS. MFD OF  3.15712E-05 OCCURRED IN INT.   3  COARSE MESH=  1
GRP.  82 REQUIRED  4 ITERATIONS. MFD OF  7.73948E-05 OCCURRED IN INT.   9  COARSE MESH=  4
GRP.  83 REQUIRED  4 ITERATIONS. MFD OF  2.16012E-05 OCCURRED IN INT.   4  COARSE MESH=  1
GRP.  84 REQUIRED  4 ITERATIONS. MFD OF  6.15136E-05 OCCURRED IN INT.   8  COARSE MESH=  2
GRP.  85 REQUIRED  4 ITERATIONS. MFD OF  2.47094E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  86 REQUIRED  4 ITERATIONS. MFD OF  2.43458E-05 OCCURRED IN INT.   2  COARSE MESH=  1
GRP.  87 REQUIRED  4 ITERATIONS. MFD OF  2.24695E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  88 REQUIRED  4 ITERATIONS. MFD OF  3.57552E-05 OCCURRED IN INT.   1  COARSE MESH=  2
GRP.  89 REQUIRED  4 ITERATIONS. MFD OF  1.96709E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  90 REQUIRED  4 ITERATIONS. MFD OF  2.25995E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  91 REQUIRED  4 ITERATIONS. MFD OF  2.63429E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  92 REQUIRED  4 ITERATIONS. MFD OF  2.32505E-05 OCCURRED IN INT.   2  COARSE MESH=  1
GRP.  93 REQUIRED  4 ITERATIONS. MFD OF  2.43624E-05 OCCURRED IN INT.   1  COARSE MESH=  1
GRP.  94 REQUIRED  4 ITERATIONS. MFD OF  6.60323E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP.  95 REQUIRED  3 ITERATIONS. MFD OF  4.34202E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP.  96 REQUIRED  3 ITERATIONS. MFD OF  7.55020E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP.  97 REQUIRED  1 ITERATIONS. MFD OF  9.00108E-06 OCCURRED IN INT.   5  COARSE MESH=  1
GRP.  98 REQUIRED  3 ITERATIONS. MFD OF  6.66319E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP.  99 REQUIRED  3 ITERATIONS. MFD OF  7.21183E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 100 REQUIRED  3 ITERATIONS. MFD OF  6.43096E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 101 REQUIRED  1 ITERATIONS. MFD OF  2.62496E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 102 REQUIRED  1 ITERATIONS. MFD OF  3.53441E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 103 REQUIRED  3 ITERATIONS. MFD OF  3.79857E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 104 REQUIRED  3 ITERATIONS. MFD OF  5.16021E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 105 REQUIRED  4 ITERATIONS. MFD OF  2.33572E-05 OCCURRED IN INT.  21  COARSE MESH=  1
GRP. 106 REQUIRED  2 ITERATIONS. MFD OF  5.17522E-05 OCCURRED IN INT.  13  COARSE MESH=  1
GRP. 107 REQUIRED  4 ITERATIONS. MFD OF  1.58584E-05 OCCURRED IN INT.  20  COARSE MESH=  2
GRP. 108 REQUIRED  3 ITERATIONS. MFD OF  8.28163E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 109 REQUIRED  4 ITERATIONS. MFD OF  4.56405E-05 OCCURRED IN INT.  20  COARSE MESH=  2
GRP. 110 REQUIRED  4 ITERATIONS. MFD OF  1.43519E-05 OCCURRED IN INT.  20  COARSE MESH=  2
GRP. 111 REQUIRED  4 ITERATIONS. MFD OF  2.07812E-05 OCCURRED IN INT.  20  COARSE MESH=  2
GRP. 112 REQUIRED  4 ITERATIONS. MFD OF  1.94142E-05 OCCURRED IN INT.  19  COARSE MESH=  2
GRP. 113 REQUIRED  4 ITERATIONS. MFD OF  2.44765E-05 OCCURRED IN INT.  19  COARSE MESH=  2
GRP. 114 REQUIRED  4 ITERATIONS. MFD OF  3.02306E-05 OCCURRED IN INT.  19  COARSE MESH=  2
GRP. 115 REQUIRED  4 ITERATIONS. MFD OF  1.85905E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 116 REQUIRED  4 ITERATIONS. MFD OF  1.36224E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 117 REQUIRED  4 ITERATIONS. MFD OF  1.42075E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 118 REQUIRED  4 ITERATIONS. MFD OF  1.31942E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 119 REQUIRED  4 ITERATIONS. MFD OF  1.09744E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 120 REQUIRED  3 ITERATIONS. MFD OF  8.16707E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 121 REQUIRED  4 ITERATIONS. MFD OF  6.10159E-05 OCCURRED IN INT.  21  COARSE MESH=  2
GRP. 122 REQUIRED  3 ITERATIONS. MFD OF  7.12880E-05 OCCURRED IN INT.  21  COARSE MESH=  3
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GRP. 123 REQUIRED   4 ITERATIONS. MFD CF  2.52604E-05 OCCURRED IN INT.  19  COARSE MESH=  3
    7  4237   1.0000286E 00   1.0000010E 00   1.4093208E 00   1.0000367E 00   9.9999934E-01   3.4930
          FINAL MONITOR          LAMBDA  1.4072618E 00          ANGULAR FLUX ON   16
ELAPSED TIME   3.49 MIN.
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NITAWL

    1s ARRAY     12 ENTRIES READ

    OT

  MSCM     NUMBER OF EXTRA CROSS SECTIONS                          0
  MMT      NUMBER OF NUCLIDES FROM MASTER LIBRARY                 11
  MWT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 2)          0
  MXT      NUMBER OF NUCLIDES FROM X-SECT LIBRARY (LOG 3)          5
  MCR      ANISN/DOT/MORSE OUTPUT TRIGGER                          0
  MAS      TOTAL CROSS SECTION POSITION                            0
  MS       WITHIN-GROUP SCATTERING CROSS SECTION POSITION          0
  IGES     NUMBER OF RESONANCE CALCULATIONS                        0
  IC4      TABLE LENGTH FOR CROSS SECTIONS                         0
  IPM      IS AN OLD ANISN LIBRARY MOUNTED ? (0/1INC/YES)          0
  IPP      OUTPUT OPTION TRIGGER                                  -1
  IFG      PRINT CONTROL - ANISN OUTPUT                            0

THE STORAGE ALLOCATED FOR THIS CASE IS 197120 WORDS

    2s ARRAY     16 ENTRIES READ

    OT

GENERAL INFORMATION CONCERNING CROSS SECTION LIBRARY
   TAPE IDENTIFICATION NUMBER                  131
   NUMBER OF NUCLIDES ON TAPE                    5
   NUMBER OF NEUTRON ENERGY GROUPS             123
   FIRST THERMAL NEUTRON ENERGY GROUP           94
   NUMBER OF GAMMA ENERGY GROUPS                 0

XSDRN TAPE     0
                    SUPER-XSDRN LIBRARY--LAST DIGITS OF ID #'S ARE CODED AS FOLLOWS--        5-900K,6
                    -800K,7-850K,8-750K,9-1000K,ANYTHING ELSE IS PRECISELY THAT--IF THESE THERMAL TE
                    MPERATURES ARE DESIRED, CALL C.W. CRAVEN, JR. OR        N. M. GREENE----ALL THER
                    MAL DATA IS PC (IFTG=94).  ALSO J. WILSON DATA  AND 3 1/V NUCLIDES        JULY, 1
                    968                                        -THIS IS A CONVERTED TAPE

WTD. TAPE    131

XSDRN WEIGHTED TAPE--PARENT CASE ENTITLED-- BWR 8X8 PINS .7219 IN PITCH 2.8 PCT
200 KG U 144 IN LONG


NUCLIDES FROM XSDRN TAPE
    1     HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K                    10001
    2     OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K                   80003
    3     ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K                 130000
    4     CHROMIUM       THERMAL TEMP=294.6                                               240003
    5     MANGANESE                          THERMAL TEMP =  900.0 K                      250005
    6     IRON           THERMAL TEMP=294.6                                               260001
    7     NICKEL         THERMAL TEMP=294.6                                               280003
    8     SILVER-109                                                                      471090
    9     CADMIUM-113                    THERMAL TEMPERATURE= 294.6 K                     481131
   10     INDIUM-115                                                                      491150
   11     LEAD       NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K                  820000
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NUCLIDES FROM GTU. TAPE
  12    URANIUM-235                    THERMAL TEMPERATURE = 294.6 K          922351
  13    URANIUM-238R                   THERMAL TEMPERATURE = 294.6 K          922381
  14    HYDROGEN--THERMOS (D=1003(X-640) THERMAL TEMPERATURE= 294.6 K          100
  15    OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K          80C
  16    ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K       400000

HYDROGEN--THERMOS (D=1003(X-640) THERMAL TEMPERATURE= 294.6 K          10001

OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K          80003

ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K       130000

CHROMIUM       THERMAL TEMP=294.6                                       240003

MANGANESE                              THERMAL TEMP = 900.0 K          250005

IRON           THERMAL TEMP=294.6                                       260001

NICKEL         THERMAL TEMP=294.6                                       280003

SILVER-109                                                              471090

GP  94 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  95 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  96 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  97 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  98 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP  99 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 100 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 101 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 102 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 103 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 104 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 105 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 106 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 107 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 108 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 109 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 110 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 111 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 112 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 113 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 114 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0

GP 115 ELASTIC SUM OF  0.0          VERSUS AVERAGE VALUE  0.0
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THIS XSDRN WORKING TAPE WAS CREATED
THE TITLE OF THE PARENT CASE IS AS FOLLOWS
XSDRN WEIGHTED TAPE--PARENT CASE ENTITLED-- DWR 8X8 PINS .7219 IN PITCH 2.8 PCT
200 KG U 144 IN LONG

   TAPE ID                          131        NUMBER OF NUCLIDES                16
   NUMBER OF NEUTRON GROUPS         123        NUMBER OF GAMMA GROUPS             0
   FIRST THERMAL GROUP               94
                              TABLE OF CONTENTS
   HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          ID    10001
   OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID    80003
   ALUMINUM   NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        ID   130000
   CHROMIUM       THERMAL TEMP=294.6                                      ID   240003
   MANGANESE                          THERMAL TEMP =  900.0 K             ID   250005
   IRON           THERMAL TEMP=294.6                                      ID   260001
   NICKEL         THERMAL TEMP=294.6                                      ID   280003
   SILVER-109                                                             ID   471090
   CADMIUM-113                        THERMAL TEMPERATURE= 294.6 K        ID   481131
   INDIUM-115                                                             ID   491150
   LEAD       NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID   820000
   URANIUM-235                        THERMAL TEMPERATURE = 294.6 K       ID   922351
   URANIUM-238                        THERMAL TEMPERATURE = 294.6 K       ID   922381
   HYDROGEN--THERMOS ID=1803(X-640) THERMAL TEMPERATURE= 294.6 K          ID      100
   OXYGEN     NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 293.6 K         ID      800
   ZIRCONIUM  NATURAL     BROWN - ST. JOHN KERNEL TEMP. = 627.13 K        ID   400000
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BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM

NUMBER OF GENERATIONS	70	START TYPE	1
NUMBER PER GENERATION	300	GENERATIONS BETWEEN CHECKPOINTS	0
NUMBER OF GENERATIONS TO BE SKIPPED	3	LIST INPUT X-SECTIONS READ F334 TAPE	NO
NUMBER OF ENERGY GROUPS	123	LIST 1-D MIXTURE X SECTIONS	NO
MAX. NUMBER OF ENERGY TRANSFERS	80	LIST 2-D MIXTURE X-SECTIONS	NO
NUMBER OF INPUT NUCLIDES	16	LIST FISS. AND ABS. BY REGION	NO
NUMBER OF MIXTURES	7	USE X-SECTIONS FROM PREVIOUS CASE	NO
NUMBER OF MIXING TABLE ENTRIES	19	USE GEOMETRY FROM PREVIOUS CASE	NO
NUMBER OF GEOMETRY CARDS	12	USE VELOCITIES FROM PREVIOUS CASE	NO
NUMBER OF 3DX TYPES	1	COMPUTE MATRIX K-EFFECTIVE BY UNIT	NO
NUMBER OF UNITS IN X DIRECTION	1	COMPUTE MATRIX K-EFFECTIVE BY 3DX TYPE	NO
NUMBER OF UNITS IN Y DIRECTION	1	LIST FISS PROB MATRIX BY UNIT	NO
NUMBER OF UNITS IN Z DIRECTION	1	ADJOINT CALCULATION	NO
NUMBER OF NUCLIDES READ FROM TAPE	-16	USE EXPONENTIAL TRANSFORM	NO
ALBEDO TYPE	0	CALCULATE FLUX	YES
SEARCH TYPE	0	CALCULATE FISSION DENSITIES	YES

MAXIMUM TIME = 22.0000 MINUTES

STORAGE LOCATIONS REQUIRED FOR THIS JOB = 148391
REMAINING AVAILABLE LOCATIONS= 9241

```
BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GECM

      MIXTURE  NUCLIDE   DENSITY
         1    -922351   1.82300E-04
         1     922381   6.24910E-03
         1       800    3.42520E-02
         1     400000   3.91360E-03
         1       100    4.26760E-02
         2      80003   1.00000E-10
         2     481131   3.31719E-04
         2     491150   7.60687E-03
         2     471090   2.17075E-02
         3     130000   6.02520E-02
         4     240003   1.67330E-02
         4     250005   1.76146E-03
         4     260001   6.04160E-02
         4     280003   8.36670E-03
         5     820000   3.29930E-02
         6      10001   6.67440E-02
         6      80003   3.33710E-02
         7    -922351   1.05230E-04
         7     922361   4.77256E-02


CROSS SECTIONS READ FROM TAPE

NUCLIDE =      10001    HYDROGEN--THERMOS ID=18031(X-640) THERMAL TEMPERATURE= 294.6 K
NUCLIDE =      80003    OXYGEN      NATURAL      BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     130000    ALUMINUM    NATURAL      BROWN - ST. JOHN KERNEL TEMP. = 627.13 K

IHC208I IBCOM - PROGRAM INTERRUPT (1) -  UNDERFLOW   OLD PSW IS  FFE5210022051340

TRACEBACK  ROUTINE  CALLED FROM ISN   REG.  14   REG.  15   REG.   0   REG.   1

           XSTAPE            0030    4204E1BA   00050120   00000000   3004ED38

           INPLT             0397    4203E730   0004EAA0   00000000   3003C7C0

           KENO                      42045DC4   00038960   08002800   30045DE8

           ALOCAT            0070    42040092   00045050   00000000   3003FDB4

           MAIN                      00015984   0103FCC0   00000030   3003A260

ENTRY POINT=  01C3FCC0

STANDARD FIXUP TAKEN , EXECUTION CONTINUING
NUCLIDE =     240003    CHROMIUM          THERMAL TEMP=294.6
NUCLIDE =     250005    MANGANESE                                THERMAL TEMP =  900.0 K
NUCLIDE =     260001    IRON              THERMAL TEMP=294.6
NUCLIDE =     280003    NICKEL            THERMAL TEMP=294.6
NUCLIDE =     471090    SILVER-109                                THERMAL TEMPERATURE= 294.6 K
NUCLIDE =     481131    CADMIUM-113
NUCLIDE =     491150    INDIUM-115
NUCLIDE =     820000    LEAD        NATURAL      BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     922351    URANIUM-235                                THERMAL TEMPERATURE = 294.6 K
NUCLIDE =     922381    URANIUM-238R                               THERMAL TEMPERATURE = 294.6 K
NUCLIDE =        100    HYDROGEN--THERMOS ID=18031(X-640) THERMAL TEMPERATURE= 294.6 K
NUCLIDE =        800    OXYGEN      NATURAL      BROWN - ST. JOHN KERNEL TEMP. = 293.6 K
NUCLIDE =     400000    ZIRCONIUM   NATURAL      BROWN - ST. JOHN KERNEL TEMP. = 627.13 K
```

BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM

GEOMETRY DESCRIPTION

REGION

1	GENERAL	1	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
2	GENERAL	2	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
3	GENERAL	3	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
4	GENERAL	4	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
5	GENERAL	5	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
6	GENERAL	6	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
7	GENERAL	7	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
8	GENERAL	4	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
9	GENERAL	6	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
10	GENERAL	0	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
11	GENERAL	0	+X = 0.0	-X = 0.0	+Y = 0.0	-Y = 0.0	+Z = 0.0	-Z = 0.0
12	CUBOID	0	+X = 1.0210E 02	-X =-1.0210E 02	+Y = 1.0210E 02	-Y =-1.0210E 02	+Z = 2.5273E 02	-Z =-2.5319E 02

BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM

WEIGHTING FUNCTION

BOX TYPE 1	GROUP	WTLOW	WT AVG	WT HI
REGION 1 DEFINED BY GEOMETRY CARD 1	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 2 DEFINED BY GEOMETRY CARD 2	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 3 DEFINED BY GEOMETRY CARD 3	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 4 DEFINED BY GEOMETRY CARD 4	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 5 DEFINED BY GEOMETRY CARD 5	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 6 DEFINED BY GEOMETRY CARD 6	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 7 DEFINED BY GEOMETRY CARD 7	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 8 DEFINED BY GEOMETRY CARD 8	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 9 DEFINED BY GEOMETRY CARD 9	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 10 DEFINED BY GEOMETRY CARD 10	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 11 DEFINED BY GEOMETRY CARD 11	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			
REGION 12 DEFINED BY GEOMETRY CARD 12	1	0.167	0.500	1.500
	GROUPS 2 TO 123 SAME AS ABOVE			

```
    2    MALE
X ZONE      -0.10210E 03,  0.10210E 03
Y ZONE      -0.10210E 03,  0.0        ,  0.10210E 03
Z ZONE      -0.25614E 03, -0.18288E 03,  0.18288E 03,  0.25273E 03

ZONE      1    1    1
X BLOCK     -0.10210E 03,  0.10210E 03
Y BLOCK     -0.10210E 03,  0.0
Z BLOCK     -0.25619E 03, -0.18288E 03

BLOCK     1    1    1
MEDIA            6,    8,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES         1,    6,   13,   20,   69,   70,   71,   72,  133
SECTOR  1  0  0  0 -1  0  0  0  0
SECTOR -1  1  0  0  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0 -1  0  0
SECTOR  0  0 -1  1  0  0  0 -1  0
SECTOR  0  0  0 -1  0  0  0  0 -1
SECTOR  1  0  0  0  1 -1  0  0  0
SECTOR  1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1

ZONE      1    2    1
X BLOCK     -0.10210E 03,  0.10210E 03
Y BLOCK      0.0        ,  0.10210E 03
Z BLOCK     -0.25619E 03, -0.18288E 03

BLOCK     1    1    1
MEDIA            6,    8,    7,    8,    5,    4,    5,    8,    9,   11
SURFACES         1,    8,   13,   20,   69,   70,   71,   72,  133
SECTOR  1  0  0  0 -1  0  0  0  0
SECTOR -1  1  0  0  0  0 -1  0  0
SECTOR  0 -1  1  0  0  0 -1  0  0
SECTOR  0  0 -1  1  0  0  0 -1  0
SECTOR  0  0  0 -1  0  0  0  0 -1
SECTOR  1  0  0  0  1 -1  0  0  0
SECTOR  1  0  0  0  0  1 -1  0  0
SECTOR  0  0  0  1  0  0  1 -1  0
SECTOR  0  0  0  0  0  0  0  1 -1
SECTOR  0  0  0  0  0  0  0  0  1

ZONE      1    1    2
X BLOCK     -0.10210E 03, -0.52465E 02, -0.33965E 02, -0.18250E 02,  0.0
   0.18250E 02,  0.33965E 02,  0.52465E 02,  0.10210E 03
Y BLOCK     -0.10210E 03, -0.52465E 02, -0.34628E 02, -0.16838E 02,  0.0
Z BLOCK     -0.18288E 03,  0.18288E 03

BLOCK     1    1    1
MEDIA            5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1

BLOCK     2    1    1
MEDIA            5,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
```

```
SECTOR  0  0  1

BLOCK     3     1     1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        53,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1

BLOCK     4     1     1
MEDIA            3,    4,    5,    8,    9,   10,   10,   11
SURFACES        54,   55,   69,   70,   71,   72,  133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1

BLOCK     5     1     1
MEDIA            3,    4,    5,    8,    9,   10,   10,   11
SURFACES        53,   54,   69,   70,   71,   72,  133
SECTOR  0  0 -1  0  0  0  0
SECTOR  0  0  1 -1  0  0  0
SECTOR  1  1  0  1 -1  0  0
SECTOR  0  0  0  0  1 -1  0
SECTOR  0  0  0  0  0  1 -1
SECTOR -1  0  0  1  0  0  0
SECTOR  0 -1  0  1  0  0  0
SECTOR  0  0  0  0  0  0  1

BLOCK     6     1     1
MEDIA            3,    4,    5,    8,    9,   10,   11
SURFACES        53,   69,   70,   71,   72,  133
SECTOR  0 -1  0  0  0  0
SECTOR  0  1 -1  0  0  0
SECTOR  1  0  1 -1  0  0
SECTOR  0  0  0  1 -1  0
SECTOR  0  0  0  0  1 -1
SECTOR -1  0  1  0  0  0
SECTOR  0  0  0  0  0  1

BLOCK     7     1     1
MEDIA            8,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1

BLOCK     8     1     1
MEDIA            8,    8,    9,   11
SURFACES        71,   72,  133
SECTOR -1  0  0
SECTOR  1 -1  0
SECTOR  0  1 -1
SECTOR  0  0  1

BLOCK     1     2     1
MEDIA            8,    8,    9,   11
```

BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM

GENERATION	K-EFFECTIVE	ELAPSED TIME(MIN)	AVG. K-EFF	DEVIATION	MATRIX K-EFF
1	9.67731E-01	4.38333E-01	1.00000E 00	0.0	0.0
2	9.33681E-01	8.82667E-01	1.00000E 00	0.0	0.0
3	9.62094E-01	1.20133E 00	9.62094E-01	0.0	0.0
4	9.88750E-01	1.69600E 00	9.75422E-01	1.33409E-02	0.0
5	9.19701E-01	2.16850E 00	9.56875E-01	2.33842E-02	0.0
6	9.57215E-01	2.52883E 00	9.56985E-01	1.62329E-02	0.0
7	9.95454E-01	2.95417E 00	9.64679E-01	1.34283E-02	0.0
8	9.43877E-01	3.34833E 00	9.61212E-01	1.15600E-02	0.0
9	9.97556E-01	3.75300E 00	9.66466E-01	1.13503E-02	0.0
10	9.33724E-01	4.18050E 00	9.62374E-01	1.04072E-02	0.0
11	9.82466E-01	4.61100E 00	9.64606E-01	9.46686E-03	0.0
12	9.50754E-01	5.03550E 00	9.63221E-01	8.95312E-03	0.0
13	8.60087E-01	5.43167E 00	9.53845E-01	1.21615E-02	0.0
14	9.2442CE-01	5.85667E 00	9.51426E-01	1.13626E-02	0.0
15	9.35135E-01	6.24833E 00	9.50173E-01	1.05273E-02	0.0
16	9.47297E-01	6.63333E 00	9.49967E-01	9.74894E-03	0.0
17	9.75358E-01	7.02100E 00	9.51663E-01	9.23295E-03	0.0
18	9.27655E-01	7.42000E 00	9.50175E-01	8.75394E-03	0.0
19	9.87099E-01	7.81467E 00	9.52347E-01	8.51391E-03	0.0
20	9.57565E-01	8.24083E 00	9.52636E-01	8.03412E-03	0.0
21	9.13011E-01	8.63883E 00	9.50582E-01	7.87540E-03	0.0
22	9.77702E-01	9.05017E 00	9.51941E-01	7.58814E-03	0.0
23	9.70212E-01	9.45467E 00	9.52810E-01	7.28137E-03	0.0
24	9.23968E-01	9.86433E 00	9.51458E-01	7.07326E-03	0.0
25	1.00653E 00	1.03172E 01	9.53852E-01	7.17284E-03	0.0
26	8.98743E-01	1.07417E 01	9.51556E-01	7.23934E-03	0.0
27	9.40290E-01	1.11547E 01	9.51105E-01	6.95550E-03	0.0
28	9.09324E-01	1.15517E 01	9.49497E-01	6.87810E-03	0.0
29	9.10296E-01	1.19738E 01	9.48045E-01	6.77513E-03	0.0
30	9.66732E-01	1.23655E 01	9.49427E-01	6.67384E-03	0.0
31	9.82600E-01	1.27697E 01	9.50570E-01	6.54187E-03	0.0
32	9.36985E-01	1.31767E 01	9.50117E-01	6.33745E-03	0.0
33	9.50075E-01	1.35655E 01	9.50116E-01	6.12918E-03	0.0
34	9.77504E-01	1.40092E 01	9.50972E-01	5.99639E-03	0.0
35	9.10847E-01	1.44160E 01	9.49990E-01	5.89377E-03	0.0
36	9.54763E-01	1.48433E 01	9.50144E-01	5.71945E-03	0.0
37	9.36104E-01	1.52583E 01	9.49742E-01	5.55868E-03	0.0
38	9.30266E-01	1.56800E 01	9.49201E-01	5.46009E-03	0.0
39	9.10991E-01	1.60943E 01	9.48330E-01	5.35369E-03	0.0
40	9.74265E-01	1.64667E 01	9.49012E-01	5.26553E-03	0.0
				WARNING - ONLY 299 INDEPENDENT FISSION POINTS WERE GENERATED.	
41	9.15403E-01	1.69018E 01	9.48753E-01	5.13400E-03	0.0
42	9.72500E-01	1.73152E 01	9.48859E-01	5.04030E-03	0.0
43	9.64365E-01	1.77018E 01	9.49237E-01	4.97966E-03	0.0
44	9.66148E-01	1.80927E 01	9.49639E-01	4.87700E-03	0.0
45	9.83507E-01	1.84900E 01	9.50423E-01	4.82757E-03	0.0
46	1.00720E 00	1.88867E 01	9.51719E-01	4.89104E-03	0.0
47	9.56370E-01	1.92683E 01	9.51822E-01	4.78317E-03	0.0
48	9.68983E-01	1.96767E 01	9.52195E-01	4.69275E-03	0.0
49	9.93463E-01	2.00860E 01	9.53073E-01	4.67512E-03	0.0
50	9.76492E-01	2.05072E 01	9.53436E-01	4.59113E-03	0.0
51	1.01006E 00	2.09160E 01	9.54591E-01	4.64349E-03	0.0
52	9.06592E-01	2.13250E 01	9.53631E-01	4.65006E-03	0.0
53	9.81257E-01	2.17300E 01	9.54173E-01	4.59275E-03	0.0
54	9.30590E-01	2.21588E 01	9.53719E-01	4.52439E-03	0.0

THE MATRIX K-EFF IS THE LARGEST EIGENVALUE OF THE MATRIX OF FISSION PROBABILITIES BY UNIT.
THERE ARE NBXMAX * NBYMAX * NBZMAX UNITS IN AN ARRAY.

BWR 8X8 PINS 200 KG U 144 IN 2.8 PCT .7219 IN PITCH GEN GEOM

LIFETIME = 4.85180E-05 + OR - 7.54626E-07 GENERATION TIME = 3.16545E-05 + OR - 2.56329E-07

NO. OF INITIAL GENERATIONS SKIPPED	AVERAGE K-EFFECTIVE	DEVIATION	67 PER CENT CONFIDENCE INTERVAL	95 PER CENT CONFIDENCE INTERVAL	99 PER CENT CONFIDENCE INTERVAL	NUMBER OF HISTORIES
3	0.95356	+ OR - 0.00460	0.94896 TO 0.95815	0.94436 TO 0.96275	0.93976 TO 0.96735	15300
4	0.95285	+ OR - 0.00464	0.94822 TO 0.95749	0.94358 TO 0.96212	0.93895 TO 0.96676	15000
5	0.95353	+ OR - 0.00468	0.94885 TO 0.95821	0.94417 TO 0.96289	0.93949 TO 0.96757	14700
6	0.95345	+ OR - 0.00478	0.94867 TO 0.95823	0.94389 TO 0.96300	0.93911 TO 0.96778	14400
7	0.95255	+ OR - 0.00479	0.94776 TO 0.95735	0.94296 TO 0.96214	0.93817 TO 0.96694	14100
8	0.95274	+ OR - 0.00490	0.94785 TO 0.95764	0.94295 TO 0.96254	0.93805 TO 0.96743	13800
9	0.95174	+ OR - 0.00490	0.94684 TO 0.95664	0.94194 TO 0.96154	0.93704 TO 0.96644	13500
10	0.95215	+ OR - 0.00499	0.94715 TO 0.95714	0.94216 TO 0.96214	0.93716 TO 0.96713	13200
11	0.95144	+ OR - 0.00506	0.94638 TO 0.95650	0.94132 TO 0.96156	0.93626 TO 0.96663	12900
12	0.95146	+ OR - 0.00518	0.94628 TO 0.95664	0.94109 TO 0.96183	0.93591 TO 0.96701	12600
17	0.95456	+ OR - 0.00520	0.94936 TO 0.95975	0.94416 TO 0.96495	0.93896 TO 0.97015	11100
22	0.95483	+ OR - 0.00568	0.94916 TO 0.96051	0.94348 TO 0.96619	0.93780 TO 0.97187	9600
27	0.95614	+ OR - 0.00593	0.95022 TO 0.96207	0.94429 TO 0.96800	0.93836 TO 0.97393	8100
32	0.55464	+ OR - 0.00628	0.95235 TO 0.96692	0.94607 TO 0.97120	0.93979 TO 0.97749	6600
37	0.96191	+ OR - 0.00755	0.95436 TO 0.96947	0.94681 TO 0.97702	0.93925 TO 0.98458	5100
42	0.96993	+ OR - 0.00855	0.96137 TO 0.97848	0.95282 TO 0.98704	0.94426 TO 0.99559	3600
47	0.96592	+ OR - 0.01358	0.95235 TO 0.97950	0.93877 TO 0.99308	0.92519 TO 1.00665	2100
52	0.95592	+ OR - 0.02533	0.93059 TO 0.98126	0.93526 TO 1.00659	0.87992 TO 1.03192	600

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Section XI

SECTION XI

STRUCTURAL ANALYSIS

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SECTION XI

STRUCTURAL ANALYSIS

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1.0 Introduction

The following structural analysis demonstrates the structural adequacy of the shipping cask under the various conditions of transport as prescribed by CFR, Title 10, Chapter 1, Part 71. The structural adequacy of the shipping cask is evaluated when subjected to the conditions in each of the following requirements:

1 - General Standards for All Packaging, 10 CFR, 71.31

2 - General Standards for Large Quantity Packaging, 10 CFR,71.32

3 - Standards for Normal Conditions of Transport, 10 CFR, 71.35

4 - Standards for Hypothetical Accident Conditions, 10 CFR , 71.36

The structural section is presented in four basic sections. The first section (1.0) covers the introduction, design criteria, and mechanical properties of the materials used in the construction of the cask. Section 2.0 evaluates the structural adequacy of the shipping cask when subjected to the conditions of general standards for all packaging and normal conditions of transport, paragraphs, 10 CFR , 71.31, 10 CFR 71.32 and 10 CFR 71.35. Section 3.0 presents a detailed evaluation of each of the critical components of the package under normal conditions of transport. The analysis takes into consideration the worst case conditions of metal temperature which would exist under a variety of thermal transient conditions. In all cases the greatest temperature

gradient thru the cask walls occurred at steady state conditions and the highest temperature occurred under normal conditions of transport without auxiliary cooling. The fourth and final section evaluates the structural adequacy of the shipping cask when subjected to the hypothetical accident conditions, 10 CFR , 71.36. The section is subdivided according to the accident damage test sequence.

1.1 Design Criteria

The following discussion describes the procedures and specifies the criteria which are used as the design basis for the NLI 10/24 rail cask. Nomenclature and categories for stresses generally follow the ASME Code. Stresses are combined on the basis of the distortion energy theory, which describes the behavior of ductile materials more accurately then the maximum shear theory. Material mechanical properties are taken from the ASME Code, MIL-HDBK-5B, standards such as ASTM, AISI, SAE, published test data from recognized sources, and minimum values from manufacturer's specifications.

1.1.1 Stress Categories

Primary Stresses

These are the normal stresses (tensile or compressive) and the shear stresses necessary to maintain equilibrium between the external and internal forces and moments applied to a structure. At any given location they consist of direct (membrane) stress, which is constant through the thickness of a structural component, and bending stress, which varies through the thickness. Primary stresses are not self-limiting and, if they exceed the yield strength through the entire thickness of a structural member, excessive deformation and rupture are prevented only by the strain-hardening properties of the material (Ref. 5.9). However, a structural member subjected only to bending does not lose its load carrying ability when yielding first occurs in the outermost fibers.

Yielding must extend across the full cross section at one or more points along the length of the member before excessive deformation, or collapse, can occur. Theories of limit design and plastic bending of beams show that the collapse moment for a solid compact section is at least 1.5 times the initial yield moment (Refs. 6,7,8,16). Hence, a higher effective stress can safely be permitted for bending of such sections than for cases where only direct stresses are present. In open, or hollow, thin-walled sections the bending factor is less than 1.5 (Refs. 6,10,17) and the permissible effective stress must be reduced accordingly. In particular, when bending involves the full cross section of a thin-walled pressure vessel the bending stress should be treated as a primary direct stress. This is necessary because once the effective stress including bending reaches yield, internal pressure can cause yielding to progress through the thickness with only strain hardening of the material to provide further load carrying capacity. For other structural components loaded only in bending, the allowable effective stress can be increased by the shape factor for the particular cross section involved. In cases where both bending and direct stresses are present, the interaction procedures set forth in References 27 and 33 can be used to establish the allowable stress (except for thin-walled pressure vessels as noted above). Under multi-axial stress conditions in a structure, procedures for assessing the effect of bending are apparently not well established. Consequently,

at locations in the cask structure involving multi-axial stresses no bending factor will be applied to increase the allowable stress when primary bending stresses are present; this is conservative and permits simpler analyses.

Secondary Stresses

These are the normal and shear stresses which result from constraints imposed by the requirements of continuity of deformations within a structure. Structural discontinuities, differential thermal expansion and nonuniform temperature distributions produce these stresses. They are self-limiting because minor distortions can satisfy the continuity conditions (Refs. 5,9).

Dynamic Stresses

During transport of the cask, railcar shocks or accidents may superimpose dynamic stresses on the static stresses normally present in the cask structure. Under dynamic loading the yield strength of most materials exceeds the value obtained under static loading; the ultimate strength is also greater in some cases. For ductile materials

the dynamic yield strength can be conservatively taken as two-thirds of the ultimate strength at the strain rates encountered in cask transportation (Refs. 11, 26,27,35,48-52). This effect is more pronounced at elevated temperature, so that the ratio of dynamic to static yield strength increases with increasing temperature (Refs. 27,35). Hence, a higher effective stress may safely be permitted when all or part of the applied loading is dynamic rather than static.

1.1.2 Allowable Stresses

The loadings that may occur on the cask during normal transport conditions include internal pressure in the containment vessel (fuel cavity) and neutron shield, axial and radial forces due to differential thermal expansion of the cask structure and contents, and shocks from the railcar. The combination of these loads that produce the largest ratios of applied stress to allowable stress at operating temperatures will be used to establish adequacy of the cask structure. Allowable stresses for normal transport conditions are based on either the static or dynamic yield strength of the material at temperature. Thus, under static loading the allowable stress is selected as 90% of the static yield strength, and under dynamic loading as 90% of the dynamic yield strength. The dynamic yield strength is taken to be either 2/3 of the ultimate tensile strength, the value established by actual dynamic tests, or the static yield strength when this exceeds 2/3 of the ultimate tensile strength (true for high strength materials). Under accident conditions loadings similar to those under normal

conditions occur but with the addition of impact accelerations and external fire. These must be considered in evaluating the cask structural integrity. However, under accident conditions yielding of the cask structure is acceptable provided integrity of the containment vessel and the minimum shielding requirement are not violated. Conservatively, no allowance is made for increased strength under dynamic loading or compressive loading, although some evidence of such effects exists (Refs. 26, 35).

1.1.3 Combination of Stresses

At a given location in a structure the primary and secondary normal and shear stresses due to the imposed loading (mechanical and thermal) are determined for the three coordinate directions (Refs. 3, 4, 8, 34). The algebraic sum of these stresses is determined in each direction and combined to obtain the resultant effective stress based on the Hencky-Von Mises distortion energy criterion of yielding (Refs. 3, 4),

$$\text{Effective stress,} \quad S_e = \sqrt{\frac{1}{2}} \sqrt{(\sigma_x - \sigma_y)^2 + (\sigma_y - \sigma_z)^2 + (\sigma_z - \sigma_x)^2 + 6\,(T_{xy}^2 + T_{yz}^2 + T_{zx}^2)}$$

where

$\sigma_x, \sigma_y, \sigma_z$ are normal stresses (tension positive, compression negative)

T_{xy}, T_{yz}, T_{zx}, are shear stresses.

This effective stress is determined for any desired loading condition and stress category (primary, secondary, etc.) and compared with the appropriate allowable stress to show that the structure is acceptable for the intended use.

An analogous effective strain may also be obtained. (Ref. 59)

Effective strain, $$\epsilon_e = \frac{\sqrt{2}}{3}\sqrt{(\epsilon_x - \epsilon_y)^2 + (\epsilon_y - \epsilon_z)^2 + (\epsilon_z - \epsilon_x)^2 + \frac{3}{2}(\gamma_{xy}^2 + \gamma_{yz}^2 + \gamma_{zx}^2)}$$

where

$\epsilon_x, \epsilon_y, \epsilon_z$ are normal strains (tension positive, compression negative)

$\gamma_{xy}, \gamma_{yz}, \gamma_{zx}$ are shear strains.

This may be compared with the allowable strain to show acceptability of the structure.

1.1.4 Structural Evaluation

The basic procedure for demonstrating integrity of the cask structure is as follows:

<u>Normal Conditions</u>

(1) Determine S_{e1} including all primary static direct and bending stresses; this must not exceed the static allowable stress, S_{as}.

(2) Determine S_{e2} including all primary static and dynamic direct and bending stresses; this must not exceed the dynamic allowable stress, S_{ad}.

(3) Determine the maximum range of stress intensity, S_r, due to all static and dynamic primary and secondary stresses developed during normal operation; this must not exceed 3 S_m as given in Table I-1.0, Appendix I of Reference 5 for the appropriate material and temperature. The stress intensity range, S_r, is determined by the procedures described in paragraphs NB-3216 and NB-3222 of Reference 5. Consideration of the possibility of thermal stress ratchet in the containment vessel by the procedure of paragraph NB-3222.5 of Reference 5 shows that ratchet action can not occur. The pressure-induced membrane stress in the shell is such a small fraction of the yield strength that the maximum allowable range of thermal stress greatly exceeds the 3 S_m limit imposed on S_r.

Accident Conditions

(4) Determine S_{e3} including all static and dynamic primary stresses only; this must not exceed 80% of the allowable stress, S_{aa}, under accident conditions (0.7 S_u). This criterion applies only to the containment vessel and outer shell (local effects in outer shell due to puncture loading are excluded).

(5) Determine S_{e4} including all static and dynamic primary and secondary stresses; this must not exceed the allowable stress, S_{aa}, under accident conditions. All cask structures must meet either this Alternate 1 criterion or the Alternate 2 criterion defined in item (6) below.

