INFORMATION ONLY

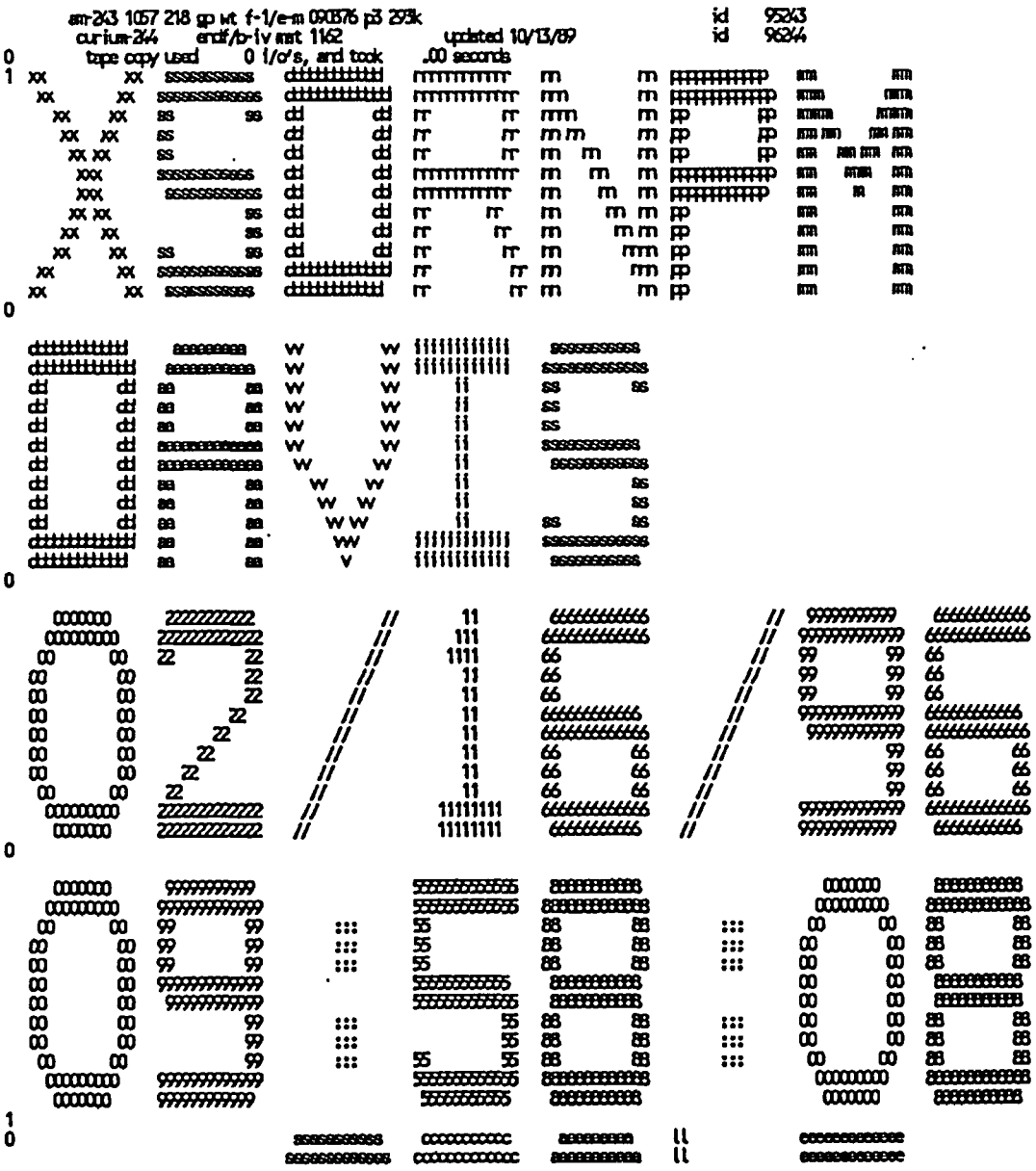
```
0absorption      1.95477E+02
 fission         1.07614E+00
- elapsed time    .35 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                          95243    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.940          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density   = 4.1914475E-10
0spin factor (g)          = 82052.602          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 4.0740025E+08
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 4.3699021E+08
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  13     -6.604252E-03    .000000E+00    4.386608E-04
  14      2.231602E-02    .000000E+00    2.371130E-04
0excess resonance integrals
0                resolved
0absorption      1.60152E+02
 fission         .00000E+00
- elapsed time    .35 min.
0 curium-244    endf/b-iv mat 1162          updated 10/13/89          96244    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  242.133          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.320          lumped nuclear density   = 9.1373150E-12
0spin factor (g)          = 5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.8688168E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 2.0045511E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      2.582341E-04    7.064275E-06    3.053164E-04
  12      6.932982E-04    3.252501E-05    1.372209E-04
  13      2.720734E-03    1.336612E-04    7.128655E-04
  14      8.467852E-02    5.066256E-03    1.605748E-02
0excess resonance integrals
0                resolved
0absorption      6.13904E+02
 fission         3.54222E+01
- elapsed time    .35 min.
- elapsed time    .35 min.
1     this xsdrn working tape was created 02/16/96 at 09:56:57
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
        tape id                    4321     number of nuclides          65
        number of neutron groups     27     number of gamma groups       0
        first thermal group          15     logical unit                 4
                          table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                 id    999
      hydrogen      endf/b-iv mat 1269/thrmal002   updated 10/13/89     id   1001
      b-10 1273 218ngp 042375 p-3 295k                                   id   5010
```

INFORMATION ONLY

```
boron-11        endf/b-iv mat 1160          updated 10/13/89        id   5011
oxygen-16       endf/b-iv mat 1276          updated 10/13/89        id   8016
oxygen-16       endf/b-iv mat 1276          updated 10/13/89        id      6
kr-83           mt=102,103,103,105,106,107  updated 10/13/89        id  36083
kr-85             mt=  102                                          id  36085
sr-90           mt=102                      updated 10/13/89        id  38090
 y-89           mt=102                      updated 10/13/89        id  39089
zr-93             mt=  102                                          id  40093
zr-94           mt=102                      updated 10/13/89        id  40094
zr-95           mt=102                      updated 10/13/89        id  40095
zircalloy       endf/b-iv mat 1284          updated 10/13/89        id  40302
nb-94           mt=102                      updated 10/13/89        id  41094
mo-95           mt=102                      updated 10/13/89        id  42095
tc-99           mt=102                      updated 10/13/89        id  43099
ru-101          mt=102                      updated 10/13/89        id  44101
ru-106          mt=102                      updated 10/13/89        id  44106
rh-103          mt=102                      updated 10/13/89        id  45103
rh-105            mt=  102                                          id  45105
pd-105          mt=102                      updated 10/13/89        id  46105
pd-108          mt=102                      updated 10/13/89        id  46108
silver-109      endf/b-iv mat 1139          updated 10/13/89        id  47109
sb-124          mt=102                      updated 10/13/89        id  51124
xe-131          mt=102,103,104,105,106      updated 10/13/89        id  54131
xe-132          mt=102,103,104,105,106      updated 10/13/89        id  54132
xenon-135       endf/b-iv mat 1234          updated 10/13/89        id  54135
xe-136            mt=  102, 103, 104, 105, 107                      id  54136
cesium-133      endf/b-iv mat 1141          updated 10/13/89        id  55133
cs-134          mt=102                      updated 10/13/89        id  55134
cs-135            mt=  102                                          id  55135
cs-137          mt=102                      updated 10/13/89        id  55137
ba-136          mt=102                      updated 10/13/89        id  56136
la-139          mt=102                      updated 10/13/89        id  57139
ce-144            mt=  102                                          id  58144
pr-141          mt=102,103,104,105,106,107  updated 10/13/89        id  59141
pr-143          mt=102                      updated 10/13/89        id  59143
nd-143          mt=102                      updated 10/13/89        id  60143
nd-145          mt=102                      updated 10/13/89        id  60145
nd-147          mt=102                      updated 10/13/89        id  60147
pm-147          mt=102                      updated 10/13/89        id  61147
pm-148            mt=  102                                          id  61148
sm-147          endf/b-v fission product    updated 10/13/89        id  62147
sm-149          mt=102,103,107              updated 10/13/89        id  62149
sm-150          mt=102                      updated 10/13/89        id  62150
sm-151          mt=102,103,104,105,106,107  updated 10/13/89        id  62151
sm-152          mt=102,103,104,105,106,107  updated 10/13/89        id  62152
eu-153          mt=102,103,104,105,106,107  updated 10/13/89        id  63153
eu-154          mt=102,103,104,105,106,107  updated 10/13/89        id  63154
eu-155          mt=102,103,104,105,106,107  updated 10/13/89        id  63155
gd-155          mt=102                      updated 10/13/89        id  64155
u-234 1043 sigp=5+4 newlacs p-3 293k f-1/e-n(1.+5)                  id  92234
uranium-235     endf/b-iv mat 1261          updated 10/13/89        id  92235
u-236 1163 sigp=5+4 newlacs p-3 293k f-1/e-n(1.+5)                  id  92236
uranium-238     endf/b-iv mat 1262          updated 10/13/89        id  92238
neptunium-237   endf/b-iv mat 1263          updated 10/13/89        id  93237
pu-238 1050 sigp=5+4 newlacs p-3 293k f-1/e-n(1.+5)                 id  94238
plutonium-239   endf/b-iv mat 1264          updated 10/13/89        id  94239
plutonium-240   endf/b-iv mat 1265          updated 10/13/89        id  94240
plutonium-241   endf/b-iv mat 1266          updated 10/13/89        id  94241
plutonium-242   endf/b-iv mat 1161          updated 10/13/89        id  94242
am-241 1056 sigp=5+4 newlacs 218ngp p-3 293k                        id  95241
```

INFORMATION ONLY

```
     am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                    id    9523
      curium-244     endf/b-iv mat 1162        updated 10/13/89       id    9624
0       tape copy used     0 i/o's, and took    .00 seconds
```



INFORMATION ONLY

```
ss      ss  cc      cc  aa      aa  ll          ee
ss          cc          aa      aa  ll          ee
ss          cc          aa      aa  ll          ee
sssssssssss cc          aaaaaaaaaaaa ll         eeeeeeeee
 sssssssssss cc         aaaaaaaaaaaa ll         eeeeeeeee
        ss  cc          aa      aa  ll          ee
        ss  cc          aa      aa  ll          ee
ss      ss  cc      cc  aa      aa  ll          ee
sssssssssssss ccccccccccccc aa      aa  llllllllllll eeeeeeeeeeee
 sssssssssss  ccccccccccc   aa      aa  llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****          program:  c0c001                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:58:08                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
                    240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp
0      -1q array has     1 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit  9 requires    12 blocks of length  70% for cross section mixing.
1                   240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp
0general problem description data block
0                         general problem data

 igs  1/2/3 = plane/cylinder/sphere      2       isn  quadrature order              8
```

INFORMATION ONLY

```
 izm  number of zones                    4        isct order of scattering                3
 im   number of special intervals       24        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           20
 ibr  right boundary condition           3        iom  outer iteration maximum           25
 mxx  number of mixtures                 3        iclc -1/0/n--flat res/sn/cpt            0
 ms   mixing table length               65        ith  0/1 = forward/adjoint              0
 igm  number of energy groups           27        iflu not used(always wgtd)              0
 nrg  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print      -2
 ngg  number of gamma groups             0        idl  0/1/2/3=no/prt nd/pch n/both      53
 iftg number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt      0
0                                 special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param            0
 iqm  volumetric sources (0/n=no/yes)    0        idfm 0/1 = none/density factors 39*     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    53        iai  0/1=none/activities by interval    0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling       0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch   0
 isx  broad group fluxes                 0        isen outer iteration acceleration       0
 ibln activity data unit                 0        rtnd band rebaln parameter              0
 jbkl 0/1/2 buckling geometry            0
0                                 weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1        ihtf total xsect psn in brd gp tables   3
 igmf number of broad groups            27        ndsf psn g-g or file number             4
 itp  0/10/20/30/40 0/c/e/ac/a           0        nusf table length or mx order           4
 ipp  -2/-1/0/n=gted xsect print        -2        mcm  extra 1-d x-sect positions         0
 iap  -1/n anlsn xsect print            -1
0                                 floating point parameters

 eps  overall convergence        1.00000E-04      dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04      dz   plane depth for buckling    .00000E+00
 xnf  normalization factor       1.00000E+00      vsc  void streaming correction   .00000E+00
 ev   eigenvalue guess            .00000E+00      pv   ipvt=1/2--k/alpha           1.00000E+00
 evm  eigenvalue modifier         .00000E+00      eql  ev change eps for search    1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00      xrpm new param mod for search    7.50000E-01
      this case will require      2535 locations for mixing
      this case has been allocated 200000 locations
1                          240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0       13q array has     65 entries.
0       14q array has     65 entries.
0       15q array has     65 entries.
0                                 data block 2 (mixing table, etc.)
0    nuclides        cccc                                mixing table                          extra
      on tape     identification                mixture   component     atom density        xsect id's
    1     999                                     1        92235       5.95891E-04
    2    1001                                     1        92234       5.24821E-06
    3    5010                                     1        92236       2.07230E-05
    4    5011                                     1        92238       2.20058E-02
    5    8016                                     1         8016       4.55359E-02
    6       6                                     3            6       2.09710E-02
    7   36083                                     1        36083       4.52870E-07
    8   36085                                     1        36085       2.19160E-07
    9   38090                                     1        38090       4.90462E-06
   10   39089                                     1        39089       2.95210E-06
   11   40093                                     1        42095       2.67690E-06
   12   40094                                     1        40093       3.66334E-06
   13   40095                                     1        40094       5.64806E-06
   14   40802                                     1        40095       2.02113E-06
   15   41094                                     1        41094       1.92647E-12
```

INFORMATION ONLY

16	42095	1	43099	5.40899E-06
17	43099	1	45103	2.34075E-06
18	44101	1	45105	1.42541E-08
19	44106	1	44101	4.73216E-06
20	45103	1	44106	6.38003E-07
21	45105	1	46105	1.32971E-06
22	46105	1	46108	2.44771E-07
23	46108	1	47109	1.71902E-07
24	47109	1	51124	4.79820E-11
25	51124	1	54131	2.48623E-06
26	54131	1	54132	4.07046E-06
27	54132	1	54135	6.51168E-09
28	54135	1	54136	9.03456E-06
29	54136	1	55134	8.14148E-08
30	55133	1	55135	2.79804E-06
31	55134	1	55137	5.70749E-06
32	55135	1	56136	1.66625E-08
33	55137	1	57139	5.70699E-06
34	56136	1	59141	4.20858E-06
35	57139	1	59143	4.03826E-07
36	58144	1	58144	3.63429E-06
37	59141	1	60143	4.64738E-06
38	59143	1	60145	3.44985E-06
39	60143	1	61147	1.63014E-06
40	60145	1	61148	4.34751E-09
41	60147	1	60147	1.34141E-07
42	61147	1	62147	1.37482E-07
43	61148	1	62149	6.87658E-08
44	62147	1	62150	9.88883E-07
45	62149	1	62151	2.22942E-07
46	62150	1	62152	4.58639E-07
47	62151	1	64155	4.46617E-10
48	62152	1	63153	2.02561E-07
49	63153	1	63154	1.57326E-08
50	63154	1	63155	3.12565E-08
51	63155	2	40802	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	5.85210E-06
56	92238	1	95237	6.15523E-07
57	95237	1	94238	2.41332E-08
58	94238	1	94239	4.36784E-05
59	94239	1	94240	3.25386E-06
60	94240	1	94241	7.50900E-07
61	94241	1	94242	2.06625E-08
62	94242	1	95241	6.04966E-09
63	95241	1	95243	4.19145E-10
64	95243	1	96244	9.13732E-12
65	96244	1	999	1.00000E-20

```
- elapsed time    .00 min.
0  21649 locations will be used
0      35q array has     25 entries.
0      36q array has     24 entries.
0      38q array has     24 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                  240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp
```

INFORMATION ONLY

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88937E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00	
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00	
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.78098E+01	4.85953E+05	23	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00	
26	3.00000E-02	1.95247E+01	1.87283E+05	26	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00	
28	1.00000E-05	2.76310E+01						

1 240 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97289E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97289E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.59953E-02	-5.58410E-01	8	-3.10450E-02
6					5.59953E-02	-2.31301E-01	7	-1.28598E-02
7					5.59953E-02	2.31301E-01	6	1.28598E-02
8					5.59953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	16	0
10					5.22844E-02	-8.21784E-01	16	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53365E-02	-9.64143E-01	24	-4.37099E-02
18					4.53365E-02	-8.17561E-01	23	-3.70655E-02
19					4.53365E-02	-5.46143E-01	22	-2.47597E-02
20					4.53365E-02	-1.91780E-01	21	-8.69444E-03
21					4.53365E-02	1.91780E-01	20	8.69444E-03
22					4.53365E-02	5.46143E-01	19	2.47597E-02
23					4.53365E-02	8.17561E-01	18	3.70655E-02
24					4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5

INFORMATION ONLY

1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44245E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36885E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.26438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.26438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33405E-02	1	1.62798E-01	9.48318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81836E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22545E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07944E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06325E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24908E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07708E-01	1.00000E+00		
22	7.48592E-01	7.63898E-01	4	4.70354E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89114E-02	1.00000E+00		
24	7.99141E-01	8.06654E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		
25	8.13968E-01			5.11431E+00				

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	144	2.10439E-05	1.12498E+00	-1.38515E-01	1.00000E+00	-4.43609E-02	.00000E+00	.0000
2	221	-9.63613E-06	1.13858E+00	-1.26102E-03	-1.51759E-02	-4.62359E-03	.00000E+00	.0000
3	284	3.53239E-06	1.13978E+00	-1.41223E-04	-1.45082E-03	-8.89717E-04	.00000E+00	.0000
4	330	-6.49129E-06	1.14017E+00	-2.40409E-05	-2.83584E-04	-1.66783E-04	.00000E+00	.0167
5	361	-1.10716E-05	1.14028E+00	-5.19524E-06	-5.29126E-05	-2.70676E-05	.00000E+00	.0167

grp to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh

INFORMATION ONLY

1	1	1	1	3.9996E-08	24	1.00000E+00	1
2	2	1	1	4.7568E-08	24	1.00000E+00	1
3	3	1	1	4.4247E-08	24	1.00000E+00	1
4	4	1	1	4.3407E-08	24	1.00000E+00	1
5	5	1	1	4.7654E-08	24	1.00000E+00	1
6	6	1	1	3.1425E-08	24	1.00000E+00	1
7	7	1	1	2.3512E-08	24	1.00000E+00	1
8	8	1	1	5.7076E-09	24	1.00000E+00	1
9	9	1	2	3.0628E-09	24	1.00000E+00	1
10	10	1	1	3.1051E-09	24	1.00000E+00	1
11	11	1	1	3.1598E-09	24	1.00000E+00	1
12	12	1	2	7.4323E-10	24	1.00000E+00	1
13	13	1	24	1.1217E-09	24	1.00000E+00	1
14	14	1	24	1.2854E-09	24	1.00000E+00	1
15	15	1	24	3.8954E-05	24	9.99982E-01	1
16	16	1	24	4.8475E-05	24	9.99987E-01	1
17	17	1	18	1.6011E-05	24	9.99960E-01	1
18	18	1	18	1.7701E-05	24	9.99958E-01	1
19	19	1	18	1.5405E-05	24	9.99955E-01	1
20	20	1	24	5.2263E-05	24	9.99969E-01	1
21	21	1	18	2.5665E-05	24	9.99988E-01	1
22	22	1	24	4.6534E-05	24	9.99991E-01	1
23	23	1	24	2.2612E-06	24	1.00000E+00	1
24	24	1	24	1.3169E-05	24	1.00000E+00	1
25	25	1	24	1.5665E-05	24	1.00000E+00	1
26	26	1	21	1.6710E-05	24	1.00000E+00	2
27	27	1	2	2.9865E-06	24	1.00000E+00	2

6 388 -5.4863E-07 1.1401E+00 -7.6125E-07 -8.6937E-06 -5.3744E-06 .0000E+00 .0167

final monitor

lambda 1.1401E+00 production/absorption 1.1401E+00 angular flux on 16

- elapsed time .02 min.

1 240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 int. zone number

		radius	int. midpoint	area	volume	prod density
1	1	.0000E+00	1.2955E-02	.0000E+00	2.1090E-03	3.3439E-03
2	1	2.5910E-02	4.3406E-02	1.6279E-01	9.4931E-03	1.5045E-02
3	1	6.0771E-02	8.7510E-02	3.8183E-01	2.9045E-02	4.6683E-02
4	1	1.1424E-01	1.7415E-01	7.1784E-01	1.3110E-01	2.1003E-01
5	1	2.3406E-01	2.9896E-01	1.4706E+00	2.2129E-01	3.6251E-01
6	1	3.5387E-01	3.8061E-01	2.2254E+00	1.2789E-01	2.1467E-01
7	1	4.0735E-01	4.2478E-01	2.5594E+00	9.3042E-02	1.5504E-01
8	1	4.4221E-01	4.5516E-01	2.7785E+00	7.4100E-02	1.2880E-01
9	2	4.6812E-01	4.6881E-01	2.9413E+00	4.0794E-03	.0000E+00
10	2	4.6950E-01	4.7148E-01	2.9500E+00	1.1698E-02	.0000E+00
11	2	4.7345E-01	4.7543E-01	2.9748E+00	1.1798E-02	.0000E+00
12	2	4.7740E-01	4.7809E-01	2.9996E+00	4.1602E-03	.0000E+00
13	3	4.7879E-01	4.8315E-01	3.0083E+00	2.6526E-02	.0000E+00
14	3	4.8752E-01	4.9998E-01	3.0632E+00	7.8276E-02	.0000E+00
15	3	5.1245E-01	5.2490E-01	3.2197E+00	8.2177E-02	.0000E+00
16	3	5.3736E-01	5.4173E-01	3.3763E+00	2.9742E-02	.0000E+00
17	4	5.4610E-01	5.5351E-01	3.4312E+00	5.1563E-02	.0000E+00
18	4	5.6092E-01	5.7090E-01	3.5244E+00	7.1554E-02	.0000E+00
19	4	5.8087E-01	5.9617E-01	3.6497E+00	1.1462E-01	.0000E+00
20	4	6.1147E-01	6.4575E-01	3.8420E+00	2.7816E-01	.0000E+00
21	4	6.8003E-01	7.1431E-01	4.2727E+00	3.0770E-01	.0000E+00
22	4	7.4859E-01	7.6389E-01	4.7085E+00	1.4687E-01	.0000E+00
23	4	7.7919E-01	7.8916E-01	4.8958E+00	9.8911E-02	.0000E+00
24	4	7.9914E-01	8.0654E-01	5.0215E+00	7.5135E-02	.0000E+00
25		8.1396E-01		5.1143E+00		

1 240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 total flux

INFORMATION ONLY

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.72636E-01	1.31503E+00	1.67389E+00	1.03961E+00	1.57466E+00	3.03077E+00	2.90515E+00	2.07949E+00
2	1.72697E-01	1.31566E+00	1.67469E+00	1.04011E+00	1.57537E+00	3.03208E+00	2.90582E+00	2.07955E+00
3	1.72641E-01	1.31503E+00	1.67391E+00	1.03963E+00	1.57457E+00	3.03046E+00	2.90479E+00	2.07936E+00
4	1.72250E-01	1.31078E+00	1.66843E+00	1.03628E+00	1.56925E+00	3.01991E+00	2.89843E+00	2.07830E+00
5	1.71238E-01	1.29987E+00	1.65454E+00	1.02785E+00	1.55588E+00	2.99378E+00	2.88280E+00	2.07571E+00
6	1.70073E-01	1.28745E+00	1.63892E+00	1.01842E+00	1.54105E+00	2.96518E+00	2.86567E+00	2.07285E+00
7	1.69148E-01	1.27774E+00	1.62689E+00	1.01126E+00	1.52991E+00	2.94410E+00	2.85331E+00	2.07066E+00
8	1.68231E-01	1.26829E+00	1.61537E+00	1.00450E+00	1.51954E+00	2.92485E+00	2.84204E+00	2.06862E+00
9	1.67729E-01	1.26318E+00	1.60919E+00	1.00091E+00	1.51409E+00	2.91483E+00	2.83622E+00	2.06755E+00
10	1.67625E-01	1.26216E+00	1.60796E+00	1.00021E+00	1.51309E+00	2.91303E+00	2.83523E+00	2.06736E+00
11	1.67472E-01	1.26066E+00	1.60617E+00	9.99224E-01	1.51167E+00	2.91049E+00	2.83383E+00	2.06707E+00
12	1.67371E-01	1.25968E+00	1.60501E+00	9.98681E-01	1.51075E+00	2.90885E+00	2.83293E+00	2.06688E+00
13	1.67184E-01	1.25785E+00	1.60280E+00	9.97340E-01	1.50894E+00	2.90541E+00	2.83100E+00	2.06651E+00
14	1.66673E-01	1.25265E+00	1.59630E+00	9.93605E-01	1.50312E+00	2.89411E+00	2.82456E+00	2.06547E+00
15	1.66101E-01	1.24636E+00	1.58793E+00	9.88188E-01	1.49470E+00	2.87743E+00	2.81494E+00	2.06434E+00
16	1.65821E-01	1.24287E+00	1.58293E+00	9.84718E-01	1.48897E+00	2.86586E+00	2.80821E+00	2.06383E+00
17	1.65686E-01	1.24087E+00	1.57982E+00	9.82589E-01	1.48499E+00	2.85790E+00	2.80354E+00	2.06369E+00
18	1.65510E-01	1.23829E+00	1.57584E+00	9.79418E-01	1.47993E+00	2.84791E+00	2.79766E+00	2.06356E+00
19	1.65289E-01	1.23521E+00	1.57123E+00	9.76054E-01	1.47424E+00	2.83674E+00	2.79108E+00	2.06333E+00
20	1.64994E-01	1.23124E+00	1.56536E+00	9.71839E-01	1.46716E+00	2.82287E+00	2.78292E+00	2.06301E+00
21	1.64791E-01	1.22846E+00	1.56124E+00	9.68855E-01	1.46212E+00	2.81303E+00	2.77722E+00	2.06291E+00
22	1.64792E-01	1.22834E+00	1.56094E+00	9.68573E-01	1.46160E+00	2.81202E+00	2.77678E+00	2.06314E+00
23	1.64867E-01	1.22919E+00	1.56207E+00	9.69302E-01	1.46278E+00	2.81432E+00	2.77826E+00	2.06342E+00
24	1.64953E-01	1.23019E+00	1.56342E+00	9.70201E-01	1.46424E+00	2.81718E+00	2.78007E+00	2.06369E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58539E+00	1.44334E+00	1.30173E+00	7.94048E-01	6.72549E-01	5.94755E-01	3.72125E-01	2.07129E-01
2	1.58531E+00	1.44324E+00	1.30152E+00	7.93816E-01	6.72340E-01	5.94471E-01	3.72095E-01	2.07110E-01
3	1.58550E+00	1.44344E+00	1.30199E+00	7.94362E-01	6.72787E-01	5.95138E-01	3.72170E-01	2.07149E-01
4	1.58655E+00	1.44471E+00	1.30465E+00	7.97431E-01	6.75339E-01	5.98865E-01	3.72585E-01	2.07371E-01
5	1.58914E+00	1.44776E+00	1.31119E+00	8.05009E-01	6.81638E-01	6.08178E-01	3.73587E-01	2.07914E-01
6	1.59208E+00	1.45110E+00	1.31836E+00	8.13353E-01	6.88562E-01	6.18456E-01	3.74667E-01	2.08505E-01
7	1.59430E+00	1.45355E+00	1.32363E+00	8.19538E-01	6.93688E-01	6.26119E-01	3.75444E-01	2.08936E-01
8	1.59639E+00	1.45577E+00	1.32843E+00	8.25217E-01	6.98381E-01	6.33181E-01	3.76136E-01	2.09327E-01
9	1.59750E+00	1.45691E+00	1.33092E+00	8.28167E-01	7.00822E-01	6.36853E-01	3.76491E-01	2.09529E-01
10	1.59770E+00	1.45710E+00	1.33132E+00	8.28642E-01	7.01221E-01	6.37442E-01	3.76551E-01	2.09564E-01
11	1.59799E+00	1.45737E+00	1.33188E+00	8.29321E-01	7.01798E-01	6.38284E-01	3.76637E-01	2.09613E-01
12	1.59818E+00	1.45754E+00	1.33226E+00	8.29760E-01	7.02163E-01	6.38829E-01	3.76692E-01	2.09646E-01
13	1.59855E+00	1.45789E+00	1.33301E+00	8.30655E-01	7.02919E-01	6.39943E-01	3.76807E-01	2.09711E-01
14	1.59959E+00	1.45902E+00	1.33542E+00	8.33457E-01	7.05288E-01	6.43428E-01	3.77172E-01	2.09918E-01
15	1.60074E+00	1.46063E+00	1.33881E+00	8.37522E-01	7.08548E-01	6.48230E-01	3.77690E-01	2.10204E-01
16	1.60129E+00	1.46170E+00	1.34105E+00	8.39816E-01	7.10652E-01	6.51320E-01	3.78034E-01	2.10388E-01
17	1.60159E+00	1.46250E+00	1.34272E+00	8.41649E-01	7.12166E-01	6.53572E-01	3.78221E-01	2.10504E-01
18	1.60204E+00	1.46358E+00	1.34500E+00	8.44154E-01	7.14216E-01	6.56642E-01	3.78428E-01	2.10649E-01
19	1.60260E+00	1.46482E+00	1.34760E+00	8.47087E-01	7.16582E-01	6.60181E-01	3.78672E-01	2.10819E-01
20	1.60338E+00	1.46638E+00	1.35090E+00	8.50711E-01	7.19598E-01	6.64691E-01	3.78970E-01	2.11052E-01
21	1.60396E+00	1.46750E+00	1.35326E+00	8.53325E-01	7.21714E-01	6.67886E-01	3.79117E-01	2.11159E-01
22	1.60402E+00	1.46761E+00	1.35349E+00	8.53659E-01	7.21856E-01	6.68134E-01	3.79051E-01	2.11133E-01
23	1.60386E+00	1.46733E+00	1.35290E+00	8.52878E-01	7.21256E-01	6.67275E-01	3.78887E-01	2.11061E-01
24	1.60366E+00	1.46698E+00	1.35216E+00	8.52038E-01	7.20531E-01	6.66234E-01	3.78742E-01	2.10985E-01

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.87323E-02	6.41539E-02	1.37538E-01	4.52611E-01	1.26457E-01	2.32781E-01	7.75834E-01	5.51708E-01
2	8.87124E-02	6.41199E-02	1.37504E-01	4.52510E-01	1.26391E-01	2.32629E-01	7.75391E-01	5.51331E-01
3	8.87488E-02	6.42070E-02	1.37567E-01	4.52698E-01	1.26545E-01	2.33102E-01	7.74432E-01	5.52403E-01
4	8.89522E-02	6.46898E-02	1.37936E-01	4.53806E-01	1.27413E-01	2.35645E-01	7.80297E-01	5.58250E-01
5	8.94502E-02	6.58982E-02	1.38838E-01	4.56532E-01	1.29574E-01	2.41995E-01	7.94832E-01	5.72790E-01
6	9.00659E-02	6.72497E-02	1.39821E-01	4.59513E-01	1.31970E-01	2.49097E-01	8.10890E-01	5.88964E-01
7	9.04987E-02	6.82718E-02	1.40538E-01	4.61705E-01	1.33763E-01	2.54463E-01	8.22844E-01	6.01106E-01
8	9.08922E-02	6.92257E-02	1.41188E-01	4.63706E-01	1.35421E-01	2.59464E-01	8.33853E-01	6.12377E-01
9	9.10971E-02	6.97241E-02	1.41525E-01	4.64745E-01	1.36284E-01	2.62073E-01	8.39571E-01	6.18249E-01