(6) Determine the maximum range of stress intensity, S, including all static and dynamic primary, secondary and peak stresses developed for extreme conditions of normal operation and accidents; this must

not exceed the 10 cycle value of S_a from Figure I-9.2, Appendix I of Reference 5. The stress intensity, S, is determined by the procedures described in paragraphs NB-3216, NB-3222 and NB-3228.3 (strain concentration effect) of Reference 5. Peak stresses are based on stress concentration factors appropriate to the specific locations being considered in the cask structure. Theoretical or experimental values of stress concentration factors may be used when available from published sources; otherwise a maximum concentration factor of 4 is acceptable (Ref. 9). This Alternate 2 criterion may be applied to all cask structures instead of the Alternate 1 criterion defined in item (5) above.

Basic stress limits used in the cask structural evaluation are summarized in the following table. The method of determining stress ranges is described on page XI-1-7j.

BASIC EFFECTIVE STRESS LIMITS

Stress Condition	Limit in terms of : Allowable	Yield Strength	Ultimate Strength
Normal			
Primary static direct + bending, S_{e_1}	S_{a_s}	$0.9\ S_{y_s}$	-----
Primary static and dynamic direct + bending, S_{e_2}	S_{a_d}	$0.9\ S_{y_d}$ (a)	$0.9\ (2/3\ S_u)$
Primary + secondary static and dynamic direct + bending, S_r (e)	$3S_m$ (b)	$k\ S_{y_s}$ (b)	-----
Accident			
Containment Vessel and outer shell must meet this criteria			
Primary static and dynamic direct + bending, S_{e_3}	$0.8S_{aa}$	-----	$0.7S_u$ (d)
All Cask Structures including containment vessel and outer shell must meet this criteria.			
Alternate 1 :			
Primary + secondary static and dynamic direct + bending, S_{e_4}	S_{aa}	-----	$0.9S_u$ (d)
Alternate 2 :			
Primary + secondary + peak static and dynamic direct + bending, S (f)	S_{a10} (c)	-----	-----

Notes:

(a) Dynamic yield strength, S_{yd}, may alternatively equal actual test values, or the static yield strength when $S_{ys} > 2/3\ S_u$.

BASIC EFFECTIVE STRESS LIMITS
(continued)

(b) S_m is taken from Table I-1.0 of ASME Code, Section III, Appendix I, for the appropriate material and temperature; k is the ratio of S_m to yield strength and ranges between 2/3 and 0.9 for various materials and temperatures.

(c) S_{a10} is the 10 cycle value of S_a from Fig. I-9.2 of ASME Code, Section III, Appendix I.

(d) In local regions of noncontainment structure subject to puncture loading, the criterion is either the effective stress, S_{e4} (0.9 S_u), or an effective strain, ϵ_{e4}, limited to 0.9 ϵ_u (ϵ_u is the strain at ultimate tensile strength, S_u).

(e) S_r is the stress intensity range.

(f) S is the stress intensity range.

1.1.5 Special Procedures

There are certain aspects of the cask structural design that cannot be adequately evaluated solely by the basic procedure given in Section 1.1.4. These involve particular types of loading, geometries, or material characteristics. Consequently, special procedures are needed to handle such situations and these are described in following paragraphs. They augment and in some cases supersede the basic procedure given previously.

Bearing Loads

Bearing loads develop between bodies in contact under the action of other external forces or inertial forces. They produce surface compressive stresses and subsurface tensile and shear stresses and must be limited in order to avoid plastic deformation that could cause dysfunction or rupture of the structural parts. Under normal conditions of transport bearing stresses must not exceed 1.5 times the allowable stresses at temperature for either static or dynamic loading. Hence, $S_{brs} < 1.5\ (0.9)\ S_{ys} = 1.35\ S_{ys}$ and $S_{brd} <$

1.35 S_{yd} (defined in Sect. 1.1.4). If available from tests, 90% of bearing yield strength shall be used as the allowable bearing stress (Ref. 27). Under accident conditions bearing stress must not exceed 1.5 times the allowable stress at temperature for accident conditions; or $S_{bra} <$ 1.35 S_u (see 1.1.4). If ultimate bearing strength is available from test data, 90% of this shall be used as the allowable bearing stress.

Closure Bolting

To insure containment of the cask contents, the inner closure head bolts are designed to withstand the hypothetical accident conditions without bolt stresses exceeding 2/3 the yield strength of the material at temperature. The bolt loads to be considered are as follows :

1. Bolt preload.
2. Internal pressure
3. "G" loads resulting from the 30-foot drop accident.

The bolts are made of high-strength austenitic stainless steel (Section 1.2) to avoid differential thermal expansion with the type 304 stainless steel of the closures. The high-strength bolt material permits the use of large preloads which prevent separation of both closure joints during normal transport and of the inner closure joint during impact and fire accidents; hence, containment of the cask contents is assured (see Sections 4.4.1, 4.8.1).

The following additional features are also included to insure joint integrity :

(1) rolled threads for minimum stress concentration;

(2) reduced shank to improve impact resistance and avoid possible failure in the threads;

(3) hardened washers under bolt head or nut to prevent yielding and minimize galling of the 304 stainless steel closures;

(4) adequate thread engagement in the 304 stainless steel casks end forging (Ref. 64).

As a final consideration bolt temperatures under both normal and accident conditions are well below the creep range for the material (Ref. 25) and thus no creep-relaxation can occur to reduce the initial clamping forces on the joints.

Miscellaneous Bolting

This category includes bolting of components which are not essential to containment of cask contents but are required during normal operation. These components are the outer closure head, the impact limiters and the neutron shield expansion tanks. Bolt stresses under normal transport conditions are limited to 75% of the material yield strength at temperature (Refs. 11,68,69) for loads due to bolt preload, internal pressure and transport shocks. Under accident conditions, the bolting is evaluated in the sections where each component is analyzed (4.3.2, 4.4.1.1, 4.8.1).

Cask Internal Structures

Certain of the cask internal structures (absorber sleeves, top spacer and bottom support) must be evaluated under accident conditions to insure that the cask contents are maintained in a nuclearly safe arrangement. The allowable stress limits for these parts are S_{aa} (0.9 S_u) for simple bending and compression and 0.6 S_{aa} for simple shear (see table on p. 7d). When bending and compression exist concurrently, an interaction relation is used in which the sum of the bending and compression stress ratios is less than

one; stress ratio is the ratio of applied to allowable stress (see Article A-9000 of Ref. 5).

Buckling

Buckling of cask structural components is not permitted under either normal or accident conditions with the exception of the water jacket which is not necessary to maintain cask integrity under accident conditions. The criterion to be met is that the applied load must be less than the critical buckling load as calculated for the particular geometry and material at temperature of the structural component involved. In this determination buckling formulas appropriate to the part under consideration and from recognized sources shall be used (Refs. 3, 4, 11, 27, 33).

Creep

Creep of cask structural components is only detrimental if it results in loss of function through excessive deformation or rupture. The cask body (shells, closures, heads, etc.) is constructed of type 304 stainless steel. Under both normal and accident conditions the temperatures of these cask parts do not exceed 800°F. According to data in References 5, 12 and 60, creep of this material is not a consideration below temperatures in the range of 800-1000°F. The question of creep of the aluminum basket is considered in Appendix C of Section VII for normal conditions of transport and in Section 4.9.2 for the fire

accident conditions. These analyses show that no unacceptable amount of creep occurs. With respect to the lead shielding the only continuously applied load under either normal or accident conditions is a gravity load due to its own weight and this causes compressive stresses of the order of 1 psi., so creep of the lead shield is not believed to be significant (Refs. 20, 21).

Fatigue

The basis for evaluating possible fatigue damage of the cask body structure is the design fatigue curve, Fig. XIV-1221.3(c)-2 of Reference 5. The anticipated number of loading cycles in the normal transport condition is 400, which corresponds to an allowable elastic peak stress range of 290,000 psi. As noted in References 5 and 9, stress ranges calculated on an elastic basis at specific locations in the cask structure must be increased by an appropriate stress concentration factor before comparison with the allowable stress range. Theoretical or experimental values of stress concentration factors should be used when these are available from published sources; otherwise a maximum concentration factor of 4 is acceptable (see Ref. 9). Under normal transport conditions the allowable elastic stress range for all primary plus secondary stresses has been established as 3 S_m (see table p. 7d). The highest temperature in the cask body during normal operation is 410°F in the inner shell; at this temperature S_m = 18,600 psi. (Table I-12. of Ref. 5). If, conservatively, the maximum stress concentration factor of 4 is applied to the 3_{Sm} allowable stress range, the maximum peak stress range permitted in the cask

body structure is 4(3) (18600) = 223,000 psi. This is less than the allowable stress range of 290,000 psi. cited above and, hence, fatigue is not a consideration under normal transport conditions.

Stress Range Procedure

The following procedure is used to determine the stress ranges, S_r or S (pp. 7b,7c) at different locations in the cask structure:

a) Identify the various loading conditions, mechanical and thermal, which occur during a complete operating cycle of the cask.

b) Determine the normalstress components σ_z(axial), σ_θ(hoop), σ_R(radial) and the shear stress components τ_{rz}, $\tau_{\theta z}$, $\tau_{r\theta}$ for each loading condition including all primary and secondary static and dynamic stresses (plus peak stresses for stress range S).

c) Select an apparent extreme load condition and find the difference between each stress component, σ_z, σ_θ, etc., at this condition and at the other load conditions; call these component differences, σ'_z, σ'_θ, etc. Other combinations of conditions may also have to be examined to finally establish the largest stress range.

d) Calculate the principal stresses, $\sigma'_1, \sigma'_2, \sigma'_3$, based on the component differences, σ_z, σ_θ, etc., for each load condition.

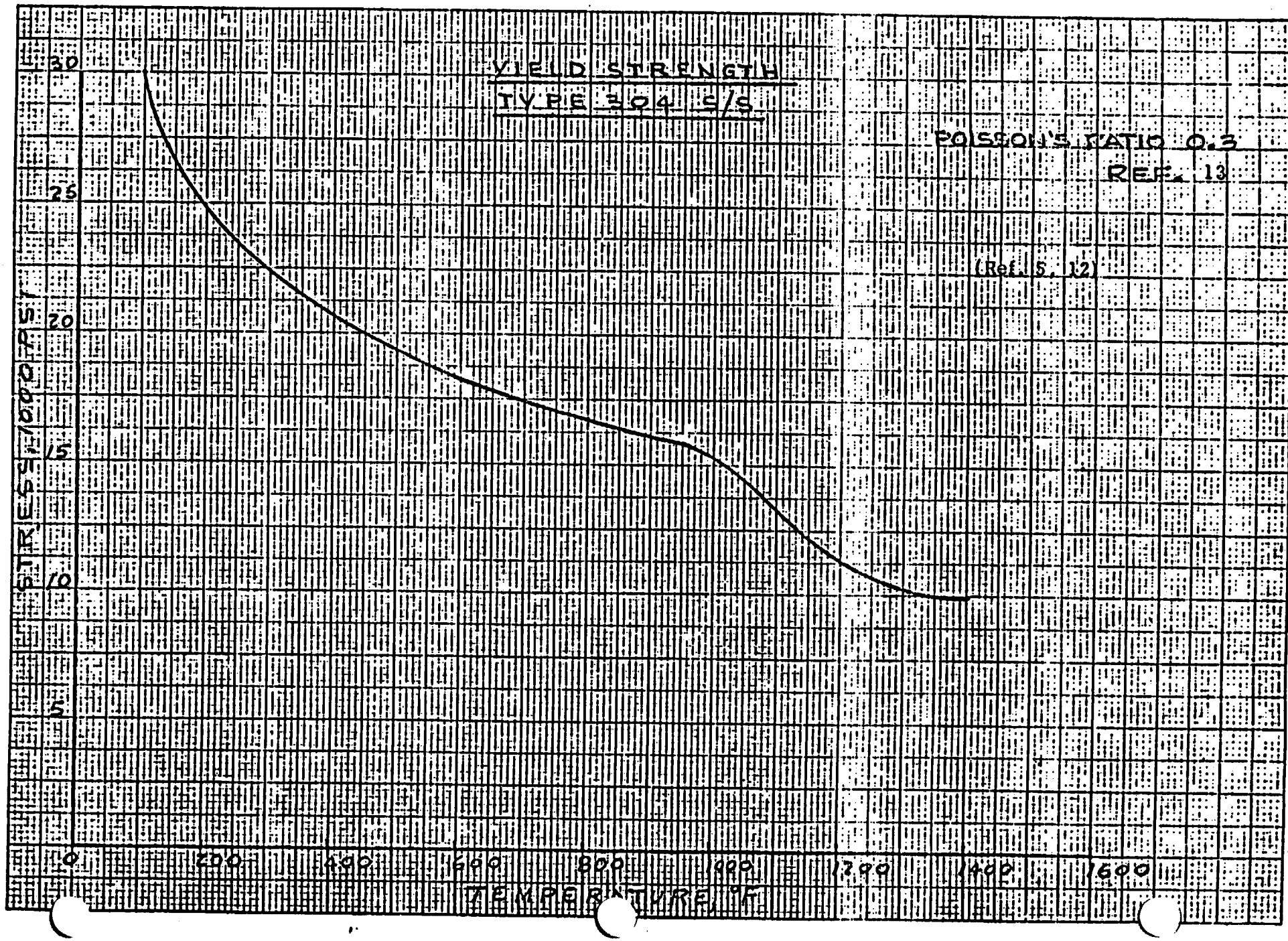
e) Determine the stress differences, $S'_{1,2} = \sigma'_1 - \sigma'_2$, $S'_{2,3} = \sigma'_2 - \sigma'_3$, $S'_{3,1} = \sigma'_3 - \sigma'_1$ at each load condition and find the largest absolute magnitude of any stress difference during the complete operating cycle. cycle. This value is the stress range, S_r(or S).

f) If the extreme values of any stress component, σ_z, σ_θ, etc., for all load conditions are of the same sign (do not include a zero value), then zero must be used as one extreme for that component.

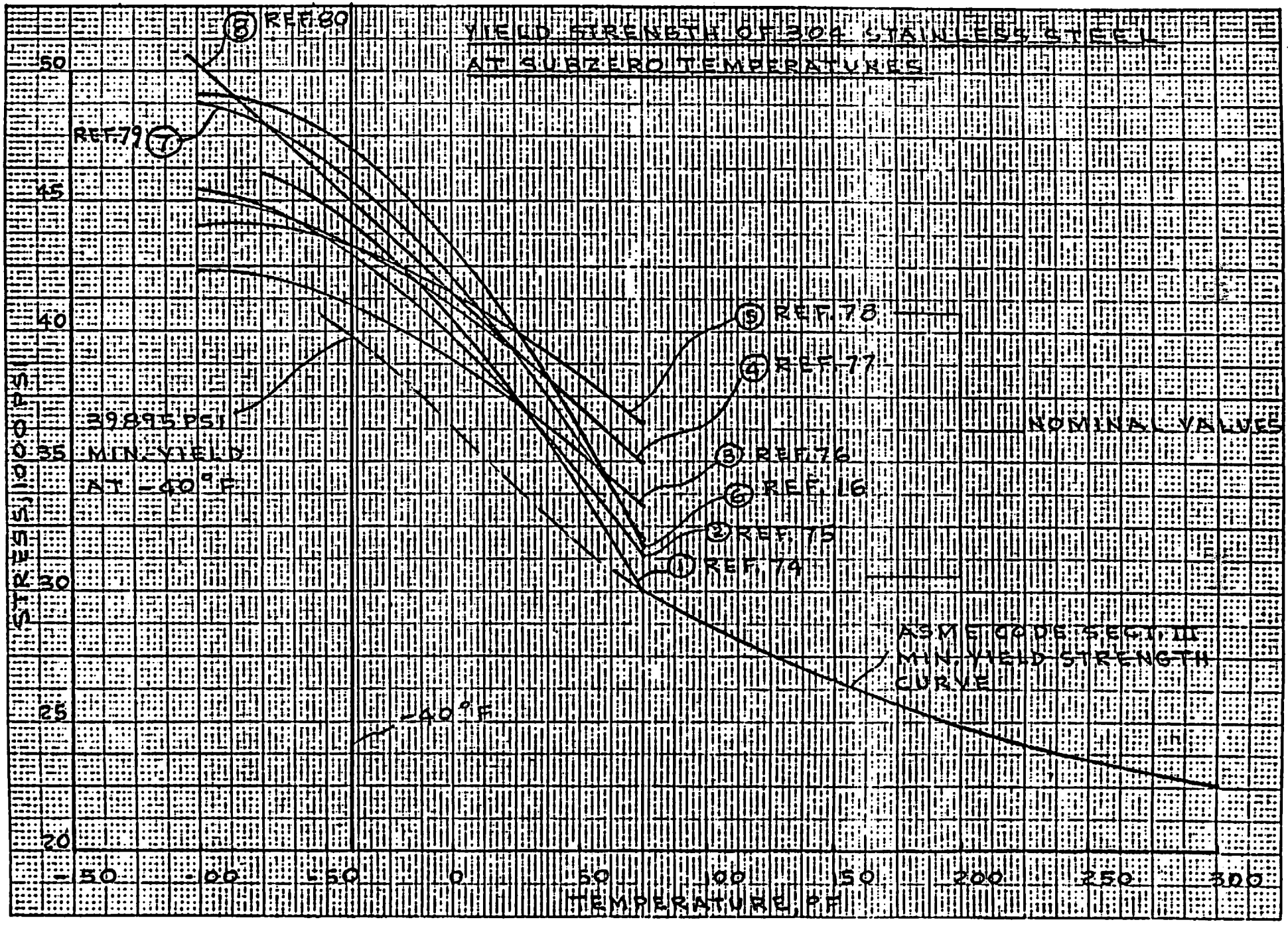
1.2 Mechanical and Physical Properties of Materials

1.2.1 Mechanical and Physical Properties of 304 Stainless Steel

10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



K+E 10 X 10 TO THE ½ INCH KEUFFEL & ESSER CO. 359-11 MADE IN U.S.A.



Calculate the minimum yield strength of 304 S/S at -40°F.

In Page X1-1-10a the average yield strength for the nominal values from curves 1, 2, 3, 4, 5, 6, 7, 8 at -40°F equals:

$$\frac{41000 + 42900 + 43250 + 43250 + 44125 + 45000 + 45750 + 47000}{8} =$$

44034 psi

The average yield strength for the nominal values from curves 1, 2, 3, 4, 5, 6, 7, 8 at 75°F (room Temp.) equals:

$$\frac{30000 + 31375 + 31750 + 32000 + 33250 + 35000 + 36500 + 35000}{8} =$$

33109 psi

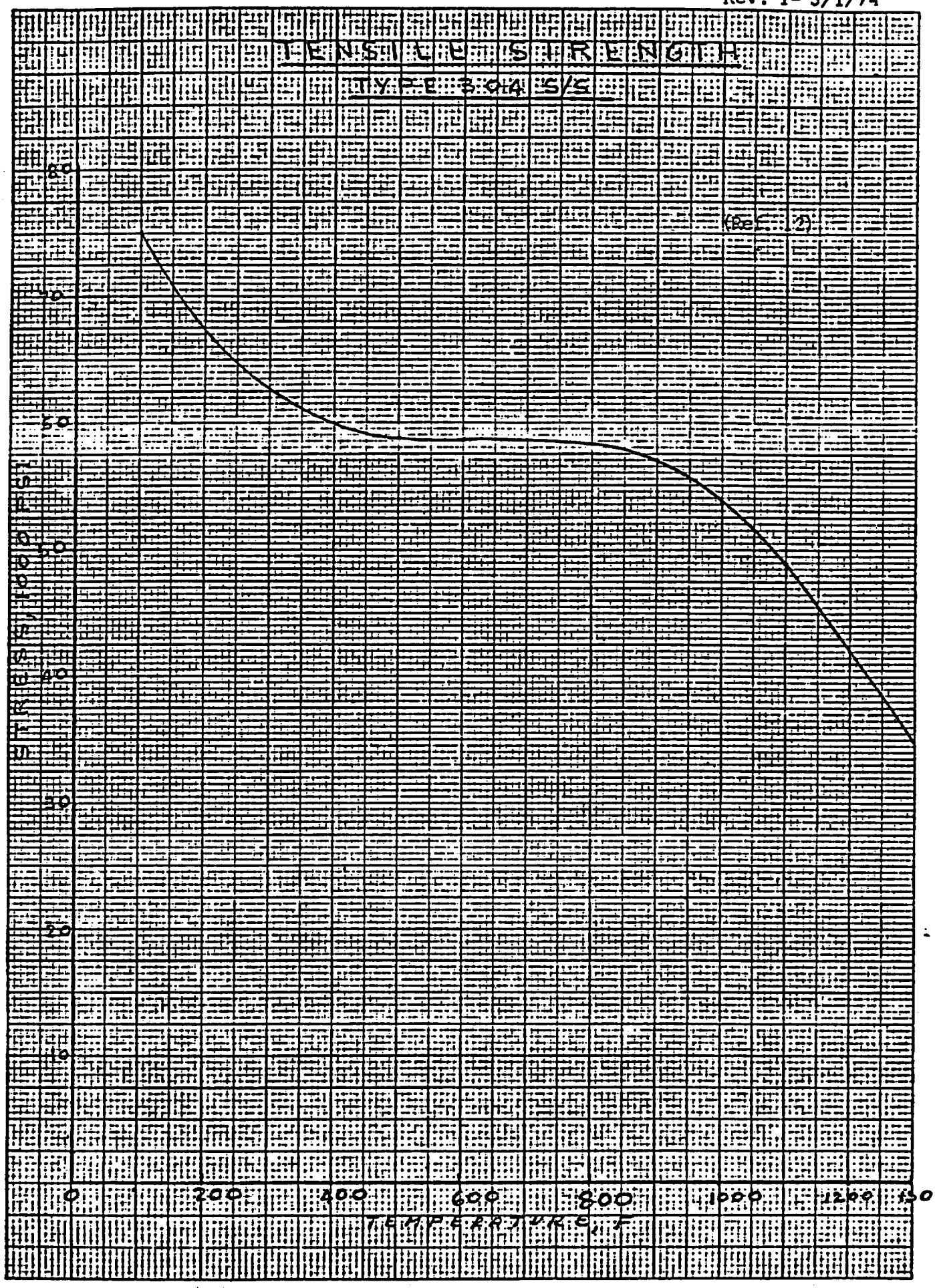
Adjusting the 33109 psi to the ASME Code room temperature minimum value of 30000 psi give a ratio of .906. This ratio is used to reduce the -40°F yield strength from 44034 to 44034 (.906) = 39895 psi.

<u>39895</u> psi will be used for design value for yield strength at -40°F.

Calculate the minimum tensile strength of 304 S/S at -40°F.

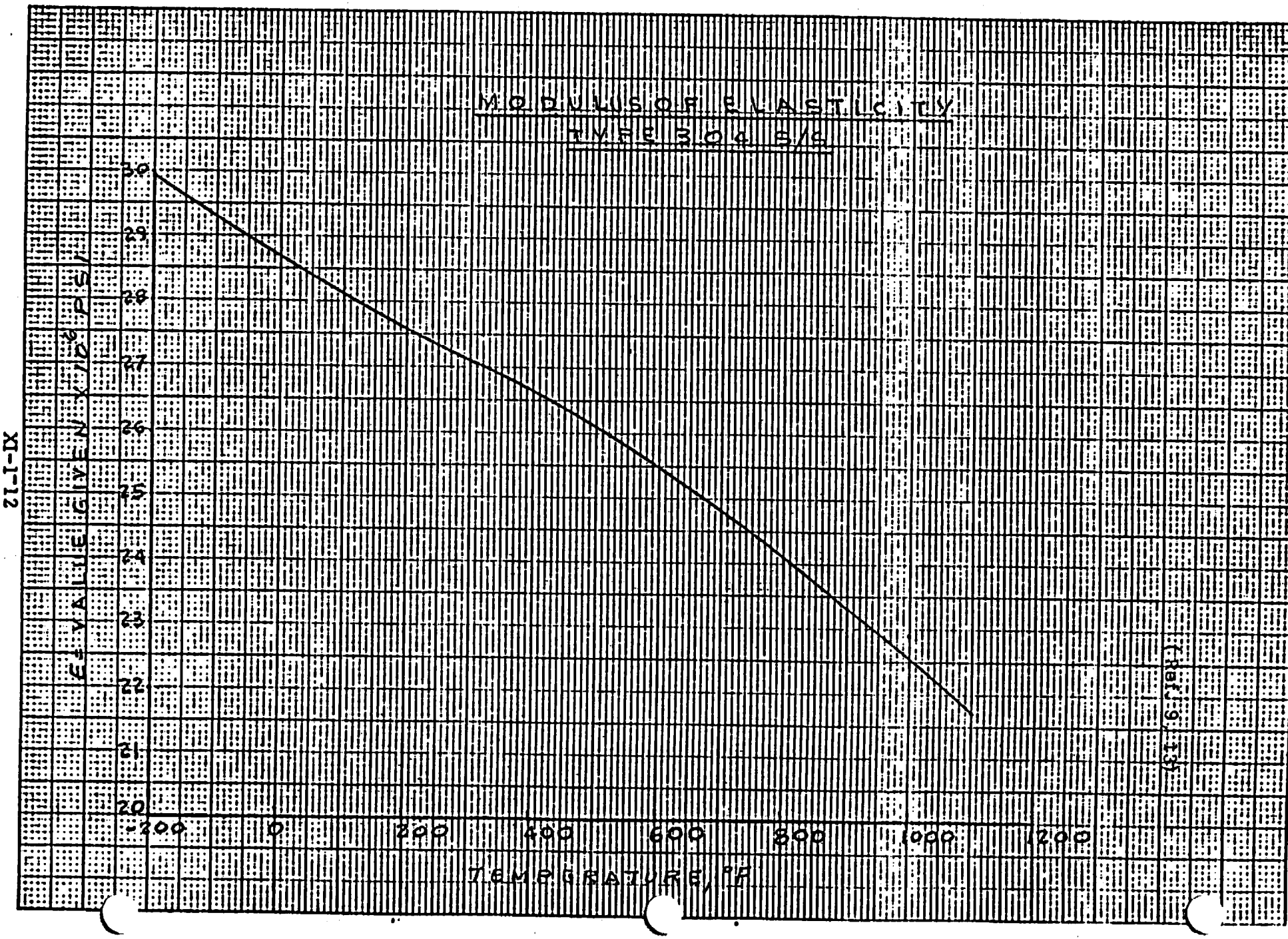
From Ref. 74, 75, 76, 77, 78 using the same procedure to arrive at the minimum yield strength at -40°F, the minimum tensile strength of 304 S/S at -40°F is calculated to be <u>115000 psi</u>.

Coefficient of thermal expansion from 68°F to -100°F = 7.99×10^{-6} IN/IN/°F (Ref. 67).



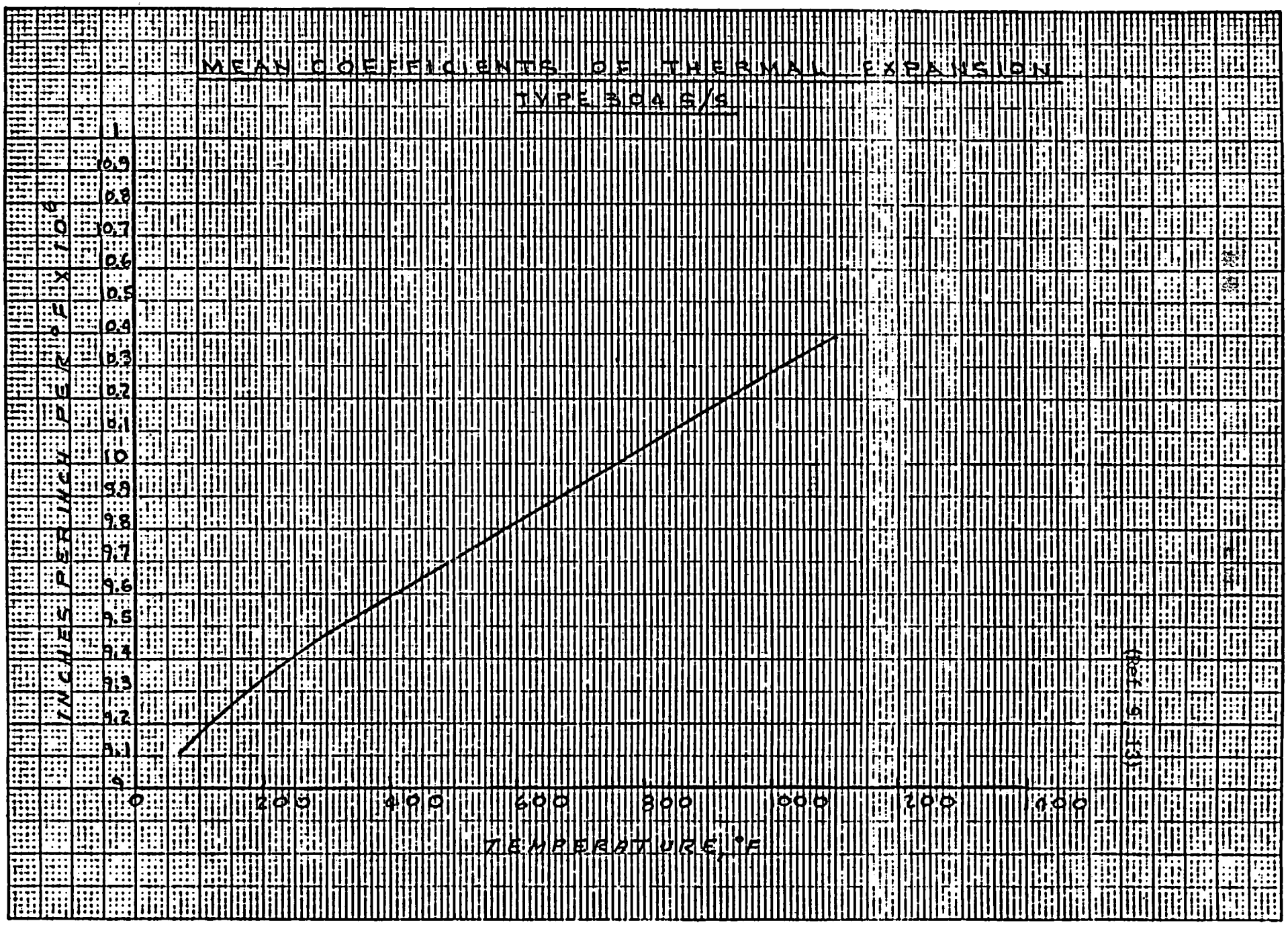
K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.

K+E 10 X 10 TO THE ½ INCH KEUFFEL & ESSER CO. 359-11 MADE IN U.S.A.



(Ref. 9, 13)

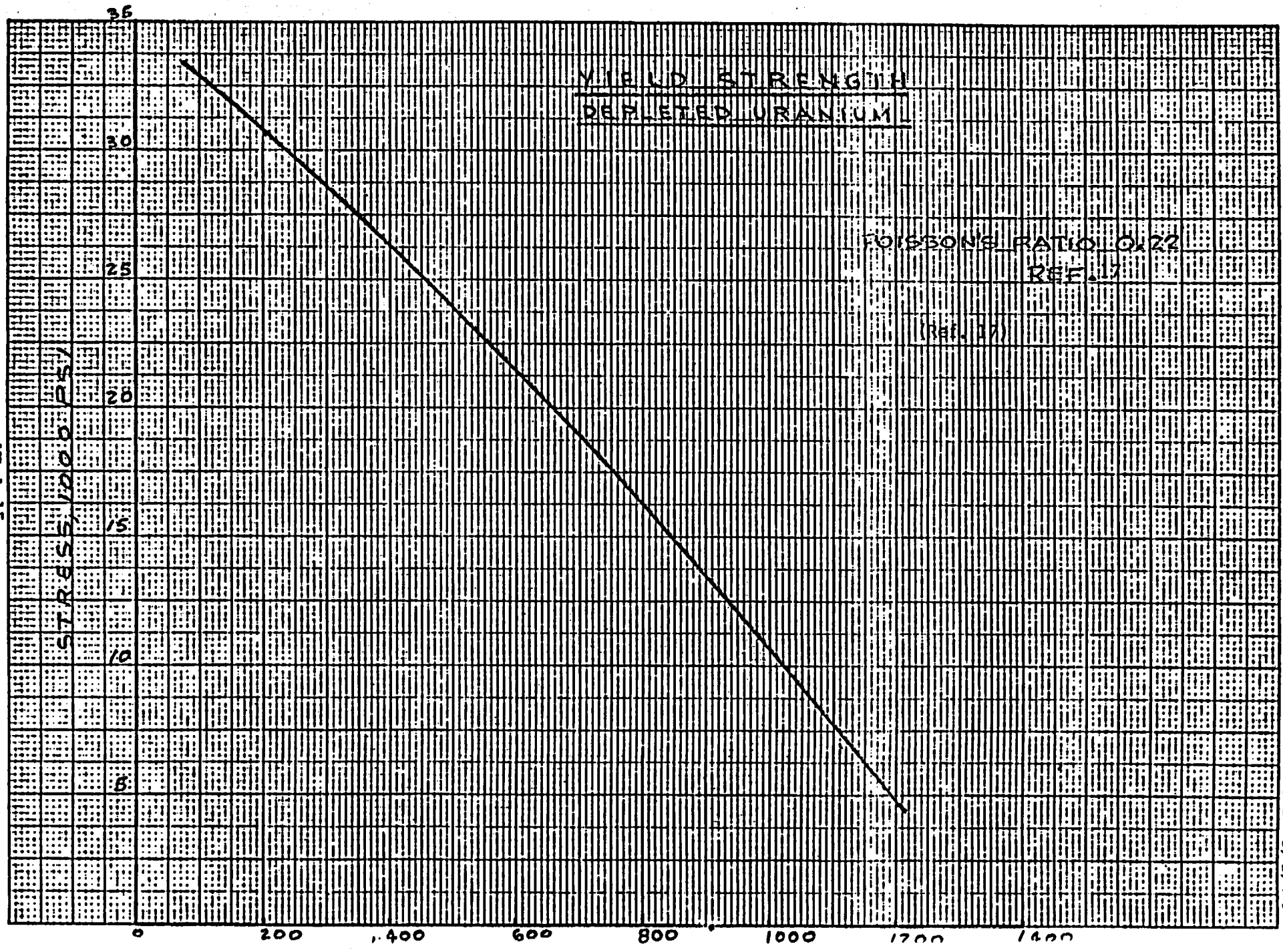
K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.

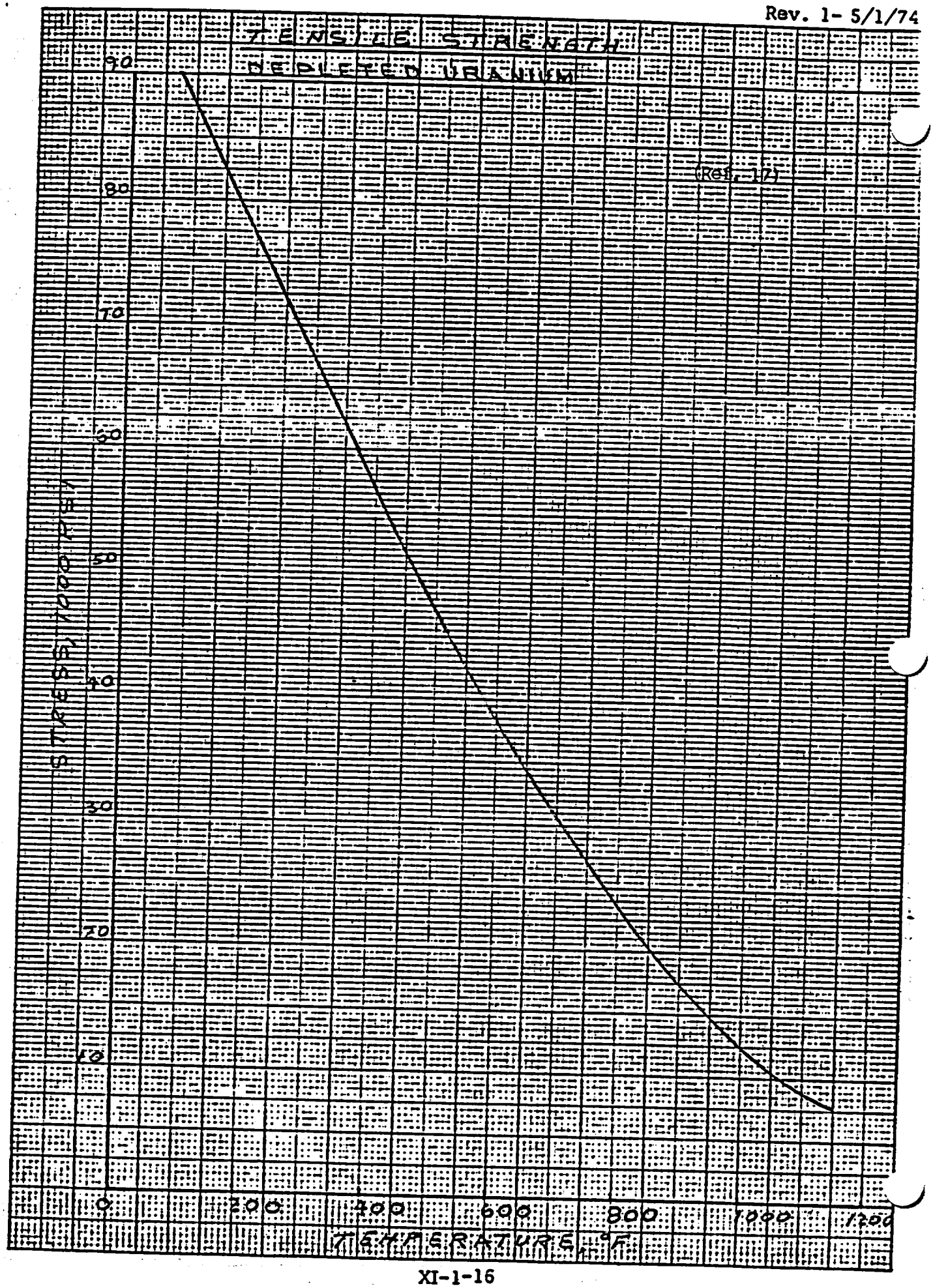


(Ref. 5, 14)