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10	9.11316E-02	6.98023E-02	1.41581E-01	4.64919E-01	1.36420E-01	2.63468E-01	8.40462E-01	6.19129E-01
11	9.11809E-02	6.99141E-02	1.41661E-01	4.65167E-01	1.36615E-01	2.63031E-01	8.41729E-01	6.20381E-01
12	9.12128E-02	6.99866E-02	1.41713E-01	4.65327E-01	1.36740E-01	2.63396E-01	8.42547E-01	6.21187E-01
13	9.12780E-02	7.01342E-02	1.41819E-01	4.65655E-01	1.36997E-01	2.64140E-01	8.44221E-01	6.22835E-01
14	9.14818E-02	7.05930E-02	1.42154E-01	4.66678E-01	1.37803E-01	2.66453E-01	8.49431E-01	6.27915E-01
15	9.17521E-02	7.12184E-02	1.42619E-01	4.68081E-01	1.38913E-01	2.69603E-01	8.56612E-01	6.34708E-01
16	9.19418E-02	7.16165E-02	1.42920E-01	4.68978E-01	1.39627E-01	2.71601E-01	8.60983E-01	6.38913E-01
17	9.20709E-02	7.19160E-02	1.43136E-01	4.69624E-01	1.40180E-01	2.73165E-01	8.64686E-01	6.42762E-01
18	9.22463E-02	7.23329E-02	1.43426E-01	4.70507E-01	1.40960E-01	2.75402E-01	8.70214E-01	6.48824E-01
19	9.24494E-02	7.28130E-02	1.43763E-01	4.71536E-01	1.41863E-01	2.78008E-01	8.76811E-01	6.56131E-01
20	9.27078E-02	7.34263E-02	1.44198E-01	4.72856E-01	1.43023E-01	2.81378E-01	8.85597E-01	6.65982E-01
21	9.28897E-02	7.38692E-02	1.44498E-01	4.73782E-01	1.43865E-01	2.83839E-01	8.92245E-01	6.73662E-01
22	9.28978E-02	7.39178E-02	1.44509E-01	4.73834E-01	1.43961E-01	2.84129E-01	8.93264E-01	6.75120E-01
23	9.28450E-02	7.38136E-02	1.44421E-01	4.73666E-01	1.43765E-01	2.83565E-01	8.91956E-01	6.73901E-01
24	9.27822E-02	7.36823E-02	1.44315E-01	4.73242E-01	1.43517E-01	2.82845E-01	8.90221E-01	6.72164E-01

0 int.

	grp. 25	grp. 26	grp. 27
1	2.26151E-01	1.35619E-01	1.73802E-02
2	2.25995E-01	1.35425E-01	1.73830E-02
3	2.26573E-01	1.35987E-01	1.75545E-02
4	2.29606E-01	1.38781E-01	1.83261E-02
5	2.37159E-01	1.45770E-01	2.02894E-02
6	2.45604E-01	1.53679E-01	2.25902E-02
7	2.51990E-01	1.59752E-01	2.44507E-02
8	2.57984E-01	1.66517E-01	2.63057E-02
9	2.61086E-01	1.68548E-01	2.72592E-02
10	2.61537E-01	1.68955E-01	2.74122E-02
11	2.62179E-01	1.69532E-01	2.75729E-02
12	2.62593E-01	1.69904E-01	2.76765E-02
13	2.63434E-01	1.70660E-01	2.78867E-02
14	2.65988E-01	1.72985E-01	2.85082E-02
15	2.69314E-01	1.75851E-01	2.92768E-02
16	2.71306E-01	1.77558E-01	2.97056E-02
17	2.75259E-01	1.79591E-01	3.03692E-02
18	2.76595E-01	1.83136E-01	3.15804E-02
19	2.80614E-01	1.87441E-01	3.29992E-02
20	2.86093E-01	1.93304E-01	3.48657E-02
21	2.90462E-01	1.98085E-01	3.64000E-02
22	2.91411E-01	1.99310E-01	3.68659E-02
23	2.90838E-01	1.98885E-01	3.68027E-02
24	2.89959E-01	1.98107E-01	3.66313E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.19649E-02	.00000E+00	1.23497E-02	1.02562E-02	3.13908E-03	1.08050E-02	9.98830E-01
2	.00000E+00	1.90919E-01	2.26178E-03	1.65430E-01	6.57391E-02	1.35378E-02	1.13914E-01	1.00004E+00
3	.00000E+00	2.15337E-01	2.59391E-02	1.60488E-01	8.08686E-02	1.55714E-02	1.44854E-01	1.00001E+00
4	.00000E+00	1.24201E-01	3.87334E-02	1.05020E-01	6.77712E-02	7.44454E-03	8.77751E-02	1.00001E+00
5	.00000E+00	1.65227E-01	6.76670E-02	2.59170E-01	9.47659E-02	4.46831E-03	1.33662E-01	9.99991E-01
6	.00000E+00	1.78934E-01	1.34395E-01	6.53746E-01	5.44214E-02	7.09942E-03	2.51788E-01	1.00008E+00
7	.00000E+00	8.86746E-02	9.83529E-02	7.45389E-01	3.63396E-02	7.72135E-03	1.42965E-01	1.00001E+00
8	.00000E+00	1.36799E-02	4.25696E-02	6.31051E-01	2.14803E-02	1.41481E-02	2.06187E-02	1.00004E+00
9	.00000E+00	9.93164E-04	2.17022E-02	5.34747E-01	2.06381E-02	2.33408E-02	-2.12831E-02	9.99990E-01
10	.00000E+00	7.37715E-05	2.06600E-02	4.58514E-01	1.05667E-02	3.62591E-02	-2.61926E-02	1.00001E+00
11	.00000E+00	5.80390E-06	1.06578E-02	4.18975E-01	8.11287E-03	5.86471E-02	-5.60971E-02	1.00001E+00
12	.00000E+00	4.07714E-07	8.11290E-03	2.37012E-01	9.34645E-03	6.37660E-02	-6.49960E-02	9.99957E-01
13	.00000E+00	6.47414E-08	9.34646E-03	1.75650E-01	6.15925E-03	5.78126E-02	-5.46259E-02	1.00001E+00
14	.00000E+00	1.28300E-08	6.15925E-03	1.51833E-01	7.49999E-03	7.95121E-02	-8.06490E-02	1.00000E+00
15	.00000E+00	1.44998E-09	7.58475E-03	8.53715E-02	8.94771E-03	6.68984E-03	-8.06808E-03	1.00099E+00
16	.00000E+00	4.25751E-10	9.12581E-03	4.33987E-02	9.75769E-03	4.10607E-03	-4.72877E-03	1.00078E+00
17	.00000E+00	1.37112E-10	7.94491E-03	1.52643E-02	7.83004E-03	4.84674E-03	-4.75746E-03	1.00044E+00

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18	.00000E+00	9.81685E-11	7.42006E-03	1.13022E-02	6.44406E-03	1.16314E-02	-1.06587E-02	1.00018E+00
19	.00000E+00	1.38789E-10	8.50848E-03	2.63845E-02	9.69011E-03	6.64942E-03	-7.83733E-03	1.00038E+00
20	.00000E+00	2.25686E-10	1.12799E-02	1.08305E-01	1.02220E-02	2.50697E-02	-2.40287E-02	1.00048E+00
21	.00000E+00	3.30331E-11	9.90182E-03	2.44678E-02	9.47212E-03	1.95529E-02	-1.91301E-02	1.00024E+00
22	.00000E+00	3.83259E-11	1.35344E-02	5.20339E-02	1.16875E-02	5.69047E-02	-5.50674E-02	1.00014E+00
23	.00000E+00	3.66338E-11	1.71087E-02	1.88300E-01	2.06445E-02	1.25074E-01	-1.28646E-01	1.00025E+00
24	.00000E+00	9.97397E-12	2.48121E-02	1.27301E-01	2.45551E-02	1.29080E-01	-1.28846E-01	1.00017E+00
25	.00000E+00	2.91973E-12	2.09252E-02	4.77306E-02	1.56681E-02	7.13802E-02	-6.61239E-02	1.00012E+00
26	.00000E+00	2.04733E-12	1.01983E-02	3.28329E-02	6.96721E-03	6.43571E-02	-6.11315E-02	1.00008E+00
27	.00000E+00	4.87869E-13	2.17960E-03	4.83590E-03	1.17205E-03	1.78452E-02	-1.68395E-02	1.00005E+00
28	.00000E+00	1.00000E+00	6.37080E-01	5.47681E+00	6.37080E-01	9.35465E-01	6.66139E-02	1.00009E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r&n rate	fiss rate	flux*cb**2	total flux
1	1.67756E-01	1.08050E-02	1.72576E-01	.00000E+00	2.20711E-03	2.57414E-03	.00000E+00	1.17512E-01
2	1.26345E+00	1.13914E-01	1.31441E+00	.00000E+00	1.75309E-05	1.17886E-02	.00000E+00	8.90955E-01
3	1.60952E+00	1.44834E-01	1.67305E+00	.00000E+00	.00000E+00	1.45478E-02	.00000E+00	1.13420E+00
4	1.00109E+00	8.77151E-02	1.03912E+00	.00000E+00	.00000E+00	6.29661E-03	.00000E+00	7.04728E-01
5	1.51436E+00	1.33662E-01	1.57395E+00	.00000E+00	.00000E+00	1.85640E-03	.00000E+00	1.06666E+00
6	2.91531E+00	2.51788E-01	3.02941E+00	.00000E+00	.00000E+00	1.67207E-03	.00000E+00	2.05260E+00
7	2.83649E+00	1.42985E-01	2.90442E+00	.00000E+00	.00000E+00	1.69875E-03	.00000E+00	1.97966E+00
8	2.06760E+00	2.06187E-02	2.09989E+00	.00000E+00	.00000E+00	1.77522E-03	.00000E+00	1.42814E+00
9	1.59745E+00	-2.12831E-02	1.58649E+00	.00000E+00	.00000E+00	2.42091E-03	.00000E+00	1.09494E+00
10	1.46686E+00	-2.61926E-02	1.44347E+00	.00000E+00	.00000E+00	5.15565E-03	.00000E+00	9.97681E-01
11	1.33081E+00	-5.60971E-02	1.30199E+00	.00000E+00	.00000E+00	1.07150E-02	.00000E+00	9.04795E-01
12	8.28042E-01	-6.49960E-02	7.93411E-01	.00000E+00	.00000E+00	1.37916E-02	.00000E+00	5.56683E-01
13	7.00716E-01	-5.46259E-02	6.72804E-01	.00000E+00	.00000E+00	1.36260E-02	.00000E+00	4.71322E-01
14	6.36697E-01	-8.06490E-02	5.95112E-01	.00000E+00	.00000E+00	9.17978E-03	.00000E+00	4.21772E-01
15	3.76479E-01	-8.06808E-03	3.72168E-01	.00000E+00	.00000E+00	2.32477E-03	.00000E+00	2.57503E-01
16	2.09521E-01	-4.72897E-03	2.07153E-01	.00000E+00	.00000E+00	1.56920E-03	.00000E+00	1.43309E-01
17	9.10908E-02	-4.73746E-03	8.87581E-02	.00000E+00	.00000E+00	2.20864E-03	.00000E+00	6.17808E-02
18	6.97057E-02	-1.06587E-02	6.42002E-02	.00000E+00	.00000E+00	2.54205E-03	.00000E+00	4.57787E-02
19	1.41515E-01	-7.83733E-03	1.37581E-01	.00000E+00	.00000E+00	3.54318E-03	.00000E+00	9.58691E-02
20	4.64710E-01	-2.40287E-02	4.52738E-01	.00000E+00	.00000E+00	1.69539E-02	.00000E+00	3.15174E-01
21	1.36255E-01	-1.91301E-02	1.26547E-01	.00000E+00	.00000E+00	1.28789E-02	.00000E+00	8.99247E-02
22	2.61989E-01	-5.50674E-02	2.32998E-01	.00000E+00	.00000E+00	3.65695E-02	.00000E+00	1.68760E-01
23	8.39527E-01	-1.28646E-01	7.74383E-01	.00000E+00	.00000E+00	8.32005E-02	.00000E+00	5.51995E-01
24	6.18007E-01	-1.28846E-01	5.52211E-01	.00000E+00	.00000E+00	8.61648E-02	.00000E+00	3.99214E-01
25	2.60964E-01	-6.61239E-02	2.26387E-01	.00000E+00	.00000E+00	4.96836E-02	.00000E+00	1.65841E-01
26	1.68437E-01	-6.11315E-02	1.35701E-01	.00000E+00	.00000E+00	4.56895E-02	.00000E+00	1.02806E-01
27	2.72689E-02	-1.68395E-02	1.74124E-02	.00000E+00	.00000E+00	1.27786E-02	.00000E+00	1.47238E-02
28	2.35914E+01	6.66139E-02	2.35678E+01	.00000E+00	2.22464E-03	4.53208E-01	.00000E+00	1.62543E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.98023E-08	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	6.70552E-08	9.99997E-01
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.23517E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.16415E-08	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.86265E-09	1.00000E+00
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00

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19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.79397E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.23517E-08	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.63685E-08	9.99992E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rôn rate	fiss rate	flux*dx**2	total flux
1	1.67346E-01	1.08050E-02	1.67756E-01	1.08050E-02	.00000E+00	.00000E+00	.00000E+00	5.31779E-03
2	1.25943E+00	1.13914E-01	1.26345E+00	1.13914E-01	.00000E+00	.00000E+00	.00000E+00	4.03811E-02
3	1.60471E+00	1.44834E-01	1.60952E+00	1.44834E-01	.00000E+00	.00000E+00	.00000E+00	5.10006E-02
4	9.98419E-01	8.77151E-02	1.00109E+00	8.77151E-02	.00000E+00	.00000E+00	.00000E+00	3.17264E-02
5	1.51053E+00	1.33662E-01	1.51436E+00	1.33662E-01	.00000E+00	.00000E+00	.00000E+00	4.79960E-02
6	2.90844E+00	2.51788E-01	2.91531E+00	2.51788E-01	.00000E+00	.00000E+00	.00000E+00	9.24057E-02
7	2.85271E+00	1.42965E-01	2.83649E+00	1.42965E-01	.00000E+00	.00000E+00	.00000E+00	8.99547E-02
8	2.06684E+00	-2.06187E-02	2.06760E+00	2.06187E-02	.00000E+00	.00000E+00	.00000E+00	6.56085E-02
9	1.59822E+00	-2.12831E-02	1.59745E+00	-2.12831E-02	.00000E+00	.00000E+00	.00000E+00	5.07079E-02
10	1.45758E+00	-2.61925E-02	1.45686E+00	-2.61926E-02	.00000E+00	.00000E+00	.00000E+00	4.62456E-02
11	1.33235E+00	-5.60971E-02	1.33081E+00	-5.60971E-02	.00000E+00	.00000E+00	.00000E+00	4.22587E-02
12	8.29870E-01	-6.49960E-02	8.28042E-01	-6.49960E-02	.00000E+00	.00000E+00	.00000E+00	2.63079E-02
13	7.02256E-01	-5.46259E-02	7.00714E-01	-5.46259E-02	.00000E+00	.00000E+00	.00000E+00	2.22625E-02
14	6.38966E-01	-8.06490E-02	6.36697E-01	-8.06490E-02	.00000E+00	.00000E+00	.00000E+00	2.02427E-02
15	3.76710E-01	-8.06808E-03	3.76479E-01	-8.06808E-03	.00000E+00	.00000E+00	.00000E+00	1.19513E-02
16	2.09654E-01	-4.72878E-03	2.09521E-01	-4.72877E-03	.00000E+00	.00000E+00	.00000E+00	6.65134E-03
17	9.12256E-02	-4.73746E-03	9.10908E-02	-4.73746E-03	.00000E+00	.00000E+00	.00000E+00	2.89286E-03
18	7.00070E-02	-1.06587E-02	6.97057E-02	-1.06587E-02	.00000E+00	.00000E+00	.00000E+00	2.21698E-03
19	1.41731E-01	-7.83733E-03	1.41515E-01	-7.83733E-03	.00000E+00	.00000E+00	.00000E+00	4.49438E-03
20	4.65377E-01	-2.40287E-02	4.64710E-01	-2.40287E-02	.00000E+00	.00000E+00	.00000E+00	1.47582E-02
21	1.36779E-01	-1.91301E-02	1.36255E-01	-1.91301E-02	.00000E+00	.00000E+00	.00000E+00	4.33240E-03
22	2.63487E-01	-5.50574E-02	2.61969E-01	-5.50574E-02	.00000E+00	.00000E+00	.00000E+00	8.33838E-03
23	8.42744E-01	-1.28646E-01	8.39527E-01	-1.28646E-01	.00000E+00	.00000E+00	.00000E+00	2.66922E-02
24	6.21380E-01	-1.28869E-01	6.18007E-01	-1.28869E-01	.00000E+00	.00000E+00	.00000E+00	1.96679E-02
25	2.62693E-01	-6.61239E-02	2.60964E-01	-6.61239E-02	.00000E+00	.00000E+00	.00000E+00	8.31006E-03
26	1.69994E-01	-6.11315E-02	1.68437E-01	-6.11315E-02	.00000E+00	.00000E+00	.00000E+00	5.37092E-03
27	2.77020E-02	-1.68385E-02	2.72689E-02	-1.68385E-02	.00000E+00	.00000E+00	.00000E+00	8.72467E-04
28	2.35871E+01	6.66144E-02	2.35914E+01	6.66138E-02	.00000E+00	.00000E+00	.00000E+00	7.48610E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.68837E-03	2.78490E-03	1.61690E-05	-2.68044E-03	1.00001E+00
2	.00000E+00	.00000E+00	4.82884E-04	2.56625E-02	1.86141E-02	5.09828E-05	-1.79825E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.60917E-03	4.99148E-02	1.57825E-02	1.36521E-04	-1.33089E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.08745E-03	4.19992E-02	5.43799E-03	1.03103E-04	-4.53241E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.09722E-02	8.15405E-02	5.15682E-03	1.51900E-04	5.66314E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.83660E-02	2.34945E-01	3.21000E-03	3.19927E-04	1.48362E-02	9.99999E-01
7	.00000E+00	.00000E+00	1.22417E-02	2.35115E-01	1.18181E-03	3.44647E-04	1.07153E-02	9.99999E-01
8	.00000E+00	.00000E+00	2.15447E-03	1.58674E-01	7.63077E-03	2.94718E-04	-5.77158E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.66388E-03	1.05108E-01	8.76150E-04	1.10829E-03	5.67977E-03	9.99988E-01
10	.00000E+00	.00000E+00	8.77321E-04	8.54438E-02	8.47751E-04	8.34410E-04	-8.04784E-04	9.99998E-01
11	.00000E+00	.00000E+00	8.47812E-04	7.68865E-02	8.68319E-04	1.33410E-03	-1.35452E-03	9.99999E-01
12	.00000E+00	.00000E+00	8.68325E-04	4.67062E-02	8.68953E-04	4.15839E-05	-4.22820E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.68954E-04	3.95406E-02	8.06602E-04	6.00341E-05	2.37301E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.06602E-04	3.62159E-02	6.82483E-04	9.64626E-05	2.76342E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.26961E-04	2.07254E-02	8.48227E-04	8.32506E-05	-2.03597E-04	9.99944E-01
16	.00000E+00	.00000E+00	9.51757E-04	1.10438E-02	9.56740E-04	5.20408E-05	-5.66642E-05	9.99936E-01
17	.00000E+00	.00000E+00	1.05252E-03	4.20045E-03	1.03395E-03	2.53759E-05	-6.76839E-06	9.99998E-01
18	.00000E+00	.00000E+00	1.09083E-03	3.06257E-03	9.88825E-04	2.09709E-05	8.10549E-05	9.99999E-01
19	.00000E+00	.00000E+00	1.01046E-03	7.08879E-03	1.04588E-03	4.59256E-05	-8.12821E-05	9.99992E-01

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20	.00000E+00	.00000E+00	1.2604E-03	2.5612E-02	1.0888E-03	1.9043E-04	-1.8026E-05	9.9996E-01
21	.00000E+00	.00000E+00	1.4080E-03	6.3807E-03	1.5241E-03	7.0298E-05	-1.8636E-04	9.9999E-01
22	.00000E+00	.00000E+00	1.9258E-03	1.3508E-02	1.8054E-03	1.5740E-04	-3.6598E-05	9.9999E-01
23	.00000E+00	.00000E+00	2.5755E-03	4.5398E-02	3.3329E-03	6.8751E-04	-1.4449E-03	1.0000E+00
24	.00000E+00	.00000E+00	4.0702E-03	3.1719E-02	4.3530E-03	7.3890E-04	-1.0219E-03	1.0000E+00
25	.00000E+00	.00000E+00	3.9155E-03	1.2160E-02	3.1300E-03	4.1361E-04	3.7188E-04	1.0000E+00
26	.00000E+00	.00000E+00	1.6290E-03	8.7996E-03	1.1628E-03	3.8424E-04	8.1971E-05	9.9999E-01
27	.00000E+00	.00000E+00	3.3720E-04	1.6496E-03	8.4985E-07	1.2064E-04	2.1570E-04	1.0000E+00
28	.00000E+00	.00000E+00	8.5801E-02	1.4129E+00	8.5801E-02	7.8814E-03	-7.7197E-03	9.9998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.6576E-01	8.1245E-03	1.6734E-01	1.0805E-02	9.8787E-05	.00000E+00	.00000E+00	3.6063E-02
2	1.2420E+00	9.5951E-02	1.2594E+00	1.1391E-01	.00000E+00	.00000E+00	.00000E+00	2.7080E-01
3	1.5817E+00	1.3152E-01	1.6047E+00	1.4483E-01	.00000E+00	.00000E+00	.00000E+00	3.4504E-01
4	9.8381E-01	8.7261E-02	9.9841E-01	8.7715E-02	.00000E+00	.00000E+00	.00000E+00	2.1472E-01
5	1.4874E+00	1.3952E-01	1.5105E+00	1.3366E-01	.00000E+00	.00000E+00	.00000E+00	3.2480E-01
6	2.8527E+00	2.6662E-01	2.9084E+00	2.5178E-01	.00000E+00	.00000E+00	.00000E+00	6.2531E-01
7	2.8063E+00	1.5368E-01	2.8327E+00	1.4296E-01	.00000E+00	.00000E+00	.00000E+00	6.1104E-01
8	2.0657E+00	1.4847E-02	2.0668E+00	2.0618E-02	.00000E+00	.00000E+00	.00000E+00	4.4752E-01
9	1.6014E+00	-1.5603E-02	1.5982E+00	-2.1283E-02	.00000E+00	.00000E+00	.00000E+00	3.4678E-01
10	1.4619E+00	-2.6997E-02	1.4575E+00	-2.6192E-02	.00000E+00	.00000E+00	.00000E+00	3.1638E-01
11	1.3416E+00	-5.7457E-02	1.3323E+00	-5.6097E-02	.00000E+00	.00000E+00	.00000E+00	2.8980E-01
12	8.4046E-01	-6.5088E-02	8.2987E-01	-6.4996E-02	.00000E+00	.00000E+00	.00000E+00	1.8106E-01
13	7.1119E-01	-5.4623E-02	7.0225E-01	-5.4629E-02	.00000E+00	.00000E+00	.00000E+00	1.5321E-01
14	6.5211E-01	-8.0623E-02	6.3996E-01	-8.0649E-02	.00000E+00	.00000E+00	.00000E+00	1.3998E-01
15	3.7812E-01	-8.2720E-03	3.7671E-01	-8.0808E-03	.00000E+00	.00000E+00	.00000E+00	8.1800E-02
16	2.1043E-01	-4.7854E-03	2.0965E-01	-4.7287E-03	.00000E+00	.00000E+00	.00000E+00	4.5526E-02
17	9.1990E-02	-4.7442E-03	9.1223E-02	-4.7374E-03	.00000E+00	.00000E+00	.00000E+00	1.9857E-02
18	7.1720E-02	-1.0577E-02	7.0070E-02	-1.0568E-02	.00000E+00	.00000E+00	.00000E+00	1.5368E-02
19	1.4300E-01	-7.9186E-03	1.4173E-01	-7.8973E-03	.00000E+00	.00000E+00	.00000E+00	3.0860E-02
20	4.6921E-01	-2.4046E-02	4.6537E-01	-2.4028E-02	.00000E+00	.00000E+00	.00000E+00	1.0129E-01
21	1.3981E-01	-1.9316E-02	1.3679E-01	-1.9130E-02	.00000E+00	.00000E+00	.00000E+00	2.9868E-02
22	2.7211E-01	-5.5104E-02	2.6348E-01	-5.5067E-02	.00000E+00	.00000E+00	.00000E+00	5.8097E-02
23	8.6210E-01	-1.3009E-01	8.4274E-01	-1.2854E-01	.00000E+00	.00000E+00	.00000E+00	1.8487E-01
24	6.3955E-01	-1.2987E-01	6.2138E-01	-1.2884E-01	.00000E+00	.00000E+00	.00000E+00	1.3685E-01
25	2.7178E-01	-6.5752E-02	2.6269E-01	-6.6123E-02	.00000E+00	.00000E+00	.00000E+00	5.8059E-02
26	1.7759E-01	-6.1049E-02	1.6999E-01	-6.1135E-02	.00000E+00	.00000E+00	.00000E+00	3.7759E-02
27	2.9802E-02	-1.6622E-02	2.7700E-02	-1.6838E-02	.00000E+00	.00000E+00	.00000E+00	6.2607E-03
28	2.3560E+01	5.8833E-02	2.3587E+01	6.6614E-02	9.8787E-05	.00000E+00	.00000E+00	5.1097E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.8279E-03	7.7138E-03	4.1111E-04	-8.1245E-03	9.9950E-01
2	.00000E+00	.00000E+00	4.4260E-03	7.5550E-02	9.9297E-02	1.0639E-03	-9.5951E-02	9.9962E-01
3	.00000E+00	.00000E+00	4.7091E-02	6.8507E-02	1.7861E-01	5.3958E-06	-1.3152E-01	9.9997E-01
4	.00000E+00	.00000E+00	6.9854E-02	4.5727E-02	1.5711E-01	3.2220E-06	-8.7261E-02	9.9988E-01
5	.00000E+00	.00000E+00	1.2937E-01	1.4828E-01	2.6866E-01	3.7869E-06	-1.3952E-01	9.9997E-01
6	.00000E+00	.00000E+00	2.7423E-01	4.5506E-01	5.4084E-01	1.1471E-05	-2.6662E-01	9.9998E-01
7	.00000E+00	.00000E+00	5.5250E-01	7.9400E-01	7.0581E-01	2.5342E-05	-1.5368E-01	9.9987E-01
8	.00000E+00	.00000E+00	7.3513E-01	1.0034E+00	7.5000E-01	4.6980E-05	-1.4847E-02	9.9992E-01
9	.00000E+00	.00000E+00	7.4030E-01	9.1511E-01	7.2468E-01	9.5807E-05	1.5603E-02	9.9989E-01
10	.00000E+00	.00000E+00	7.2147E-01	8.6396E-01	6.9323E-01	2.1110E-04	2.6973E-02	9.9986E-01
11	.00000E+00	.00000E+00	6.9986E-01	8.0354E-01	6.4151E-01	4.5631E-04	5.7451E-02	9.9994E-01
12	.00000E+00	.00000E+00	5.5862E-01	4.1894E-01	4.9259E-01	5.9610E-04	6.5083E-02	9.9997E-01
13	.00000E+00	.00000E+00	4.8887E-01	3.3790E-01	4.3337E-01	8.9761E-04	5.4625E-02	9.9997E-01
14	.00000E+00	.00000E+00	4.6941E-01	3.2468E-01	3.8784E-01	1.4694E-03	8.0621E-02	9.9988E-01
15	.00000E+00	.00000E+00	2.5265E-01	1.2559E-01	2.4279E-01	1.2913E-03	8.2741E-03	9.9994E-01
16	.00000E+00	.00000E+00	1.6756E-01	5.4950E-02	1.6188E-01	8.8950E-04	4.7870E-03	9.9990E-01
17	.00000E+00	.00000E+00	8.6306E-02	1.5654E-02	8.1450E-02	4.3727E-04	4.7408E-03	1.0000E+00
18	.00000E+00	.00000E+00	7.7019E-02	1.2092E-02	6.6073E-02	3.6996E-04	1.0574E-02	1.0000E+00
19	.00000E+00	.00000E+00	1.2859E-01	3.6121E-02	1.1988E-01	7.9174E-04	7.9132E-03	1.0000E+00
20	.00000E+00	.00000E+00	3.1582E-01	2.5517E-01	2.8851E-01	3.2645E-03	2.4050E-02	9.9999E-01

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21	.00000E+00	.00000E+00	1.50480E-01	4.99443E-02	1.2998E-01	1.23751E-03	1.93081E-02	1.00004E+00
22	.00000E+00	.00000E+00	2.88144E-01	1.47940E-01	2.3022E-01	2.81206E-03	5.51078E-02	9.99998E-01
23	.00000E+00	.00000E+00	6.98248E-01	8.39165E-01	5.51057E-01	1.20981E-02	1.3009E-01	1.00001E+00
24	.00000E+00	.00000E+00	7.09544E-01	7.33724E-01	5.66368E-01	1.33018E-02	1.2869E-01	1.00001E+00
25	.00000E+00	.00000E+00	4.56501E-01	2.97857E-01	3.83194E-01	7.55472E-03	6.5750E-02	1.00000E+00
26	.00000E+00	.00000E+00	3.59984E-01	3.15751E-01	2.91638E-01	7.2944E-03	6.1057E-02	9.99983E-01
27	.00000E+00	.00000E+00	1.19468E-01	6.58665E-02	1.0039E-01	2.50622E-03	1.6625E-02	9.99998E-01
28	.00000E+00	.00000E+00	9.29610E+00	9.21227E+00	9.29610E+00	5.91468E-02	-5.8840E-02	9.99967E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.64997E-01	2.10805E-09	1.65766E-01	8.12454E-03	4.26597E-10	.00000E+00	.00000E+00	1.88841E-01
2	1.23071E+00	-4.87721E-08	1.24208E+00	9.59318E-02	.00000E+00	.00000E+00	.00000E+00	1.40909E+00
3	1.56413E+00	-3.94333E-09	1.58170E+00	1.31526E-01	.00000E+00	.00000E+00	.00000E+00	1.79140E+00
4	9.70670E-01	2.16520E-08	9.83810E-01	8.72619E-02	.00000E+00	.00000E+00	.00000E+00	1.11211E+00
5	1.46501E+00	-2.23687E-08	1.48743E+00	1.39825E-01	.00000E+00	.00000E+00	.00000E+00	1.67885E+00
6	2.81868E+00	2.37695E-07	2.86271E+00	2.66634E-01	.00000E+00	.00000E+00	.00000E+00	3.23018E+00
7	2.78100E+00	1.75371E-07	2.80637E+00	1.53681E-01	.00000E+00	.00000E+00	.00000E+00	3.18488E+00
8	2.06392E+00	-1.20093E-07	2.06374E+00	1.48471E-02	.00000E+00	.00000E+00	.00000E+00	2.36139E+00
9	1.60356E+00	-4.92143E-08	1.60140E+00	-1.56034E-02	.00000E+00	.00000E+00	.00000E+00	1.83519E+00
10	1.46680E+00	-6.01523E-08	1.46198E+00	-2.69973E-02	.00000E+00	.00000E+00	.00000E+00	1.67842E+00
11	1.35177E+00	-4.26168E-08	1.34164E+00	-5.77517E-02	.00000E+00	.00000E+00	.00000E+00	1.54634E+00
12	8.51598E-01	-1.92106E-08	8.40460E-01	-6.50589E-02	.00000E+00	.00000E+00	.00000E+00	9.73652E-01
13	7.20153E-01	-1.56201E-09	7.11195E-01	-5.46235E-02	.00000E+00	.00000E+00	.00000E+00	8.23711E-01
14	6.65674E-01	1.05850E-08	6.52118E-01	-8.05213E-02	.00000E+00	.00000E+00	.00000E+00	7.60959E-01
15	3.78573E-01	2.09122E-06	3.78128E-01	-8.27207E-03	.00000E+00	.00000E+00	.00000E+00	4.33663E-01
16	2.10948E-01	1.64750E-06	2.10436E-01	-4.78543E-03	.00000E+00	.00000E+00	.00000E+00	2.41509E-01
17	9.27525E-02	-3.35600E-06	9.19909E-02	-4.74423E-03	.00000E+00	.00000E+00	.00000E+00	1.06115E-01
18	7.36155E-02	-3.21498E-06	7.17207E-02	-1.05777E-02	.00000E+00	.00000E+00	.00000E+00	8.40789E-02
19	1.44266E-01	-5.37192E-06	1.43004E-01	-7.91861E-03	.00000E+00	.00000E+00	.00000E+00	1.65046E-01
20	4.73088E-01	3.61124E-06	4.69219E-01	-2.40467E-02	.00000E+00	.00000E+00	.00000E+00	5.41265E-01
21	1.43393E-01	-8.45319E-06	1.39818E-01	-1.93165E-02	.00000E+00	.00000E+00	.00000E+00	1.63776E-01
22	2.82468E-01	3.57357E-06	2.72111E-01	-5.51040E-02	.00000E+00	.00000E+00	.00000E+00	3.22259E-01
23	8.89289E-01	-5.71100E-07	8.62108E-01	-1.30090E-01	.00000E+00	.00000E+00	.00000E+00	1.01456E+00
24	6.71217E-01	-2.53733E-06	6.39951E-01	-1.29871E-01	.00000E+00	.00000E+00	.00000E+00	7.63641E-01
25	2.89473E-01	-1.55391E-06	2.71783E-01	-6.57520E-02	.00000E+00	.00000E+00	.00000E+00	3.28362E-01
26	1.97659E-01	7.83225E-06	1.77959E-01	-6.10495E-02	.00000E+00	.00000E+00	.00000E+00	2.22404E-01
27	3.65267E-02	2.27439E-07	2.98025E-02	-1.66228E-02	.00000E+00	.00000E+00	.00000E+00	4.03125E-02
28	2.36019E+01	-5.96958E-06	2.35604E+01	5.88539E-02	4.26597E-10	.00000E+00	.00000E+00	2.70022E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.19649E-02	.00000E+00	2.18660E-02	2.07350E-02	3.56434E-03	2.10805E-09	9.98825E-01
2	.00000E+00	1.90919E-01	7.17069E-03	2.66663E-01	1.85451E-01	1.46527E-02	-4.87721E-08	1.00002E+00
3	.00000E+00	2.15337E-01	7.56398E-02	2.79053E-01	2.75267E-01	1.57133E-02	-3.94333E-09	9.99987E-01
4	.00000E+00	1.24201E-01	1.13674E-01	1.92747E-01	2.30324E-01	7.55087E-03	2.16520E-08	1.00000E+00
5	.00000E+00	1.65227E-01	2.07978E-01	4.89003E-01	3.68584E-01	4.62999E-03	-2.23687E-08	9.99989E-01
6	.00000E+00	1.78924E-01	4.26992E-01	1.34375E+00	5.98476E-01	7.43082E-03	2.37695E-07	1.00001E+00
7	.00000E+00	8.86746E-02	6.62744E-01	1.77541E+00	7.43334E-01	8.09134E-03	1.75371E-07	9.99989E-01
8	.00000E+00	1.36799E-02	7.79868E-01	1.78977E+00	7.79111E-01	1.44898E-02	-1.20093E-07	9.99921E-01
9	.00000E+00	9.95164E-04	7.69667E-01	1.55498E+00	7.46198E-01	2.45449E-02	-4.92143E-08	9.99895E-01
10	.00000E+00	7.37715E-05	7.42594E-01	1.40792E+00	7.05827E-01	3.73147E-02	-6.01523E-08	9.99900E-01
11	.00000E+00	5.80390E-06	7.10890E-01	1.29941E+00	6.50449E-01	6.04375E-02	-4.26168E-08	9.99942E-01
12	.00000E+00	4.07714E-07	5.67543E-01	7.02662E-01	5.05155E-01	6.44037E-02	-1.92106E-08	9.99974E-01
13	.00000E+00	6.47414E-08	4.99094E-01	5.53120E-01	4.40338E-01	5.87108E-02	-1.56201E-09	9.99971E-01
14	.00000E+00	1.28300E-08	4.76906E-01	5.12730E-01	3.96034E-01	8.08780E-02	1.05850E-08	9.99989E-01
15	.00000E+00	1.44998E-09	2.60667E-01	2.35698E-01	2.52587E-01	8.06416E-03	2.09122E-06	1.00005E+00
16	.00000E+00	4.25751E-10	1.77642E-01	1.09598E-01	1.72583E-01	5.04761E-03	1.64750E-06	1.00005E+00
17	.00000E+00	1.37112E-10	9.56281E-02	3.51198E-02	9.03140E-02	5.30938E-03	-3.35600E-06	1.00008E+00
18	.00000E+00	9.81685E-11	8.55308E-02	2.66565E-02	7.35059E-02	1.20225E-02	-3.21498E-06	1.00007E+00
19	.00000E+00	1.38789E-10	1.38113E-01	6.94904E-02	1.30621E-01	7.48710E-03	-5.37192E-06	1.00008E+00
20	.00000E+00	2.25686E-10	3.28365E-01	3.86025E-01	2.99821E-01	2.85247E-02	3.61124E-06	1.00005E+00
21	.00000E+00	3.30831E-11	1.61790E-01	8.07930E-02	1.40925E-01	2.08608E-02	-8.45319E-06	1.00008E+00