1.2.2 Mechanical and Physical Properties of Depleted Uranium.

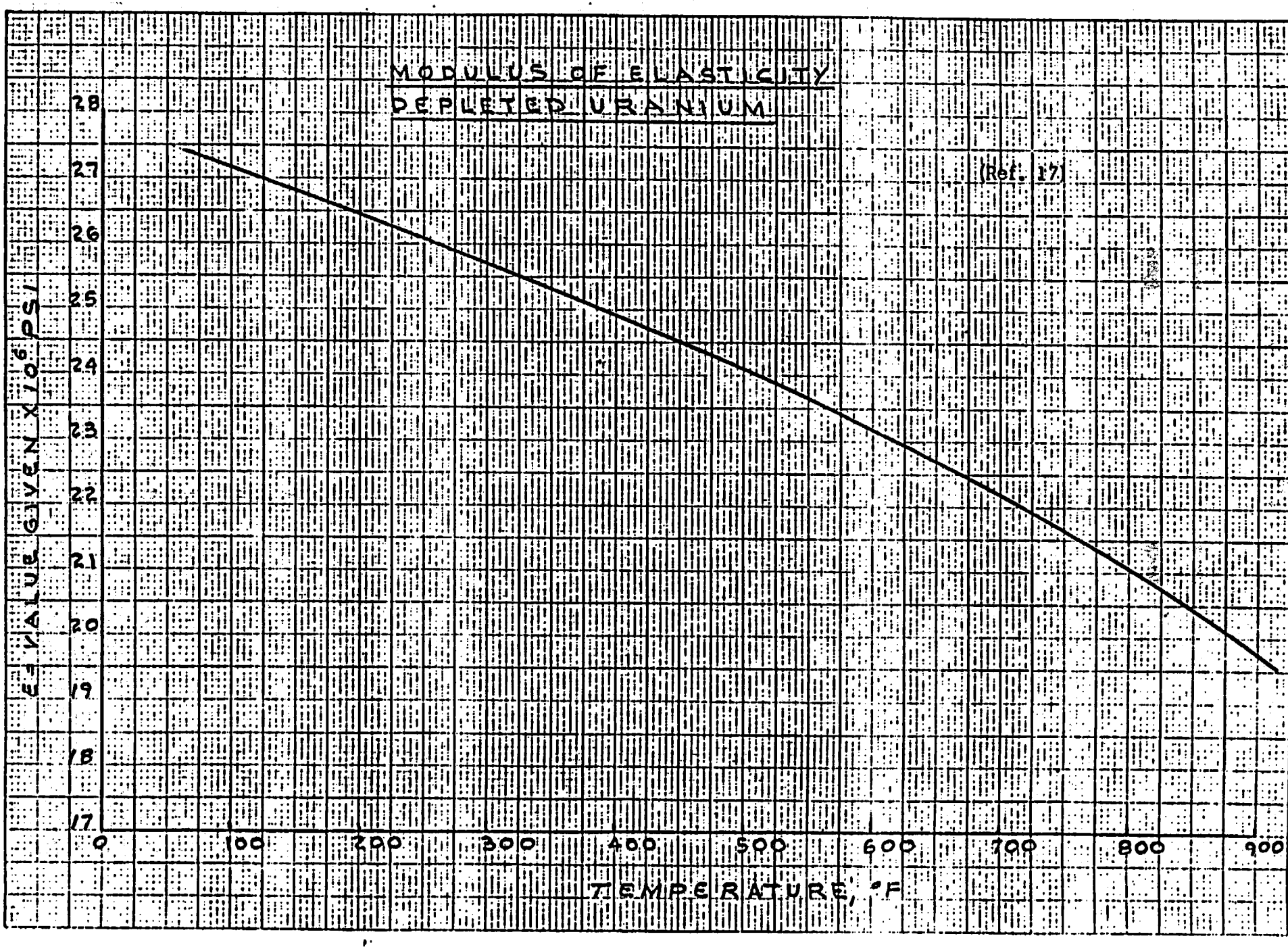
K+E 10 X 10 TO THE ½ INCH KEUFFEL & ESSER CO. 359-11 MADE IN U.S.A.





K+E 10 X 10 TO THE ½ INCH 359-11 KEUFFEL & ESSER CO. MADE IN U.S.A.

10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



MEAN DEFLECTIONS OF THE PRIMARY EXPANSION
WITH PRIMARY DEFLECTIONS
INCHES PER INCH PER °F X 10^6
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
(Ref. 1-5)
10 X 10 TO THE ½ INCH
KEUFFEL & ESSER CO.
359-11

1.2.3 Mechanical and Physical Properties of Chemical Lead

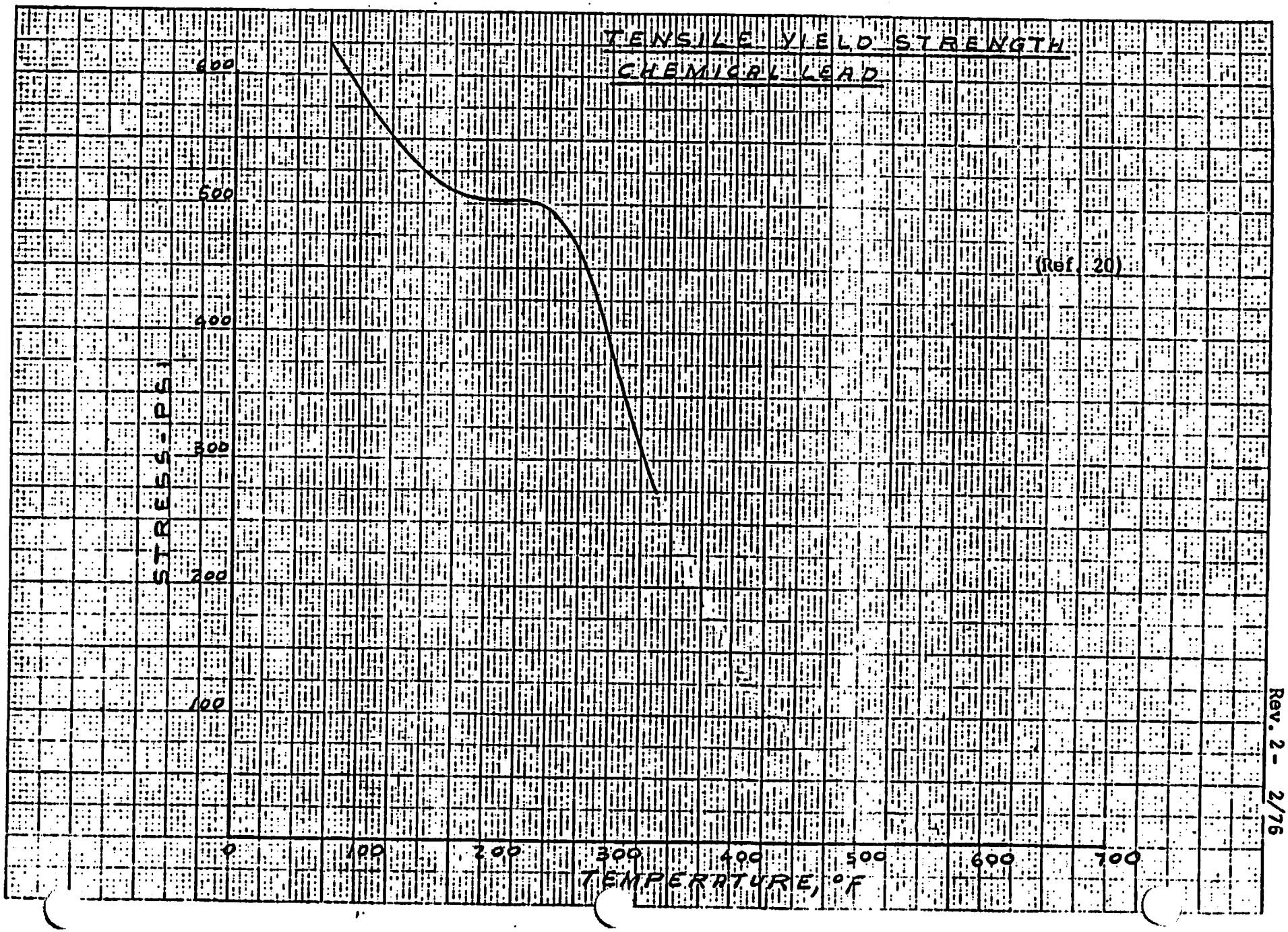
Poisson's Ratio .43 (Ref. 21)

Lead Properties

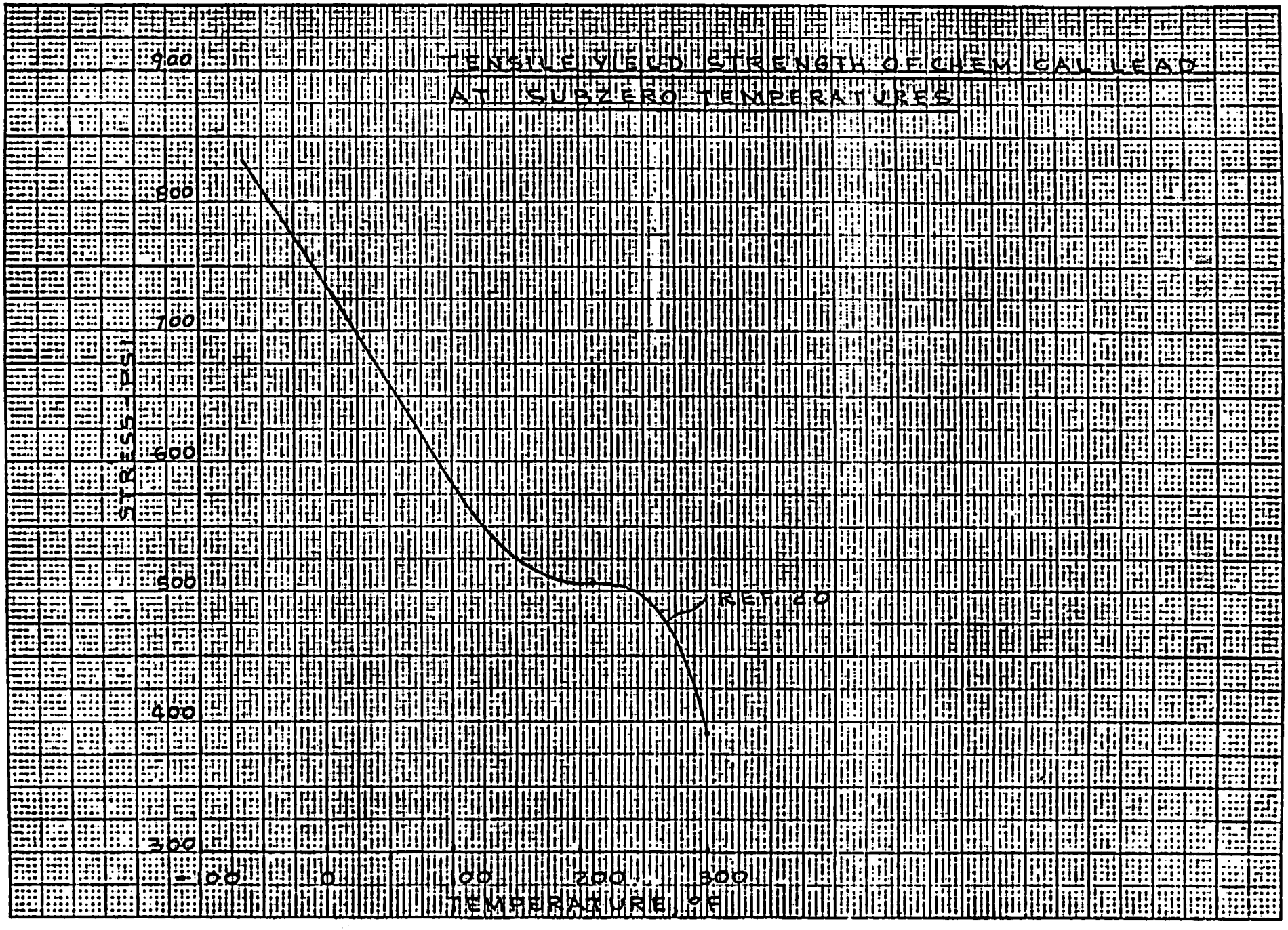
Coefficient of thermal expansion from - 418°F to 75°F (Ref. 21) equals 13.94×10^{-6} IN/IN/°F

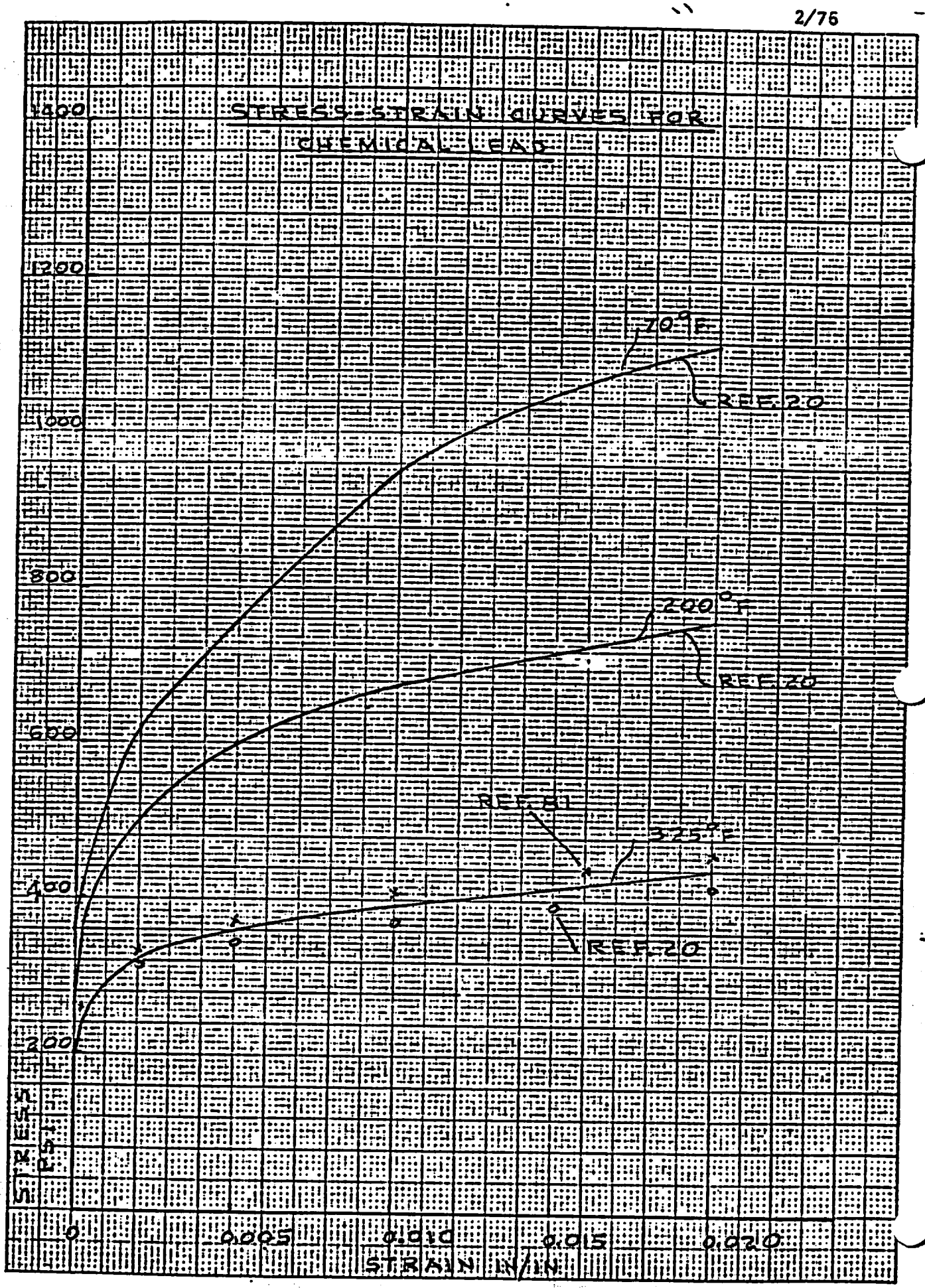
Modulus of elasticity at -40°F (Ref. 21) equals 2.58×10^{6} psi (Ref. 21)

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.

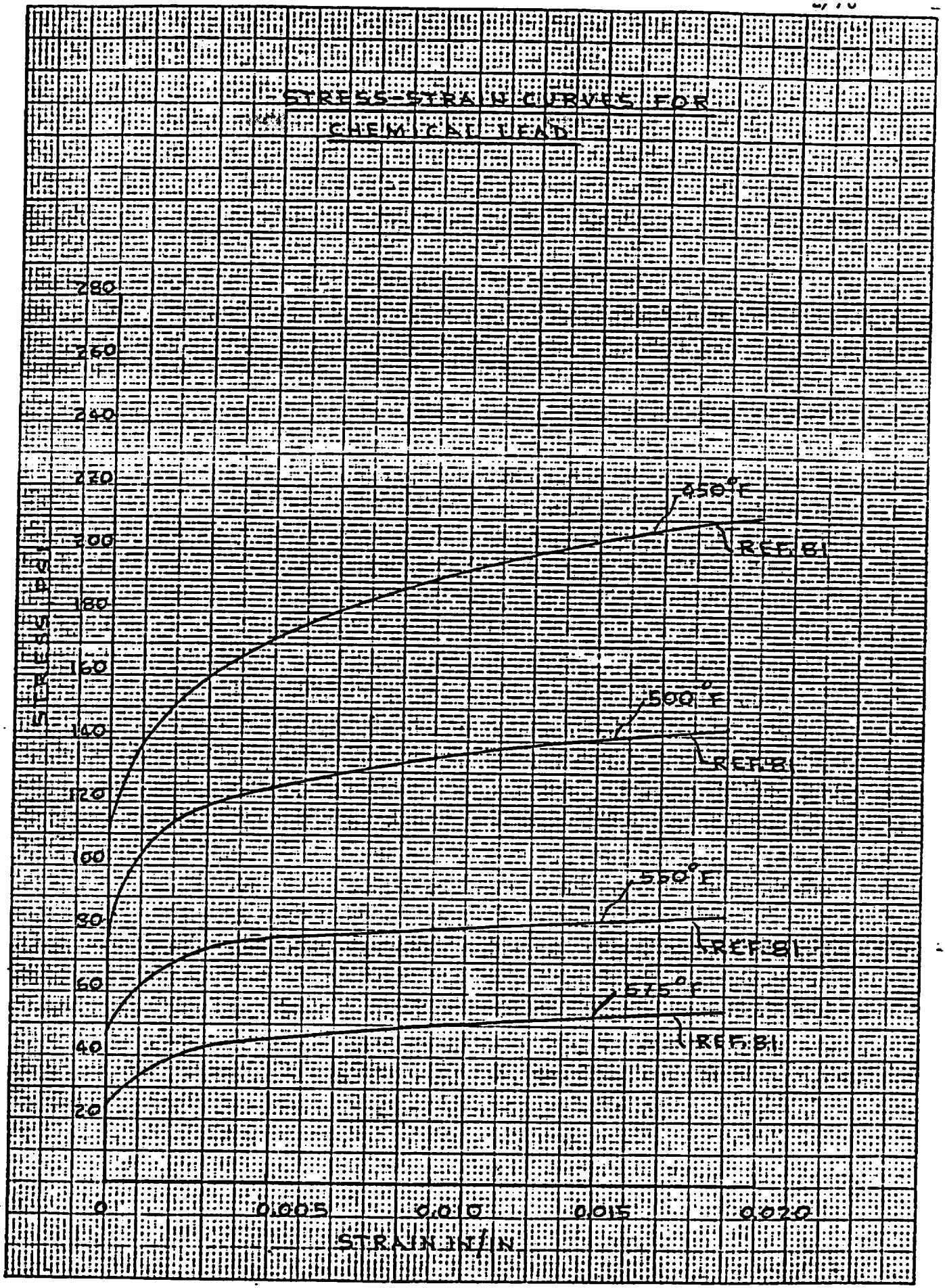


K&E 10 X 10 TO THE ½ INCH SEMI-LOG
KEUFFEL & ESSER CO. MADE IN U.S.A.





K+E 10 X 10 TO THE ½ INCH 359-11 KEUFFEL & ESSER CO.



K+E 10 X 10 TO THE ½ INCH 359-11 KEUFFEL & ESSER CO.

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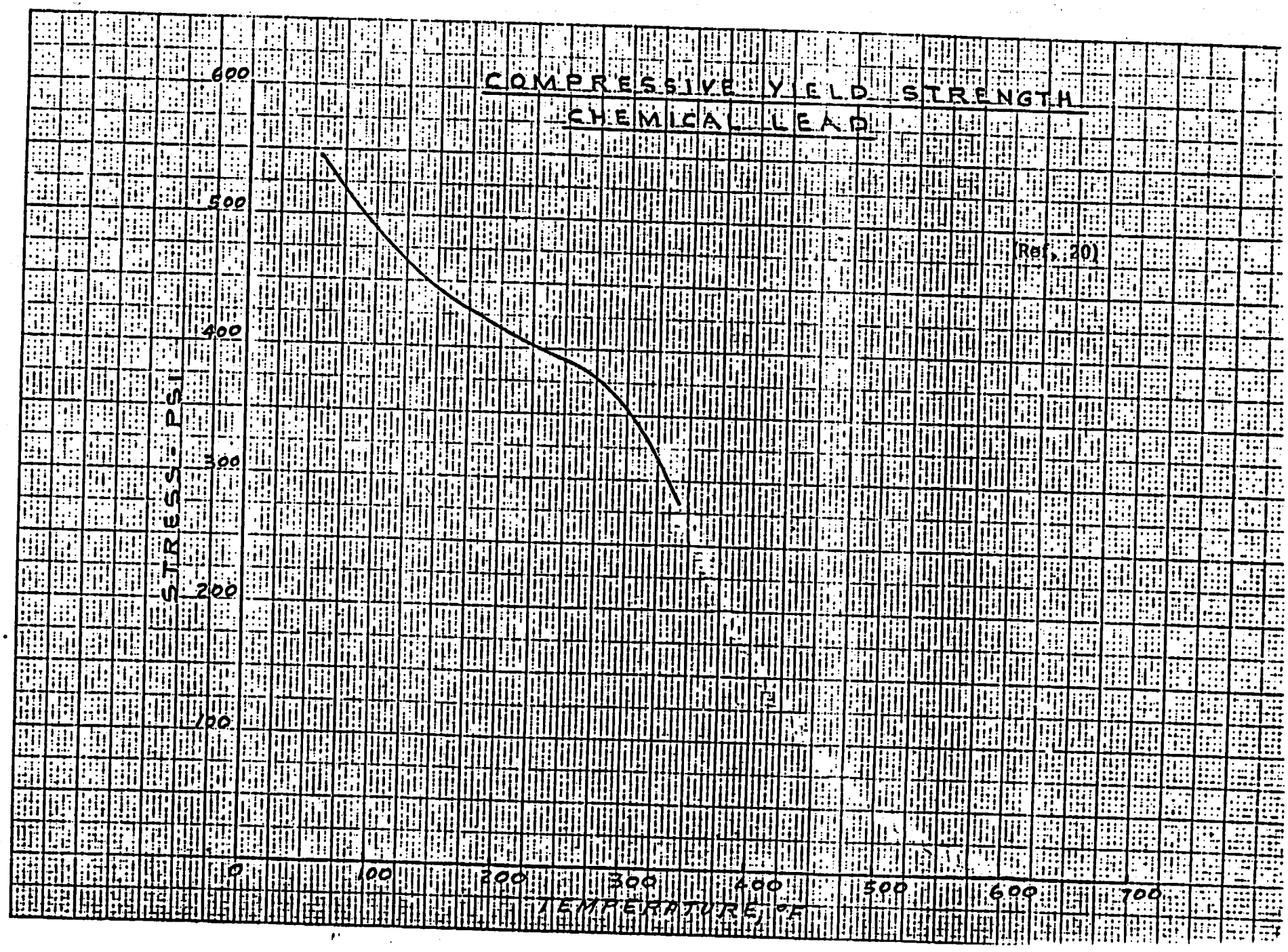
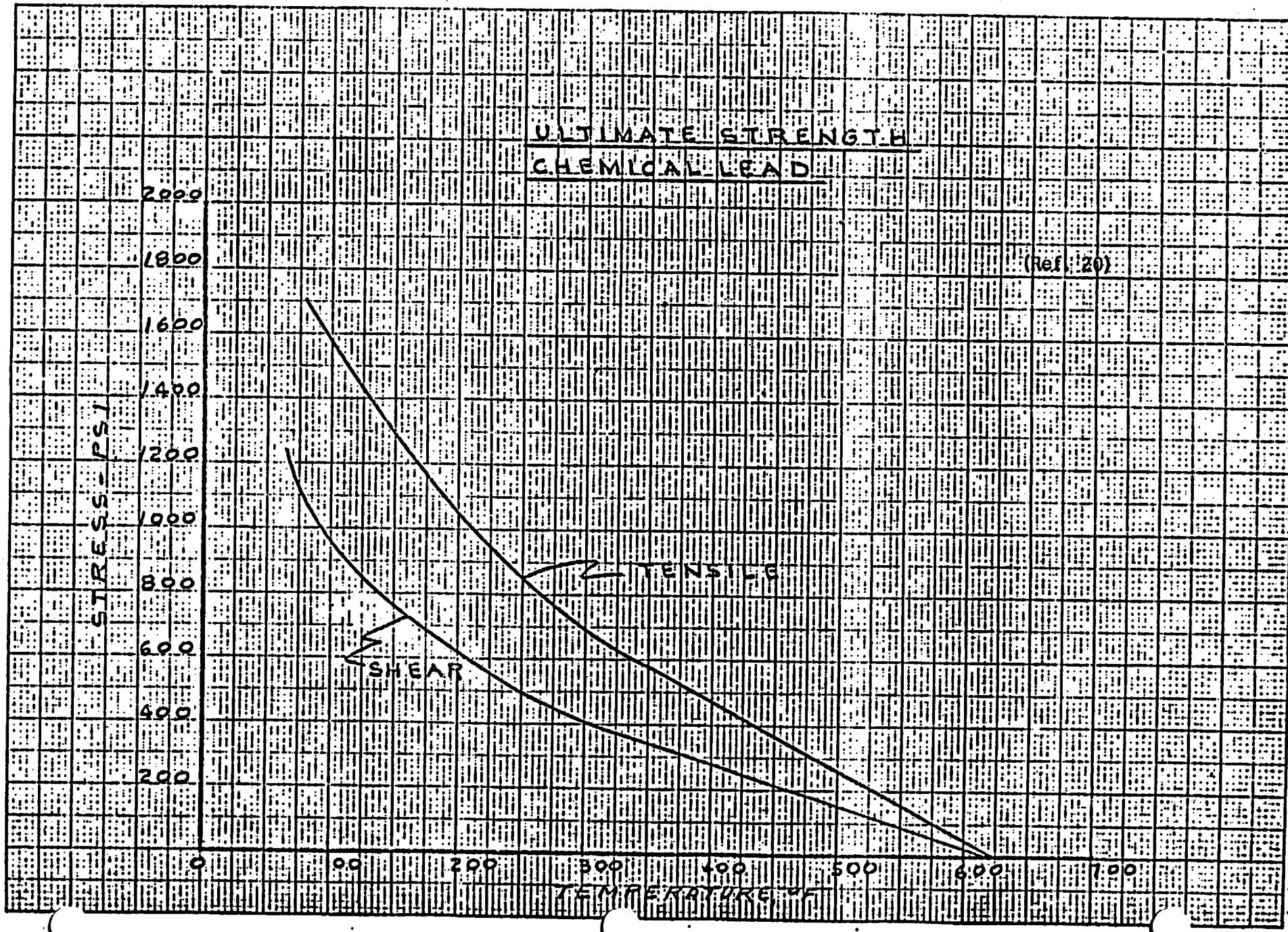
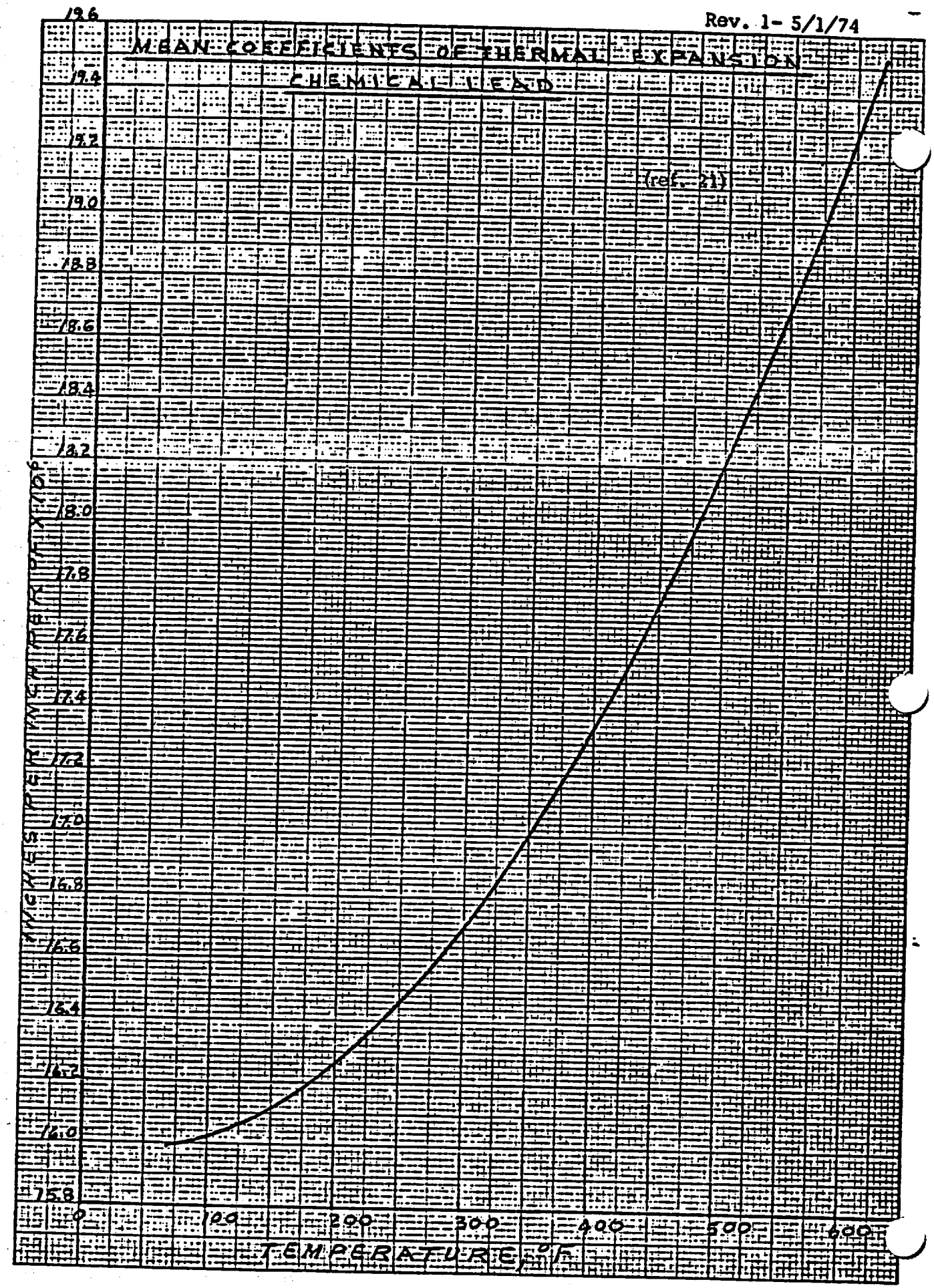

COMPRESSIVE YIELD STRENGTH
CHEMICAL LEAD
(Ref. 20)
STRESS, PSI
600
500
400
300
200
100
0
100
200
300
400
500
600
700
TEMPERATURE, °F

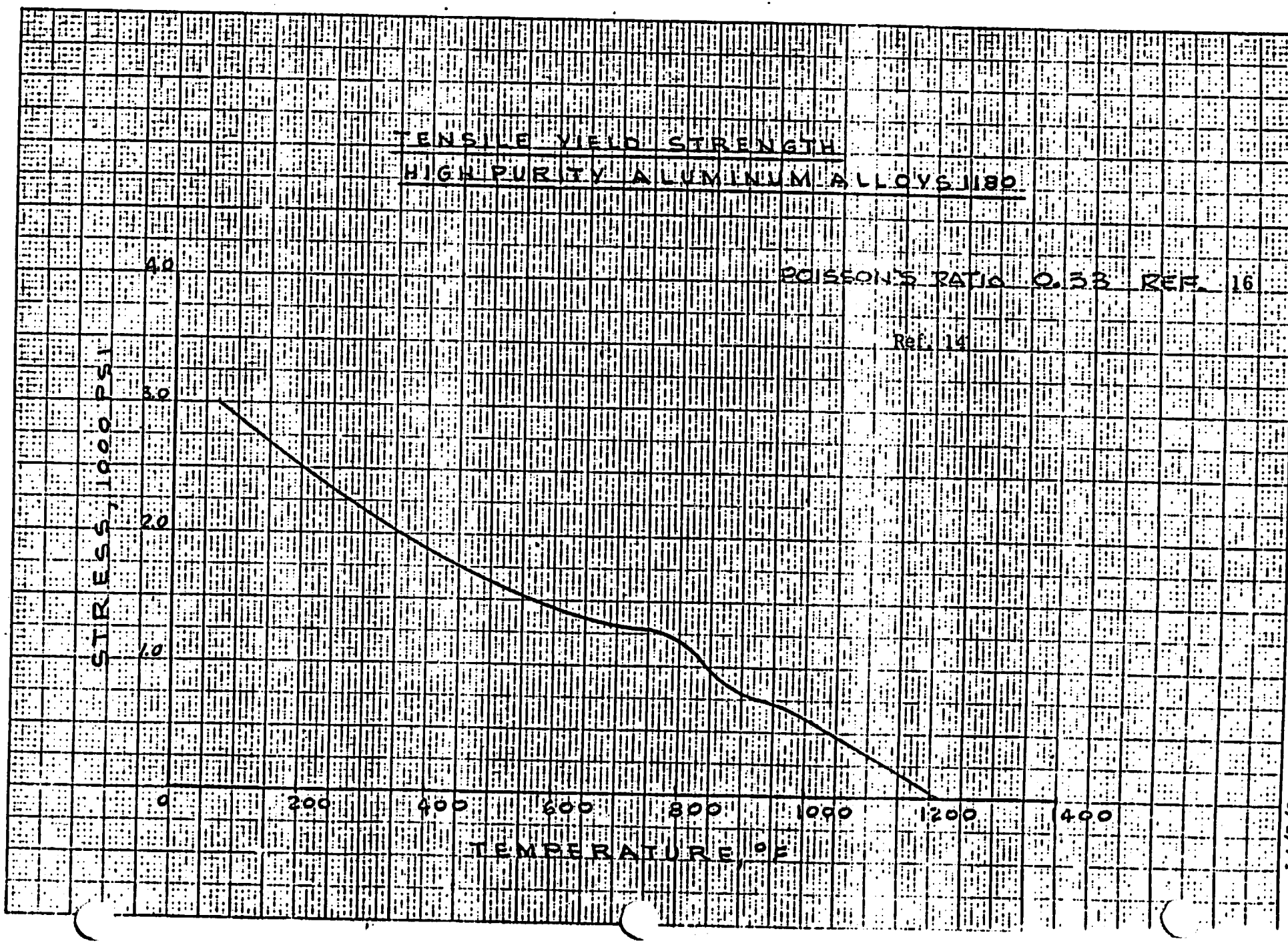

ULTIMATE STRENGTH
CHEMICAL LEAD
(Ref. 20)
STRESS - PSI
2000
1800
1600
1400
1200
1000
800
600
400
200
0
TENSILE
SHEAR
0
100
200
300
400
500
600
700
TEMPERATURE °F

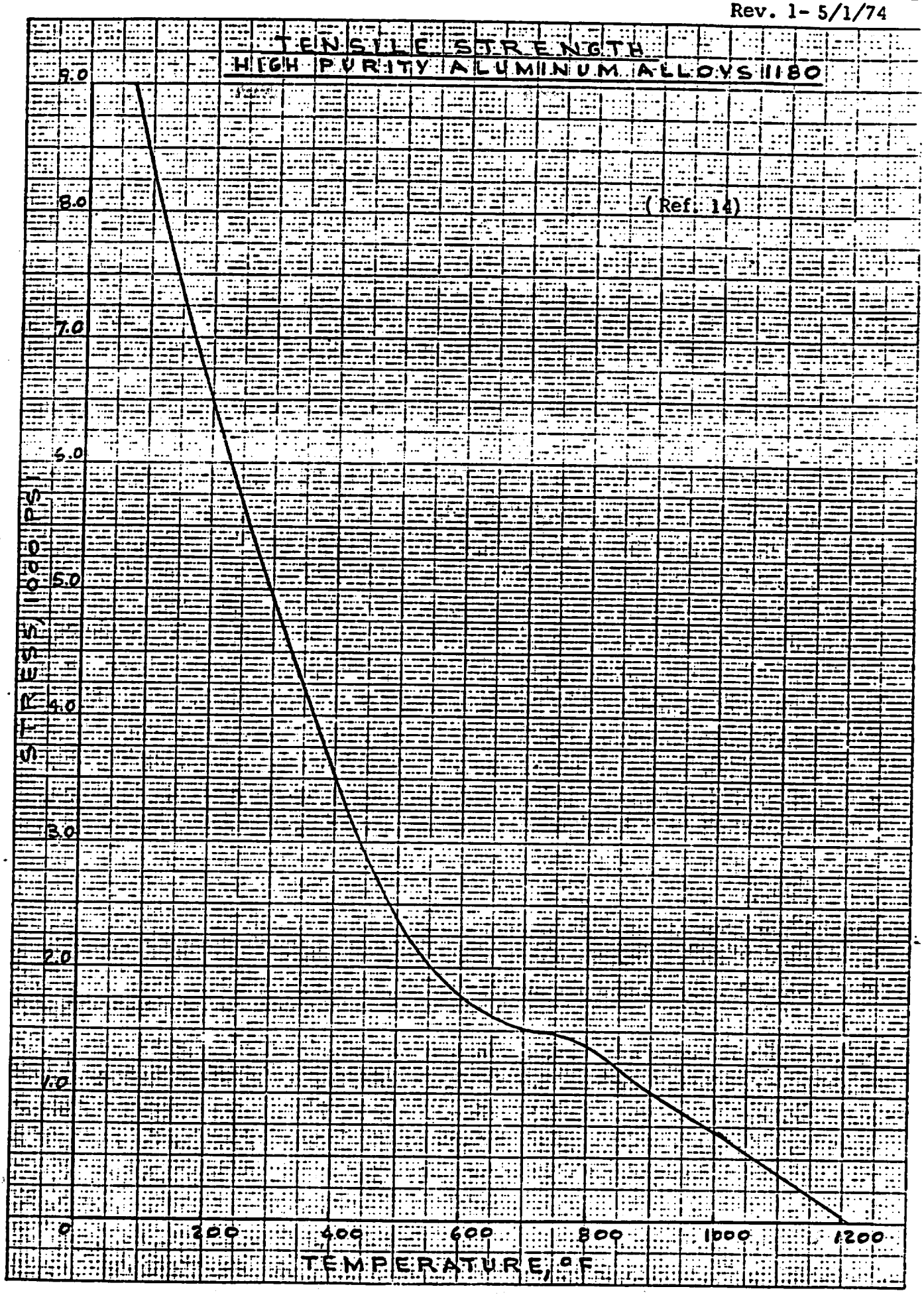
K&E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.