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22	.00000E+00	3.83259E-11	3.03604E-01	2.13487E-01	2.43719E-01	5.98741E-02	3.57357E-06	1.00002E+00
23	.00000E+00	3.66438E-11	7.12852E-01	1.07286E+00	5.75084E-01	1.37869E-01	-5.71100E-07	1.00006E+00
24	.00000E+00	9.97397E-12	7.38429E-01	8.92745E-01	5.95278E-01	1.43121E-01	-2.53733E-06	1.00004E+00
25	.00000E+00	2.91973E-12	4.81342E-01	3.57749E-01	4.01982E-01	7.93486E-02	-1.55391E-06	1.00008E+00
26	.00000E+00	2.04733E-12	3.71811E-01	3.57384E-01	2.99769E-01	7.20358E-02	7.83225E-06	9.99998E-01
27	.00000E+00	4.87869E-13	1.21985E-01	7.23509E-02	1.01512E-01	2.04720E-02	2.27438E-07	1.00001E+00
28	.00000E+00	1.00000E+00	1.00190E+01	1.61017E+01	1.00190E+01	1.00349E+00	-5.99568E-06	9.99985E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dr**2	total flux
1	1.64997E-01	2.10805E-09	1.72578E-01	.00000E+00	2.30590E-03	2.57414E-03	.00000E+00	3.47753E-01
2	1.23071E+00	-4.87721E-08	1.31441E+00	.00000E+00	1.75309E-05	1.17886E-02	.00000E+00	2.61085E+00
3	1.56413E+00	-3.94333E-09	1.67305E+00	.00000E+00	.00000E+00	1.45478E-02	.00000E+00	3.32164E+00
4	9.70670E-01	2.16520E-08	1.03912E+00	.00000E+00	.00000E+00	6.29661E-03	.00000E+00	2.06328E+00
5	1.46501E+00	-2.23687E-08	1.57395E+00	.00000E+00	.00000E+00	1.85640E-03	.00000E+00	3.11830E+00
6	2.81868E+00	2.37698E-07	3.02941E+00	.00000E+00	.00000E+00	1.67207E-03	.00000E+00	6.00150E+00
7	2.78100E+00	1.75371E-07	2.90442E+00	.00000E+00	.00000E+00	1.69873E-03	.00000E+00	5.86555E+00
8	2.06383E+00	-1.20098E-07	2.07989E+00	.00000E+00	.00000E+00	1.77522E-03	.00000E+00	4.30265E+00
9	1.60856E+00	-4.92143E-08	1.58545E+00	.00000E+00	.00000E+00	2.42091E-03	.00000E+00	3.32763E+00
10	1.46680E+00	-6.01529E-08	1.44347E+00	.00000E+00	.00000E+00	5.15569E-03	.00000E+00	3.03873E+00
11	1.35177E+00	-4.26168E-08	1.30199E+00	.00000E+00	.00000E+00	1.07150E-02	.00000E+00	2.78319E+00
12	8.51598E-01	-1.92106E-08	7.94341E-01	.00000E+00	.00000E+00	1.37916E-02	.00000E+00	1.73791E+00
13	7.20153E-01	-1.56201E-09	6.72804E-01	.00000E+00	.00000E+00	1.36260E-02	.00000E+00	1.47051E+00
14	6.65674E-01	1.05850E-08	5.95112E-01	.00000E+00	.00000E+00	9.17978E-03	.00000E+00	1.34296E+00
15	3.78673E-01	2.09122E-06	3.72168E-01	.00000E+00	.00000E+00	2.32477E-03	.00000E+00	7.84918E-01
16	2.10948E-01	1.64750E-06	2.07153E-01	.00000E+00	.00000E+00	1.56920E-03	.00000E+00	4.36998E-01
17	9.27525E-02	-3.35600E-06	8.87581E-02	.00000E+00	.00000E+00	2.20864E-03	.00000E+00	1.90646E-01
18	7.36155E-02	-3.21498E-06	6.42002E-02	.00000E+00	.00000E+00	2.54205E-03	.00000E+00	1.47443E-01
19	1.44266E-01	-5.37192E-06	1.37581E-01	.00000E+00	.00000E+00	3.54318E-03	.00000E+00	2.96270E-01
20	4.73085E-01	3.61124E-06	4.52739E-01	.00000E+00	.00000E+00	1.69539E-02	.00000E+00	9.72674E-01
21	1.43393E-01	-8.45319E-06	1.26547E-01	.00000E+00	.00000E+00	1.28783E-02	.00000E+00	2.88022E-01
22	2.82465E-01	3.57357E-06	2.32996E-01	.00000E+00	.00000E+00	3.65695E-02	.00000E+00	5.57494E-01
23	8.89289E-01	-5.71100E-07	7.73389E-01	.00000E+00	.00000E+00	8.32006E-02	.00000E+00	1.77813E+00
24	6.71217E-01	-2.53733E-06	5.52211E-01	.00000E+00	.00000E+00	8.61648E-02	.00000E+00	1.31936E+00
25	2.89473E-01	-1.55391E-06	2.26387E-01	.00000E+00	.00000E+00	4.98836E-02	.00000E+00	5.60534E-01
26	1.97857E-01	7.83225E-06	1.35701E-01	.00000E+00	.00000E+00	4.56895E-02	.00000E+00	3.68577E-01
27	3.65257E-02	2.27438E-07	1.74124E-02	.00000E+00	.00000E+00	1.27786E-02	.00000E+00	6.21699E-02
28	2.36019E+01	-5.96958E-06	2.35678E+01	.00000E+00	2.32343E-03	4.55203E-01	.00000E+00	4.90943E+01

- elapsed time .02 min.

0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.32023E-03	2.46632E-02	3.14960E-02	1.91146E-02	2.92597E-02	5.58960E-02	3.18615E-02	4.61034E-03
2	3.63221E-03	3.82934E-02	4.86870E-02	2.94863E-02	4.49319E-02	8.46411E-02	4.80592E-02	6.95114E-03
3	2.95138E-03	3.26702E-02	4.29869E-02	2.71862E-02	4.29898E-02	8.04865E-02	4.60468E-02	5.53407E-03
4	1.01878E-03	1.20220E-02	1.64775E-02	1.09272E-02	1.74414E-02	3.33811E-02	1.95152E-02	1.98607E-03
5	1.69031E-03	1.87470E-02	2.46961E-02	1.56111E-02	2.43670E-02	4.65140E-02	2.66799E-02	3.28888E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.76323E-03	5.86906E-03	1.25367E-02	1.47708E-02	1.21700E-02	1.78675E-02	1.82534E-03	1.05963E-03
2	7.15452E-03	8.80490E-03	1.88576E-02	2.18491E-02	1.83631E-02	2.71110E-02	2.71215E-03	1.58962E-03
3	5.75377E-03	8.26034E-03	1.76352E-02	2.02020E-02	1.69731E-02	2.50651E-02	2.53800E-03	1.47790E-03
4	1.91944E-03	3.36057E-03	7.16180E-03	8.11418E-03	6.85338E-03	1.00771E-02	1.10575E-03	6.22081E-04
5	3.33909E-03	4.78343E-03	1.02084E-02	1.16847E-02	9.84101E-03	1.44731E-02	1.51738E-03	8.70663E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.05475E-03	2.33689E-03	1.76176E-03	5.37297E-03	4.22164E-03	1.20619E-02	2.84650E-02	2.83012E-02
2	1.59250E-03	3.58298E-03	2.63450E-03	8.07731E-03	6.43045E-03	1.85115E-02	4.32469E-02	4.33146E-02
3	1.47298E-03	3.29718E-03	2.44776E-03	7.46892E-03	5.97175E-03	1.71157E-02	4.01946E-02	4.01905E-02
4	5.98243E-04	1.30954E-03	9.99810E-04	3.03522E-03	2.40481E-03	6.86900E-03	1.66064E-02	1.66319E-02
5	8.54371E-04	1.89117E-03	1.42751E-03	4.34696E-03	3.43847E-03	9.83099E-03	2.33368E-02	2.32414E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.44407E-02	1.31470E-02	3.43384E-03	3.84351E-01
2	2.22285E-02	2.05503E-02	5.66042E-03	5.86934E-01

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3	2.04908E-02	1.89825E-02	5.19966E-03	5.40975E-01
4	8.29796E-03	7.56765E-03	1.90505E-03	2.17707E-01
5	1.18114E-02	1.07995E-02	2.81431E-03	3.12114E-01

1 240 d, sas2h: babcock wilcox 15x15, 3.00w/o, 20gd/mtu burn high temp

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.70692E-01	1.29416E+00	1.64749E+00	1.02566E+00	1.54958E+00	2.98152E+00	2.87557E+00	2.07444E+00
2	1.67548E-01	1.26141E+00	1.60707E+00	9.99721E-01	1.51239E+00	2.91177E+00	2.83454E+00	2.06721E+00
3	1.66403E-01	1.24954E+00	1.5920E+00	9.90752E-01	1.49870E+00	2.88529E+00	2.81946E+00	2.06494E+00
4	1.64993E-01	1.23114E+00	1.56617E+00	9.71662E-01	1.46683E+00	2.82225E+00	2.78268E+00	2.06318E+00
5	1.67064E-01	1.25437E+00	1.59584E+00	9.91275E-01	1.49815E+00	2.88286E+00	2.81802E+00	2.06715E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59046E+00	1.44919E+00	1.31426E+00	8.08612E-01	6.84621E-01	6.12646E-01	3.74037E-01	2.08164E-01
2	1.59784E+00	1.45723E+00	1.33160E+00	8.28980E-01	7.01506E-01	6.37861E-01	3.76894E-01	2.09588E-01
3	1.60013E+00	1.45986E+00	1.33719E+00	8.35452E-01	7.06969E-01	6.45905E-01	3.77442E-01	2.10065E-01
4	1.60343E+00	1.46646E+00	1.35106E+00	8.50869E-01	7.19888E-01	6.64860E-01	3.78898E-01	2.11010E-01
5	1.59871E+00	1.45992E+00	1.33714E+00	8.34953E-01	7.06488E-01	6.45205E-01	3.77103E-01	2.09949E-01

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.97398E-02	6.64960E-02	1.39255E-01	4.57807E-01	1.30620E-01	2.45133E-01	8.01802E-01	5.79882E-01
2	9.11561E-02	6.98580E-02	1.41621E-01	4.66042E-01	1.36517E-01	2.62748E-01	8.41092E-01	6.19751E-01
3	9.16263E-02	7.09144E-02	1.42394E-01	4.67401E-01	1.38378E-01	2.68071E-01	8.53064E-01	6.31378E-01
4	9.27138E-02	7.34609E-02	1.44203E-01	4.72898E-01	1.43093E-01	2.81597E-01	8.86436E-01	6.67204E-01
5	9.15952E-02	7.08572E-02	1.42339E-01	4.67212E-01	1.38378E-01	2.67841E-01	8.54277E-01	6.33868E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.40893E-01	1.49532E-01	2.13877E-02
2	2.61856E-01	1.69242E-01	2.74920E-02
3	2.67666E-01	1.74396E-01	2.88879E-02
4	2.86895E-01	1.94317E-01	3.52220E-02
5	2.69258E-01	1.76982E-01	2.98687E-02

0flux disadventage factors (zone average/cell average-flux)

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02172E+00	1.03172E+00	1.03257E+00	1.03267E+00	1.03419E+00	1.03422E+00	1.02042E+00	1.00853E+00
2	1.00250E+00	1.00561E+00	1.00704E+00	1.00852E+00	1.00951E+00	1.01003E+00	1.00589E+00	1.00003E+00
3	9.96038E-01	9.96167E-01	9.97648E-01	9.99473E-01	1.00057E+00	1.00084E+00	1.00051E+00	9.98933E-01
4	9.87605E-01	9.81488E-01	9.80781E-01	9.80215E-01	9.79009E-01	9.78978E-01	9.87458E-01	9.98079E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94857E-01	9.92650E-01	9.82885E-01	9.68652E-01	9.69049E-01	9.49537E-01	9.91868E-01	9.91502E-01
2	9.99455E-01	9.98161E-01	9.95854E-01	9.92846E-01	9.92948E-01	9.88618E-01	9.98650E-01	9.98285E-01
3	1.00039E+00	9.99961E-01	1.00003E+00	1.00060E+00	1.00068E+00	1.00109E+00	1.00090E+00	1.00056E+00
4	1.00295E+00	1.00448E+00	1.01040E+00	1.01906E+00	1.01868E+00	1.03046E+00	1.00478E+00	1.00505E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.79765E-01	9.38716E-01	9.78334E-01	9.78871E-01	9.43561E-01	9.15220E-01	9.38574E-01	9.14831E-01
2	9.95229E-01	9.86177E-01	9.94957E-01	9.95356E-01	9.86564E-01	9.80988E-01	9.84566E-01	9.77728E-01
3	1.00036E+00	1.00109E+00	1.00089E+00	1.00040E+00	9.99995E-01	1.00085E+00	9.98580E-01	9.96071E-01
4	1.01224E+00	1.03704E+00	1.01310E+00	1.01216E+00	1.05409E+00	1.05136E+00	1.03764E+00	1.05259E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

0zone	grp. 25	grp. 26	grp. 27
1	8.95330E-01	8.43769E-01	7.16087E-01
2	9.72573E-01	9.56267E-01	9.20431E-01
3	9.95948E-01	9.85398E-01	9.67165E-01
4	1.06535E+00	1.09795E+00	1.17923E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.52023E-03	2.46432E-02	3.14960E-02	1.91146E-02	2.92597E-02	5.58960E-02	3.18415E-02	4.61034E-03

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2	3.65221E-03	3.82934E-02	4.86876E-02	2.94863E-02	4.49319E-02	8.46411E-02	4.80592E-02	6.93116E-03
3	2.95138E-03	3.26702E-02	4.29859E-02	2.71862E-02	4.23898E-02	8.04845E-02	4.60468E-02	5.53407E-03
4	1.01878E-03	1.20220E-02	1.64775E-02	1.09272E-02	1.74414E-02	3.33811E-02	1.93152E-02	1.98607E-03
5	1.69031E-03	1.87470E-02	2.46961E-02	1.56111E-02	2.43670E-02	4.65140E-02	2.66799E-02	3.29888E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.76323E-03	5.86906E-03	1.25367E-02	1.44708E-02	1.21700E-02	1.78675E-02	1.82534E-03	1.05963E-03
2	7.15452E-03	8.80490E-03	1.88578E-02	2.18491E-02	1.83631E-02	2.71110E-02	2.71215E-03	1.58962E-03
3	5.75397E-03	8.26024E-03	1.78352E-02	2.02020E-02	1.69731E-02	2.50551E-02	2.53800E-03	1.47790E-03
4	1.91944E-03	3.34057E-03	7.16180E-03	8.11418E-03	6.85339E-03	1.00771E-02	1.10575E-03	6.22081E-04
5	3.33905E-03	4.78343E-03	1.02084E-02	1.16847E-02	9.84101E-03	1.44731E-02	1.51758E-03	8.70663E-04

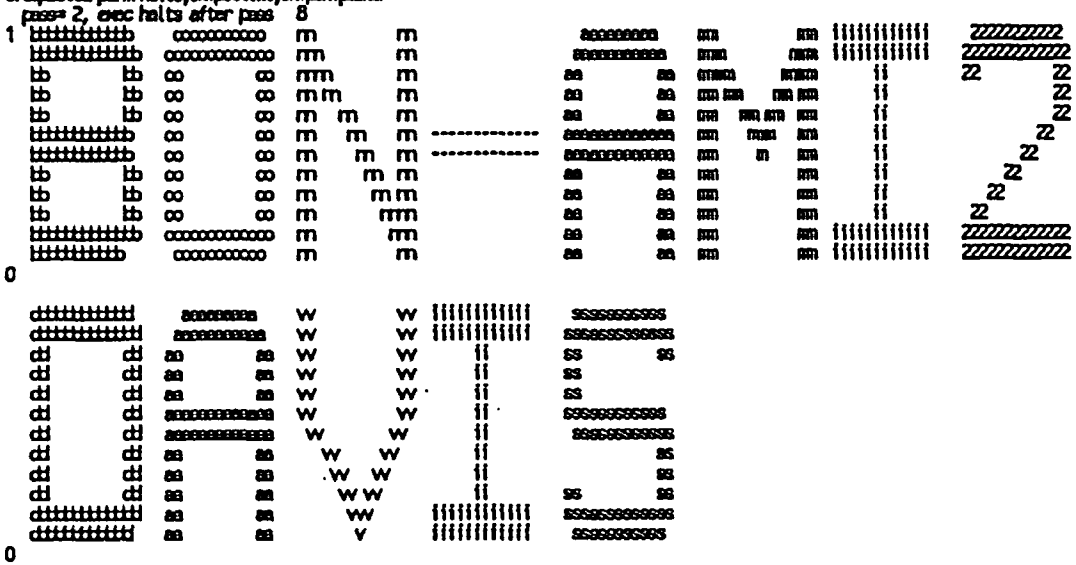
Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.05475E-03	2.33689E-03	1.76176E-03	5.37297E-03	4.22154E-03	1.20619E-02	2.84650E-02	2.83012E-02
2	1.59250E-03	3.58259E-03	2.63450E-03	8.07731E-03	6.43045E-03	1.85115E-02	4.32659E-02	4.33146E-02
3	1.47296E-03	3.29918E-03	2.44771E-03	7.46892E-03	5.97175E-03	1.71157E-02	4.01914E-02	4.01905E-02
4	5.96243E-04	1.30954E-03	9.99810E-04	3.08522E-03	2.40481E-03	6.86900E-03	1.65064E-02	1.66319E-02
5	8.54371E-04	1.89117E-03	1.42751E-03	4.34696E-03	3.43847E-03	9.83099E-03	2.33356E-02	2.32414E-02

Ozone	grp. 25	grp. 26	grp. 27
1	1.24409E-02	1.31470E-02	3.44384E-03
2	2.22285E-02	2.05503E-02	5.66049E-03
3	2.04903E-02	1.89825E-02	5.19964E-03
4	8.29799E-03	7.56765E-03	1.90505E-03
5	1.18114E-02	1.07995E-02	2.81431E-03

Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

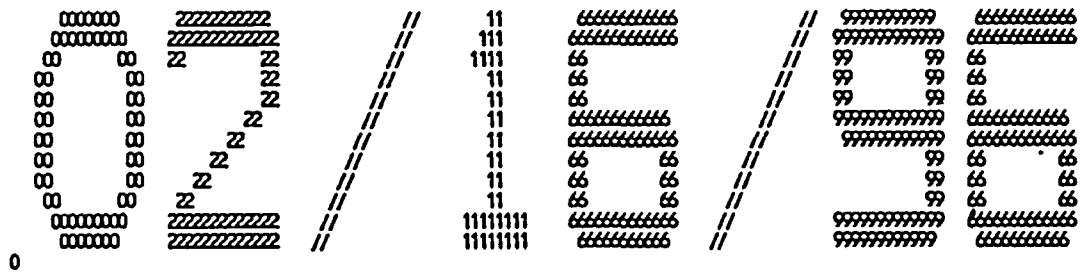
- elapsed time .03 min.

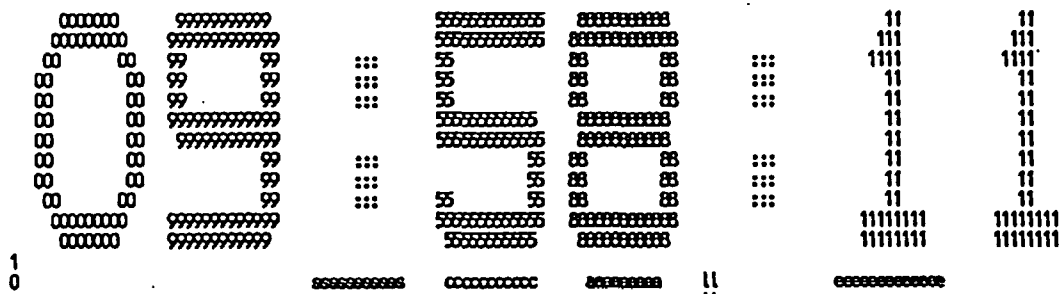
0requested parm=halt8,skipcellwt,skipshipdata
pass= 2, exec halts after pass 8

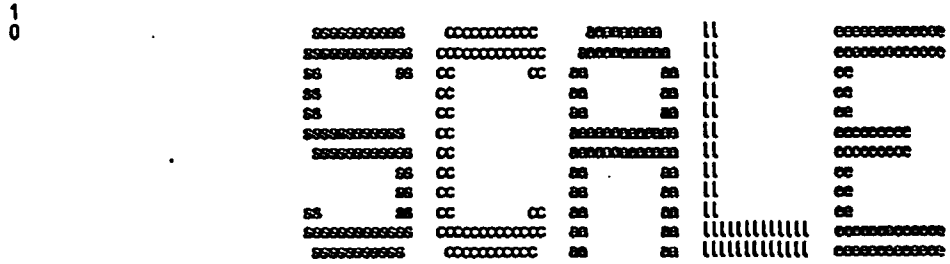


0

INFORMATION ONLY







program verification information

code system: scale version: 4.2

program: c0c008

creation date: 04/27/95

INFORMATION ONLY

```
*****            library:  /neutronics/scale/exe                *****
*****                                                            *****
*****                                                            *****
*****   this is not a   scale  configuration controlled code     *****
*****                                                            *****
*****            jobname:  davis                                 *****
*****                                                            *****
*****   date of execution:  02/16/96                             *****
*****                                                            *****
*****   time of execution:  09:58:11                             *****
*****                                                            *****
*****                                                            *****
*****************************************************************
*****************************************************************
*****************************************************************
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0ig--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0im--number of zones or material regions                     4
0ms--mixing table length                                    70
0ibl--shielded cross section edit option (0/1--no/yes)       0
0ibr--bondarenko factor edit option (0/1--no/yes)            0
0iscqt--dancoff factor option                                0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has    70 entries.
0       4q array has    70 entries.
0       5q array has    70 entries.
0       6q array has     4 entries.
0       7q array has     4 entries.
0       8q array has     4 entries.
0       9q array has     4 entries.
0      10q array has    70 entries.
0      11q array has     4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
   1       3       8016    2.09710E-02          201
   2       3       1001    4.19420E-02          202
   3       3       5010    3.81515E-06          203
   4       3       5011    1.54884E-05          204
   5       2      40302    4.25156E-02          205
   6       1      92235    1.97093E-04       200006
   7       1      92234    1.73686E-06       200007
   8       1      92236    6.85418E-06       200008
   9       1      92238    7.27846E-03       200009
  10       1       8016    1.50611E-02       200010
  11       1       8016    1.15315E-02       200011
  12       1      36083    1.49788E-07       200012
  13       1      36085    7.24877E-08       200013
  14       1      38090    1.62222E-06       200014
  15       1      39089    9.69799E-07       200015
```

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16	1	42095	8.85395E-07	200016
17	1	40095	1.21166E-06	200017
18	1	40094	1.88811E-06	200018
19	1	40095	6.68494E-07	200019
20	1	41094	6.37185E-13	200020
21	1	43099	1.78793E-06	200021
22	1	45103	7.74208E-07	200022
23	1	45105	4.70797E-09	200023
24	1	44101	1.56517E-06	200024
25	1	44106	2.11021E-07	200025
26	1	46105	4.39806E-07	200026
27	1	46108	8.09598E-08	200027
28	1	47109	5.68571E-08	200028
29	1	51124	1.58536E-11	200029
30	1	54131	8.22527E-07	200030
31	1	54132	1.34631E-06	200031
32	1	54135	2.15375E-09	200032
33	1	54136	2.98490E-06	200033
34	1	55134	2.69282E-08	200034
35	1	55135	9.25459E-07	200035
36	1	55137	1.88977E-06	200036
37	1	56136	5.51117E-09	200037
38	1	57139	1.88760E-06	200038
39	1	59141	1.39034E-06	200039
40	1	59143	1.33567E-07	200040
41	1	58144	1.20205E-06	200041
42	1	60143	1.53714E-06	200042
43	1	60145	1.14105E-06	200043
44	1	61147	5.39173E-07	200044
45	1	61148	1.43795E-09	200045
46	1	60147	4.43675E-08	200046
47	1	62147	4.54726E-08	200047
48	1	62149	2.27445E-08	200048
49	1	62150	3.27241E-07	200049
50	1	62151	7.37387E-08	200050
51	1	62152	1.51698E-07	200051
52	1	64155	1.47720E-10	200052
53	1	63153	6.68515E-08	200053
54	1	63154	5.20859E-09	200054
55	1	63155	1.03382E-08	200055
56	1	40302	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	1.93560E-06	200060
61	1	93237	2.03586E-07	200061
62	1	94238	7.98213E-09	200062
63	1	94239	1.44467E-05	200063
64	1	94240	1.07622E-06	200064
65	1	94241	2.48362E-07	200065
66	1	94242	6.83419E-09	200066
67	1	95241	2.00094E-09	200067
68	1	95243	1.38633E-10	200068
69	1	96244	3.02219E-12	200069
70	1	999	3.30753E-21	200070

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.29052E+01	0
3	3	8.14000E-01	6.07600E+02	3.54862E+00	0

INFORMATION ONLY

```
   4     1          2.96100E+00    9.75000E+02    2.32883E-01            0
     8067 locations of   200000 available are required to make a new master containing the self-shielded values
0no nuclides in your problem have bondarenko factor data**tonami will copy from logical 12 to logical  1
0copy      999  1/v cross sectio from log 12 to log  1   bondarenko trigger 0
0copy     1001  hydrogen         from log 12 to log 18   bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 12 to log 18   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1   bondarenko trigger 0
0copy     5011  boron-11         from log 12 to log 18   bondarenko trigger 0
0copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
0copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 12 to log 18   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy    36083  kr-83            from log 12 to log  1   bondarenko trigger 0
0copy    36085  kr-85            from log 12 to log  1   bondarenko trigger 0
0copy    38090  sr-90            from log 12 to log  1   bondarenko trigger 0
0copy    39089   y-89            from log 12 to log  1   bondarenko trigger 0
0copy    40093  zr-93            from log 12 to log  1   bondarenko trigger 0
0copy    40094  zr-94            from log 12 to log  1   bondarenko trigger 0
0copy    40095  zr-95            from log 12 to log  1   bondarenko trigger 0
0copy    40302  zircalloy        from log 12 to log 18   bondarenko trigger 0
0copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
0copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
0copy    41094  nb-94            from log 12 to log  1   bondarenko trigger 0
0copy    42095  mo-95            from log 12 to log  1   bondarenko trigger 0
0copy    43099  tc-99            from log 12 to log  1   bondarenko trigger 0
0copy    44101  ru-101           from log 12 to log  1   bondarenko trigger 0
0copy    44106  ru-106           from log 12 to log  1   bondarenko trigger 0
0copy    45103  rh-103           from log 12 to log  1   bondarenko trigger 0
0copy    45105  rh-105           from log 12 to log  1   bondarenko trigger 0
0copy    46105  pd-105           from log 12 to log  1   bondarenko trigger 0
0copy    46108  pd-108           from log 12 to log  1   bondarenko trigger 0
0copy    47109  silver-109       from log 12 to log  1   bondarenko trigger 0
0copy    51124  sb-124           from log 12 to log  1   bondarenko trigger 0
0copy    54131  xe-131           from log 12 to log  1   bondarenko trigger 0
0copy    54132  xe-132           from log 12 to log  1   bondarenko trigger 0
0copy    54135  xenon-135        from log 12 to log  1   bondarenko trigger 0
0copy    54136  xe-136           from log 12 to log  1   bondarenko trigger 0
0copy    55133  cesium-133       from log 12 to log  1   bondarenko trigger 0
0copy    55134  cs-134           from log 12 to log  1   bondarenko trigger 0
0copy    55135  cs-135           from log 12 to log  1   bondarenko trigger 0
0copy    55137  cs-137           from log 12 to log  1   bondarenko trigger 0
0copy    56136  ba-136           from log 12 to log  1   bondarenko trigger 0
0copy    57139  la-139           from log 12 to log  1   bondarenko trigger 0
0copy    58144  ce-144           from log 12 to log  1   bondarenko trigger 0
0copy    59141  pr-141           from log 12 to log  1   bondarenko trigger 0
0copy    59143  pr-143           from log 12 to log  1   bondarenko trigger 0
0copy    60143  nd-143           from log 12 to log  1   bondarenko trigger 0
0copy    60145  nd-145           from log 12 to log  1   bondarenko trigger 0
0copy    60147  nd-147           from log 12 to log  1   bondarenko trigger 0
0copy    61147  pm-147           from log 12 to log  1   bondarenko trigger 0
0copy    61148  pm-148           from log 12 to log  1   bondarenko trigger 0
0copy    62147  sm-147           from log 12 to log  1   bondarenko trigger 0
0copy    62149  sm-149           from log 12 to log  1   bondarenko trigger 0
0copy    62150  sm-150           from log 12 to log  1   bondarenko trigger 0
0copy    62151  sm-151           from log 12 to log  1   bondarenko trigger 0
```

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```
0copy   62152  sm-152          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63153  eu-153          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63154  eu-154          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63155  eu-155          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   64155  gd-155          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigp= from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92235  uranium-235     from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigp= from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92238  uranium-238     from lcg 12 to lcg  1   bondarenko trigger 0
0copy   93237  neptunium-237   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigp from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94239  plutonium-239   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94240  plutonium-240   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94241  plutonium-241   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94242  plutonium-242   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigp from lcg 12 to lcg  1   bondarenko trigger 0
0copy   95243  am-243 1057 218 from lcg 12 to lcg  1   bondarenko trigger 0
0copy   96244  curium-244      from lcg 12 to lcg  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
           compiled for nrc      1/27/89
              last updated       9/16/93
                 l.m.petrie  -   ornl
        tape id                          4321        number of nuclides                70
        number of neutron groups           27        number of gamma groups             0
        first thermal group                15        logical unit                       1
                                   table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                          id   200070
       hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89             id      202
       hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89             id   200057
      b-10 1273 218rgp 042375 p-3 293k                                           id      203
      b-10 1273 218rgp 042375 p-3 293k                                           id   200058
       boron-11       endf/b-iv mat 1160            updated 10/13/89             id      204
       boron-11       endf/b-iv mat 1160            updated 10/13/89             id   200059
       oxygen-16      endf/b-iv mat 1276            updated 10/13/89             id      201
       oxygen-16      endf/b-iv mat 1276            updated 10/13/89             id   200010
       oxygen-16      endf/b-iv mat 1276            updated 10/13/89             id   200011
       kr-83          mt=102,103,103,105,106,107    updated 10/13/89             id   200012
       kr-85             mt=  102                                                id   200013
       sr-90          mt=102                        updated 10/13/89             id   200014
        y-89          mt=102                        updated 10/13/89             id   200015
       zr-93             mt=  102                                                id   200017
       zr-94          mt=102                        updated 10/13/89             id   200018
       zr-95          mt=102                        updated 10/13/89             id   200019
       zircalloy      endf/b-iv mat 1284            updated 10/13/89             id      205
       zircalloy      endf/b-iv mat 1284            updated 10/13/89             id   200056
       nb-94          mt=102                        updated 10/13/89             id   200020
       mo-95          mt=102                        updated 10/13/89             id   200016
       tc-99          mt=102                        updated 10/13/89             id   200021
       ru-101         mt=102                        updated 10/13/89             id   200024
       ru-106         mt=102                        updated 10/13/89             id   200025
       rh-103         mt=102                        updated 10/13/89             id   200022
       rh-105            mt=  102                                                id   200023
       pd-105         mt=102                        updated 10/13/89             id   200026
       pd-108         mt=102                        updated 10/13/89             id   200027
       silver-109     endf/b-iv mat 1139            updated 10/13/89             id   200028
       sb-124         mt=102                        updated 10/13/89             id   200029
       xe-131         mt=102,103,104,105,106        updated 10/13/89             id   200030
       xe-132         mt=102,103,104,105,106        updated 10/13/89             id   200031
       xenon-135      endf/b-iv mat 1294            updated 10/13/89             id   200032
```

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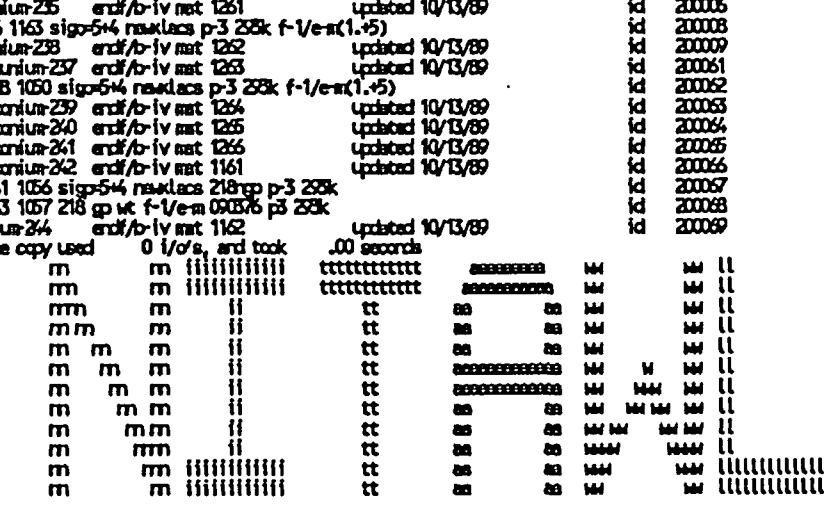
```
xe-136          mt=  102, 103, 104, 105, 107                          id   200033
cesium-133    endf/b-iv mat 1141            updated 10/13/89          id   200060
cs-134        mt=102                        updated 10/13/89          id   200034
cs-135          mt=  102                                              id   200035
cs-137        mt=102                        updated 10/13/89          id   200036
ba-136        mt=102                        updated 10/13/89          id   200037
la-139        mt=102                        updated 10/13/89          id   200038
ce-144          mt=  102                                              id   200041
pr-141        mt=102,103,104,105,106,107    updated 10/13/89          id   200039
pr-143        mt=102                        updated 10/13/89          id   200040
nd-143        mt=102                        updated 10/13/89          id   200042
nd-145        mt=102                        updated 10/13/89          id   200043
nd-147        mt=102                        updated 10/13/89          id   200046
pm-147        mt=102                        updated 10/13/89          id   200044
pm-148          mt=  102                                              id   200045
sm-147        endf/b-v fission product      updated 10/13/89          id   200047
sm-149        mt=102,103,107                updated 10/13/89          id   200048
sm-150        mt=102                        updated 10/13/89          id   200049
sm-151        mt=102,103,104,105,106,107    updated 10/13/89          id   200050
sm-152        mt=102,103,104,105,106,107    updated 10/13/89          id   200051
eu-153        mt=102,103,104,105,106,107    updated 10/13/89          id   200053
eu-154        mt=102,103,104,105,106,107    updated 10/13/89          id   200054
eu-155        mt=102,103,104,105,106,107    updated 10/13/89          id   200055
gd-155        mt=102                        updated 10/13/89          id   200052
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)                    id   200007
uranium-235   endf/b-iv mat 1261            updated 10/13/89          id   200006
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)                    id   200008
uranium-238   endf/b-iv mat 1262            updated 10/13/89          id   200009
neptunium-237 endf/b-iv mat 1263            updated 10/13/89          id   200061
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)                   id   200062
plutonium-239 endf/b-iv mat 1264            updated 10/13/89          id   200063
plutonium-240 endf/b-iv mat 1265            updated 10/13/89          id   200064
plutonium-241 endf/b-iv mat 1266            updated 10/13/89          id   200065
plutonium-242 endf/b-iv mat 1161            updated 10/13/89          id   200066
am-241 1056 sigo=5+4 nsxlacs 218grp p-3 293k                          id   200067
am-243 1057 218 gp wt f-1/e-n 090376 p3 293k                          id   200068
curium-244    endf/b-iv mat 1162            updated 10/13/89          id   200069
0     tape copy used     0 i/o's, and took     .00 seconds
1
```



```
0

dddddddddd    eeeeeeee   w       w  iiiiiiiiiii   ssssssssss
dddddddddddd  eeeeeeeeee w       w  iiiiiiiiiii   ssssssssssss
dd      dd    ee      ee w       w      ii       ss      ss
dd      dd    ee      ee w       w      ii       ss
dd      dd    ee      ee w       w      ii       ss
dd      dd    eeeeeeeeee w       w      ii       ssssssssss
dd      dd    eeeeeeeeee  w     w       ii        ssssssssss
dd      dd    ee      ee   w   w        ii                ss
```

INFORMATION ONLY

```
  dd      dd  aa      aa    w  w      ii            ss
  dd      dd  aa      aa     w w      ii      ss    ss
  ddddddddddd aa      aa      ww  iiiiiiiiiiii sssssssssss
  ddddddddddd aa      aa      v   iiiiiiiiiiii  sssssssss
0

   000000    2222222222        //    11    666666666666        //  999999999  666666666666
  00000000   2222222222222      //   111    666666666666666     //  9999999999999 666666666666666
 00      00  22      22        //   1111   66                   //  99      99 66
00        00        22        //    11    66                   //  99      99 66
00        00        22        //    11    66                   //  99      99 66
00        00      22          //    11    666666666666         //  9999999999999 666666666666
00        00    22            //    11    666666666666666      //  999999999999  666666666666666
00        00  22              //    11    66      66           //        99 66      66
00        00 22               //    11    66      66           //        99 66      66
 00      00  22               //    11    66      66           //        99 66      66
  00000000   2222222222222    //  11111111 666666666666666     //  999999999999 666666666666666
   000000    2222222222       //  11111111  666666666666       //  999999999    666666666
0

   000000    999999999         5555555555  88888888                11    22222222
  00000000   9999999999999     5555555555  88888888888            111    2222222222222
 00      00  99      99   :::  55          88      88      :::   1111   22      22
00        00 99      99   :::  55          88      88      :::    11            22
00        00 99      99   :::  55          88      88      :::    11            22
00        00 9999999999999      555555555   88888888              11          22
00        00  999999999999      5555555555  88888888              11        22
00        00        99   :::          55  88      88      :::    11      22
00        00        99   :::          55  88      88      :::    11    22
 00      00         99   :::  55       55  88      88      :::    11  22
  00000000   9999999999999     5555555555  88888888888           11111111  2222222222222
   000000    999999999         555555555   88888888              11111111  2222222222222
1
0                   sssssssssss   cccccccccc    aaaaaaaa   ll          eeeeeeeeeeee
                   sssssssssssss cccccccccccc  aaaaaaaaa  ll          eeeeeeeeeeee
                   ss       ss   cc        cc aa      aa ll          ee
                   ss            cc           aa      aa ll          ee
                   ss            cc           aa      aa ll          ee
                   sssssssssss   cc           aaaaaaaaaaaa ll          eeeeeeeee
                    sssssssssss  cc           aaaaaaaaaaaa ll          eeeeeeeee
                            ss   cc           aa      aa ll          ee
                            ss   cc           aa      aa ll          ee
                   ss       ss   cc        cc aa      aa ll          ee
                   sssssssssssss cccccccccccc  aa      aa llllllllllll eeeeeeeeeeee
                    sssssssssss  cccccccccc    aa      aa llllllllllll eeeeeeeeeeee
```

```
*************************************************************
*************************************************************
*************************************************************
*****                                                   *****
*****        program verification information            *****
*****                                                   *****
*****        code system:   scale  version:   4.2       *****
*****                                                   *****
*************************************************************
*************************************************************
```

INFORMATION ONLY

```
*****                                                                  *****
*****                                                                  *****
*****              program:  c0c002                                    *****
*****          creation date:  04/27/95                                *****
*****                                                                  *****
*****              library:  /neutronics/scale/exe                     *****
*****                                                                  *****
*****                                                                  *****
*****      this is not a   scale  configuration controlled code        *****
*****                                                                  *****
*****              jobname:  davis                                     *****
*****                                                                  *****
*****      date of execution:  02/16/96                                *****
*****                                                                  *****
*****      time of execution:  09:58:12                                *****
*****                                                                  *****
*****                                                                  *****
*********************************************************************
*********************************************************************
*********************************************************************
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
         0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     70 entries.
0        3q array has     15 entries.
0        4q array has      5 entries.
0 general information concerning cross section library
    tape identification number                  4349
    number of nuclides on tape                    65
    number of neutron energy groups               27
    first thermal neutron energy group            15
    number of gamma energy groups                  0
0   direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                           based on endf-b version 4 data with endf-b version 5 fission products
                              compiled for nrc      1/27/89
                                 last updated       9/16/93
                                    l.m.petrie  -   ornl
- work tape   4349

 xsdrn weighted tape--parent case entitled--  240 d, sas2h: babcock wilcox 15x15,
  3.00wt%, 20gwd/mtu burn high temp


0 nuclides from xsdrn tape
     1    hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          202
     2    b-10 1273 218ngp 042375 p-3 293k                                          203
     3    boron-11        endf/b-iv mat 1160             updated 10/13/89          204
```

INFORMATION ONLY

```
  4   oxygen-16      endf/b-iv mat 1276            updated 10/13/89          201
  5   zircalloy      endf/b-iv mat 1284            updated 10/13/89          205
0 nuclides from work tape
  6   1/v cross sections normalized to 1.0 at 0.0253 ev                      999
  7   hydrogen       endf/b-iv mat 1269/thrmt002   updated 10/13/89         1001
  8   b-10 1273 218ngp 042375 p-3 293k                                      5010
  9   boron-11       endf/b-iv mat 1160            updated 10/13/89         5011
 10   oxygen-16      endf/b-iv mat 1276            updated 10/13/89         8016
 11   oxygen-16      endf/b-iv mat 1276            updated 10/13/89            6
 12   kr-83          mt=102,103,103,105,106,107    updated 10/13/89        36083
 13   kr-85            mt=  102                                            36085
 14   sr-90          mt=102                        updated 10/13/89        38090
 15    y-89          mt=102                        updated 10/13/89        39089
 16   zr-93            mt=  102                                            40093
 17   zr-94          mt=102                        updated 10/13/89        40094
 18   zr-95          mt=102                        updated 10/13/89        40095
 19   zircalloy      endf/b-iv mat 1284            updated 10/13/89        40302
 20   rb-94          mt=102                        updated 10/13/89        41094
 21   mo-95          mt=102                        updated 10/13/89        42095
 22   tc-99          mt=102                        updated 10/13/89        43099
 23   ru-101         mt=102                        updated 10/13/89        44101
 24   ru-106         mt=102                        updated 10/13/89        44106
 25   rh-103         mt=102                        updated 10/13/89        45103
 26   rh-105           mt=  102                                            45105
 27   pd-105         mt=102                        updated 10/13/89        46105
 28   pd-108         mt=102                        updated 10/13/89        46108
 29   silver-109     endf/b-iv mat 1139            updated 10/13/89        47109
 30   sb-124         mt=102                        updated 10/13/89        51124
 31   xe-131         mt=102,103,104,105,106        updated 10/13/89        54131
 32   xe-132         mt=102,103,104,105,106        updated 10/13/89        54132
 33   xenon-135      endf/b-iv mat 1294            updated 10/13/89        54135
 34   xe-136           mt=  102, 103, 104, 105, 107                        54136
 35   cesium-133     endf/b-iv mat 1141            updated 10/13/89        55133
 36   cs-134         mt=102                        updated 10/13/89        55134
 37   cs-135           mt=  102                                            55135
 38   cs-137         mt=102                        updated 10/13/89        55137
 39   ba-136         mt=102                        updated 10/13/89        56136
 40   la-139         mt=102                        updated 10/13/89        57139
 41   ce-144           mt=  102                                            58144
 42   pr-141         mt=102,103,104,105,106,107    updated 10/13/89        59141
 43   pr-143         mt=102                        updated 10/13/89        59143
 44   nd-143         mt=102                        updated 10/13/89        60143
 45   nd-145         mt=102                        updated 10/13/89        60145
 46   nd-147         mt=102                        updated 10/13/89        60147
 47   pm-147         mt=102                        updated 10/13/89        61147
 48   pm-148           mt=  102                                            61148
 49   sm-147         endf/b-v fission product      updated 10/13/89        62147
 50   sm-149         mt=102,103,107                updated 10/13/89        62149
 51   sm-150         mt=102                        updated 10/13/89        62150
 52   sm-151         mt=102,103,104,105,106,107    updated 10/13/89        62151
 53   sm-152         mt=102,103,104,105,106,107    updated 10/13/89        62152
 54   eu-153         mt=102,103,104,105,106,107    updated 10/13/89        63153
 55   eu-154         mt=102,103,104,105,106,107    updated 10/13/89        63154
 56   eu-155         mt=102,103,104,105,106,107    updated 10/13/89        63155
 57   gd-155         mt=102                        updated 10/13/89        64155
 58   u-234 1043 sigo=5+4 newlacs p-3 293k f-1/e=(1.+5)                     92234
 59   uranium-235    endf/b-iv mat 1261            updated 10/13/89        92235
 60   u-236 1163 sigo=5+4 newlacs p-3 293k f-1/e=(1.+5)                     92236
 61   uranium-238    endf/b-iv mat 1262            updated 10/13/89        92238
 62   neptunium-237  endf/b-iv mat 1263            updated 10/13/89        93237
```

INFORMATION ONLY

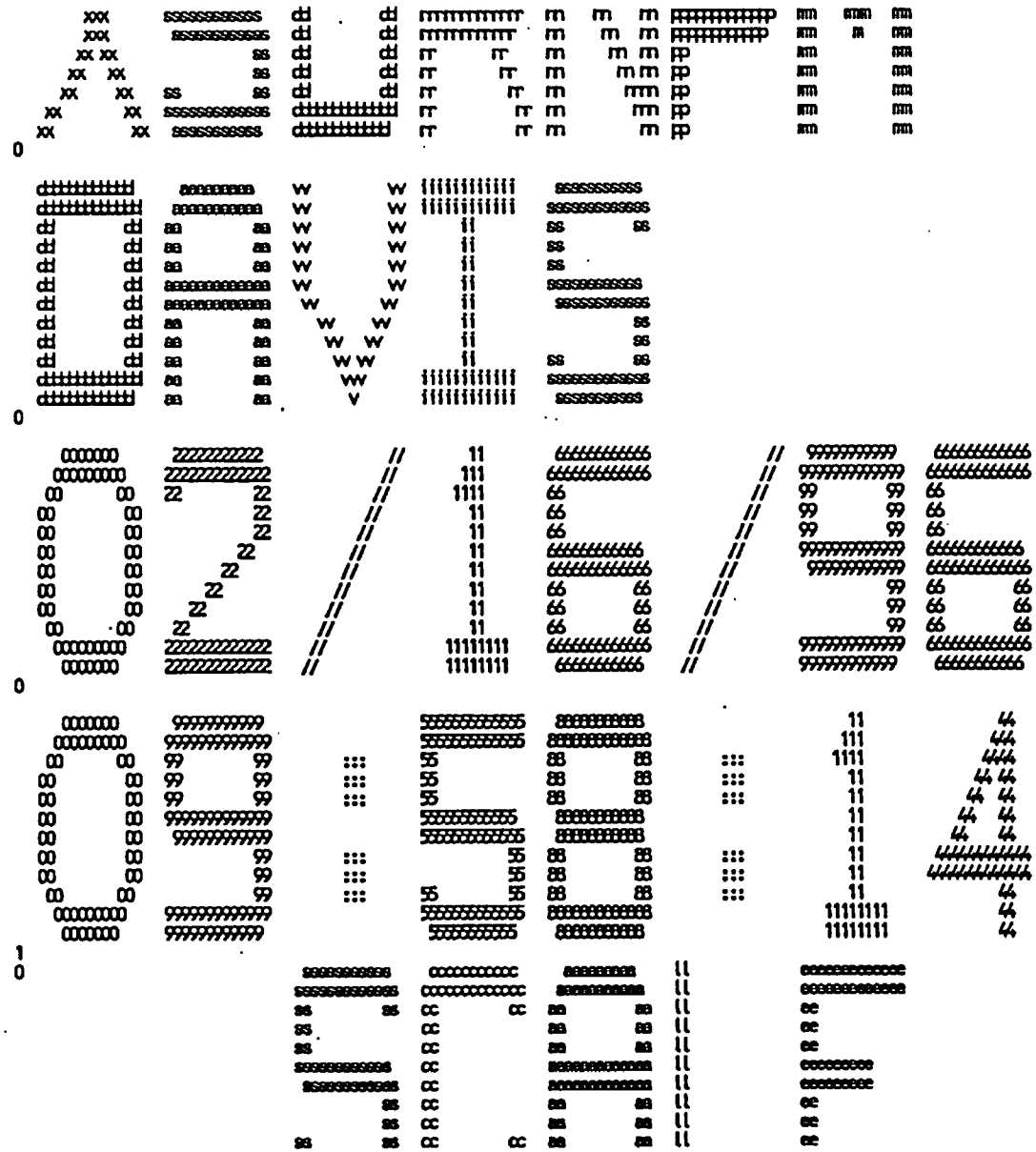
```
   63   pu-238 1050 sigp=5+4 nsw=lacs p-3 293k f-1/e-n(1.+5)                94238
   64    plutonium-239  endf/b-iv mat 1264          updated 10/13/89       94239
   65    plutonium-240  endf/b-iv mat 1265          updated 10/13/89       94240
   66    plutonium-241  endf/b-iv mat 1266          updated 10/13/89       94241
   67    plutonium-242  endf/b-iv mat 1161          updated 10/13/89       94242
   68   am-241 1056 sigp=5+4 nsw=lacs 218grp p-3 293k                       95241
   69   am-243 1057 218 gp wt f-1/e-n 093576 p3 293k                        95243
   70    curium-244     endf/b-iv mat 1162          updated 10/13/89       96244
0 hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89      202    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218grp 042375 p-3 293k                                       203    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160          updated 10/13/89      204    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276          updated 10/13/89      201    temperature=  607.60
0 zircalloy       endf/b-iv mat 1284          updated 10/13/89      205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =    90.436          temperature(kelvin)      =  650.000
0potential scatter sigma  =     6.385          lumped nuclear density   = 4.251602E-02
0spin factor (g)          =     1.079          lump dimension (a-bar)   = 6.730999E-01
0inner radius             = 6.324600E-01       dancoff correction (c)   = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  8      -1.156752E-03    .000000E+00   -7.806083E-01
  9      -4.625978E-02    .000000E+00   -2.073270E+00
 10      -5.962230E-02    .000000E+00   -1.351984E+00
 11      -1.761672E-01    .000000E+00   -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption      2.92402E-01
 fission          .00000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 09:58:12
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled-  240 d, sas2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

        tape id                          8670        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     4
                                  table of contents
      hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          id    202
      b-10 1273 218grp 042375 p-3 293k                                         id    203
      boron-11        endf/b-iv mat 1160             updated 10/13/89          id    204
      oxygen-16       endf/b-iv mat 1276             updated 10/13/89          id    201
      zircalloy       endf/b-iv mat 1284             updated 10/13/89          id    205
      1/v cross sections normalized to 1.0 at 0.0253 ev                        id    999
      hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          id   1001
      b-10 1273 218grp 042375 p-3 293k                                         id   5010
      boron-11        endf/b-iv mat 1160             updated 10/13/89          id   5011
      oxygen-16       endf/b-iv mat 1276             updated 10/13/89          id   8016
      oxygen-16       endf/b-iv mat 1276             updated 10/13/89          id      6
      kr-83           mt=102,103,103,105,106,107     updated 10/13/89          id  36083
      kr-85             mt=  102                                               id  36085
      sr-90           mt=102                         updated 10/13/89          id  38090
       y-89           mt=102                         updated 10/13/89          id  39089
      zr-93             mt=  102                                               id  40093
```

INFORMATION ONLY

```
      zr-94        mt=102                      updated 10/13/89          id   40094
      zr-95        mt=102                      updated 10/13/89          id   40095
      zircalloy    endf/b-iv mat 1284          updated 10/13/89          id   40302
      nb-94        mt=102                      updated 10/13/89          id   41094
      mo-95        mt=102                      updated 10/13/89          id   42095
      tc-99        mt=102                      updated 10/13/89          id   43099
      ru-101       mt=102                      updated 10/13/89          id   44101
      ru-106       mt=102                      updated 10/13/89          id   44106
      rh-103       mt=102                      updated 10/13/89          id   45103
      rh-105         mt=  102                                            id   45105
      pd-105       mt=102                      updated 10/13/89          id   46105
      pd-108       mt=102                      updated 10/13/89          id   46108
      silver-109   endf/b-iv mat 1139          updated 10/13/89          id   47109
      sb-124       mt=102                      updated 10/13/89          id   51124
      xe-131       mt=102,103,104,105,106      updated 10/13/89          id   54131
      xe-132       mt=102,103,104,105,106      updated 10/13/89          id   54132
      xenon-135    endf/b-iv mat 1294          updated 10/13/89          id   54135
      xe-136         mt=  102, 103, 104, 105, 107                        id   54136
      cesium-133   endf/b-iv mat 1141          updated 10/13/89          id   55133
      cs-134       mt=102                      updated 10/13/89          id   55134
      cs-135         mt=  102                                            id   55135
      cs-137       mt=102                      updated 10/13/89          id   55137
      ba-136       mt=102                      updated 10/13/89          id   56136
      la-139       mt=102                      updated 10/13/89          id   57139
      ce-144         mt=  102                                            id   58144
      pr-141       mt=102,103,104,105,106,107  updated 10/13/89          id   59141
      pr-143       mt=102                      updated 10/13/89          id   59143
      nd-143       mt=102                      updated 10/13/89          id   60143
      nd-145       mt=102                      updated 10/13/89          id   60145
      nd-147       mt=102                      updated 10/13/89          id   60147
      pm-147       mt=102                      updated 10/13/89          id   61147
      pm-148         mt=  102                                            id   61148
      sm-147       endf/b-v fission product    updated 10/13/89          id   62147
      sm-149       mt=102,103,107              updated 10/13/89          id   62149
      sm-150       mt=102                      updated 10/13/89          id   62150
      sm-151       mt=102,103,104,105,106,107  updated 10/13/89          id   62151
      sm-152       mt=102,103,104,105,106,107  updated 10/13/89          id   62152
      eu-153       mt=102,103,104,105,106,107  updated 10/13/89          id   63153
      eu-154       mt=102,103,104,105,106,107  updated 10/13/89          id   63154
      eu-155       mt=102,103,104,105,106,107  updated 10/13/89          id   63155
      gd-155       mt=102                      updated 10/13/89          id   64155
     u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   92234
      uranium-235  endf/b-iv mat 1261          updated 10/13/89          id   92235
     u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   92236
      uranium-238  endf/b-iv mat 1262          updated 10/13/89          id   92238
      neptunium-237 endf/b-iv mat 1263         updated 10/13/89          id   93237
     pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   94238
      plutonium-239 endf/b-iv mat 1264         updated 10/13/89          id   94239
      plutonium-240 endf/b-iv mat 1265         updated 10/13/89          id   94240
      plutonium-241 endf/b-iv mat 1266         updated 10/13/89          id   94241
      plutonium-242 endf/b-iv mat 1161         updated 10/13/89          id   94242
     am-241 1056 sigo=5+4 nsxlacs 218rgp p-3 293k                        id   95241
     am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                        id   95243
      curium-244   endf/b-iv mat 1162          updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took      .00 seconds
1 xx        xx  ssssssssss  ddddddddddd  rrrrrrrrr  rrr      rrr ppppppppp  mmm      mmm
  xx      xx  ssssssssssss ddddddddddddd rrrrrrrrrr rrrr     rrr ppppppppppp mmmm    mmmm
    xx    xx  ss      ss  dd      dd  rr      rr  rrrr     rrr pp      pp  mmmmm  mmmmm
     xx  xx   ss          dd      dd  rr      rr  rr rr    rrr pp      pp  mm mm  mm mm
      xx xx   ss          dd      dd  rr      rr  rr  rr   rrr pp      pp  mm  mm mm  mm
```

INFORMATION ONLY



INFORMATION ONLY

```
ssssssssssss   cccccccccccc   aa      aa   llllllllllll   eeeeeeeeeeee
 ssssssssss     cccccccccc    aa      aa   llllllllllll   eeeeeeeeeeee


*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****          program:  c0c001                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****   this is not a   scale  configuration controlled code *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****   date of execution:  02/16/96                        *****
*****                                                       *****
*****   time of execution:  09:58:14                        *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************

1
                    240 d, second part of sas2h pass to make library
0       -1q array has     1 entries.
0        0q array has    11 entries.
0        1q array has    15 entries.
0        2q array has    10 entries.
0        3q array has    12 entries.
0        4q array has     9 entries.
0        5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                   240 d, second part of sas2h pass to make library
0general problem description data block
0                          general problem data

 igeom  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                    8
 izm  number of zones                      4      isct  order of scattering                3
 im  number of spacial intervals          28      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            20
 ibr  right boundary condition             3      iom  outer iteration maximum            25
 mxx  number of mixtures                   3      iclc  -1/0/n--flat res/sn/cpt            0
 ms  mixing table length                  70      ith  0/1 = forward/adjoint              0
 igm  number of energy groups             27      iflu not used(always wgtd)              0
```

INFORMATION ONLY

```
 nng  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print      -2
 ngg  number of gamma groups             0        idl  0/1/2/3=no/prt nd/pch n/both     14
 ifg  number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt      0
0                          special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param            0
 iqn  volumetric sources (0/n=no/yes)    0        idfm 0/1 = none/density factors 39*     0
 ipn  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    14        iai  0/1=none/activities by interval    0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling       0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch   0
 isx  broad group fluxes                 0        isen outer iteration acceleration       0
 ibln activity data unit                 0        nbnd band rebain parameter              0
 jtkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1        ihtf total xsect pan in brd gp tables   3
 ngnf number of broad groups             3        ndsf pan g-g or file number             4
 itp  0/10/20/30/40 0/c/e/ac/a           0        nusf table length or max order          6
 ipp  -2/-1/0/n=gated xsect print       -2        mscm extra 1-d x-sect positions         0
 iap  -1/n anisn xsect print            -1
0                          floating point parameters

 eps  overall convergence        1.00000E-04      dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04      dz   plane depth for buckling  2.00000E+02
 xnf  normalization factor       1.00000E+00      vsc  void streaming correction  .00000E+00
 ev   eigenvalue guess            .00000E+00      pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00      eql  ev change eps for search  1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00      xrpm new param mod for search  7.50000E-01
      this case will require      2611 locations for mixing
      this case has been allocated 200000 locations
1                    240 d, second part of sas2h pass to make library
0       13q array has     70 entries.
0       14q array has     70 entries.
0       15q array has     70 entries.
0                          data block 2 (mixing table, etc.)
0    nuclides                                          mixing table                          extra
      on tape     cccc                          mixture  component   atom density          xsect id's
   1     202     identification                    3        201      2.09710E-02
   2     203                                       3        202      4.19420E-02
   3     204                                       3        203      3.81515E-06
   4     201                                       3        204      1.54884E-05
   5     205                                       2        205      4.25156E-02
   6     999                                       1      92235      1.97095E-04
   7    1001                                       1      92234      1.73586E-06
   8    5010                                       1      92236      6.85418E-06
   9    5011                                       1      92238      7.27846E-03
  10    8016                                       1       8016      1.50611E-02
  11       6                                       1          6      1.15315E-02
  12   36083                                       1      36083      1.49788E-07
  13   36085                                       1      36085      7.24877E-08
  14   38090                                       1      38090      1.62222E-06
  15   39089                                       1      39089      9.69799E-07
  16   40095                                       1      42095      8.85395E-07
  17   40094                                       1      40093      1.21166E-06
  18   40095                                       1      40094      1.86811E-06
  19   40902                                       1      40095      6.68494E-07
  20   41094                                       1      41094      6.37185E-13
  21   42095                                       1      43099      1.78738E-06
  22   43099                                       1      45103      7.74208E-07
```

INFORMATION ONLY

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   23  44101                          1      45105    4.70997E-09
   24  44106                          1      44101    1.56517E-06
   25  45103                          1      44106    2.11021E-07
   26  45105                          1      46105    4.39806E-07
   27  46105                          1      46103    8.09598E-08
   28  46103                          1      47109    5.66571E-08
   29  47109                          1      51124    1.58536E-11
   30  51124                          1      54131    8.22527E-07
   31  54131                          1      54132    1.34631E-06
   32  54132                          1      54135    2.15375E-09
   33  54135                          1      54136    2.98490E-06
   34  54136                          1      55134    2.69282E-08
   35  55133                          1      55135    9.25459E-07
   36  55134                          1      55137    1.88977E-06
   37  55135                          1      56136    5.51117E-09
   38  55137                          1      57139    1.88760E-06
   39  56136                          1      59141    1.39034E-06
   40  57139                          1      59143    1.33667E-07
   41  58144                          1      58144    1.20205E-06
   42  59141                          1      60143    1.53714E-06
   43  59143                          1      60145    1.14105E-06
   44  60143                          1      61147    5.39173E-07
   45  60145                          1      61148    1.43995E-09
   46  60147                          1      60147    4.43675E-08
   47  61147                          1      62147    4.54726E-08
   48  61148                          1      62149    2.27445E-08
   49  62147                          1      62150    3.27241E-07
   50  62149                          1      62151    7.37387E-08
   51  62150                          1      62152    1.51696E-07
   52  62151                          1      64155    1.47720E-10
   53  62152                          1      63153    6.69315E-08
   54  63153                          1      63154    5.20859E-09
   55  63154                          1      63155    1.03382E-08
   56  63155                          1      40302    4.42681E-03
   57  64155                          1       1001    2.30630E-02
   58  92234                          1       5010    2.09787E-06
   59  92235                          1       5011    8.51673E-06
   60  92236                          1      55133    1.93560E-06
   61  92238                          1      95237    2.03586E-07
   62  95237                          1      94238    7.98213E-09
   63  94238                          1      94239    1.44467E-05
   64  94239                          1      94240    1.07622E-06
   65  94240                          1      94241    2.48362E-07
   66  94241                          1      94242    6.83419E-09
   67  94242                          1      95241    2.00094E-09
   68  95241                          1      95243    1.38533E-10
   69  95243                          1      96244    3.02219E-12
   70  96244                          1        999    3.30753E-21
-  elapsed time    .00 min.
0  24259 locations will be used
0      35q array has     29 entries.
0      36q array has     28 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                  240 d, second part of sas2h pass to make library
                        neutron group parameters
0  gp   energy     lethargy   weighted   broad gp     calc      group     right     left
       boundaries  boundaries  velocities  numbers     type      band      albedo    albedo
```

INFORMATION ONLY

1	2.00000E+07	-6.95147E-01	4.60581E+09	1	0	1	1.00000E+00
2	6.43400E+06	4.40989E-01	2.88737E+09	1	0	2	1.00000E+00
3	3.00000E+06	1.20397E+00	2.12201E+09	1	0	3	1.00000E+00
4	1.85000E+06	1.68740E+00	1.75673E+09	1	0	4	1.00000E+00
5	1.40000E+06	1.96611E+00	1.46535E+09	1	0	5	1.00000E+00
6	9.00000E+05	2.40995E+00	1.06620E+09	2	0	6	1.00000E+00
7	4.00000E+05	3.21888E+00	6.07957E+08	2	0	7	1.00000E+00
8	1.00000E+05	4.60517E+00	2.72415E+08	2	0	8	1.00000E+00
9	1.70000E+04	6.37713E+00	1.13526E+08	2	0	9	1.00000E+00
10	3.00000E+03	8.11173E+00	4.82126E+07	2	0	10	1.00000E+00
11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00
12	1.00000E+02	1.15126E+01	1.01036E+07	2	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69593E+06	2	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00
15	3.04999E+00	1.50030E+01	2.10601E+06	2	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	2	0	16	1.00000E+00
17	1.29999E+00	1.58557E+01	1.52545E+06	2	0	17	1.00000E+00
18	1.12999E+00	1.59959E+01	1.42867E+06	2	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05898E+05	2	0	20	1.00000E+00
21	4.00000E-01	1.70344E+01	8.17974E+05	3	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86953E+05	3	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.85201E+04	3	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 240 d, second part of ses2h pass to make library

0

	mixture by zone	order p(l) by zone	activity table sset no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	3	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3			0	-6.04419E-01	8	0
5					5.59953E-02	-5.58410E-01	8	-3.10450E-02
6					5.59953E-02	-2.31301E-01	7	-1.28698E-02
7					5.59953E-02	2.31301E-01	6	1.28698E-02
8					5.59953E-02	5.58410E-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	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20195E-01	13	-1.15128E-02
13					5.22844E-02	2.20195E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70555E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02

INFORMATION ONLY

4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86839E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36886E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1

int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42630E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46403E-02			
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60586E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10577E+00	4	6.34088E+00	1.35731E+00			
19	1.20236E+00	1.30195E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00			
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			
29	2.96100E+00			1.86045E+01				

- elapsed time .00 min.