MEAN COEFFICIENTS OF THERMAL EXPANSION
CHEMICAL LEAD
(ref. 21)
19.6
19.4
19.2
19.0
18.8
18.6
18.4
18.2
18.0
17.8
17.6
17.4
17.2
17.0
16.8
16.6
16.4
16.2
16.0
15.8
INCHES PER INCH PER °F X 10⁶
0
100
200
300
400
500
600
TEMPERATURE, °F

1.2.4 Mechanical and Physical Properties of High Purity Aluminum Alloy 1180

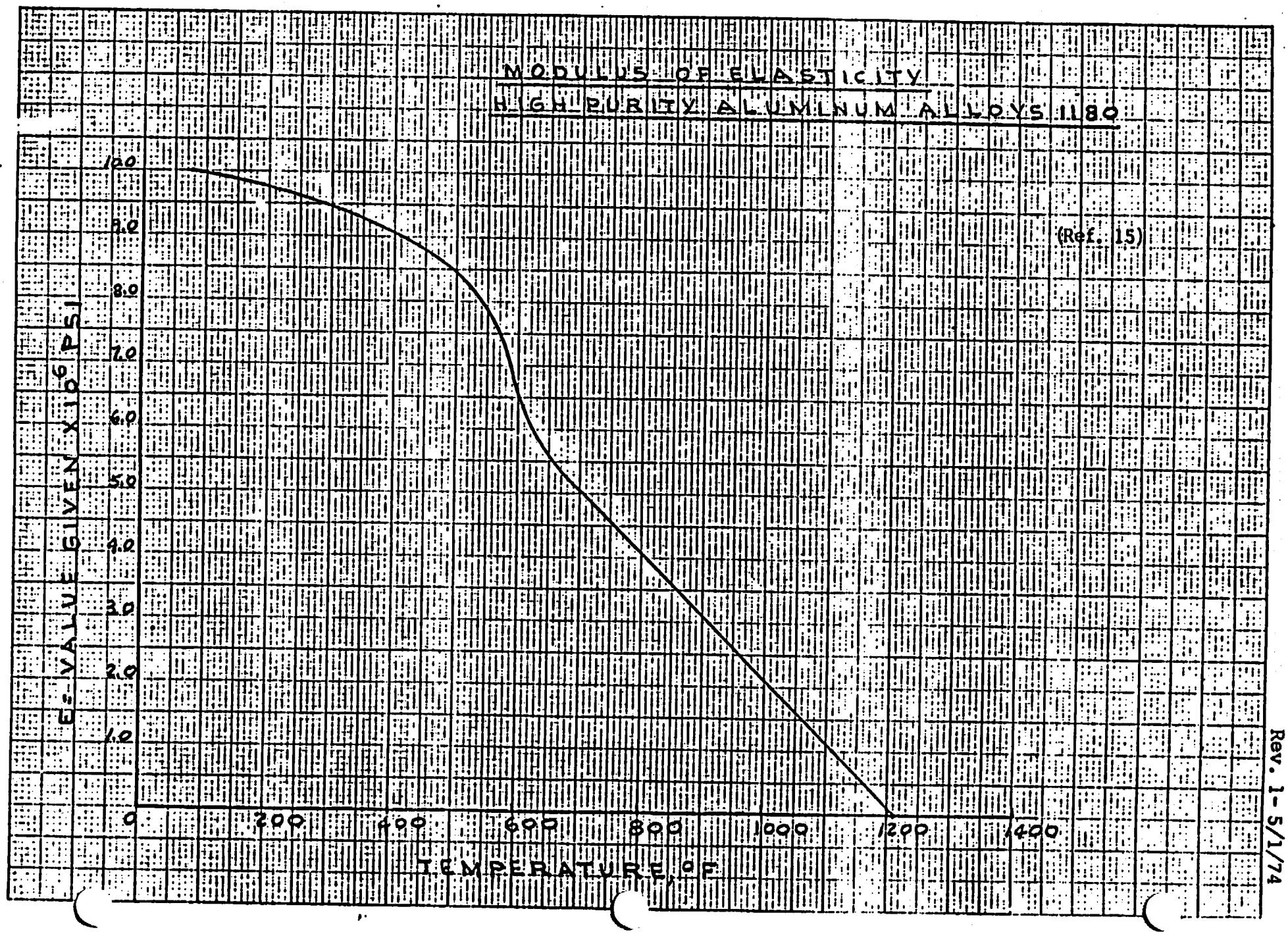
K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.





K&E 10 X 10 TO THE ½ INCH KEUFFEL & ESSER CO. 359-11 MADE IN U.S.A.

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



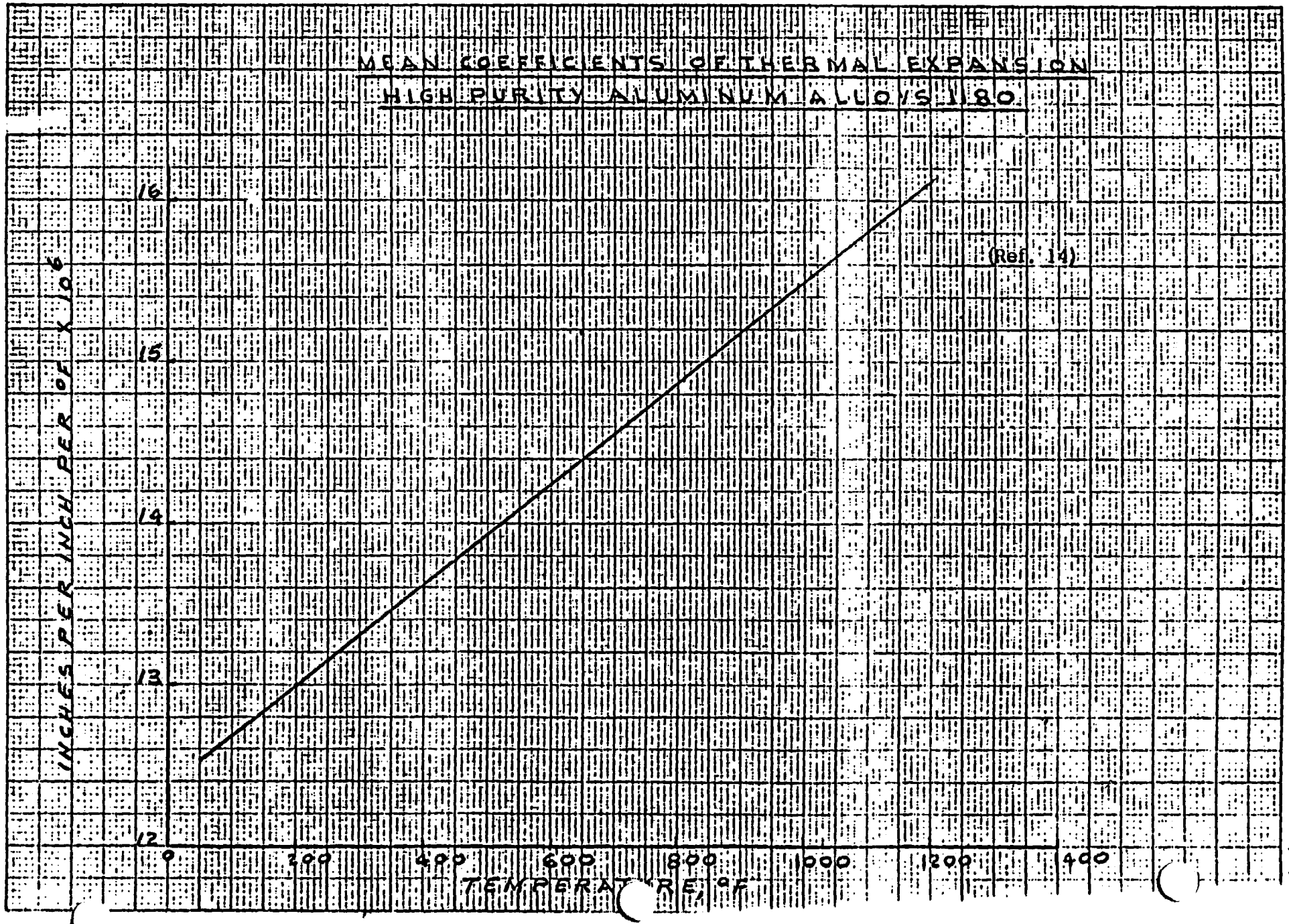
1180 Aluminum Data

Stresses σ = psi

Temperature	ϵ =.0001	ϵ =.0005	ϵ =.0020	ϵ =.01	ϵ =.10
70°F	σ = 1000	σ = 2240	σ = 2950	σ = 4500	σ = 7500
500°F	σ = 850	σ = 1330	σ = 1670	σ = 2200	σ = 2360
600°F	σ = 650	σ = 1140	σ = 1420	σ = 1850	σ = 1890
700°F	σ = 500	σ = 940	σ = 1180	σ = 1550	σ = 1590
800°F	σ = 400	σ = 750	σ = 940	σ = 1200	σ = 1280

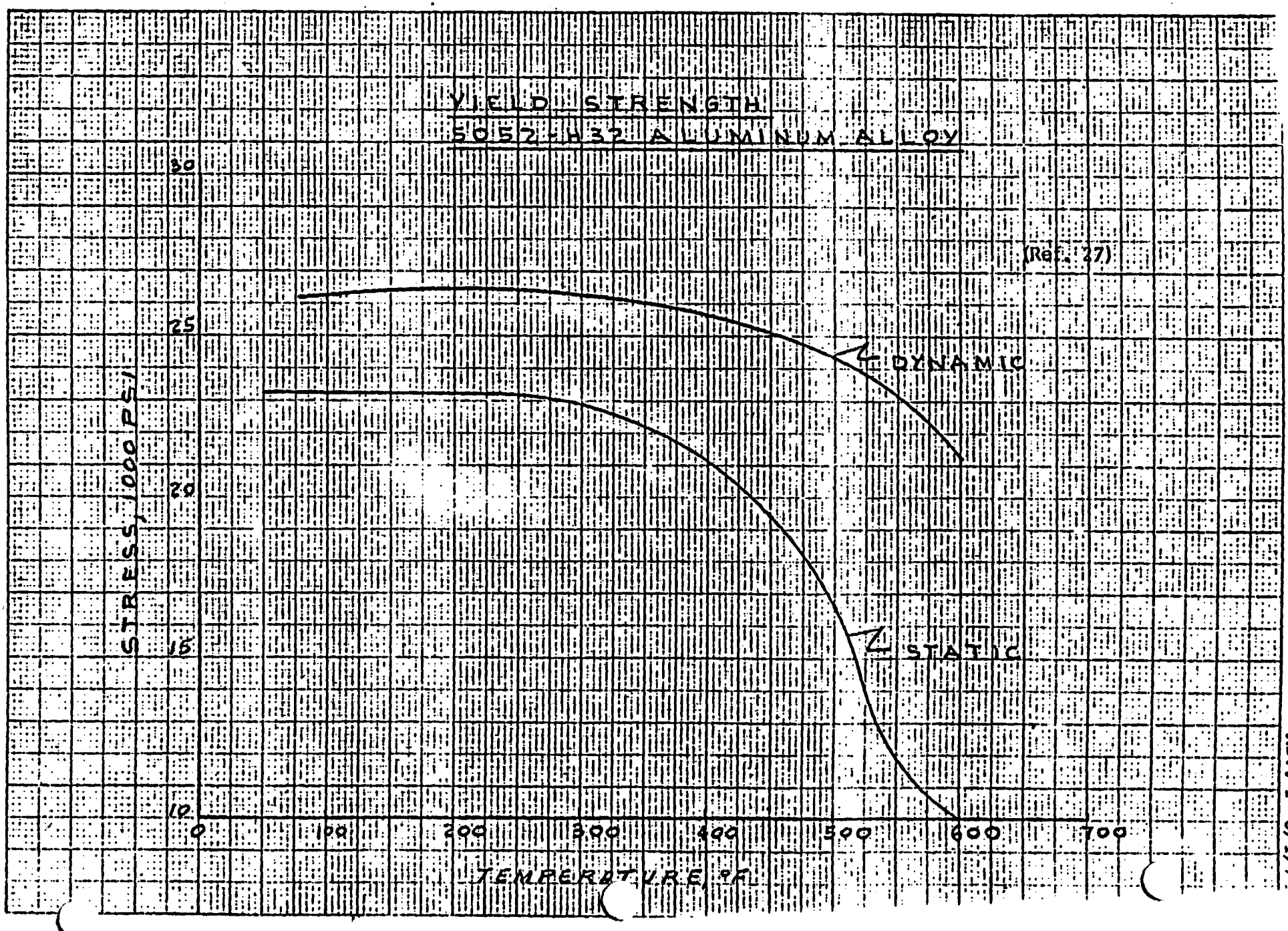
Ref. 14

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



1.2.5 Mechanical and Physical Properties of 5052-H32 Aluminum Alloy

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



5052-H32 Aluminum Alloy

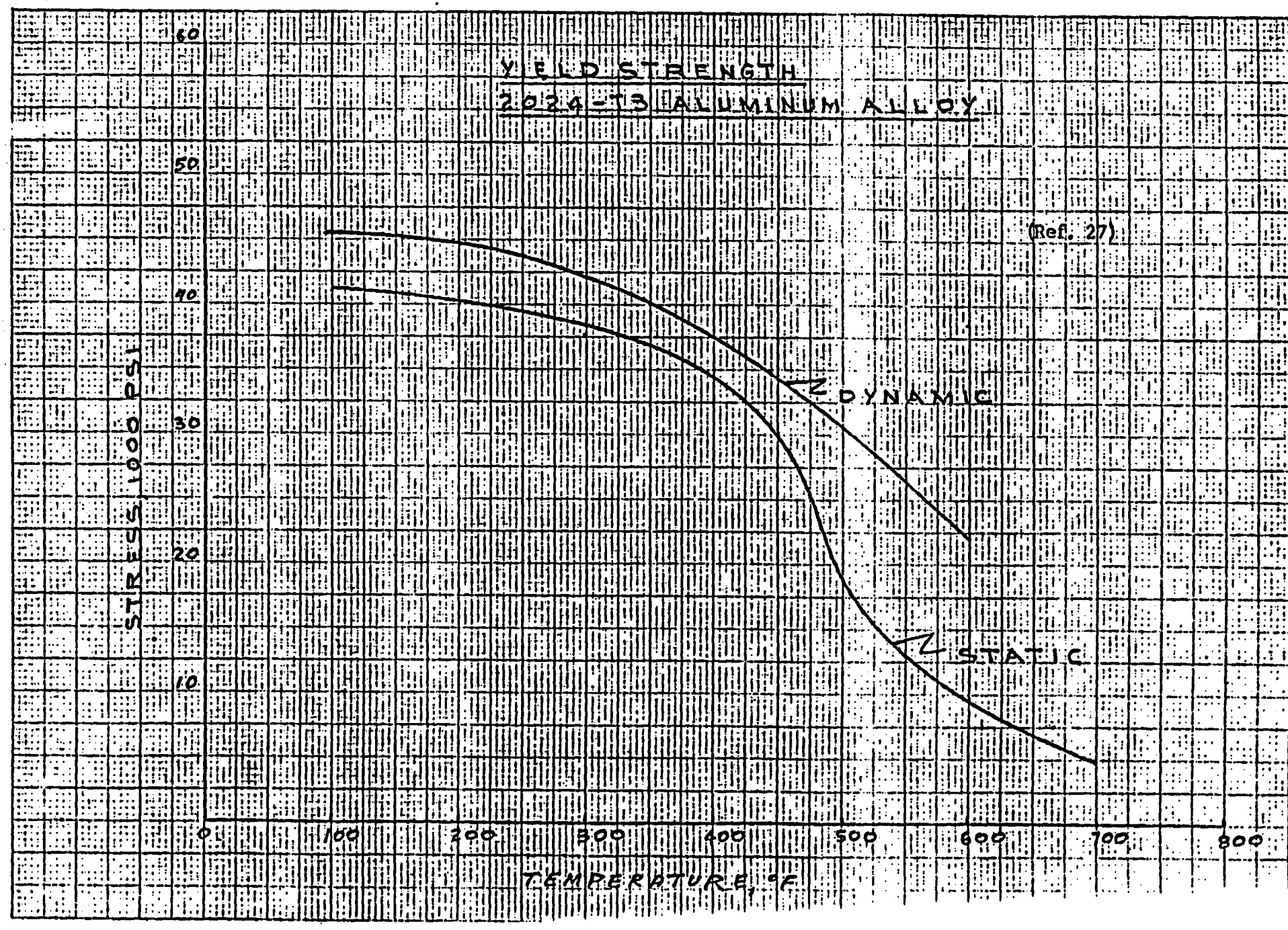
Mean Coefficient of thermal expansion (Ref. 14)

Temp. °F	α, in./in./°F
438	13.75×10^{-6}
586	14.07×10^{-6}
628	14.25×10^{-6}
886	15.04×10^{-6}
936	15.15×10^{-6}

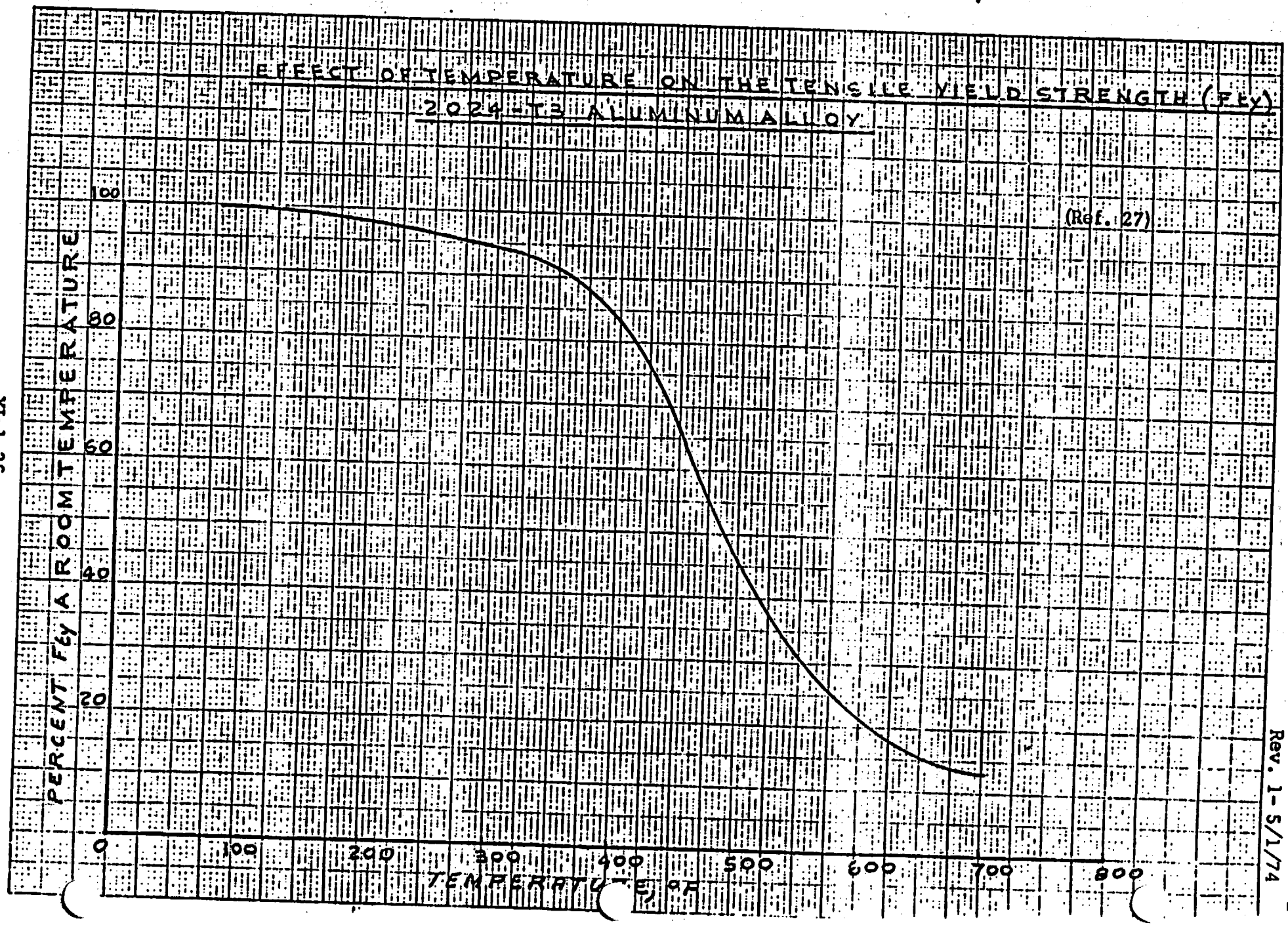
Ultimate tensile strength @ 75°F = 31000 psi
(Ref. 27)