1

outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	215	-1.84455E-06	1.12851E+00	-1.42324E-01	1.00000E+00	-4.10664E-02	.00000E+00	.0000
2	319	2.60041E-06	1.14215E+00	-1.25575E-03	-1.84449E-02	-4.28646E-03	.00000E+00	.0167
3	401	2.31725E-07	1.14359E+00	-1.27918E-04	-1.79126E-03	-8.35467E-04	.00000E+00	.0167
4	462	2.14825E-06	1.14384E+00	-2.02940E-05	-3.55789E-04	-1.62330E-04	.00000E+00	.0167
5	504	-4.31136E-07	1.14388E+00	-3.61934E-06	-7.01865E-05	-3.16620E-05	.00000E+00	.0167

grp to grp inner mfd max. flux msf max. scale coarse

INFORMATION ONLY

		iters	int.	difference	int.	factor	mesh
1	1	1	17	2.49552E-06	28	1.00000E+00	1
2	2	1	17	3.03674E-06	28	1.00000E+00	1
3	3	1	17	2.81856E-06	28	1.00000E+00	1
4	4	1	17	2.75748E-06	28	1.00000E+00	1
5	5	1	17	2.89726E-06	28	1.00000E+00	1
6	6	1	17	1.98400E-06	28	1.00000E+00	1
7	7	1	24	1.11949E-06	28	1.00000E+00	2
8	8	1	3	2.11836E-07	20	1.00000E+00	2
9	9	1	27	6.98521E-06	28	9.99998E-01	3
10	10	1	26	1.04663E-06	28	1.00000E+00	3
11	11	1	26	2.28395E-06	28	1.00000E+00	3
12	12	1	26	1.14753E-06	28	9.99999E-01	3
13	13	1	26	1.47936E-06	28	1.00000E+00	3
14	14	1	25	4.36464E-07	28	1.00000E+00	3
15	15	1	2	3.39450E-05	28	9.99962E-01	2
16	16	1	2	4.18474E-05	28	9.99965E-01	2
17	17	1	27	9.47314E-05	28	1.00002E+00	3
18	18	1	2	5.36616E-05	28	9.99921E-01	3
19	19	1	26	7.43672E-05	26	9.99978E-01	3
20	20	1	2	4.05059E-05	28	9.99919E-01	3
21	21	1	3	6.15783E-05	28	9.99942E-01	3
22	22	1	24	2.89865E-05	28	9.99966E-01	3
23	23	1	27	3.44234E-05	28	1.00002E+00	4
24	24	1	1	3.42575E-05	9	1.00002E+00	4
25	25	1	1	3.91320E-05	8	1.00002E+00	5
26	26	1	1	3.25397E-05	6	1.00002E+00	6
27	27	1	1	3.00988E-05	5	1.00002E+00	8

6 531 -1.69257E-05 1.14395E+00 -5.47494E-07 -1.38940E-05 -6.78856E-06 .00000E+00 .0167

final monitor

lambda 1.14392E+00 production/absorption 1.15895E+00 angular flux on 16

- elapsed time .02 min.

1 240 d, second part of sas2h pass to make library

0 int.	zone	number	radius	int. midpoint	area	volume	prod density
1	1		.00000E+00	1.97664E-02	.00000E+00	4.90881E-03	.00000E+00
2	1		3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3	1		7.90575E-02	1.18689E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1		1.58115E-01	1.97664E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1		2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1		3.16230E-01	3.55759E-01	1.98695E+00	1.76717E-01	.00000E+00
7	1		3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1		4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1		5.53403E-01	5.73167E-01	3.47713E+00	1.42355E-01	.00000E+00
10	1		5.92931E-01	6.12692E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2		6.32460E-01	6.42220E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2		6.52780E-01	6.62940E-01	4.10154E+00	8.46403E-02	.00000E+00
13	3		6.73100E-01	6.96583E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3		7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3		7.67033E-01	7.90517E-01	4.81941E+00	2.33283E-01	.00000E+00
16	4		8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.59973E-02
17	4		9.11591E-01	9.60386E-01	5.72769E+00	5.88891E-01	2.83198E-02
18	4		1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	6.39825E-02
19	4		1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	7.37806E-02
20	4		1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	8.36686E-02
21	4		1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	9.36102E-02
22	4		1.78991E+00	1.88750E+00	1.12663E+01	2.31478E+00	1.03609E-01
23	4		1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.13574E-01
24	4		2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.23819E-01
25	4		2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.34061E-01
26	4		2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.44431E-01

INFORMATION ONLY

27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	7.61524E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.88275E-02
29		2.96100E+00		1.86045E+01		

1 240 d, second part of ses2h pass to make library

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.22880E-02	8.88680E-02	1.11539E-01	6.86707E-02	1.03474E-01	1.92610E-01	1.92975E-01	1.46890E-01
2	1.22850E-02	8.89176E-02	1.11474E-01	6.86325E-02	1.03421E-01	1.92523E-01	1.92585E-01	1.46884E-01
3	1.22856E-02	8.88903E-02	1.11496E-01	6.86504E-02	1.03456E-01	1.92598E-01	1.92988E-01	1.46895E-01
4	1.22900E-02	8.90095E-02	1.11600E-01	6.87286E-02	1.03586E-01	1.92836E-01	1.93145E-01	1.46924E-01
5	1.23014E-02	8.91483E-02	1.11802E-01	6.88615E-02	1.03802E-01	1.93236E-01	1.93394E-01	1.46968E-01
6	1.23175E-02	8.93397E-02	1.12070E-01	6.90446E-02	1.03100E-01	1.93786E-01	1.93734E-01	1.47024E-01
7	1.23375E-02	8.95846E-02	1.12414E-01	6.92824E-02	1.03488E-01	1.94505E-01	1.94177E-01	1.47094E-01
8	1.23617E-02	8.98904E-02	1.12851E-01	6.95895E-02	1.03995E-01	1.95443E-01	1.94756E-01	1.47177E-01
9	1.23921E-02	9.01594E-02	1.13244E-01	6.98711E-02	1.04463E-01	1.96313E-01	1.95293E-01	1.47246E-01
10	1.23959E-02	9.03708E-02	1.13571E-01	7.01190E-02	1.04885E-01	1.97101E-01	1.95781E-01	1.47294E-01
11	1.24078E-02	9.05451E-02	1.13844E-01	7.03270E-02	1.05258E-01	1.97778E-01	1.96200E-01	1.47339E-01
12	1.24200E-02	9.06752E-02	1.14017E-01	7.04353E-02	1.05408E-01	1.98116E-01	1.96404E-01	1.47382E-01
13	1.24467E-02	9.09120E-02	1.14286E-01	7.05729E-02	1.05593E-01	1.98457E-01	1.96597E-01	1.47451E-01
14	1.24857E-02	9.12894E-02	1.14737E-01	7.08281E-02	1.05975E-01	1.99119E-01	1.96978E-01	1.47542E-01
15	1.25316E-02	9.17748E-02	1.15358E-01	7.12144E-02	1.06573E-01	2.00195E-01	1.97609E-01	1.47643E-01
16	1.26025E-02	9.25525E-02	1.16369E-01	7.18590E-02	1.07590E-01	2.02042E-01	1.98706E-01	1.47812E-01
17	1.26733E-02	9.33277E-02	1.17380E-01	7.25074E-02	1.08623E-01	2.03942E-01	1.99853E-01	1.48008E-01
18	1.27295E-02	9.39581E-02	1.18212E-01	7.30446E-02	1.09483E-01	2.05586E-01	2.00876E-01	1.48213E-01
19	1.27788E-02	9.45195E-02	1.18961E-01	7.35315E-02	1.10250E-01	2.07122E-01	2.01849E-01	1.48425E-01
20	1.28078E-02	9.48584E-02	1.19421E-01	7.38528E-02	1.10788E-01	2.08112E-01	2.02492E-01	1.48580E-01
21	1.28261E-02	9.50772E-02	1.19722E-01	7.40817E-02	1.11122E-01	2.08990E-01	2.02941E-01	1.48697E-01
22	1.28379E-02	9.52208E-02	1.19923E-01	7.41644E-02	1.11347E-01	2.09259E-01	2.03258E-01	1.48784E-01
23	1.28454E-02	9.53137E-02	1.20055E-01	7.42528E-02	1.11497E-01	2.09579E-01	2.03477E-01	1.48847E-01
24	1.28498E-02	9.53694E-02	1.20135E-01	7.43067E-02	1.11590E-01	2.09784E-01	2.03620E-01	1.48888E-01
25	1.28517E-02	9.53953E-02	1.20174E-01	7.43327E-02	1.11636E-01	2.09885E-01	2.03692E-01	1.48910E-01
26	1.28514E-02	9.53927E-02	1.20172E-01	7.43318E-02	1.11636E-01	2.09897E-01	2.03702E-01	1.48910E-01
27	1.28497E-02	9.53729E-02	1.20146E-01	7.43143E-02	1.11608E-01	2.09841E-01	2.03664E-01	1.48897E-01
28	1.28473E-02	9.53434E-02	1.20106E-01	7.42895E-02	1.11563E-01	2.09750E-01	2.03600E-01	1.48897E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15817E-01	1.06985E-01	1.00658E-01	6.52725E-02	5.58691E-02	5.35811E-02	2.92596E-02	1.62611E-02
2	1.15817E-01	1.06966E-01	1.00662E-01	6.52774E-02	5.58639E-02	5.35878E-02	2.92518E-02	1.62620E-02
3	1.15815E-01	1.06957E-01	1.00641E-01	6.52536E-02	5.58419E-02	5.35563E-02	2.92256E-02	1.62589E-02
4	1.15810E-01	1.06935E-01	1.00591E-01	6.51962E-02	5.57891E-02	5.34805E-02	2.92104E-02	1.62514E-02
5	1.15803E-01	1.06901E-01	1.00515E-01	6.51087E-02	5.57089E-02	5.33664E-02	2.91877E-02	1.62401E-02
6	1.15793E-01	1.06855E-01	1.00411E-01	6.49858E-02	5.56005E-02	5.32092E-02	2.91578E-02	1.62252E-02
7	1.15780E-01	1.06794E-01	1.00274E-01	6.48339E-02	5.54590E-02	5.30060E-02	2.91201E-02	1.62061E-02
8	1.15765E-01	1.06713E-01	1.00093E-01	6.46285E-02	5.52739E-02	5.27367E-02	2.90726E-02	1.61819E-02
9	1.15755E-01	1.06636E-01	9.99221E-02	6.44369E-02	5.51021E-02	5.24868E-02	2.90299E-02	1.61599E-02
10	1.15754E-01	1.06568E-01	9.97645E-02	6.42625E-02	5.49467E-02	5.22578E-02	2.89926E-02	1.61408E-02
11	1.15759E-01	1.06508E-01	9.96398E-02	6.41257E-02	5.48252E-02	5.20806E-02	2.89599E-02	1.61236E-02
12	1.15754E-01	1.06488E-01	9.95851E-02	6.40721E-02	5.47724E-02	5.20086E-02	2.89418E-02	1.61153E-02
13	1.15709E-01	1.06460E-01	9.95294E-02	6.39901E-02	5.46998E-02	5.19019E-02	2.89268E-02	1.61074E-02
14	1.15637E-01	1.06395E-01	9.93842E-02	6.38126E-02	5.45467E-02	5.16737E-02	2.89022E-02	1.60927E-02
15	1.15560E-01	1.06287E-01	9.91465E-02	6.35332E-02	5.43074E-02	5.13153E-02	2.88674E-02	1.60697E-02
16	1.15452E-01	1.06109E-01	9.87528E-02	6.30733E-02	5.39124E-02	5.07225E-02	2.87985E-02	1.60310E-02
17	1.15355E-01	1.05933E-01	9.83594E-02	6.26136E-02	5.35123E-02	5.01268E-02	2.87147E-02	1.59859E-02
18	1.15286E-01	1.05784E-01	9.80228E-02	6.22208E-02	5.31615E-02	4.96156E-02	2.86363E-02	1.59410E-02
19	1.15231E-01	1.05647E-01	9.77083E-02	6.18547E-02	5.28250E-02	4.91378E-02	2.85525E-02	1.58946E-02
20	1.15205E-01	1.05560E-01	9.75058E-02	6.16183E-02	5.26094E-02	4.88273E-02	2.84618E-02	1.58608E-02
21	1.15192E-01	1.05501E-01	9.73646E-02	6.14540E-02	5.24543E-02	4.86106E-02	2.84079E-02	1.58344E-02
22	1.15188E-01	1.05459E-01	9.72641E-02	6.13369E-02	5.23425E-02	4.84557E-02	2.83668E-02	1.58148E-02
23	1.15182E-01	1.05429E-01	9.71927E-02	6.12537E-02	5.22625E-02	4.83455E-02	2.83368E-02	1.58008E-02
24	1.15179E-01	1.05408E-01	9.71440E-02	6.11971E-02	5.22079E-02	4.82704E-02	2.83157E-02	1.57905E-02
25	1.15177E-01	1.05397E-01	9.71150E-02	6.11633E-02	5.21757E-02	4.82260E-02	2.83041E-02	1.57850E-02

INFORMATION ONLY

26	1.15174E-01	1.05393E-01	9.71056E-02	6.11526E-02	5.21665E-02	4.82127E-02	2.83024E-02	1.57842E-02
27	1.15172E-01	1.05395E-01	9.71114E-02	6.11598E-02	5.21744E-02	4.82228E-02	2.83075E-02	1.57867E-02
28	1.15170E-01	1.05401E-01	9.71271E-02	6.11779E-02	5.21936E-02	4.82485E-02	2.83170E-02	1.57912E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.25461E-03	6.03026E-03	1.13700E-02	3.74452E-02	1.21054E-02	2.57135E-02	8.61427E-02	7.03890E-02
2	7.25513E-03	6.03101E-03	1.13708E-02	3.74474E-02	1.21062E-02	2.57150E-02	8.61374E-02	7.02732E-02
3	7.25300E-03	6.02723E-03	1.13671E-02	3.74353E-02	1.20974E-02	2.56858E-02	8.60179E-02	7.01356E-02
4	7.24787E-03	6.01811E-03	1.13582E-02	3.74068E-02	1.20769E-02	2.56196E-02	8.57552E-02	6.98395E-02
5	7.24011E-03	6.00418E-03	1.13447E-02	3.73640E-02	1.20461E-02	2.55201E-02	8.53655E-02	6.94011E-02
6	7.22966E-03	5.98516E-03	1.13266E-02	3.73065E-02	1.20043E-02	2.53861E-02	8.48465E-02	6.88167E-02
7	7.21609E-03	5.96003E-03	1.13031E-02	3.72322E-02	1.19498E-02	2.52121E-02	8.41850E-02	6.80727E-02
8	7.19832E-03	5.92863E-03	1.12726E-02	3.71359E-02	1.18782E-02	2.49858E-02	8.33494E-02	6.71368E-02
9	7.18197E-03	5.89561E-03	1.12445E-02	3.70471E-02	1.18115E-02	2.47770E-02	8.25982E-02	6.62999E-02
10	7.16708E-03	5.86697E-03	1.12191E-02	3.69673E-02	1.17504E-02	2.45889E-02	8.19453E-02	6.55780E-02
11	7.15508E-03	5.84473E-03	1.11986E-02	3.69037E-02	1.17035E-02	2.44473E-02	8.14707E-02	6.50756E-02
12	7.14999E-03	5.83646E-03	1.11859E-02	3.68776E-02	1.16873E-02	2.43997E-02	8.13251E-02	6.49485E-02
13	7.14337E-03	5.82269E-03	1.11788E-02	3.68422E-02	1.16611E-02	2.43141E-02	8.10429E-02	6.46302E-02
14	7.12953E-03	5.79213E-03	1.11557E-02	3.67680E-02	1.16012E-02	2.41210E-02	8.04153E-02	6.39014E-02
15	7.10762E-03	5.74365E-03	1.11195E-02	3.66525E-02	1.15056E-02	2.38221E-02	7.94979E-02	6.28549E-02
16	7.07138E-03	5.66402E-03	1.10594E-02	3.64633E-02	1.13509E-02	2.33405E-02	7.80985E-02	6.12981E-02
17	7.03438E-03	5.58604E-03	1.09973E-02	3.62690E-02	1.11983E-02	2.28538E-02	7.66686E-02	5.97508E-02
18	7.00119E-03	5.52229E-03	1.09402E-02	3.60906E-02	1.10680E-02	2.24547E-02	7.53061E-02	5.82828E-02
19	6.96909E-03	5.46633E-03	1.08874E-02	3.59154E-02	1.09460E-02	2.20694E-02	7.39348E-02	5.68130E-02
20	6.94729E-03	5.42810E-03	1.08460E-02	3.57945E-02	1.08661E-02	2.18156E-02	7.29563E-02	5.57717E-02
21	6.93153E-03	5.40338E-03	1.08181E-02	3.57061E-02	1.08098E-02	2.16350E-02	7.22225E-02	5.49962E-02
22	6.91997E-03	5.38602E-03	1.07976E-02	3.56407E-02	1.07688E-02	2.15085E-02	7.16657E-02	5.44126E-02
23	6.91162E-03	5.37381E-03	1.07828E-02	3.55929E-02	1.07393E-02	2.14077E-02	7.12485E-02	5.39765E-02
24	6.90593E-03	5.36556E-03	1.07726E-02	3.55600E-02	1.07189E-02	2.13402E-02	7.09469E-02	5.36609E-02
25	6.90266E-03	5.36069E-03	1.07667E-02	3.55405E-02	1.07060E-02	2.12974E-02	7.07479E-02	5.34489E-02
26	6.90190E-03	5.35889E-03	1.07651E-02	3.55341E-02	1.07012E-02	2.12788E-02	7.06508E-02	5.33360E-02
27	6.90256E-03	5.35990E-03	1.07669E-02	3.55391E-02	1.07026E-02	2.12802E-02	7.06413E-02	5.33107E-02
28	6.90538E-03	5.36261E-03	1.07707E-02	3.55509E-02	1.07082E-02	2.12954E-02	7.06986E-02	5.33466E-02

0 int.	grp. 25	grp. 26	grp. 27
1	3.17211E-02	2.28527E-02	4.33841E-03
2	3.17091E-02	2.28398E-02	4.33517E-03
3	3.16342E-02	2.27732E-02	4.32162E-03
4	3.14747E-02	2.26333E-02	4.29088E-03
5	3.12384E-02	2.24247E-02	4.24936E-03
6	3.09229E-02	2.21437E-02	4.18968E-03
7	3.05213E-02	2.17829E-02	4.11143E-03
8	3.00181E-02	2.13273E-02	4.01002E-03
9	2.95708E-02	2.09204E-02	3.91846E-03
10	2.91905E-02	2.05718E-02	3.83928E-03
11	2.88360E-02	2.03471E-02	3.79132E-03
12	2.88818E-02	2.03134E-02	3.78818E-03
13	2.87007E-02	2.01454E-02	3.76307E-03
14	2.82861E-02	1.97449E-02	3.63380E-03
15	2.77053E-02	1.91757E-02	3.47025E-03
16	2.68613E-02	1.83587E-02	3.23001E-03
17	2.60360E-02	1.75901E-02	3.02405E-03
18	2.52608E-02	1.69073E-02	2.87147E-03
19	2.44903E-02	1.62510E-02	2.73533E-03
20	2.39514E-02	1.58131E-02	2.65395E-03
21	2.35550E-02	1.55031E-02	2.59984E-03
22	2.32604E-02	1.52802E-02	2.56276E-03
23	2.30423E-02	1.51194E-02	2.53666E-03
24	2.28854E-02	1.50059E-02	2.51862E-03
25	2.27797E-02	1.49259E-02	2.50670E-03
26	2.27206E-02	1.48862E-02	2.49985E-03
27	2.27052E-02	1.48707E-02	2.49727E-03

INFORMATION ONLY

28 2.27147E-02 1.48739E-02 2.49715E-03
- elapsed time .02 min.
1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	4.78609E-04	6.33478E-04	5.27473E-05	-6.86193E-04	9.99953E-01
2	.00000E+00	.00000E+00	3.63477E-04	6.03966E-03	7.95803E-03	1.72591E-04	-7.74685E-03	9.99964E-01
3	.00000E+00	.00000E+00	3.76711E-03	5.41786E-03	1.40962E-02	9.19848E-05	-1.04207E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.52772E-03	3.58341E-03	1.23122E-02	4.18181E-05	-6.82619E-03	9.99989E-01
5	.00000E+00	.00000E+00	1.01847E-02	1.15008E-02	2.08350E-02	4.95595E-05	-1.06997E-02	9.99992E-01
6	.00000E+00	.00000E+00	2.14030E-02	3.44731E-02	4.09715E-02	8.42517E-05	-1.96527E-02	1.00000E+00
7	.00000E+00	.00000E+00	4.21606E-02	6.09446E-02	5.41143E-02	6.11957E-05	-1.20143E-02	9.99988E-01
8	.00000E+00	.00000E+00	5.63212E-02	7.83025E-02	5.87126E-02	3.63824E-05	-2.42262E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.77525E-02	7.25507E-02	5.74534E-02	2.92511E-05	2.76213E-04	9.99889E-01
10	.00000E+00	.00000E+00	5.70158E-02	6.90680E-02	5.55064E-02	3.60089E-05	1.49945E-03	9.99895E-01
11	.00000E+00	.00000E+00	5.57952E-02	6.54509E-02	5.22538E-02	5.50166E-05	3.49016E-03	9.99938E-01
12	.00000E+00	.00000E+00	4.53160E-02	3.50229E-02	4.12088E-02	6.03238E-05	4.04784E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.04798E-02	2.85698E-02	3.66388E-02	8.46323E-05	3.75730E-03	9.99968E-01
14	.00000E+00	.00000E+00	3.94366E-02	2.83864E-02	3.39094E-02	1.36993E-04	5.39045E-03	9.99888E-01
15	.00000E+00	.00000E+00	2.17603E-02	1.09527E-02	2.04813E-02	1.13435E-04	1.16563E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.43082E-02	4.63237E-03	1.36474E-02	7.72528E-05	5.78567E-04	9.99999E-01
17	.00000E+00	.00000E+00	7.37300E-03	1.33708E-03	6.95650E-03	3.82740E-05	3.78279E-04	9.99994E-01
18	.00000E+00	.00000E+00	6.55987E-03	1.07568E-03	5.89771E-03	3.36583E-05	6.48474E-04	1.00000E+00
19	.00000E+00	.00000E+00	1.10239E-02	3.10681E-03	1.03112E-02	6.95832E-05	6.43095E-04	9.99999E-01
20	.00000E+00	.00000E+00	2.72076E-02	2.20461E-02	2.49261E-02	2.87528E-04	1.99575E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.33346E-02	4.57259E-03	1.18966E-02	1.14683E-04	1.32340E-03	1.00000E+00
22	.00000E+00	.00000E+00	2.69219E-02	1.45137E-02	2.25864E-02	2.78769E-04	3.95628E-03	1.00000E+00
23	.00000E+00	.00000E+00	7.10181E-02	8.73366E-02	5.73516E-02	1.26782E-03	1.23956E-02	1.00004E+00
24	.00000E+00	.00000E+00	7.65800E-02	8.19825E-02	6.32830E-02	1.49151E-03	1.18026E-02	1.00004E+00
25	.00000E+00	.00000E+00	5.10185E-02	3.46880E-02	4.46265E-02	8.81621E-04	5.51002E-03	1.00002E+00
26	.00000E+00	.00000E+00	4.07276E-02	3.87085E-02	3.57524E-02	8.95194E-04	4.07927E-03	1.00002E+00
27	.00000E+00	.00000E+00	1.37997E-02	8.39691E-03	1.27918E-02	3.19619E-04	6.88214E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.17072E-01	8.13118E-01	8.17072E-01	6.86171E-03	-6.84474E-03	9.99978E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.24026E-02	-6.86193E-04	1.22921E-02	.00000E+00	3.50331E-11	.00000E+00	1.80858E-05	1.55081E-02
2	9.04818E-02	-7.74685E-03	8.90107E-02	.00000E+00	.00000E+00	.00000E+00	8.75418E-05	1.12645E-01
3	1.13746E-01	-1.04207E-02	1.11595E-01	.00000E+00	.00000E+00	.00000E+00	9.15590E-05	1.41375E-01
4	7.02583E-02	-6.82619E-03	6.87048E-02	.00000E+00	.00000E+00	.00000E+00	4.15656E-05	8.71495E-02
5	1.05125E-01	-1.06997E-02	1.02523E-01	.00000E+00	.00000E+00	.00000E+00	4.92671E-05	1.30197E-01
6	1.97551E-01	-1.96527E-02	1.92694E-01	.00000E+00	.00000E+00	.00000E+00	8.33628E-05	2.44701E-01
7	1.96052E-01	-1.20143E-02	1.95018E-01	.00000E+00	.00000E+00	.00000E+00	5.92527E-05	2.44183E-01
8	1.47318E-01	-2.42262E-03	1.46897E-01	.00000E+00	.00000E+00	.00000E+00	3.27046E-05	1.84868E-01
9	1.15757E-01	2.76213E-04	1.15816E-01	.00000E+00	.00000E+00	.00000E+00	2.16555E-05	1.45495E-01
10	1.06523E-01	1.49945E-03	1.06961E-01	.00000E+00	.00000E+00	.00000E+00	1.91325E-05	1.34178E-01
11	9.95734E-02	3.49016E-03	1.00650E-01	.00000E+00	.00000E+00	.00000E+00	1.78688E-05	1.25953E-01
12	6.41626E-02	4.04784E-03	6.52636E-02	.00000E+00	.00000E+00	.00000E+00	1.04903E-05	8.14122E-02
13	5.48577E-02	3.75730E-03	5.58606E-02	.00000E+00	.00000E+00	.00000E+00	8.74495E-06	6.96391E-02
14	5.21258E-02	5.39045E-03	5.35691E-02	.00000E+00	.00000E+00	.00000E+00	8.52431E-06	6.65295E-02
15	2.89721E-02	1.16563E-03	2.92270E-02	.00000E+00	.00000E+00	.00000E+00	4.50400E-06	3.65828E-02
16	1.61293E-02	5.78567E-04	1.62599E-02	.00000E+00	.00000E+00	.00000E+00	2.26495E-06	2.03594E-02
17	7.15854E-03	3.78279E-04	7.25373E-03	.00000E+00	.00000E+00	.00000E+00	9.27623E-07	9.06306E-03
18	5.85054E-03	6.48474E-04	6.02892E-03	.00000E+00	.00000E+00	.00000E+00	7.46824E-07	7.47947E-03
19	1.12046E-02	6.43095E-04	1.13689E-02	.00000E+00	.00000E+00	.00000E+00	1.48534E-06	1.41956E-02
20	3.69225E-02	1.99575E-03	3.74423E-02	.00000E+00	.00000E+00	.00000E+00	5.48083E-06	4.67613E-02
21	1.17155E-02	1.32340E-03	1.21051E-02	.00000E+00	.00000E+00	.00000E+00	1.37497E-06	1.49956E-02
22	2.44815E-02	3.95628E-03	2.57066E-02	.00000E+00	.00000E+00	.00000E+00	2.80052E-06	3.16192E-02
23	8.15744E-02	1.23956E-02	8.61215E-02	.00000E+00	.00000E+00	.00000E+00	8.70913E-06	1.05591E-01
24	6.51695E-02	1.18026E-02	7.02734E-02	.00000E+00	.00000E+00	.00000E+00	5.29011E-06	8.53253E-02
25	2.89769E-02	5.51002E-03	3.17155E-02	.00000E+00	.00000E+00	.00000E+00	1.81083E-06	3.88406E-02
26	2.03753E-02	4.07927E-03	2.28509E-02	.00000E+00	.00000E+00	.00000E+00	9.53476E-07	2.72648E-02
27	3.79465E-03	6.88214E-04	4.33862E-03	.00000E+00	.00000E+00	.00000E+00	1.12286E-07	5.13952E-03

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28	1.76838E+00	-6.84477E-03	1.77553E+00	.00000E+00	3.50331E-11	.00000E+00	5.87149E-04	2.22644E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.11632E-04	1.58645E-04	2.37992E-06	-1.55367E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.77070E-05	1.43126E-03	1.02700E-03	1.37854E-05	-1.01310E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.46512E-04	2.74728E-03	8.68660E-04	2.01085E-05	-7.42206E-04	9.99996E-01
4	.00000E+00	.00000E+00	2.82531E-04	2.29479E-03	2.97118E-04	1.30402E-05	-2.76058E-05	9.99997E-01
5	.00000E+00	.00000E+00	6.08308E-04	4.40740E-03	2.78735E-04	1.68290E-05	3.12708E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.01185E-03	1.23972E-02	1.69380E-04	2.70507E-05	8.15401E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.67148E-04	1.25905E-02	6.32853E-05	2.68066E-05	5.77050E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.16872E-04	9.20258E-03	4.43118E-04	2.20992E-05	-3.48375E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.44942E-04	6.35391E-03	5.29668E-05	7.66408E-05	3.15340E-04	9.99995E-01
10	.00000E+00	.00000E+00	5.30313E-05	4.98040E-03	4.94142E-05	5.92497E-05	-5.56279E-05	9.99997E-01
11	.00000E+00	.00000E+00	4.94175E-05	4.44516E-03	5.02016E-05	8.98253E-05	-9.06093E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.02019E-05	2.75609E-03	5.12762E-05	5.66238E-06	-6.74324E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.12762E-05	2.35720E-03	4.80852E-05	6.31605E-06	-3.12645E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80853E-05	2.24437E-03	4.22955E-05	8.57116E-06	-2.78852E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.49199E-05	1.22266E-03	5.03394E-05	6.33185E-06	-1.14143E-05	9.99969E-01
16	.00000E+00	.00000E+00	5.62555E-05	6.51788E-04	5.64653E-05	3.86304E-06	-4.04869E-06	9.99962E-01
17	.00000E+00	.00000E+00	6.27271E-05	2.52189E-04	6.20771E-05	1.87465E-06	-1.21095E-06	9.99969E-01
18	.00000E+00	.00000E+00	6.55613E-05	1.93985E-04	6.26370E-05	1.61502E-06	1.31881E-06	9.99987E-01
19	.00000E+00	.00000E+00	6.35760E-05	4.28613E-04	6.32380E-05	3.32595E-06	-2.96644E-06	9.99970E-01
20	.00000E+00	.00000E+00	7.79284E-05	1.55479E-03	6.61000E-05	1.33671E-05	-1.47871E-06	9.99971E-01
21	.00000E+00	.00000E+00	8.99546E-05	4.14789E-04	9.90781E-05	5.14164E-06	-1.42420E-06	9.99984E-01
22	.00000E+00	.00000E+00	1.31719E-04	9.46694E-04	1.26509E-04	1.22223E-05	-6.99385E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.91860E-04	3.33163E-03	2.44397E-04	5.44158E-05	-1.07192E-04	1.00000E+00
24	.00000E+00	.00000E+00	3.13404E-04	2.51201E-03	3.44735E-04	6.14610E-05	-9.30531E-05	1.00001E+00
25	.00000E+00	.00000E+00	3.18850E-04	1.01014E-03	2.59997E-04	3.57478E-05	2.29138E-05	1.00001E+00
26	.00000E+00	.00000E+00	1.35291E-04	7.88984E-04	1.04264E-04	3.54183E-05	-4.40422E-06	1.00000E+00
27	.00000E+00	.00000E+00	3.02525E-05	1.66427E-04	8.57494E-03	1.23474E-05	1.77954E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.14000E-03	8.18941E-02	5.14000E-03	6.35691E-04	-6.30080E-04	9.99995E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.26278E-02	-8.41560E-04	1.24028E-02	-6.86158E-04	5.66822E-06	.00000E+00	1.56693E-06	2.06934E-03
2	9.07419E-02	-8.75994E-03	9.04818E-02	-7.74685E-03	.00000E+00	.00000E+00	1.09420E-05	1.51037E-02
3	1.14095E-01	-1.11629E-02	1.13749E-01	-1.04207E-02	.00000E+00	.00000E+00	1.25895E-05	1.89909E-02
4	7.04754E-02	-6.85380E-03	7.02589E-02	-6.82619E-03	.00000E+00	.00000E+00	7.40890E-06	1.17317E-02
5	1.05464E-01	-1.03870E-02	1.05125E-01	-1.06997E-02	.00000E+00	.00000E+00	8.61804E-06	1.75562E-02
6	1.98227E-01	-1.88373E-02	1.97551E-01	-1.96527E-02	.00000E+00	.00000E+00	1.01693E-05	3.29956E-02
7	1.96469E-01	-1.14372E-02	1.96062E-01	-1.20143E-02	.00000E+00	.00000E+00	8.35086E-06	3.27212E-02
8	1.47406E-01	-2.77099E-03	1.47318E-01	-2.42262E-03	.00000E+00	.00000E+00	5.27158E-06	2.45631E-02
9	1.15746E-01	5.91553E-04	1.15757E-01	2.76213E-04	.00000E+00	.00000E+00	4.57967E-06	1.92950E-02
10	1.05482E-01	1.44382E-03	1.06523E-01	1.49945E-03	.00000E+00	.00000E+00	4.90886E-06	1.77518E-02
11	9.95800E-02	3.39955E-03	9.96734E-02	3.49016E-03	.00000E+00	.00000E+00	4.75415E-06	1.66047E-02
12	6.40554E-02	4.04110E-03	6.41626E-02	4.04784E-03	.00000E+00	.00000E+00	3.20855E-06	1.06843E-02
13	5.47560E-02	3.75418E-03	5.48577E-02	3.75730E-03	.00000E+00	.00000E+00	2.73715E-06	9.13398E-03
14	5.19858E-02	3.38766E-03	5.21298E-02	3.39045E-03	.00000E+00	.00000E+00	2.59518E-06	8.67503E-03
15	2.89360E-02	1.15421E-03	2.89721E-02	1.16563E-03	.00000E+00	.00000E+00	1.42181E-06	4.82570E-03
16	1.61127E-02	5.74519E-04	1.61293E-02	5.78567E-04	.00000E+00	.00000E+00	7.91675E-07	2.68689E-03
17	7.14857E-03	3.77068E-04	7.15854E-03	3.78279E-04	.00000E+00	.00000E+00	3.51113E-07	1.19222E-03
18	5.83399E-03	6.49798E-04	5.85054E-03	6.48474E-04	.00000E+00	.00000E+00	2.86619E-07	9.73538E-04
19	1.11873E-02	6.40108E-04	1.12046E-02	6.43075E-04	.00000E+00	.00000E+00	5.49104E-07	1.86592E-03
20	3.68707E-02	1.99227E-03	3.69225E-02	1.99575E-03	.00000E+00	.00000E+00	1.80704E-06	6.14975E-03
21	1.16830E-02	1.30915E-03	1.17155E-02	1.32340E-03	.00000E+00	.00000E+00	5.71953E-07	1.94944E-03
22	2.43963E-02	3.94728E-03	2.44815E-02	3.95628E-03	.00000E+00	.00000E+00	1.19281E-06	4.07101E-03
23	8.12852E-02	1.22884E-02	8.15744E-02	1.23956E-02	.00000E+00	.00000E+00	3.96133E-06	1.35677E-02
24	6.49157E-02	1.17075E-02	6.51694E-02	1.18028E-02	.00000E+00	.00000E+00	3.14467E-06	1.08365E-02
25	2.88684E-02	5.53294E-03	2.89769E-02	5.51002E-03	.00000E+00	.00000E+00	1.39004E-06	4.81865E-03
26	2.03078E-02	4.07486E-03	2.03753E-02	4.07927E-03	.00000E+00	.00000E+00	9.67257E-07	3.38874E-03
27	3.78842E-03	7.06009E-04	3.79469E-03	6.88214E-04	.00000E+00	.00000E+00	1.74783E-07	6.31694E-04
28	1.76923E+00	-7.47473E-03	1.76838E+00	-6.84477E-03	5.66822E-06	.00000E+00	1.04301E-04	2.94833E-01

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1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.53734E-04	3.35839E-04	2.79640E-05	-3.63784E-04	9.99985E-01
2	.00000E+00	.00000E+00	1.98698E-04	3.22388E-03	4.23720E-03	9.21267E-05	-4.13646E-03	9.99987E-01
3	.00000E+00	.00000E+00	2.01047E-03	2.89639E-03	7.53584E-03	4.91752E-05	-5.57437E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.95410E-03	1.91862E-03	6.59219E-03	2.23502E-05	-3.66041E-03	9.99995E-01
5	.00000E+00	.00000E+00	5.44811E-03	6.16735E-03	1.11734E-02	2.65777E-05	-5.75175E-03	9.99996E-01
6	.00000E+00	.00000E+00	1.14658E-02	1.84816E-02	2.19865E-02	4.51580E-05	-1.05441E-02	1.00000E+00
7	.00000E+00	.00000E+00	2.25974E-02	3.23794E-02	2.87506E-02	3.25129E-05	-6.18531E-03	9.99982E-01
8	.00000E+00	.00000E+00	2.97751E-02	4.11411E-02	3.08484E-02	1.91158E-05	-8.89669E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04068E-02	3.79552E-02	3.00570E-02	1.53025E-05	3.37880E-04	9.99892E-01
10	.00000E+00	.00000E+00	2.98719E-02	3.60450E-02	2.89675E-02	1.87942E-05	8.85763E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.91375E-02	3.39824E-02	2.71302E-02	2.85752E-05	1.98047E-03	9.99945E-01
12	.00000E+00	.00000E+00	2.36542E-02	1.80582E-02	2.12477E-02	3.11036E-05	2.27595E-03	9.99981E-01
13	.00000E+00	.00000E+00	2.09264E-02	1.47206E-02	1.85782E-02	4.36072E-05	2.00578E-03	9.99973E-01
14	.00000E+00	.00000E+00	2.08434E-02	1.44976E-02	1.73185E-02	6.99657E-05	2.95516E-03	9.99990E-01
15	.00000E+00	.00000E+00	1.11508E-02	5.68458E-03	1.06495E-02	5.89818E-05	4.42308E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.37853E-03	2.40978E-03	7.09588E-03	4.01869E-05	2.38960E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.81181E-03	6.92019E-04	3.60054E-03	1.98099E-05	1.91479E-04	9.99995E-01
18	.00000E+00	.00000E+00	3.39183E-03	5.47617E-04	2.99229E-03	1.71352E-05	3.82387E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.68615E-03	1.60635E-03	5.33134E-03	3.59775E-05	3.18838E-04	9.99999E-01
20	.00000E+00	.00000E+00	1.40287E-02	1.14053E-02	1.28952E-02	1.48749E-04	9.84574E-04	1.00001E+00
21	.00000E+00	.00000E+00	6.84749E-03	2.32580E-03	6.05060E-03	5.83274E-05	7.38661E-04	1.00000E+00
22	.00000E+00	.00000E+00	1.36463E-02	7.27146E-03	1.13206E-02	1.39728E-04	2.18581E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.53407E-02	4.37130E-02	2.87052E-02	6.34560E-04	5.99988E-03	1.00002E+00
24	.00000E+00	.00000E+00	3.77600E-02	4.03256E-02	3.11278E-02	7.33642E-04	5.89755E-03	1.00002E+00
25	.00000E+00	.00000E+00	2.49485E-02	1.68144E-02	2.16703E-02	4.28112E-04	2.85049E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.98217E-02	1.83811E-02	1.69773E-02	4.25092E-04	2.41917E-03	1.00001E+00
27	.00000E+00	.00000E+00	6.67666E-03	3.88256E-03	5.91467E-03	1.47785E-04	6.14197E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.19572E-01	4.16813E-01	4.19572E-01	3.41045E-03	-3.40036E-03	9.99977E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.25573E-02	-1.20534E-03	1.26278E-02	-8.41560E-04	1.85728E-11	.00000E+00	1.00653E-05	8.22160E-03
2	9.20530E-02	-1.28964E-02	9.07419E-02	-8.75994E-03	.00000E+00	.00000E+00	4.67285E-05	6.01283E-02
3	1.15719E-01	-1.67373E-02	1.14095E-01	-1.11625E-02	.00000E+00	.00000E+00	4.89478E-05	7.55794E-02
4	7.14430E-02	-1.05142E-02	7.04754E-02	-6.85380E-03	.00000E+00	.00000E+00	2.22560E-05	4.66614E-02
5	1.06980E-01	-1.61387E-02	1.05464E-01	-1.03870E-02	.00000E+00	.00000E+00	2.66205E-05	6.98217E-02
6	2.00839E-01	-2.93822E-02	1.98227E-01	-1.88575E-02	.00000E+00	.00000E+00	4.46921E-05	1.31188E-01
7	1.99587E-01	-1.76225E-02	1.98468E-01	-1.14372E-02	.00000E+00	.00000E+00	3.14806E-05	1.29733E-01
8	1.47697E-01	-3.66066E-03	1.47406E-01	-2.77099E-03	.00000E+00	.00000E+00	1.71834E-05	9.71266E-02
9	1.15517E-01	9.29433E-04	1.15746E-01	5.91553E-04	.00000E+00	.00000E+00	1.13291E-05	7.61165E-02
10	1.06222E-01	2.33259E-03	1.06482E-01	1.44382E-03	.00000E+00	.00000E+00	9.98681E-06	7.00243E-02
11	9.90183E-02	5.38001E-03	9.95800E-02	3.39956E-03	.00000E+00	.00000E+00	9.27753E-06	6.53956E-02
12	6.33661E-02	6.31708E-03	6.40654E-02	4.04110E-03	.00000E+00	.00000E+00	5.40888E-06	4.19789E-02
13	5.41649E-02	5.75794E-03	5.47560E-02	3.75418E-03	.00000E+00	.00000E+00	4.50588E-06	3.58818E-02
14	5.11011E-02	8.34282E-03	5.16858E-02	5.38766E-03	.00000E+00	.00000E+00	4.35358E-06	3.39788E-02
15	2.88443E-02	1.59652E-03	2.88360E-02	1.15421E-03	.00000E+00	.00000E+00	2.34191E-06	1.90217E-02
16	1.60568E-02	8.13479E-04	1.61127E-02	5.74619E-04	.00000E+00	.00000E+00	1.17927E-06	1.05910E-02
17	7.09457E-03	5.68547E-04	7.14837E-03	3.77068E-04	.00000E+00	.00000E+00	4.80119E-07	4.69086E-03
18	5.71451E-03	1.03218E-03	5.83399E-03	6.49798E-04	.00000E+00	.00000E+00	3.80202E-07	3.80775E-03
19	1.10981E-02	9.58947E-04	1.11873E-02	6.40108E-04	.00000E+00	.00000E+00	7.69982E-07	7.33971E-03
20	3.65854E-02	2.97685E-03	3.68707E-02	1.99227E-03	.00000E+00	.00000E+00	2.83544E-06	2.41914E-02
21	1.14485E-02	2.04782E-03	1.16830E-02	1.30975E-03	.00000E+00	.00000E+00	6.99508E-07	7.62670E-03
22	2.36443E-02	6.13510E-03	2.43863E-02	3.94928E-03	.00000E+00	.00000E+00	1.44897E-06	1.58680E-02
23	7.89650E-02	1.82889E-02	8.12852E-02	1.22884E-02	.00000E+00	.00000E+00	4.35902E-06	5.28495E-02
24	6.22481E-02	1.76071E-02	6.49157E-02	1.17095E-02	.00000E+00	.00000E+00	2.57258E-06	4.19598E-02
25	2.73699E-02	8.33343E-03	2.88684E-02	5.53294E-03	.00000E+00	.00000E+00	8.79534E-07	1.85695E-02
26	1.88636E-02	6.49408E-03	2.08078E-02	4.07486E-03	.00000E+00	.00000E+00	4.52786E-07	1.29469E-02
27	3.37044E-03	1.32021E-03	3.78842E-03	7.06009E-04	.00000E+00	.00000E+00	5.19185E-08	2.37631E-03
28	1.76588E+00	-1.08750E-02	1.76923E+00	-7.47473E-03	1.85728E-11	.00000E+00	3.11082E-04	1.16366E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

INFORMATION ONLY

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.21135E-02	.00000E+00	2.05319E-02	1.94698E-02	3.63035E-03	1.20533E-03	9.98897E-01
2	.00000E+00	1.91371E-01	6.73317E-03	2.47194E-01	1.70970E-01	1.51509E-02	1.28953E-02	1.00002E+00
3	.00000E+00	2.15417E-01	7.01575E-02	2.56078E-01	2.52603E-01	1.62574E-02	1.67372E-02	9.99989E-01
4	.00000E+00	1.24145E-01	1.04566E-01	1.76088E-01	2.10417E-01	7.77983E-03	1.05141E-02	1.00000E+00
5	.00000E+00	1.65069E-01	1.90752E-01	4.43728E-01	3.34558E-01	5.22670E-03	1.61396E-02	9.99991E-01
6	.00000E+00	1.78657E-01	3.89452E-01	1.19091E+00	5.30402E-01	8.31671E-03	2.95820E-02	1.00001E+00
7	.00000E+00	8.85054E-02	5.92545E-01	1.56461E+00	6.55078E-01	8.35657E-03	1.76231E-02	9.99989E-01
8	.00000E+00	1.36510E-02	6.89167E-01	1.57532E+00	6.85762E-01	1.34511E-02	3.66075E-03	9.99922E-01
9	.00000E+00	9.91007E-04	6.77875E-01	1.37068E+00	6.57763E-01	2.21066E-02	-9.33808E-04	9.99898E-01
10	.00000E+00	7.36106E-05	6.54847E-01	1.24451E+00	6.25907E-01	3.34119E-02	-2.33196E-03	9.99899E-01
11	.00000E+00	5.79125E-06	6.28047E-01	1.15711E+00	5.79264E-01	5.42054E-02	-5.37864E-03	9.99940E-01
12	.00000E+00	4.06824E-07	5.04635E-01	6.32315E-01	4.52782E-01	5.81835E-02	-6.31742E-03	9.99975E-01
13	.00000E+00	6.46000E-08	4.47425E-01	5.02026E-01	3.99663E-01	5.35376E-02	-5.75748E-03	9.99970E-01
14	.00000E+00	1.28020E-08	4.30968E-01	4.72118E-01	3.64465E-01	7.46500E-02	-8.34267E-03	9.99988E-01
15	.00000E+00	1.44677E-09	2.38546E-01	2.17038E-01	2.32592E-01	7.53757E-03	-1.60092E-03	1.00007E+00
16	.00000E+00	4.24821E-10	1.63040E-01	1.00866E-01	1.59132E-01	4.71284E-03	-8.16557E-04	1.00007E+00
17	.00000E+00	1.36813E-10	8.79279E-02	3.24917E-02	8.35567E-02	4.95557E-03	-5.67262E-04	1.00003E+00
18	.00000E+00	9.79542E-11	7.87397E-02	2.46702E-02	6.85430E-02	1.12269E-02	-1.03496E-03	1.00006E+00
19	.00000E+00	1.38486E-10	1.27389E-01	6.45629E-02	1.21350E-01	6.99304E-03	-9.58357E-04	1.00005E+00
20	.00000E+00	2.25198E-10	3.08895E-01	3.63470E-01	2.80077E-01	2.67779E-02	-2.98742E-03	1.00009E+00
21	.00000E+00	3.29610E-11	1.52381E-01	7.71019E-02	1.34486E-01	1.99390E-02	-2.05092E-03	1.00004E+00
22	.00000E+00	3.82423E-11	2.95188E-01	2.10436E-01	2.40256E-01	5.90774E-02	-6.13913E-03	1.00005E+00
23	.00000E+00	3.65638E-11	7.15845E-01	1.10448E+00	5.91982E-01	1.42114E-01	-1.82787E-02	1.00004E+00
24	.00000E+00	9.95219E-12	7.61354E-01	9.41618E-01	6.27864E-01	1.51068E-01	-1.76074E-02	1.00004E+00
25	.00000E+00	2.91336E-12	5.03114E-01	3.80135E-01	4.27137E-01	8.43519E-02	-8.38349E-03	1.00002E+00
26	.00000E+00	2.04286E-12	3.89479E-01	3.80591E-01	3.19234E-01	7.67321E-02	-6.49428E-03	1.00002E+00
27	.00000E+00	4.86834E-13	1.28224E-01	7.68333E-02	1.07801E-01	2.17422E-02	-1.32026E-03	1.00001E+00
28	.00000E+00	1.00000E+00	9.33080E+00	1.48275E+01	9.33025E+00	9.91453E-01	1.08556E-02	9.99988E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*cdf**2	total flux
1	1.28458E-02	-9.97737E-09	1.25573E-02	-1.20534E-03	2.16520E-03	2.41708E-03	2.85477E-04	3.26516E-01
2	9.53250E-02	-9.01340E-03	9.20530E-02	-1.28964E-02	1.62522E-05	1.07287E-02	1.56700E-03	2.42065E+00
3	1.20081E-01	-1.07647E-07	1.15719E-01	-1.67373E-02	.00000E+00	1.33500E-02	1.81789E-03	3.04817E+00
4	7.42708E-02	-9.78123E-03	7.14430E-02	-1.05142E-02	.00000E+00	5.75240E-03	8.81579E-04	1.88495E+00
5	1.11534E-01	-1.84290E-07	1.06950E-01	-1.61387E-02	.00000E+00	1.68452E-03	1.03082E-03	2.82959E+00
6	2.09693E-01	-2.34811E-07	2.00859E-01	-2.99822E-02	.00000E+00	1.48188E-03	1.73113E-03	5.31797E+00
7	2.03560E-01	5.61110E-07	1.99587E-01	-1.76225E-02	.00000E+00	1.49704E-03	1.22592E-03	5.16913E+00
8	1.48864E-01	8.97995E-08	1.47697E-01	-3.68066E-03	.00000E+00	1.56076E-03	6.97367E-04	3.78712E+00
9	1.15171E-01	-4.37011E-06	1.15517E-01	9.29433E-04	.00000E+00	2.13595E-03	4.70572E-04	2.98326E+00
10	1.05405E-01	6.26909E-07	1.05222E-01	2.33259E-03	.00000E+00	4.55725E-03	4.28092E-04	2.68604E+00
11	9.71375E-02	1.37020E-06	9.90053E-02	5.38001E-03	.00000E+00	9.54164E-03	3.86377E-04	2.47840E+00
12	6.11904E-02	-3.91943E-07	6.33661E-02	6.31708E-03	.00000E+00	1.24109E-02	2.27570E-04	1.56392E+00
13	5.22063E-02	4.64490E-07	5.41649E-02	5.75794E-03	.00000E+00	1.23673E-02	1.96229E-04	1.33448E+00
14	4.82657E-02	1.48075E-07	5.11011E-02	8.34282E-03	.00000E+00	8.45267E-03	1.78234E-04	1.23658E+00
15	2.83257E-02	-4.46383E-06	2.88943E-02	1.59652E-03	.00000E+00	2.14073E-03	1.11784E-04	7.22782E-01
16	1.57945E-02	-3.07762E-06	1.60568E-02	8.13479E-04	.00000E+00	1.44688E-03	5.85730E-05	4.02554E-01
17	6.90660E-03	1.28506E-06	7.09457E-03	5.68547E-04	.00000E+00	2.04339E-03	2.34470E-05	1.76382E-01
18	5.36478E-03	-2.77755E-06	5.71451E-03	1.05218E-03	.00000E+00	2.37041E-03	1.62795E-05	1.37489E-01
19	1.07752E-02	5.89876E-07	1.10981E-02	9.58947E-04	.00000E+00	3.29172E-03	3.72989E-05	2.75244E-01
20	3.55610E-02	-1.05754E-05	3.68854E-02	2.97685E-03	.00000E+00	1.58374E-02	1.31723E-04	9.08433E-01
21	1.07126E-02	-3.10257E-06	1.14485E-02	2.04782E-03	.00000E+00	1.22900E-02	3.12957E-05	2.74863E-01
22	2.13068E-02	-4.03089E-06	2.36443E-02	6.13510E-03	.00000E+00	3.60467E-02	5.91360E-05	5.49526E-01
23	7.07259E-02	9.52730E-06	7.89650E-02	1.82883E-02	.00000E+00	8.56527E-02	1.91421E-04	1.83053E+00
24	5.33756E-02	-3.12395E-07	6.22481E-02	1.76071E-02	.00000E+00	9.08818E-02	1.12351E-04	1.39159E+00
25	2.27252E-02	-6.15187E-03	2.73699E-02	8.38343E-03	.00000E+00	5.27926E-02	3.80808E-05	5.95598E-01
26	1.48782E-02	-2.52953E-07	1.88636E-02	6.49408E-03	.00000E+00	4.86563E-02	1.86382E-05	3.92258E-01
27	2.49733E-03	-5.14804E-03	3.37046E-03	1.32021E-03	.00000E+00	1.35708E-02	1.90395E-06	6.60215E-02
28	1.75450E+00	-1.95233E-05	1.76888E+00	-1.08750E-02	2.18146E-03	4.55157E-01	1.19544E-02	4.47405E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance

INFORMATION ONLY

1	.00000E+00	2.21135E-02	.00000E+00	2.14758E-02	2.05978E-02	3.71345E-03	-9.97737E-09	9.98896E-01
2	.00000E+00	1.91371E-01	7.31705E-03	2.57889E-01	1.85272E-01	1.54294E-02	-9.01340E-08	1.00001E+00
3	.00000E+00	2.15417E-01	7.60816E-02	2.67140E-01	2.75104E-01	1.63987E-02	-1.07647E-07	9.99987E-01
4	.00000E+00	1.24145E-01	1.13331E-01	1.83984E-01	2.23619E-01	7.85708E-03	-9.78123E-08	9.99999E-01
5	.00000E+00	1.65069E-01	2.05993E-01	4.65810E-01	3.66746E-01	5.31966E-03	-1.84250E-07	9.99990E-01
6	.00000E+00	1.78657E-01	4.23332E-01	1.25626E+00	5.95508E-01	8.47315E-03	-2.34811E-07	1.00001E+00
7	.00000E+00	8.85054E-02	6.57970E-01	1.67052E+00	7.38008E-01	8.47708E-03	5.61110E-07	9.99989E-01
8	.00000E+00	1.36510E-02	7.75581E-01	1.70897E+00	7.75766E-01	1.35287E-02	8.97995E-08	9.99920E-01
9	.00000E+00	9.91007E-04	7.66479E-01	1.48754E+00	7.45326E-01	2.22278E-02	-4.37011E-06	9.99897E-01
10	.00000E+00	7.36105E-05	7.41808E-01	1.35461E+00	7.08430E-01	3.35259E-02	6.26907E-07	9.99898E-01
11	.00000E+00	5.79123E-06	7.13025E-01	1.26099E+00	6.58608E-01	5.43788E-02	1.37020E-06	9.99939E-01
12	.00000E+00	4.06824E-07	5.73555E-01	6.88152E-01	5.15290E-01	5.82806E-02	-3.91943E-07	9.99975E-01
13	.00000E+00	6.46000E-08	5.08884E-01	5.47674E-01	4.55227E-01	5.36722E-02	4.64490E-07	9.99969E-01
14	.00000E+00	1.28020E-08	4.90798E-01	5.17246E-01	4.15986E-01	7.48556E-02	1.48095E-07	9.99988E-01
15	.00000E+00	1.44677E-09	2.71502E-01	2.34877E-01	2.63773E-01	7.71631E-03	-4.45383E-06	1.00009E+00
16	.00000E+00	4.24821E-10	1.84778E-01	1.08560E-01	1.79956E-01	4.83414E-03	-3.07762E-06	1.00006E+00
17	.00000E+00	1.36813E-10	9.91754E-02	3.47729E-02	9.41758E-02	4.99553E-03	1.28506E-06	1.00003E+00
18	.00000E+00	9.79542E-11	8.87569E-02	2.64875E-02	7.74756E-02	1.12798E-02	-2.77755E-06	1.00005E+00
19	.00000E+00	1.38486E-10	1.44163E-01	6.97047E-02	1.37056E-01	7.10192E-03	5.89876E-07	1.00003E+00
20	.00000E+00	2.25198E-10	3.45209E-01	3.98478E-01	3.17964E-01	2.72276E-02	-1.05754E-05	1.00008E+00
21	.00000E+00	3.29610E-11	1.72653E-01	8.44159E-02	1.52532E-01	2.01171E-02	-3.10257E-06	1.00004E+00
22	.00000E+00	3.83423E-11	3.33788E-01	2.33171E-01	2.74269E-01	5.95081E-02	-4.03089E-06	1.00004E+00
23	.00000E+00	3.66638E-11	8.22393E-01	1.23886E+00	6.78284E-01	1.44071E-01	9.52730E-06	1.00004E+00
24	.00000E+00	9.95219E-12	8.76008E-01	1.06644E+00	7.22619E-01	1.53355E-01	-3.12395E-07	1.00004E+00
25	.00000E+00	2.91335E-12	5.79402E-01	4.32678E-01	4.95693E-01	8.56973E-02	-6.15187E-03	1.00002E+00
26	.00000E+00	2.04286E-12	4.50164E-01	4.38470E-01	3.72068E-01	7.80878E-02	-2.52953E-07	1.00002E+00
27	.00000E+00	4.86824E-13	1.48731E-01	8.92792E-02	1.26800E-01	2.22220E-02	-5.16804E-08	1.00001E+00
28	.00000E+00	1.00000E+00	1.05719E+01	1.61398E+01	1.05719E+01	1.00236E+00	-1.95301E-05	9.99987E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*dt**2	total flux
1	1.28968E-02	-9.97737E-09	1.22921E-02	.00000E+00	2.17087E-03	2.41708E-03	3.14095E-04	3.52315E-01
2	9.53250E-02	-9.01340E-08	8.90107E-02	.00000E+00	1.62522E-05	1.09287E-02	1.71221E-03	2.60833E+00
3	1.20081E-01	-1.07647E-07	1.11597E-01	.00000E+00	.00000E+00	1.33500E-02	1.97107E-03	3.28411E+00
4	7.42708E-02	-9.78123E-08	6.87048E-02	.00000E+00	.00000E+00	5.75240E-03	9.52807E-04	2.03049E+00
5	1.11534E-01	-1.84250E-07	1.02523E-01	.00000E+00	.00000E+00	1.68452E-03	1.11513E-03	3.04717E+00
6	2.09893E-01	-2.34811E-07	1.92694E-01	.00000E+00	.00000E+00	1.48188E-03	1.85285E-03	5.72695E+00
7	2.03560E-01	5.61110E-07	1.95018E-01	.00000E+00	.00000E+00	1.49704E-03	1.32501E-03	5.57576E+00
8	1.48864E-01	8.97995E-08	1.46897E-01	.00000E+00	.00000E+00	1.56078E-03	7.52527E-04	4.03867E+00
9	1.15171E-01	-4.37011E-06	1.15816E-01	.00000E+00	.00000E+00	2.13399E-03	5.08257E-04	3.17416E+00
10	1.05405E-01	6.26909E-07	1.06961E-01	.00000E+00	.00000E+00	4.55729E-03	4.62112E-04	2.90800E+00
11	9.71375E-02	1.37020E-06	1.00650E-01	.00000E+00	.00000E+00	9.54164E-03	4.18278E-04	2.68636E+00
12	6.11904E-02	-3.91943E-07	6.52634E-02	.00000E+00	.00000E+00	1.24109E-02	2.46678E-04	1.69759E+00
13	5.22063E-02	4.64490E-07	5.58506E-02	.00000E+00	.00000E+00	1.23673E-02	2.12217E-04	1.44933E+00
14	4.82657E-02	1.48095E-07	5.35691E-02	.00000E+00	.00000E+00	8.45267E-03	1.95707E-04	1.34577E+00
15	2.83237E-02	-4.45383E-06	2.92270E-02	.00000E+00	.00000E+00	2.14073E-03	1.20052E-04	7.83212E-01
16	1.57945E-02	-3.07762E-06	1.62599E-02	.00000E+00	.00000E+00	1.44688E-03	6.29109E-05	4.36571E-01
17	6.90660E-03	1.28506E-06	7.25373E-03	.00000E+00	.00000E+00	2.04339E-03	2.52069E-05	1.91528E-01
18	5.36478E-03	-2.77755E-06	6.02892E-03	.00000E+00	.00000E+00	2.37041E-03	1.76980E-05	1.49749E-01
19	1.07752E-02	5.89876E-07	1.13686E-02	.00000E+00	.00000E+00	3.29172E-03	4.01010E-05	2.98645E-01
20	3.55610E-02	-1.05754E-05	3.74423E-02	.00000E+00	.00000E+00	1.58574E-02	1.41846E-04	9.85535E-01
21	1.07126E-02	-3.10257E-06	1.21031E-02	.00000E+00	.00000E+00	1.22900E-02	3.39399E-05	2.99435E-01
22	2.13066E-02	-4.03089E-06	2.57066E-02	.00000E+00	.00000E+00	3.60467E-02	6.46681E-05	6.01064E-01
23	7.07299E-02	9.52730E-06	8.61215E-02	.00000E+00	.00000E+00	8.56527E-02	2.03650E-04	2.00254E+00
24	5.33756E-02	-3.12395E-07	7.02734E-02	.00000E+00	.00000E+00	9.08818E-02	1.25298E-04	1.52972E+00
25	2.27252E-02	-6.15187E-03	3.17159E-02	.00000E+00	.00000E+00	5.27926E-02	4.21610E-05	6.57227E-01
26	1.48782E-02	-2.52953E-07	2.28509E-02	.00000E+00	.00000E+00	4.86563E-02	2.10117E-05	4.35893E-01
27	2.49733E-03	-5.16804E-08	4.33862E-03	.00000E+00	.00000E+00	1.35703E-02	2.24294E-06	7.41659E-02
28	1.75450E+00	-1.95230E-05	1.77553E+00	.00000E+00	2.18713E-03	4.55157E-01	1.29569E-02	4.84254E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

INFORMATION ONLY

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.09998E-03	4.97152E-03	5.26014E-03	2.50249E-03	3.18158E-03	5.52947E-03	3.72049E-03	1.74274E-03
2	6.70103E-04	4.91019E-03	5.75661E-03	3.43497E-03	4.29880E-03	6.16395E-03	4.33987E-03	2.14746E-03
3	1.12768E-03	5.38921E-03	5.84306E-03	2.91018E-03	3.86563E-03	6.79211E-03	4.39629E-03	1.82315E-03
4	7.74881E-04	4.23266E-03	4.90758E-03	2.38326E-03	2.82784E-03	4.80332E-03	3.32751E-03	1.79648E-03
5	7.97509E-04	4.29811E-03	4.95116E-03	2.40766E-03	2.87768E-03	4.89222E-03	3.37687E-03	1.79679E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11224E-03	1.01486E-03	1.09642E-03	8.72589E-04	7.83709E-04	1.00879E-03	3.13745E-04	1.56159E-04
2	1.78969E-03	1.95277E-03	2.04380E-03	1.59939E-03	1.41152E-03	1.66206E-03	6.25267E-04	3.40838E-04
3	1.12153E-03	1.05699E-03	1.30164E-03	1.21978E-03	1.10269E-03	1.51851E-03	3.73415E-04	1.87908E-04
4	1.19407E-03	1.09414E-03	1.03049E-03	6.77811E-04	6.01782E-04	6.38781E-04	3.11266E-04	1.61486E-04
5	1.19220E-03	1.09483E-03	1.04611E-03	7.05265E-04	6.26954E-04	6.82879E-04	3.14763E-04	1.62959E-04

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.08819E-05	1.13772E-04	1.34909E-04	4.46709E-04	2.31664E-04	6.75516E-04	2.16474E-03	2.01510E-03
2	1.65665E-04	1.94151E-04	2.66191E-04	8.59807E-04	3.91615E-04	1.07147E-03	3.38727E-03	3.12108E-03
3	1.10969E-04	1.81898E-04	1.86016E-04	5.97233E-04	3.62520E-04	1.07915E-03	3.28500E-03	3.13057E-03
4	6.95208E-05	6.48574E-05	1.12583E-04	3.86197E-04	1.31387E-04	3.30358E-04	1.11594E-03	9.12768E-04
5	7.17035E-05	7.06685E-05	1.16610E-04	3.98265E-04	1.43061E-04	3.68485E-04	1.22557E-03	1.02943E-03