1.2.6 Mechanical Properties of 2024-T3

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



K&E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



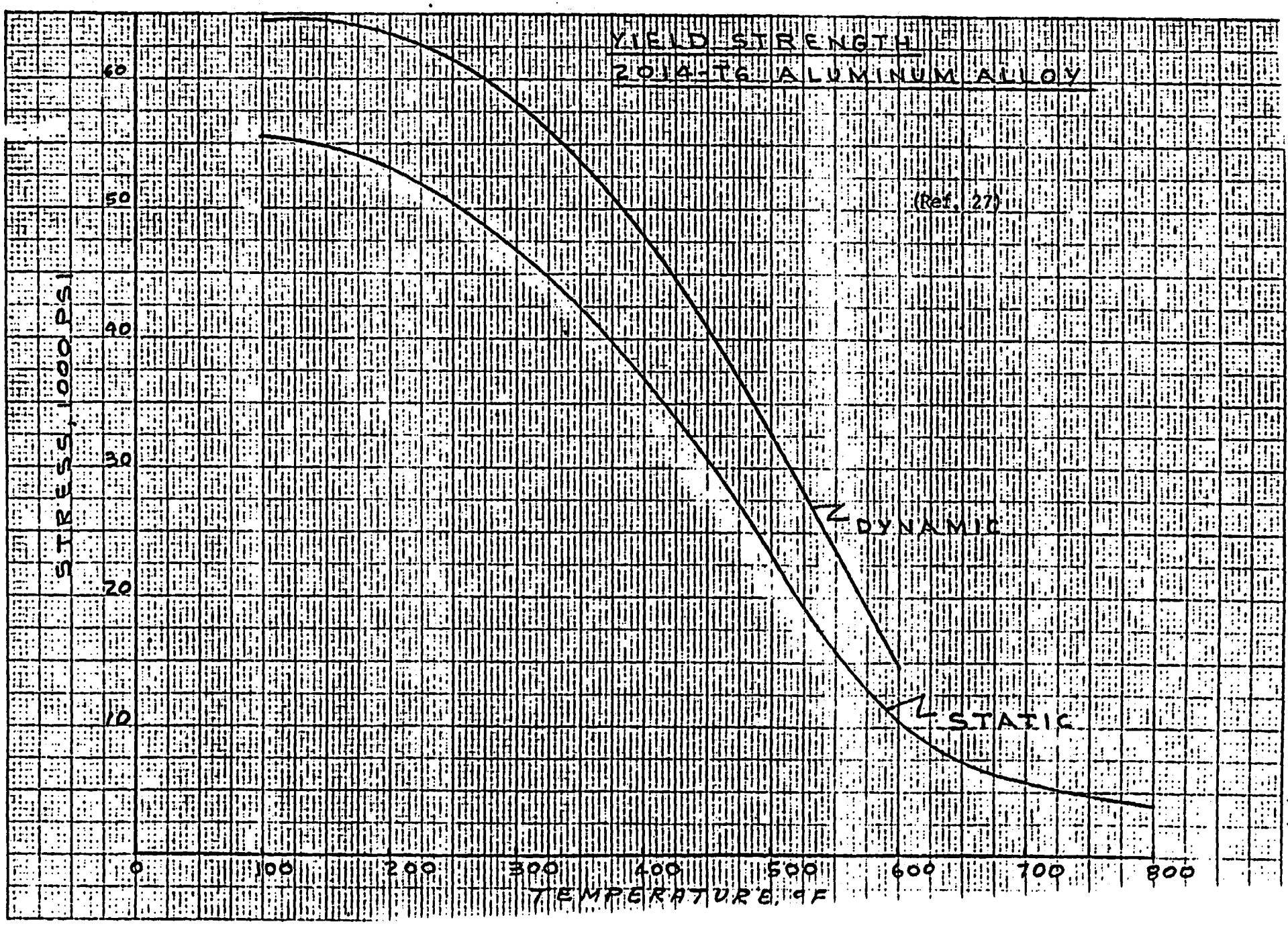
1.2.7 Mechanical and Physical Properties of AL 2024-T351

Poisson's Ratio = 0.33 (Ref. 16)

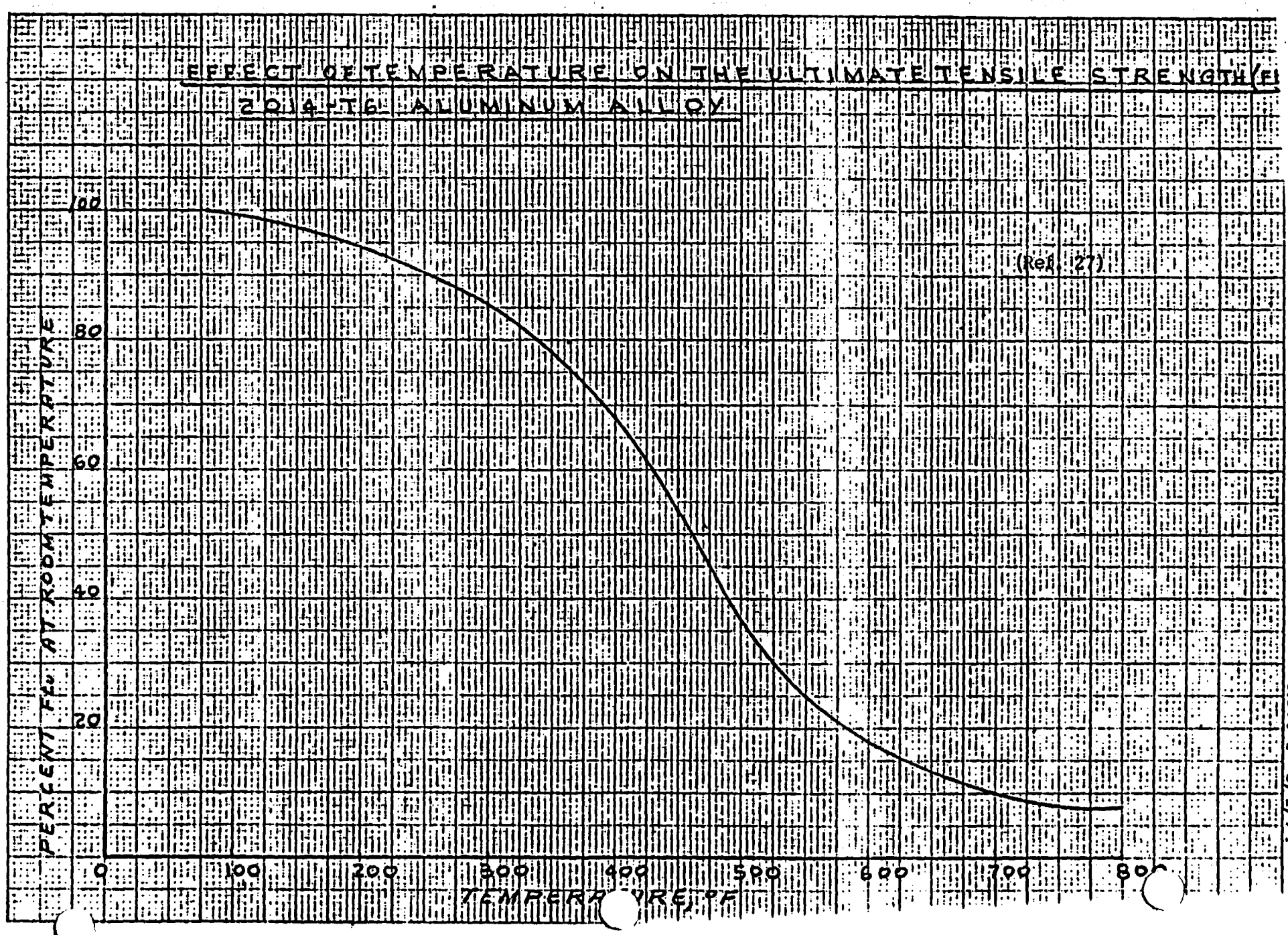
Temp. °F	Ref. 27	
	Static Yield Strength, psi	Ultimate Tensile Strength, psi
250	36080	46170
300	32390	38190
Values given are after 10,000 hour exposure at temperature		

1.2.8 Mechanical Properties of 2014-T6 Aluminum Alloy

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



1.2.9 Mechanical Properties of Inner and Outer Closure Studs.

ASTM 453 Gr. 660 (Ref. 24)

A-286 Condition STA (Ref.25)

Ultimate Tensile strength = 130,000 psi

Yield strength = 85,000 psi (Ref. 25)

Minimum Fracture Strain 15% (Ref. 25)

1.2.10 Mechanical Properties For Bolting Material Used for Miscellaneous Structural Joints .

ASTM 193 Gr. B7

Ultimate Tensile strength = 125,000 psi

Yield Strength = 105,000 psi (Ref. 24)

1.2.11 Mechanical and Physical Properties of Neutron Absorber Material

Temperature °F	E =Value Given x 10^6 psi
77	11.52
212	11.13
392	10.62
572	9.86
600	9.68

Ref.

Ultimate tensile strength 42800 psi (Ref. 19)

Yield strength 10500 psi (Ref. 19)

$\alpha_{(77°F \text{ to } 932°F)} = 12.5 \times 10^{-6}$ in/in/°F (Ref.19)

1.2.12 Mechanical and Physical Properties of Ricorad PPC-V (Solid Neutron Shield Material).

Tensile stress at room temperature = 2500 psi

Elongation at room temperature = 30%

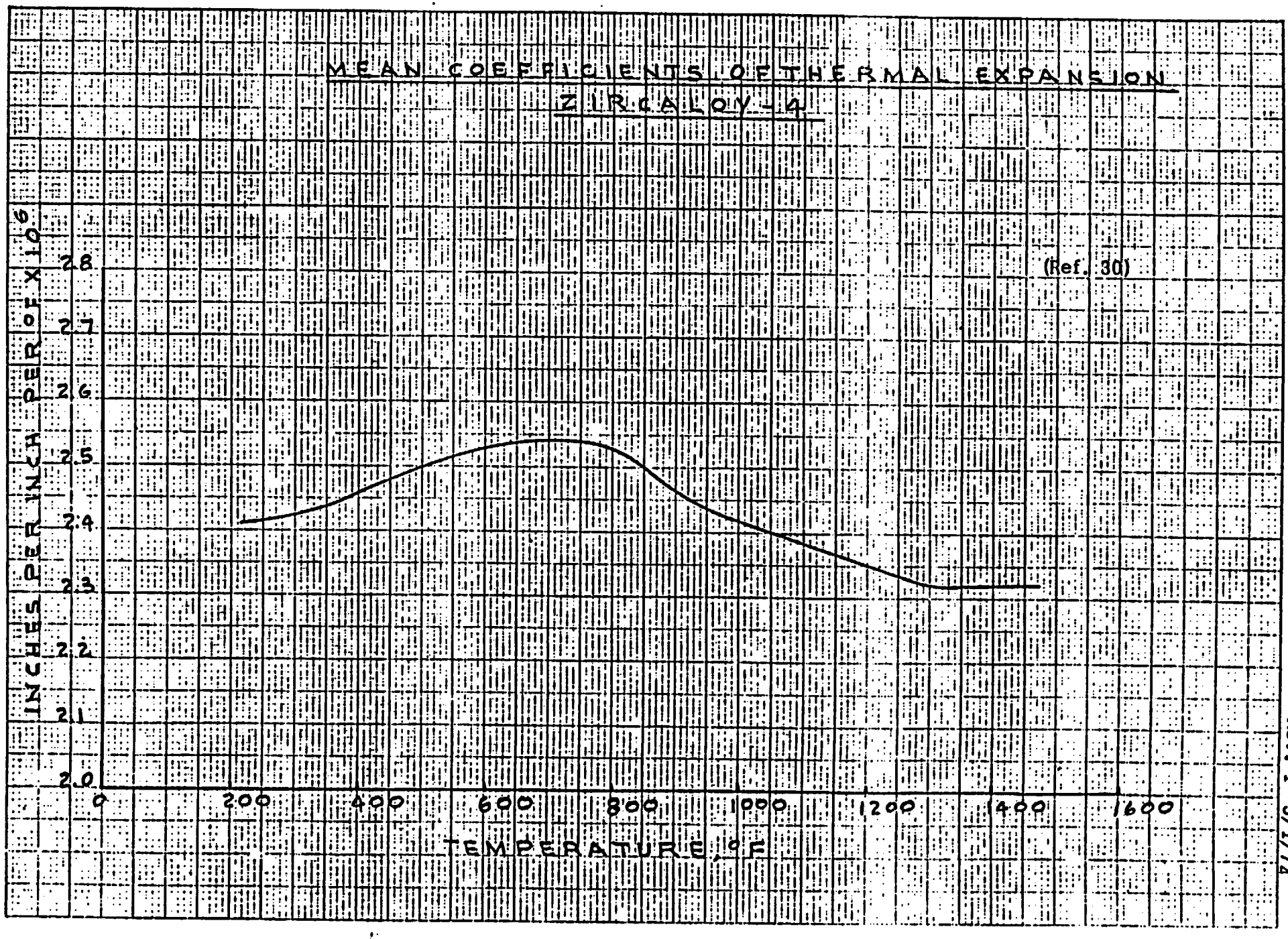
Melting point °F none - Excellent high temperature stability, no melting, sag or slump at 600°F

Coefficient of Linear Thermal Expansion = 1.51×10^{-4} in/in/°F

Ref. 28,29

1.2.13 Physical Properties of Zircaloy-4

K+E 10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO. MADE IN U.S.A.



1.2.14 Mechanical and Physical Properties of Viton

Mechanical properties of Viton

Tensile strength 1735 psi

Elongation 190%

100% modulus, 880 psi

Hardness, Durometer A 79

Viton mechanical properties exceeds mechanical properties of AMS-7278D, MIL-R-83248, AMS-7280

Physical properties of Viton

Specific gravity 1.80 to 1.86

Coefficient of linear expansion 88 x 10^{-6} in./in./^{o}F.

High Temperature

Viton withstands high temperature and simultaneously retains its good mechanical properties better than any other elastomer. Oil and chemical resistance also are relatively unaffected by elevated temperatures. Compounds of Viton remain usefully elastic indefinitely when exposed to laboratory air oven aging up to 400°F or to intermittent test exposures up to 500°F. Continuous service limits are generally considered to be:

3000 hours at 450°F

1000 hours at 500°F

240 hours at 550°F

48 hours at 600°F

For fleeting exposures to 1000 plus °F, where a rubber part must perform a function and then is destroyed. Viton often can provide the necessary temporary protection.

Ref. 31

1.2.15 Mechanical Properties of Aluminum

6061-T6511

Ultimate Tensile Strength = 42000 psi

Yield Strength = 36000 psi

Ref. 27

1.2.16 Mechanical Properties of Carbon Steel

ASTM - A36

Ultimate Strength = 72000 psi

Yield Strength = 36000 psi

Ref. 45

1.2.17 Mechanical Properties of Aluminum Bronze

ASTM - B148 - 954HT

Ultimate Tensile Strength = 90 000 psi

Yield Strength = 45000 psi

Ref. 46

1.2.18 Mechanical Properties of Low Alloy Steel

ASTM - A514 - GRH

Ultimate Tensile Strength = 115000 psi

Yield Strength = 100000 psi

Ref. 45

1.2.19 Mechanical Properties of Carbon Steel

AISI-1042

Ultimate Tensile Strength = 72000 psi

Yield Strength = 40000 psi

Ref. 11

1.2.20 Brake Lining - Molded Compound D - 53OA

Coefficient of Friction .45

Ref. 47

1.2.21 Mechanical Properties of Alloy Steel Bolts

ASTM - A354 - GRBD

Ultimate Tensile Strength = 150000 psi

Yield Strength = 125000 psi

Ref. 24

1.2.22 Mechanical Properties of Carbon Steel

ASTM - A441

Ultimate Tensile Strength = 67000 psi

Yield Strength = 50000 psi

Ref. 45

1.2.23 Mechanical Properties of 17-4pH Condition H-1150 Stainless Steel.

Ultimate Tensile Strength = 135000 psi

Yield Strength = 105000 psi

Ref. 25

1.2.24 Mechanical Properties for Bolting Material

ASTM - A193 Class 2 Grades B8, B8C, B8T

	Temperature - °F		
Property	68	325	400
Yield Strength (psi)	100,000	88,000	86,500
Ultimate Strength (psi)	125,000	103,750	99,400

Refs. 24, 27

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2.0 General Standards for All Packages

The following analysis satisfies the requirements of the following standards :

10 CFR, 71.31 General Standards for All Packaging

10 CFR, 71.32 General Standards for Large Quantity Packaging

10 CFR, 71.35 Standards for Normal Conditions of Transport

The vehicle and package tie-down system have been designed to satisfy the following criteria.

Vehicle

The rail car has been designed and constructed in accordance with the Association of American Railroads "Specification for Design, Fabrication and Construction of Freight Cars." This specification establishes the analytical methods, load factors ("g" loads), allowable stress levels and load combinations to be used in the design of a freight car. The specification also requires that the loaded prototype car be impact tested to prove the structural adequacy of the car under the prescribed loading conditions.

The prototype car will be fitted with the cask support and tie-down arrangement as described in this safety analysis report. A set of neutron shield expansion tanks, connecting lines and supports will also be fitted to the prototype car for testing. A simulated cask structure of approximately the same dimensions as the actual cask will be positioned on the car in the same manner as the actual cask. The mass and location of center of gravity of the simulated cask structure will be the same as the actual cask.

Package Tie-down System

The tie-down system comprises, for each end of the cask, a lug (or lugs) welded to the cask, plates welded to the center sill of the rail car, a pin thru the aligned lugs and plates, and a pair of flat saddle supports, also welded to the center sill and side sills of the rail car.

The cask lugs, as part of the cask, are required to sustain simultaneous loadings of 10g longitudinally, 5g transversely and 2g vertically without exceeding 90% of the yield stress of the materials involved.

The pins are subject to the same requirements as the lugs on the cask.

The tie-down plates and support saddles, as welded parts of the car itself, are designed to the same requirements except that the transverse loading of 5g is reduced to 2g, which is considered a safe and satisfactory design criteria for the rail car itself.

2.0 Summary of Results

Tabulation of Stress vs Allowables

	Combined psi	All. psi	M.S.
Lifting Devices (Sect. 2.1)			
Cask Trunnions			
Weld at root	12577	24750	.968
Root of trunnion	18691	24750	.324
Outer Closure Lift Lug (Sect. 2.1.2)	4500 lbs.	23400 lbs.	4.0
Inner Closure Lift Lug (Sect. 2.1.3)			
Eye bolt tension	9437 lbs.	46,850 lbs.	3.96
Expansion Tanks (Sect. 2.2.4)			
Support	7871	37,500	3.76
Cylinder in saddle	603	19,350	31.08
Bolts in base	14294	78250	4.47
Tank in bending	74	37,500	479.

2.1 Lifting Devices 10 CFR 71.31 c

Requirement: "the system shall be capable of supporting three times the weight of the loaded package without generating stress in any material of the packaging in excess of its yield strength."

2.1.1 Cask Trunnions

Loaded package weight 200,000 lbs.

Design Load = 3 x 200,000 = 600,000 lbs.

Cask is provided with four trunnions. Only two trunnions will be used at any one time to lift the cask. Therefore, the design load per trunnion is 300,000 lbs. Yield stress of 304 SS at 200 $^{\circ}$F. is 24,750 psi min. from 1.2.