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	9.28145E-04	6.61741E-04	1.00942E-04	4.19214E-02
2	1.45258E-03	1.06411E-03	1.83235E-04	5.53039E-02
3	1.48223E-03	1.11985E-03	2.09760E-04	5.17650E-02
4	3.84693E-04	2.34281E-04	2.90224E-05	3.45354E-02
5	4.42179E-04	2.79969E-04	3.75563E-05	3.54099E-02

forced group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6391E+06	1.9647E+09	7.1812E-01
2	9.0000E+05	1.5065E+05	9.6512E+06	2.8188E-01
3	4.0000E-01	1.2716E-01	3.6830E+05	1.2316E-10
4	1.0000E-05			

1 240 d, second part of ses2h pass to make library

0cell averaged fluxes

Ozone	grp. 1	grp. 2	grp. 3
1	3.87437E-01	1.13905E+00	2.45235E-01
2	3.92664E-01	1.14057E+00	2.35554E-01
3	3.95604E-01	1.14097E+00	2.31194E-01
4	4.12753E-01	1.14405E+00	2.00512E-01
5	4.11057E-01	1.14373E+00	2.03513E-01

0flux disadvantage factors (zone average/cell average flux)

Ozone	grp. 1	grp. 2	grp. 3
1	9.42516E-01	9.99905E-01	1.20619E+00
2	9.55251E-01	9.97257E-01	1.15858E+00
3	9.62383E-01	9.97588E-01	1.13713E+00
4	1.00410E+00	1.00028E+00	9.85240E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

Ozone	grp. 1	grp. 2	grp. 3
1	1.70157E-02	1.81279E-02	6.77785E-03
2	1.90707E-02	2.55619E-02	1.05713E-02
3	1.91358E-02	2.19601E-02	1.06691E-02
4	1.51265E-02	1.62707E-02	3.13845E-03
5	1.53321E-02	1.65477E-02	3.53005E-03

Ozone	volume	vol. fraction
1	1.25665E+00	4.56256E-02
2	1.66687E-01	6.05165E-03
3	6.58265E-01	2.38987E-02

INFORMATION ONLY

```
   4    2.5462E+01    9.2426E-01
   5    2.7540E+01    1.0000E+00
 - elapsed time    .03 min.
1  cccccccccc   cccccccccc   EE        EE  FFFFFFFFFF   LL          eeeeeeeeeee
   cccccccccccc cccccccccccc EE        EE  FFFFFFFFFFF  LL          eeeeeeeeeee
   cc        cc cc        cc EE        EE  FF        FF  LL          ee
   cc           cc        cc EE        EE  FF        FF  LL          ee
   cc           cc        cc EE        EE  FF        FF  LL          ee
   cc           cc        cc EE        EE  FFFFFFFFFFF  LL          eeeeeeeee
   cc           cc        cc EE        EE  FFFFFFFFFF   LL          eeeeeeeee
   cc           cc        cc EE        EE  FF           LL          ee
   cc           cc        cc EE        EE  FF           LL          ee
   cc        cc cc        cc EE        EE  FF           LL          ee
   cccccccccccc cccccccccccc EEEEEEEEEEEE  FF           LLLLLLLLLLLL eeeeeeeeeee
    cccccccccc   cccccccccc   EEEEEEEEEE   FF           LLLLLLLLLLLL eeeeeeeeeee
0

   ddddddddddd    aaaaaaaa   W        W  iiiiiiiiiiii   sssssssssss
   ddddddddddd   aaaaaaaaaa  W        W  iiiiiiiiiiii  ssssssssssss
   dd        dd  aa      aa  W        W     ii         ss        ss
   dd        dd  aa      aa  W        W     ii         ss
   dd        dd  aa      aa  W        W     ii         ss
   dd        dd  aaaaaaaaaaaa W        W     ii         sssssssssss
   dd        dd  aaaaaaaaaaaa  W      W      ii          ssssssssss
   dd        dd  aa      aa    W    W       ii                  ss
   dd        dd  aa      aa     W  W        ii                  ss
   dd        dd  aa      aa      WW         ii         ss       ss
   ddddddddddd   aa      aa      WW         iiiiiiiiiiii ssssssssssss
   ddddddddddd   aa      aa       v         iiiiiiiiiiii  ssssssssss
0

    oooooo     zzzzzzzzzz          //     11      &&&&&&&&&&          //  99999999999  &&&&&&&&&&
   oooooooo    zzzzzzzzzzz        //     111      &&&&&&&&&&&        //  99999999999  &&&&&&&&&&&
  oo      oo   zz        zz      //     1111     66                //   99      99   66
 oo        oo          zz      //       11      66               //    99      99   66
 oo        oo         zz       //       11      66              //     99      99   66
 oo        oo        zz        //       11      &&&&&&&&&&     //      99999999999  &&&&&&&&&&
 oo        oo       zz         //       11      &&&&&&&&&&&    //       99999999999  &&&&&&&&&&&
 oo        oo      zz          //       11      66      66    //                99   66      66
 oo        oo     zz           //       11      66      66   //                 99   66      66
  oo      oo    zz             //       11      66      66  //                  99   66      66
   oooooooo     zzzzzzzzzzzz  //     11111111   &&&&&&&&&&& //      99999999999  &&&&&&&&&&&
    oooooo      zzzzzzzzzzzz //      11111111    &&&&&&&&&  //      99999999999   &&&&&&&&&
0

    oooooo     99999999999            555555555555  88888888888                11      777777777777
   oooooooo    99999999999            555555555555 8888888888888              111      777777777777
  oo      oo   99      99     :::    55           88      88     :::        1111      77        77
 oo        oo  99      99     :::    55           88      88     :::          11            77
 oo        oo  99      99     :::    55           88      88     :::          11           77
 oo        oo  99999999999           555555555    88888888                   11           77
 oo        oo  99999999999           555555555555 88888888                   11           77
 oo        oo          99     :::            55 88      88     :::          11          77
 oo        oo          99     :::            55 88      88     :::          11          77
  oo      oo           99     :::    55      55 88      88     :::          11         77
   oooooooo    99999999999            555555555555 8888888888888        11111111         77
    oooooo     99999999999             555555555  88888888888          11111111         77
1
0                        ssssssssss   cccccccccc    aaaaaaaa   ll        eeeeeeeeeee
                        ssssssssssss cccccccccccc  aaaaaaaaaa ll        eeeeeeeeeee
```

INFORMATION ONLY

```
ss      ss  cc      cc  aa      aa  ll          ee
ss          cc          aa      aa  ll          ee
ss          cc          aa      aa  ll          ee
sssssssssss cc          aaaaaaaaaaa ll          eeeeeeeee
 sssssssssss cc         aaaaaaaaaaa ll          eeeeeeeee
        ss  cc          aa      aa  ll          ee
        ss  cc          aa      aa  ll          ee
ss      ss  cc      cc  aa      aa  ll          ee
sssssssssss cccccccccccc aa      aa  llllllllllll eeeeeeeeeeee
 sssssssss   cccccccccc  aa      aa  llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****            program verification information            *****
*****                                                       *****
*****            code system:   scale  version:   4.2       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c005                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:58:17                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       2q array has      1 entries.
0        * core allocated to array-data (by -ttt$ or default) was   200000 words. *
1         * broad 3-group flux weighting factors *
0
0                 therm =    .5092
```

INFORMATION ONLY

```
0                res  =   .3846
0                fast =  2.9317
0 user requested (see jadt) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from arpx (normalized to thermal flux), barns

                10010 to  10020 2.75386E-01
                10010 tot-cap   2.75386E-01
                50100 to  40100 2.09013E-02
                50100 to  10010 2.09013E-02
                50100 to  40090 3.11769E-03
                50100 to  10020 3.11769E-03
                50100 to  30070 3.16715E+03
                50100 to  20040 3.16730E+03
                50100 to  10030 7.80945E-02
                50100 tot-cap   3.16725E+03
                50110 to  50100 8.88977E-06
                50110 to  50120 4.18853E-03
                50110 to  40110 1.13442E-06
                50110 to  10010 1.13442E-06
                50110 to  40090 1.01236E-05
                50110 to  10030 1.01236E-05
                50110 to  30080 1.32158E-04
                50110 to  20040 1.32158E-04
                50110 tot-cap   4.34084E-03
                80160 to  80170 1.47104E-04
                80160 to  70160 7.77840E-05
                80160 to  10010 7.77840E-05
                80160 to  70150 1.46700E-05
                80160 to  10020 1.46700E-05
                80160 to  60130 2.21441E-02
                80160 to  20040 2.21441E-02
                80160 to  80161 3.41135E-03
                80160 tot-cap   2.23837E-02
               360830 to 360820 1.76621E-02
               360830 to 360810 1.86468E-09
               360830 to 360840 1.48072E+02
               360830 to 350830 7.33568E-04
               360830 to  10010 7.33568E-04
               360830 to 350820 5.83331E-06
               360830 to  10020 5.83331E-06
               360830 to 350810 2.03885E-06
               360830 to  10030 2.03885E-06
               360830 to 340810 3.29972E-08
               360830 to  20030 3.29972E-08
               360830 to 340800 3.87812E-05
               360830 to  20040 3.87812E-05
               360830 tot-cap   1.48091E+02
               360850 to 360860 1.33283E+00
               360850 tot-cap   1.33283E+00
               380900 to 380910 6.11188E-01
               380900 tot-cap   6.11188E-01
               390890 to 390900 9.50305E-01
               390890 tot-cap   9.50305E-01
               400930 to 400940 1.18722E+01
               400930 tot-cap   1.18722E+01
               400940 to 400950 1.66352E-01
               400940 tot-cap   1.66352E-01
               400950 to 400960 1.97588E+00
               400950 tot-cap   1.97588E+00
```

INFORMATION ONLY

410940 to 410950	3.46661E+01
410940 tot-cap	3.46661E+01
420950 to 420960	3.52522E+01
420950 tot-cap	3.52522E+01
430990 to 430980	5.35894E-03
430990 to 431000	8.15638E+01
430990 tot-cap	8.15691E+01
441010 to 441020	2.50117E+01
441010 tot-cap	2.50117E+01
441060 to 441070	7.66631E-01
441060 tot-cap	7.66631E-01
451030 to 451020	1.94081E-03
451030 to 451040	3.40500E+02
451030 tot-cap	3.40502E+02
451050 to 451060	7.90428E+03
451050 tot-cap	7.90428E+03
461050 to 461060	3.05554E+01
461050 tot-cap	3.05554E+01
461080 to 461090	6.08972E+01
461080 tot-cap	6.08972E+01
471090 to 471080	4.51325E-03
471090 to 471100	3.36304E+02
471090 to 461090	2.57938E-04
471090 to 10010	2.57938E-04
471090 to 451060	2.12051E-04
471090 to 20040	2.12051E-04
471090 to 471091	5.55824E-01
471090 tot-cap	3.36309E+02
511240 to 511250	1.09642E+01
511240 tot-cap	1.09642E+01
541310 to 541300	5.47244E-02
541310 to 541250	1.14430E-05
541310 to 541320	2.40805E+02
541310 to 531310	3.33798E-05
541310 to 10010	3.33798E-05
541310 to 531300	4.58919E-07
541310 to 10020	4.58919E-07
541310 to 531250	4.70578E-07
541310 to 10030	4.70578E-07
541310 to 521280	1.55555E-05
541310 to 20040	1.55555E-05
541310 tot-cap	2.40860E+02
541320 to 541310	8.84048E-03
541320 to 541300	1.87500E-05
541320 to 541330	8.41305E-01
541320 to 531320	6.77785E-06
541320 to 10010	6.77785E-06
541320 to 531310	2.84930E-07
541320 to 10020	2.84930E-07
541320 to 531300	3.83659E-08
541320 to 10030	3.83659E-08
541320 to 521250	8.30558E-07
541320 to 20040	8.30558E-07
541320 tot-cap	8.50172E-01
541350 to 541360	1.44670E+06
541350 tot-cap	1.44670E+06
541360 to 541350	1.51222E-02
541360 to 541340	4.61869E-05
541360 to 541370	1.18642E-01
541360 to 531360	2.79250E-07

INFORMATION ONLY

541360	to 10010	2.79290E-07
541360	to 531350	1.03961E-07
541360	to 10020	1.03961E-07
541360	to 531340	2.34866E-08
541360	to 10030	2.34866E-08
541360	to 521330	2.34241E-07
541360	to 20040	2.34241E-07
541360	tot-cap	1.33811E-01
551330	to 551320	7.08146E-03
551330	to 551340	9.32952E+01
551330	to 541330	7.78062E-04
551330	to 10010	7.78062E-04
551330	to 531300	1.21005E-05
551330	to 20040	1.21005E-05
551330	tot-cap	9.33011E+01
551340	to 551350	1.22130E+02
551340	tot-cap	1.22130E+02
551350	to 551360	1.95162E+01
551350	tot-cap	1.95162E+01
551370	to 551380	2.08031E-01
551370	tot-cap	2.08031E-01
561360	to 561370	8.14606E-01
561360	tot-cap	8.14606E-01
571390	to 571400	7.56654E+00
571390	tot-cap	7.56654E+00
581440	to 581450	1.14875E+00
581440	tot-cap	1.14875E+00
591410	to 591400	5.07440E-03
591410	to 591390	1.45800E-06
591410	to 571370	2.19084E-06
591410	to 20040	4.52882E-05
591410	to 581400	1.54905E-05
591410	to 10010	4.43067E-05
591410	to 591420	1.11551E+01
591410	to 581410	4.17447E-05
591410	to 10020	1.29286E-05
591410	to 581390	1.35585E-06
591410	to 10030	1.35585E-06
591410	to 571390	1.30942E-08
591410	to 20030	1.30942E-08
591410	to 571380	4.30973E-05
591410	tot-cap	1.11603E+01
591430	to 591440	9.16495E+01
591430	tot-cap	9.16495E+01
601430	to 601420	7.77083E-02
601430	to 601410	7.92424E-06
601430	to 581390	1.75011E-05
601430	to 20040	4.88915E-04
601430	to 591420	3.31708E-06
601430	to 10010	3.42954E-05
601430	to 601440	1.92651E+02
601430	to 591430	3.30457E-05
601430	to 10020	2.05957E-06
601430	to 591410	2.97908E-06
601430	to 10030	2.97908E-06
601430	to 581410	1.43133E-08
601430	to 20030	1.43133E-08
601430	to 581400	4.71414E-04
601430	tot-cap	1.95029E+02
601450	to 601440	9.97864E-02

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601450	to 601430	1.01175E-04
601450	to 581410	7.23125E-06
601450	to 20040	1.81711E-04
601450	to 591440	1.90050E-06
601450	to 10010	1.23862E-05
601450	to 601460	7.22582E+01
601450	to 591450	1.16281E-05
601450	to 10020	1.14244E-06
601450	to 591430	1.80107E-06
601450	to 10030	1.80107E-06
601450	to 581430	3.66699E-09
601450	to 20030	3.66699E-09
601450	to 581420	1.74479E-04
601450	tot-cap	7.23582E+01
601470	to 601480	1.69168E+02
601470	tot-cap	1.69168E+02
611470	to 611460	2.72616E-02
611470	to 611450	8.50603E-05
611470	to 591430	7.58435E-06
611470	to 20040	7.05508E-05
611470	to 601460	1.04371E-05
611470	to 10010	2.38494E-05
611470	to 611480	5.36651E+02
611470	to 601470	2.12576E-05
611470	to 10020	7.84523E-06
611470	to 601450	2.96207E-06
611470	to 10030	2.96207E-06
611470	to 591450	4.45355E-09
611470	to 20030	4.45355E-09
611470	to 591440	6.23665E-05
611470	tot-cap	5.36578E+02
611480	to 611490	1.15266E+04
611480	tot-cap	1.15266E+04
621470	to 621460	7.11243E-02
621470	to 621450	6.40362E-03
621470	to 601430	5.62185E-05
621470	to 20040	1.05573E-03
621470	to 611460	1.29063E-04
621470	to 10010	1.85403E-04
621470	to 621480	2.08808E+02
621470	to 611470	1.63646E-04
621470	to 10020	1.07305E-04
621470	to 611450	1.15222E-04
621470	to 10030	1.15222E-04
621470	to 601450	5.30158E-06
621470	to 20030	5.30158E-06
621470	to 601440	1.03752E-03
621470	to 621471	1.45472E+00
621470	tot-cap	2.08887E+02
621490	to 621480	4.02107E-02
621490	to 621470	3.19192E-05
621490	to 621500	4.47195E+04
621490	to 611490	4.15418E-04
621490	to 10010	4.15418E-04
621490	to 601460	4.15418E-04
621490	to 20040	4.15418E-04
621490	tot-cap	4.47195E+04
621500	to 621510	1.24848E+02
621500	tot-cap	1.24848E+02
621510	to 621500	1.34695E-01

INFORMATION ONLY

621510	to 621490	1.20109E-04
621510	to 601470	1.35716E-05
621510	to 20040	1.06235E-04
621510	to 611500	1.64465E-06
621510	to 10010	1.28376E-05
621510	to 621520	4.81862E+03
621510	to 611510	1.18528E-05
621510	to 10020	6.39831E-07
621510	to 611490	1.16285E-06
621510	to 10030	1.16285E-06
621510	to 601490	1.19796E-09
621510	to 20030	1.19796E-09
621510	to 601480	9.26637E-05
621510	tot-cap	4.81876E+03
621520	to 621510	1.60340E-02
621520	to 621500	1.08680E-04
621520	to 601480	2.42985E-06
621520	to 20040	1.00951E-05
621520	to 611510	6.96662E-07
621520	to 10010	2.05583E-06
621520	to 621530	6.81767E+02
621520	to 611520	1.82621E-06
621520	to 10020	4.67044E-07
621520	to 611500	1.21467E-07
621520	to 10030	1.21467E-07
621520	to 601500	3.68114E-10
621520	to 20030	3.68114E-10
621520	to 601490	7.66524E-06
621520	tot-cap	6.81783E+02
631530	to 631520	1.56213E-02
631530	to 631510	2.33275E-05
631530	to 611490	3.85358E-05
631530	to 20040	5.50264E-04
631530	to 621520	6.54189E-06
631530	to 10010	5.55667E-05
631530	to 631540	5.68632E+02
631530	to 621530	5.33315E-05
631530	to 10020	4.30660E-06
631530	to 621510	9.64501E-07
631530	to 10030	9.64501E-07
631530	to 611510	2.20463E-03
631530	to 20030	2.20463E-03
631530	to 611500	5.11728E-04
631530	tot-cap	5.68648E+02
631540	to 631530	2.49728E-02
631540	to 631520	8.97066E-06
631540	to 611500	8.72236E-11
631540	to 20040	6.56784E-04
631540	to 621530	1.96376E-06
631540	to 10010	1.05788E-03
631540	to 631550	1.03480E+03
631540	to 621540	1.05788E-03
631540	to 10020	1.96267E-06
631540	to 621520	3.32532E-06
631540	to 10030	3.32532E-06
631540	to 611520	1.40944E-03
631540	to 20030	1.40944E-03
631540	to 611510	6.56784E-04
631540	tot-cap	1.03483E+03
631550	to 631540	2.05034E-02

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631550	to 631530	5.74142E-05
631550	to 611510	1.54638E-06
631550	to 20040	7.61090E-06
631550	to 621540	3.13069E-06
631550	to 10010	6.58607E-06
631550	to 631560	2.50529E+03
631550	to 621550	5.06278E-06
631550	to 10020	1.60740E-06
631550	to 621530	5.32104E-07
631550	to 10030	5.32104E-07
631550	to 611530	1.20604E-10
631550	to 20030	1.20604E-10
631550	to 611520	6.06452E-06
631550	tot-cap	2.50525E+03
641550	to 641560	1.65972E+04
641550	tot-cap	1.65972E+04
922340	to 922330	5.37161E-03
922340	fission	3.86763E+00
922340	nu-sigf	1.01609E+01
922340	to 922320	7.78853E-05
922340	to 922350	1.69442E+02
922340	to 922341	2.60942E+00
922340	tot-cap	1.73315E+02
922350	to 922340	2.46199E-02
922350	fission	3.51653E+02
922350	nu-sigf	8.51468E+02
922350	to 922330	2.34617E-05
922350	to 922360	8.13681E+01
922350	to 922351	7.42194E-02
922350	tot-cap	4.33045E+02
922360	to 922350	2.73641E-02
922360	fission	1.65349E+00
922360	nu-sigf	4.53531E+00
922360	to 922340	3.66673E-04
922360	to 922370	6.97858E+01
922360	to 922361	2.85478E+00
922360	tot-cap	7.14670E+01
922380	to 922370	5.46600E-02
922380	fission	8.27057E-01
922380	nu-sigf	2.32670E+00
922380	to 922360	3.53195E-04
922380	to 922390	7.61294E+00
922380	tot-cap	8.49501E+00
932370	to 932360	1.26589E-02
932370	fission	4.48514E+00
932370	nu-sigf	1.35001E+01
932370	to 932350	4.76640E-05
932370	to 932380	2.78085E+02
932370	to 932371	6.69105E-01
932370	tot-cap	2.82583E+02
942380	to 942370	2.00260E-03
942380	fission	2.02106E+01
942380	nu-sigf	5.72261E+01
942380	to 942360	1.12078E-05
942380	to 942390	2.57609E+02
942380	to 942381	2.60790E+00
942380	tot-cap	2.77822E+02
942390	to 942380	1.05946E-02
942390	fission	8.54735E+02
942390	nu-sigf	2.45731E+03

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```
                942350 to 942370  1.80436E-05
                942350 to 942360  1.78869E-03
                942350 to 942400  4.83359E+02
                942350 tot-cap    1.33811E+03
                942400 to 942350  4.98738E-03
                942400 fission    5.21918E+00
                942400 nu-sigf    1.63062E+01
                942400 to 942380  4.86689E-05
                942400 to 942410  1.91204E+03
                942400 tot-cap    1.91727E+03
                942410 to 942400  6.34184E-02
                942410 fission    8.90376E+02
                942410 nu-sigf    2.61233E+03
                942410 to 942350  1.04138E-04
                942410 to 942420  2.94403E+02
                942410 tot-cap    1.18484E+03
                942420 to 942410  2.03312E-02
                942420 fission    3.88427E+00
                942420 nu-sigf    1.21612E+01
                942420 to 942400  2.47167E-04
                942420 to 942430  2.98889E+02
                942420 tot-cap    3.00793E+02
                952410 fission    1.16252E+01
                952410 nu-sigf    3.71443E+01
                952410 to 952420  1.00417E+03
                952410 tot-cap    1.01579E+03
                952430 fission    2.99576E+00
                952430 nu-sigf    1.00699E+01
                952430 to 952440  3.82722E+02
                952430 tot-cap    3.85718E+02
                952440 to 952430  4.88603E-03
                952440 fission    1.35703E+01
                952440 nu-sigf    4.54429E+01
                952440 to 952420  4.87258E-05
                952440 to 952450  1.26267E+02
                952440 to 952441  3.32706E+00
                952440 tot-cap    1.39863E+02
Othe reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
Othe reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
Othe fission product transitions for  922340 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction 922340 to 922341 was not used, because 922341 is not in library., (in subr pool)
Othe reaction 922350 to 922351 was not used, because 922351 is not in library., (in subr pool)
Othe fission product transitions for  922360 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction 922360 to 922361 was not used, because 922361 is not in library., (in subr pool)
Othe fission product transitions for  952370 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction 952370 to 952371 was not used, because 952371 is not in library., (in subr pool)
```

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```
0the fission product transitions for  942380 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
0the fission product transitions for  942400 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  942420 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952410 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  962440 to 962441 was not used, because  962441 is not in library., (in subr pool)
1
0                    case completed.  date,   2/16/1996
0 * normal termination *
1  ooooooooooo   rrrrrrrrrrr   iiiiiiiiiiii    gggggggggg    eeeeeeeeeeee  m        m  ssssssssss
   ooooooooooooo rrrrrrrrrrrr  iiiiiiiiiiii   gggggggggggg   eeeeeeeeeeee  mm       m  ssssssssssss
   oo       oo   rr       rr      ii        gg       gg   ee            mmm      m  ss       ss
   oo       oo   rr       rr      ii        gg            ee            mmm      m  ss
   oo       oo   rr       rr      ii        gg            ee            m  m     m  ss
   oo       oo   rrrrrrrrrrr      ii        gg   gggggg   eeeeeeee      m   m    m  ssssssssss
   oo       oo   rrrrrrrrrrr      ii        gg   gggggg   eeeeeeee      m    m   m   ssssssssss
   oo       oo   rr      rr       ii        gg       gg   ee            m     m  m          ss
   oo       oo   rr       rr      ii        gg       gg   ee            m      mm          ss
   oo       oo   rr        rr     ii        gg       gg   ee            m       mm  ss       ss
   oooooooooooo rr        rr  iiiiiiiiiiii  gggggggggggg  eeeeeeeeeeee  m        mm  ssssssssssss
    ooooooooooo rr        rr  iiiiiiiiiiii   gggggggggg   eeeeeeeeeeee  m        m   ssssssssss
0

   ttttttttttt    aaaaaaaa    w        w  iiiiiiiiiiii    ssssssssss
   ttttttttttttt  aaaaaaaaaa  w        w  iiiiiiiiiiii   ssssssssssss
   tt       tt   aa      aa   w        w      ii        ss       ss
   tt       tt   aa      aa   w        w      ii        ss
   tt       tt   aa      aa   w        w      ii        ss
   tt       tt   aaaaaaaaaaaa w        w      ii        ssssssssssss
   tt       tt   aaaaaaaaaaaa  w      w       ii         ssssssssssss
   tt       tt   aa      aa     w    w        ii                 ss
   tt       tt   aa      aa      w  w         ii                 ss
   tt       tt   aa      aa       w w         ii        ss       ss
   ttttttttttt   aa      aa        ww     iiiiiiiiiiii  ssssssssssss
   ttttttttttt   aa      aa         v     iiiiiiiiiiii   ssssssssss
0

    000000     zzzzzzzzzz2          //      11     &&&&&&&&&&&&          //  ??????????   &&&&&&&&&&&&
   00000000   zzzzzzzzzzzz2         //     111     &&&&&&&&&&&&          //  ??????????   &&&&&&&&&&&&
  00       00 zz       zz2          //    1111     &&                    //  ??      ??   &&
  00       00          zz2          //      11     &&                    //  ??      ??   &&
  00       00          zz2          //      11     &&                    //  ??      ??   &&
  00       00        zz2            //      11     &&&&&&&&&&&&          //  ??????????   &&&&&&&&&&&&
  00       00      zz2              //      11     &&&&&&&&&&&&          //  ??????????   &&&&&&&&&&&&
  00       00    zz2                //      11     &&      &&            //          ??   &&      &&
  00       00  zz2                  //      11     &&      &&            //          ??   &&      &&
```

INFORMATION ONLY

```
   00      00   22          //          11     66      66   //          99  66      66
    00000000    2222222222  //        11111111 6666666666  //      99999999999 6666666666
     000000     2222222222  //        11111111  66666666   //      99999999999  66666666
0

    000000     99999999                 55555555555 88888888                 11     88888888
   00000000    99999999                 55555555555 88888888                 111    88888888
  00      00   99      99      :::      55          88      88      :::     1111    88      88
 00       00   99      99      :::      55          88      88      :::      11     88      88
 00       00   99      99      :::      55          88      88      :::      11     88      88
 00       00   99999999                 55555555555 88888888                 11     88888888
 00       00    99999999                55555555555 88888888                 11     88888888
 00       00          99      :::               55 88      88      :::      11     88      88
 00       00          99      :::               55 88      88      :::      11     88      88
  00      00          99      :::      55       55 88      88      :::      11     88      88
   00000000   99999999                 55555555555 88888888                11111111 88888888
    000000    99999999                  555555555  88888888                11111111 88888888
1
0                          555555555   cccccccccc   aaaaaaaa   ll          eeeeeeeeee
                          55555555555 cccccccccccc aaaaaaaaaa ll          eeeeeeeeee
                          55      55  cc      cc   aa      aa ll          ee
                          55          cc           aa      aa ll          ee
                          55          cc           aa      aa ll          ee
                          555555555   cc           aaaaaaaaaa ll          eeeeeeee
                           555555555  cc           aaaaaaaaaa ll          eeeeeeee
                                   55 cc           aa      aa ll          ee
                                   55 cc           aa      aa ll          ee
                          55       55 cc      cc   aa      aa ll          ee
                          555555555555 cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                           555555555  cccccccccc   aa      aa llllllllllll eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0c004

creation date: 04/27/95

library: /neutronics/scale/exe

this is not a scale configuration controlled code

jobname: davis

date of execution: 02/16/96

INFORMATION ONLY

```
                    *****   time of execution:  09:58:18                    *****
                    *****                                                   *****
                    *****                                                   *****
                    ***********************************************************
                    ***********************************************************
                    ***********************************************************
1
0       -1q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0        0q array has      1 entries.
0         dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0             short-lived split test fraction, qn =    9.118EE-04
0             half-norm of matrix used, an =    7.0000E+00
0             4-place-accuracy-retention ratio, ratio4 =    6.451EE-13
0        1q array has     20 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        3q array has      1 entries.
0        4q array has      1 entries.
0       5/q array has     12 entries.
1library information...

        cross-section data taken from position number  1 of library on unit 15.

        pass  2
        pass  1
        pass  0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass  1
        pass  0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ***********************************************************************
        *                                                                     *
        *          prelim lwr origen-s binary working library--id = 1143      *
        *       made from modified card-image origen-s libraries of scale 4.2 *
        *     data from the light element, actinide, and fission product libraries *
        *       decay data, including gamma and total energy, are from endf/b-vi *
        *                                                                     *
        *     neutron flux spectrum factors and cross sections were produced from *
        *    the "presas2" case updating all nuclides on the scale "dump" library *
        *                                                                     *
        *                fission product yields are from endf/b-v             *
        *                                                                     *
        *             photon libraries use an 18-energy-group structure       *
        *           the photon data are from the master photon data base,     *
        *             produced to include bremsstrahlung from uo2 matrix      *
        *                                                                     *
        *      see information above this box (if present) for later updates  *
        *                                                                     *
        ***********************************************************************
```

INFORMATION ONLY


```
0        *                                                                  *
         ********************************************************************
0
0                .other identification and sizes of library.
0                 data set name:  ft15f001
0              2/16/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7985    number of nonzero off-diagonal matrix elements
0        ********************************************************************
1
    sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                    actinides        page   1
      power= 8.466E-06mw, burnup=2.0318E-02mwd, flux= 1.64E+13n/cm**2-sec
0                                    nuclide concentrations, gram atoms
                                     basis = converted to atoms/(barn-cm)
```

	charge	200.0 d	240.0 d	280.0 d	320.0 d	320.0 d	360.0 d	400.0 d
u230	3.03E-22	4.37E-22	5.84E-22	7.51E-22	9.43E-22	9.43E-22	1.17E-21	1.42E-21
u231	8.18E-21	1.15E-20	1.46E-20	1.82E-20	2.23E-20	2.22E-20	2.69E-20	3.22E-20
u232	1.07E-13	1.44E-13	1.87E-13	2.36E-13	2.94E-13	2.94E-13	3.61E-13	4.37E-13
u233	9.03E-12	1.12E-11	1.33E-11	1.52E-11	1.71E-11	1.71E-11	1.89E-11	2.06E-11
u234	5.35E-06	5.30E-06	5.25E-06	5.19E-06	5.14E-06	5.14E-06	5.10E-06	5.05E-06
u235	6.26E-04	6.11E-04	5.96E-04	5.82E-04	5.67E-04	5.67E-04	5.54E-04	5.40E-04
u236	1.53E-05	1.81E-05	2.08E-05	2.34E-05	2.59E-05	2.59E-05	2.84E-05	3.08E-05
u237	2.96E-08	3.35E-08	3.61E-08	3.85E-08	4.09E-08	4.08E-08	4.32E-08	4.55E-08
u238	2.20E-02	2.20E-02	2.20E-02	2.20E-02	2.20E-02	2.20E-02	2.20E-02	2.20E-02
u239	4.13E-09	5.62E-09	5.59E-09	5.58E-09	5.57E-09	3.23E-09	5.56E-09	5.55E-09
u240	.00E+00	2.57E-39	1.87E-38	9.93E-38	4.17E-37	4.17E-37	1.47E-36	4.50E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.51E-15	2.54E-15	3.82E-15	5.38E-15	7.21E-15	7.21E-15	9.31E-15	1.17E-14
np236m	6.04E-15	8.73E-15	1.11E-14	1.36E-14	1.62E-14	1.60E-14	1.89E-14	2.18E-14
np236	1.12E-13	1.91E-13	2.93E-13	4.21E-13	5.75E-13	5.75E-13	7.57E-13	9.68E-13
np237	3.67E-07	4.91E-07	6.25E-07	7.67E-07	9.16E-07	9.17E-07	1.07E-06	1.24E-06
np238	4.33E-10	5.93E-10	7.52E-10	9.21E-10	1.10E-09	1.09E-09	1.28E-09	1.48E-09
np239	7.84E-07	8.11E-07	8.08E-07	8.05E-07	8.04E-07	8.03E-07	8.02E-07	8.02E-07
np240m	.00E+00	2.19E-41	1.59E-40	8.48E-40	3.56E-39	3.56E-39	1.25E-38	3.84E-38
np240	1.15E-11	1.36E-11	1.35E-11	1.35E-11	1.34E-11	1.09E-11	1.34E-11	1.34E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.46E-13	2.47E-13	3.77E-13	5.37E-13	7.27E-13	7.27E-13	9.49E-13	1.20E-12
pu237	3.28E-14	4.61E-14	5.89E-14	7.12E-14	8.31E-14	8.31E-14	9.46E-14	1.06E-13
pu238	9.70E-09	1.62E-08	2.46E-08	3.51E-08	4.78E-08	4.78E-08	6.24E-08	7.96E-08
pu239	3.13E-05	3.81E-05	4.45E-05	5.08E-05	5.57E-05	5.57E-05	6.08E-05	6.54E-05
pu240	1.66E-06	2.40E-06	3.25E-06	4.17E-06	5.13E-06	5.13E-06	6.13E-06	7.16E-06
pu241	2.56E-07	4.51E-07	7.16E-07	1.05E-06	1.47E-06	1.47E-06	1.95E-06	2.51E-06
pu242	4.63E-09	1.04E-08	1.98E-08	3.41E-08	5.43E-08	5.43E-08	8.17E-08	1.17E-07
pu243	5.47E-13	1.31E-12	2.49E-12	4.27E-12	6.80E-12	6.51E-12	1.02E-11	1.46E-11
pu244	1.12E-29	1.28E-28	9.32E-28	4.95E-27	2.08E-26	2.08E-26	7.32E-26	2.24E-25
pu245	.00E+00	9.35E-35	6.81E-34	3.60E-33	1.51E-32	1.48E-32	5.32E-32	1.63E-31
pu246	.00E+00	2.11E-37	1.75E-36	9.95E-36	4.40E-35	4.40E-35	1.61E-34	5.11E-34
am239	1.95E-20	4.62E-20	8.77E-20	1.50E-19	2.37E-19	2.33E-19	3.53E-19	5.03E-19
am240	8.34E-18	1.99E-17	3.78E-17	6.49E-17	1.02E-16	1.02E-16	1.52E-16	2.17E-16
am241	1.37E-09	3.09E-09	5.89E-09	1.01E-08	1.60E-08	1.60E-08	2.39E-08	3.40E-08
am242m	9.02E-12	2.46E-11	5.45E-11	1.05E-10	1.84E-10	1.84E-10	2.99E-10	4.59E-10
am242	1.59E-12	3.56E-12	6.77E-12	1.16E-11	1.83E-11	1.81E-11	2.73E-11	3.88E-11
am243	6.20E-11	1.82E-10	4.26E-10	8.61E-10	1.57E-09	1.57E-09	2.67E-09	4.26E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.97E-14	6.03E-14	1.40E-13	2.83E-13	5.17E-13	5.06E-13	8.75E-13	1.40E-12
am245	.00E+00	8.65E-33	6.24E-32	3.26E-31	1.35E-30	1.35E-30	4.69E-30	1.42E-29
am246	.00E+00	5.25E-40	4.38E-39	2.49E-38	1.10E-37	1.10E-37	4.03E-37	1.28E-36
totals	2.27E-02	2.27E-02	2.27E-02	2.27E-02	2.26E-02	2.26E-02	2.26E-02	2.26E-02

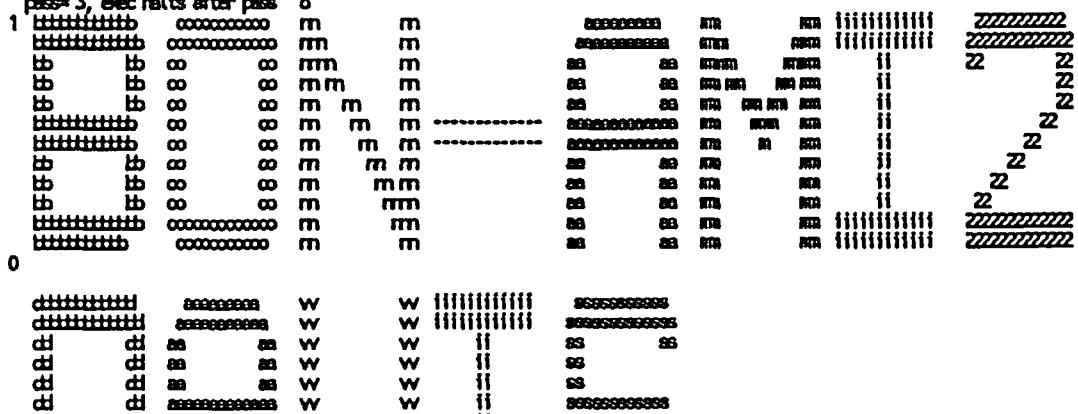
INFORMATION ONLY

```
0   flux            1.66E+13  1.64E+13  1.64E+13  1.64E+13   .00E+00  1.64E+13  1.63E+13
0 .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0    .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *
0                                  table of contents for material tables
0                                    case or subcase printed      page

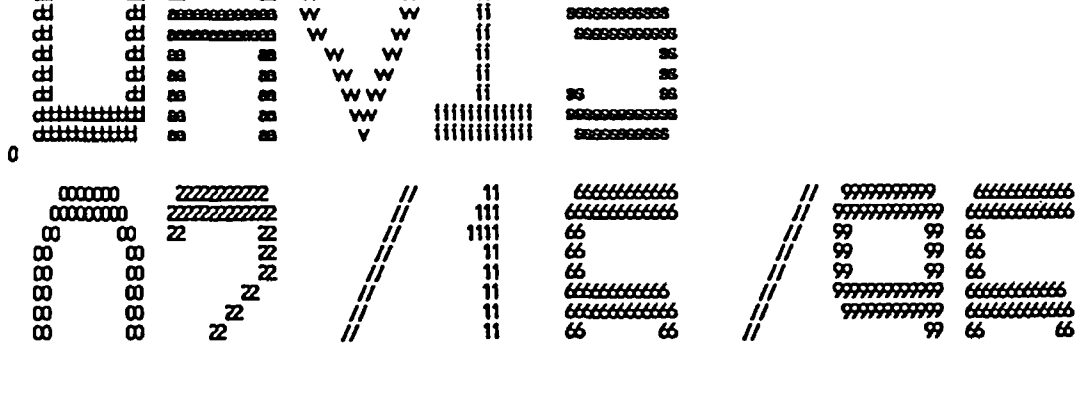
                                          1              1
0rdset          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7935          0          5         99          2         16         96         18         18
          18          0         71
0      56q array has      2 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      57q array has      3 entries.
0       1q array has     20 entries.
0       1q array has     10 entries.
    l90   97576
    l116  60826
    l132  33663 rudata (library) storage size
    l44   33734
    l103  75953
0      58q array has .    4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
    l140  66991
    used   101044 in size   200000
0jqpt           12
           0          0          0          0          0          0          0          0          0          0
           0          0
0therm           4
  5.092282E-01 3.846097E-01 2.951669E+00 1.000000E-31
0rxn            5
        7935         20          6         18       1697
0mm             19
           7          7          0          0          1          1          0          0          0          0
          21        100       1697          4          3         74          4          1          0
0tcorst         5
  8.640000E+04 1.600064E+02  .000000E+00  .000000E+00 1.000000E-03
0mzero          4
           0        689        129        879
0pow            3
  .000000E+00  .000000E+00  .000000E+00
0 lirp          9
           6          0         51         26          2       3000       1000       1697         94
```

INFORMATION ONLY

```
 n-gamma, fission and total mev/fission =          5.2408E+00     1.9492E+02     2.0016E+02
 start of interval flux =        1.65204E+13
 n-gamma, fission and total mev/fission =          5.3397E+00     1.9505E+02     2.0039E+02
 start of interval flux =        1.64592E+13
 n-gamma, fission and total mev/fission =          5.4422E+00     1.9518E+02     2.0062E+02
 start of interval flux =        1.64118E+13
 n-gamma, fission and total mev/fission =          5.5462E+00     1.9530E+02     2.0085E+02
 start of interval flux =        1.63779E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total mev/fission =          5.6579E+00     1.9542E+02     2.0107E+02
 start of interval flux =        1.63548E+13
 n-gamma, fission and total mev/fission =          5.7568E+00     1.9553E+02     2.0128E+02
 start of interval flux =        1.63432E+13
0 case or subcase    1  sea2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has     20 entries.
0requested parm=halt8,skipcellwt,skipshipdata
  pass= 3, exec halts after pass   8
```



```
0
```



```
0
```

INFORMATION ONLY

```
00      00   22          //          11     66      66   //          99  66      66
00      00  22           //          11     66      66   //          99  66      66
 00000000   2222222222   //        11111111  6666666666  //  999999999999  6666666666
  000000    2222222222   //        11111111   66666666   //  99999999999    66666666
0

  000000    999999999                 555555555   88888888              22222222    22222222
 00000000   999999999                 555555555   88888888              22222222    22222222
00      00  99      99     :::        55          88      88     :::    22      22  22      22
00      00  99      99     :::        55          88      88     :::            22          22
00      00  99      99     :::        55          88      88     :::            22          22
00      00  999999999                 555555555   88888888                     22          22
00      00   99999999                 555555555   88888888                   22          22
00      00          99     :::                55  88      88     :::      22          22
00      00          99     :::                55  88      88     :::    22          22
 00      00         99     :::        55      55  88      88     :::  22          22
 00000000   999999999                 555555555   88888888              22222222    22222222
  000000    999999999                  55555555   88888888              22222222    22222222
1
0                        .sssssssss   cccccccccc   aaaaaaaa   ll         eeeeeeeeeee
                        ssssssssssss  cccccccccccc  aaaaaaaaaa  ll         eeeeeeeeeee
                        ss      ss    cc      cc    aa      aa  ll         ee
                        ss            cc            aa      aa  ll         ee
                        ss            cc            aa      aa  ll         ee
                        ssssssssss    cc            aaaaaaaaaaaa ll        eeeeeeeee
                         ssssssssss   cc            aaaaaaaaaaaa ll        eeeeeeeee
                               ss     cc            aa      aa  ll         ee
                               ss     cc            aa      aa  ll         ee
                        ss      ss    cc      cc    aa      aa  ll         ee
                        ssssssssssss  cccccccccccc  aa      aa  llllllllllll eeeeeeeeeee
                         ssssssssss   cccccccccc    aa      aa  llllllllllll eeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0.008

creation date: 04/27/95

library: /nsutronics/scale/exe

this is not a scale configuration controlled code

jdname: davis

date of execution: 02/16/96

INFORMATION ONLY

```
                    *****                                                    *****
                    *****   time of execution:  09:58:22                     *****
                    *****                                                    *****
                    *****                                                    *****
                    ***********************************************************
                    ***********************************************************
                    ***********************************************************
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has      6 entries.
0        2q array has      2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf mod/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       66
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     66 entries.
0       4q array has     66 entries.
0       5q array has     66 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     66 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
   1       1      92235    5.40480E-04        92235
   2       1      92234    5.04673E-06        92234
   3       1      92236    3.08086E-05        92236
   4       1      92238    2.19627E-02        92238
   5       1       8016    4.55359E-02         8016
   6       3       8016    2.09710E-02            6
   7       1      36083    7.25090E-07        36083
   8       1      36085    3.50117E-07        36085
   9       1      38090    7.86170E-06        38090
  10       1      39089    5.47405E-06        39089
  11       1      42095    6.12150E-06        42095
  12       1      40093    5.98109E-06        40093
  13       1      40094    9.26342E-06        40094
  14       1      40095    2.10190E-06        40095
  15       1      41094    3.60192E-12        41094
  16       1      43099    8.96719E-06        43099
  17       1      45103    4.40588E-06        45103
  18       1      45105    1.67519E-08        45105
  19       1      44101    7.85901E-06        44101
  20       1      44106    1.14008E-06        44106
  21       1      46105    2.49116E-06        46105
  22       1      46108    5.44054E-07        46108
  23       1      47109    3.91284E-07        47109
```

INFORMATION ONLY

24	1	51124	1.00596E-10	51124
25	1	54131	4.16287E-06	54131
26	1	54132	7.00588E-06	54132
27	1	54135	6.60408E-09	54135
28	1	54136	1.50334E-05	54136
29	1	55134	2.22576E-07	55134
30	1	55135	4.71145E-06	55135
31	1	55137	9.46756E-06	55137
32	1	56136	4.32042E-08	56136
33	1	57139	9.43297E-06	57139
34	1	59141	7.61682E-06	59141
35	1	59143	3.93553E-07	59143
36	1	58144	5.00712E-06	58144
37	1	60143	7.75909E-06	60143
38	1	60145	5.63501E-06	60145
39	1	61147	2.48433E-06	61147
40	1	61148	6.82848E-09	61148
41	1	60147	1.32714E-07	60147
42	1	62147	3.65885E-07	62147
43	1	62149	7.51956E-08	62149
44	1	62150	1.75200E-06	62150
45	1	62151	2.87244E-07	62151
46	1	62152	8.48904E-07	62152
47	1	64155	7.98151E-10	64155
48	1	63153	3.95032E-07	63153
49	1	63154	4.62875E-08	63154
50	1	63155	5.11217E-08	63155
51	2	40302	4.25154E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	9.78898E-06	55133
56	1	95237	1.23726E-06	95237
57	1	94238	7.95918E-08	94238
58	1	94239	6.54028E-05	94239
59	1	94240	7.15776E-06	94240
60	1	94241	2.50959E-06	94241
61	1	94242	1.17254E-07	94242
62	1	95241	3.39704E-08	95241
63	1	95243	4.28479E-09	95243
64	1	96244	1.64658E-10	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05844E-01	0
2	4	4.78790E-01	2.93000E+02	5.49010E-01	0
3	2	5.46100E-01	6.50000E+02	.00000E+00	0
4	3	8.13968E-01	6.07600E+02	.00000E+00	0

7711 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical 1

Ocopy	999	1/v cross sectio	from log 12 to log 18	bondarenko trigger	0
Ocopy	999	1/v cross sectio	from log 18 to log 1	bondarenko trigger	0
Ocopy	999	1/v cross sectio	from log 18 to log 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 12 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218grp	from log 12 to log 1	bondarenko trigger	0
Ocopy	5011	boron-11	from log 12 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 12 to log 18	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0

INFORMATION ONLY

```
Copy   36083  kr-83          from lag 12 to lag  1   bondarenko trigger 0
Copy   36085  kr-85          from lag 12 to lag  1   bondarenko trigger 0
Copy   38090  sr-90          from lag 12 to lag  1   bondarenko trigger 0
Copy   39089   y-89          from lag 12 to lag  1   bondarenko trigger 0
Copy   40093  zr-93          from lag 12 to lag  1   bondarenko trigger 0
Copy   40094  zr-94          from lag 12 to lag  1   bondarenko trigger 0
Copy   40095  zr-95          from lag 12 to lag  1   bondarenko trigger 0
Copy   40302  zircalloy      from lag 12 to lag  1   bondarenko trigger 0
Copy   41094  nb-94          from lag 12 to lag  1   bondarenko trigger 0
Copy   42095  mo-95          from lag 12 to lag  1   bondarenko trigger 0
Copy   43099  tc-99          from lag 12 to lag  1   bondarenko trigger 0
Copy   44101  ru-101         from lag 12 to lag  1   bondarenko trigger 0
Copy   44106  ru-106         from lag 12 to lag  1   bondarenko trigger 0
Copy   45103  rh-103         from lag 12 to lag  1   bondarenko trigger 0
Copy   45105  rh-105         from lag 12 to lag  1   bondarenko trigger 0
Copy   46105  pd-105         from lag 12 to lag  1   bondarenko trigger 0
Copy   46108  pd-108         from lag 12 to lag  1   bondarenko trigger 0
Copy   47109  silver-109     from lag 12 to lag  1   bondarenko trigger 0
Copy   51124  sb-124         from lag 12 to lag  1   bondarenko trigger 0
Copy   54131  xe-131         from lag 12 to lag  1   bondarenko trigger 0
Copy   54132  xe-132         from lag 12 to lag  1   bondarenko trigger 0
Copy   54135  xenon-135      from lag 12 to lag  1   bondarenko trigger 0
Copy   54136  xe-136         from lag 12 to lag  1   bondarenko trigger 0
Copy   55133  cesium-133     from lag 12 to lag  1   bondarenko trigger 0
Copy   55134  cs-134         from lag 12 to lag  1   bondarenko trigger 0
Copy   55135  cs-135         from lag 12 to lag  1   bondarenko trigger 0
Copy   55137  cs-137         from lag 12 to lag  1   bondarenko trigger 0
Copy   56136  ba-136         from lag 12 to lag  1   bondarenko trigger 0
Copy   57139  la-139         from lag 12 to lag  1   bondarenko trigger 0
Copy   58144  ce-144         from lag 12 to lag  1   bondarenko trigger 0
Copy   59141  pr-141         from lag 12 to lag  1   bondarenko trigger 0
Copy   59143  pr-143         from lag 12 to lag  1   bondarenko trigger 0
Copy   60143  nd-143         from lag 12 to lag  1   bondarenko trigger 0
Copy   60145  nd-145         from lag 12 to lag  1   bondarenko trigger 0
Copy   60147  nd-147         from lag 12 to lag  1   bondarenko trigger 0
Copy   61147  pm-147         from lag 12 to lag  1   bondarenko trigger 0
Copy   61148  pm-148         from lag 12 to lag  1   bondarenko trigger 0
Copy   62147  sm-147         from lag 12 to lag  1   bondarenko trigger 0
Copy   62149  sm-149         from lag 12 to lag  1   bondarenko trigger 0
Copy   62150  sm-150         from lag 12 to lag  1   bondarenko trigger 0
Copy   62151  sm-151         from lag 12 to lag  1   bondarenko trigger 0
Copy   62152  sm-152         from lag 12 to lag  1   bondarenko trigger 0
Copy   63153  eu-153         from lag 12 to lag  1   bondarenko trigger 0
Copy   63154  eu-154         from lag 12 to lag  1   bondarenko trigger 0
Copy   63155  eu-155         from lag 12 to lag  1   bondarenko trigger 0
Copy   64155  gd-155         from lag 12 to lag  1   bondarenko trigger 0
Copy   92234  u-234 1043 sigp from lag 12 to lag  1   bondarenko trigger 0
Copy   92235  uranium-235    from lag 12 to lag  1   bondarenko trigger 0
Copy   92236  u-236 1163 sigp from lag 12 to lag  1   bondarenko trigger 0
Copy   92238  uranium-238    from lag 12 to lag  1   bondarenko trigger 0
Copy   93237  neptunium-237  from lag 12 to lag  1   bondarenko trigger 0
Copy   94238  pu-238 1060 sigp from lag 12 to lag  1   bondarenko trigger 0
Copy   94239  plutonium-239  from lag 12 to lag  1   bondarenko trigger 0
Copy   94240  plutonium-240  from lag 12 to lag  1   bondarenko trigger 0
Copy   94241  plutonium-241  from lag 12 to lag  1   bondarenko trigger 0
Copy   94242  plutonium-242  from lag 12 to lag  1   bondarenko trigger 0
Copy   95241  am-241 1056 sigp from lag 12 to lag  1   bondarenko trigger 0
Copy   95243  am-243 1057 218 from lag 12 to lag  1   bondarenko trigger 0
Copy   96244  curium-244     from lag 12 to lag  1   bondarenko trigger 0
1    scale 4.2 - 27 group neutron bump library
```

INFORMATION ONLY

```
based on endf-b version 4 data with endf-b version 5 fission products
   compiled for nrc      1/27/89
      last updated       9/16/93
         l.m.petrie  -   ornl
 tape id                    4321        number of nuclides          66
 number of neutron groups     27        number of gamma groups       0
 first thermal group          15        logical unit                 1
                      table of contents
1/v cross sections normalized to 1.0 at 0.0253 ev                  id    999
1/v cross sections normalized to 1.0 at 0.0253 ev                  id     66
 hydrogen      endf/b-iv mat 1269/thrml002   updated 10/13/89      id   1001
b-10 1273 218ngp 042375 p-3 293k                                   id   5010
 boron-11      endf/b-iv mat 1160            updated 10/13/89      id   5011
 oxygen-16     endf/b-iv mat 1276            updated 10/13/89      id   8016
 oxygen-16     endf/b-iv mat 1276            updated 10/13/89      id      6
 kr-83         mt=102,103,103,105,106,107    updated 10/13/89      id  36083
 kr-85           mt=  102                                          id  36085
 sr-90         mt=102                        updated 10/13/89      id  38090
  y-89         mt=102                        updated 10/13/89      id  39089
 zr-93           mt=  102                                          id  40093
 zr-94         mt=102                        updated 10/13/89      id  40094
 zr-95         mt=102                        updated 10/13/89      id  40095
 zircalloy     endf/b-iv mat 1284            updated 10/13/89      id  40302
 nb-94         mt=102                        updated 10/13/89      id  41094
 mo-95         mt=102                        updated 10/13/89      id  42095
 tc-99         mt=102                        updated 10/13/89      id  43099
 ru-101        mt=102                        updated 10/13/89      id  44101
 ru-106        mt=102                        updated 10/13/89      id  44106
 rh-103        mt=102                        updated 10/13/89      id  45103
 rh-105          mt=  102                                          id  45105
 pd-105        mt=102                        updated 10/13/89      id  46105
 pd-108        mt=102                        updated 10/13/89      id  46108
 silver-109    endf/b-iv mat 1139            updated 10/13/89      id  47109
 sb-124        mt=102                        updated 10/13/89      id  51124
 xe-131        mt=102,103,104,105,106        updated 10/13/89      id  54131
 xe-132        mt=102,103,104,105,106        updated 10/13/89      id  54132
 xenon-135     endf/b-iv mat 1294            updated 10/13/89      id  54135
 xe-136          mt=  102, 103, 104, 105, 107                      id  54136
 cesium-133    endf/b-iv mat 1141            updated 10/13/89      id  55133
 cs-134        mt=102                        updated 10/13/89      id  55134
 cs-135          mt=  102                                          id  55135
 cs-137        mt=102                        updated 10/13/89      id  55137
 ba-136        mt=102                        updated 10/13/89      id  56136
 la-139        mt=102                        updated 10/13/89      id  57139
 ce-144          mt=  102                                          id  58144
 pr-141        mt=102,103,104,105,106,107    updated 10/13/89      id  59141
 pr-143        mt=102                        updated 10/13/89      id  59143
 nd-143        mt=102                        updated 10/13/89      id  60143
 nd-145        mt=102                        updated 10/13/89      id  60145
 nd-147        mt=102                        updated 10/13/89      id  60147
 pm-147        mt=102                        updated 10/13/89      id  61147
 pm-148          mt=  102                                          id  61148
 sm-147        endf/b-v fission product      updated 10/13/89      id  62147
 sm-149        mt=102,103,107                updated 10/13/89      id  62149
 sm-150        mt=102                        updated 10/13/89      id  62150
 sm-151        mt=102,103,104,105,106,107    updated 10/13/89      id  62151
 sm-152        mt=102,103,104,105,106,107    updated 10/13/89      id  62152
 eu-153        mt=102,103,104,105,106,107    updated 10/13/89      id  63153
 eu-154        mt=102,103,104,105,106,107    updated 10/13/89      id  63154
 eu-155        mt=102,103,104,105,106,107    updated 10/13/89      id  63155
```

INFORMATION ONLY

```
gd-155        mt=102                    updated 10/13/89          id    64155
u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)               id    92234
uranium-235   endf/b-iv mat 1261        updated 10/13/89          id    92235
u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)               id    92236
uranium-238   endf/b-iv mat 1262        updated 10/13/89          id    92238
neptunium-237 endf/b-iv mat 1263        updated 10/13/89          id    93237
pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)              id    94238
plutonium-239 endf/b-iv mat 1264        updated 10/13/89          id    94239
plutonium-240 endf/b-iv mat 1265        updated 10/13/89          id    94240
plutonium-241 endf/b-iv mat 1266        updated 10/13/89          id    94241
plutonium-242 endf/b-iv mat 1161        updated 10/13/89          id    94242
am-241 1056 sigo=5+4 newklacs 218mp p-3 293k                      id    95241
am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                      id    95243
curium-244    endf/b-iv mat 1162        updated 10/13/89          id    96244
0
 tape copy used    0 i/o's, and took    .00 seconds
1
m       m  iiiiiiiiiiii  tttttttttttttt    aaaaaaaa    ww       ww  ll
mm      m  iiiiiiiiiiii  tttttttttttttt   aaaaaaaaaa   ww       ww  ll
mmm     m     ii            tt        aa      aa  ww       ww  ll
mm m    m     ii            tt        aa      aa  ww       ww  ll
m  m    m     ii            tt        aa      aa  ww       ww  ll
m   m   m     ii            tt        aaaaaaaaaaaa  ww   w   ww  ll
m    m  m     ii            tt        aaaaaaaaaaaa  ww  www  ww  ll
m     m m     ii            tt        aa      aa  ww ww ww ww  ll
m      mm     ii            tt        aa      aa  ww w   w ww  ll
m       mm    ii            tt        aa      aa  wwww   wwww  ll
m        m iiiiiiiiiiii     tt        aa      aa  www     www  llllllllllll
m        m iiiiiiiiiiii     tt        aa      aa  ww       ww  llllllllllll
0

dddddddddd    aaaaaaaa   w       w  iiiiiiiiiiii   ssssssssss
dddddddddd   aaaaaaaaaa  w       w  iiiiiiiiiiii  ssssssssssss
dd      dd   aa      aa  w       w     ii         ss      ss
dd      dd   aa      aa  w       w     ii         ss
dd      dd   aa      aa  w       w     ii         ss
dd      dd   aaaaaaaaaaaa  w       w  ii          ssssssssss
dd      dd   aaaaaaaaaaaa   w     w   ii                  ss
dd      dd   aa      aa     w   w     ii                  ss
dd      dd   aa      aa      w w      ii         ss      ss
dddddddddd   aa      aa       ww   iiiiiiiiiiii  ssssssssssss
dddddddddd   aa      aa       v    iiiiiiiiiiii   ssssssssss
0

oooooo     zzzzzzzzzz        //      11      eeeeeeeeee        //  ffffffffff   eeeeeeeeee
oooooooo   zzzzzzzzzzzz      //     111      eeeeeeeeeeee      //  ffffffffffff eeeeeeeeeeee
oo    oo   zz      zz        //    1111      ee                //  ff      ff   ee
oo    oo         zz          //      11      ee                //  ff      ff   ee
oo    oo        zz           //      11      ee                //  ff      ff   ee
oo    oo      zz             //      11      eeeeeeeeee        //  ffffffffffff eeeeeeeeee
oo    oo    zz               //      11      eeeeeeeeeeee      //   ffffffffff  eeeeeeeeeeee
oo    oo  zz                 //      11      ee      ee        //         ff   ee      ee
oo    oo  zz                 //      11      ee      ee        //         ff   ee      ee
oo    oo  zz                 //      11      ee      ee        //         ff   ee      ee
oooooooo  zzzzzzzzzzzz       //   11111111   eeeeeeeeeeee      //  ffffffffffff eeeeeeeeeeee
oooooo    zzzzzzzzzzzz       //   11111111    eeeeeeeeee       //  ffffffffff   eeeeeeeeee
0

oooooo     ffffffffff          eeeeeeeeee   aaaaaaaaaa            ddddddddd   iiiiiiiiii
oooooooo   ffffffffffff        eeeeeeeeeeee aaaaaaaaaaaa          ddddddddddd iiiiiiiiiiii
oo    oo   ff      ff   ::    ee      ee   aa      aa     ::     dd      dd  ii      ii
```

INFORMATION ONLY

```
1
0
```

```
program verification information
code system:  scale  version:  4.2

program:  c0c002
creation date:  04/27/95
library:  /neutronics/scale/exe

this is not a  scale  configuration controlled code

jobname:  davis
date of execution:  02/16/96
time of execution:  09:58:23
```

```
1
0    -iq array has    1 entries.
```

INFORMATION ONLY

```
0        0q array has      9 entries.
0        1q array has     12 entries.
0select 65 nuclides from the master  library on logical  1
        0 nuclides from the working library on logical  2
        0 nuclides from the working library on logical  3
          to create the new working library on logical  4

       61 resonance calculations have been requested
        0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     65 entries.
0        3q array has    915 entries.
0        4q array has     65 entries.
0 general information concerning cross section library
    tape identification number                4321
    number of nuclides on tape                  66
    number of neutron energy groups             27
    first thermal neutron energy group          15
    number of gamma energy groups                0
0  direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                          based on endf-b version 4 data with endf-b version 5 fission products
                            compiled for nrc      1/27/89
                              last updated       9/16/93
                                l.m.petrie   -   ornl
0 nuclides from xsdrn tape
    1    1/v cross sections normalized to 1.0 at 0.0253 ev                                  999
    2    hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89                   1001
    3    b-10 1273 218grp 042375 p-3 293k                                                   5010
    4    boron-11        endf/b-iv mat 1160             updated 10/13/89                   5011
    5    oxygen-16       endf/b-iv mat 1276             updated 10/13/89                   8016
    6    oxygen-16       endf/b-iv mat 1276             updated 10/13/89                      6
    7    kr-83           mt=102,103,103,105,106,107     updated 10/13/89                  36083
    8    kr-85             mt=  102                                                        36085
    9    sr-90           mt=102                         updated 10/13/89                  38090
    10    y-89           mt=102                         updated 10/13/89                  39089
    11   zr-93             mt=  102                                                        40093
    12   zr-94           mt=102                         updated 10/13/89                  40094
    13   zr-95           mt=102                         updated 10/13/89                  40095
    14   zircalloy       endf/b-iv mat 1284             updated 10/13/89                  40002
    15   nb-94           mt=102                         updated 10/13/89                  41094
    16   mo-95           mt=102                         updated 10/13/89                  42095
    17   tc-99           mt=102                         updated 10/13/89                  43099
    18   ru-101          mt=102                         updated 10/13/89                  44101
    19   ru-106          mt=102                         updated 10/13/89                  44106
    20   rh-103          mt=102                         updated 10/13/89                  45103
    21   rh-105            mt=  102                                                        45105
    22   pd-105          mt=102                         updated 10/13/89                  46105
    23   pd-108          mt=102                         updated 10/13/89                  46108
    24   silver-109      endf/b-iv mat 1139             updated 10/13/89                  47109
    25   sb-124          mt=102                         updated 10/13/89                  51124
    26   xe-131          mt=102,103,104,105,106         updated 10/13/89                  54131
    27   xe-132          mt=102,103,104,105,106         updated 10/13/89                  54132
    28   xenon-135       endf/b-iv mat 1294             updated 10/13/89                  54135
    29   xe-136            mt=  102, 103, 104, 105, 107                                    54136
    30   cesium-133      endf/b-iv mat 1141             updated 10/13/89                  55133
    31   cs-134          mt=102                         updated 10/13/89                  55134
    32   cs-135            mt=  102                                                        55135
    33   cs-137          mt=102                         updated 10/13/89                  55137
```

INFORMATION ONLY

```
 34   ba-136      mt=102                          updated 10/13/89          56136
 35   la-139      mt=102                          updated 10/13/89          57139
 36   ce-144        mt=  102                                              58144
 37   pr-141      mt=102,103,104,105,106,107      updated 10/13/89          59141
 38   pr-143      mt=102                          updated 10/13/89          59143
 39   nd-143      mt=102                          updated 10/13/89          60143
 40   nd-145      mt=102                          updated 10/13/89          60145
 41   nd-147      mt=102                          updated 10/13/89          60147
 42   pm-147      mt=102                          updated 10/13/89          61147
 43   pm-148        mt=  102                                              61148
 44   sm-147      endf/b-v fission product        updated 10/13/89          62147
 45   sm-149      mt=102,103,107                  updated 10/13/89          62149
 46   sm-150      mt=102                          updated 10/13/89          62150
 47   sm-151      mt=102,103,104,105,106,107      updated 10/13/89          62151
 48   sm-152      mt=102,103,104,105,106,107      updated 10/13/89          62152
 49   eu-153      mt=102,103,104,105,106,107      updated 10/13/89          63153
 50   eu-154      mt=102,103,104,105,106,107      updated 10/13/89          63154
 51   eu-155      mt=102,103,104,105,106,107      updated 10/13/89          63155
 52   gd-155      mt=102                          updated 10/13/89          64155
 53   u-234 1043 sigp=5+4 newklacs p-3 293k f-1/e-m(1.+5)                   92234
 54   uranium-235 endf/b-iv mat 1261              updated 10/13/89          92235
 55   u-236 1163 sigp=5+4 newklacs p-3 293k f-1/e-m(1.+5)                   92236
 56   uranium-238 endf/b-iv mat 1262              updated 10/13/89          92238
 57   neptunium-237 endf/b-iv mat 1263            updated 10/13/89          93237
 58   pu-238 1050 sigp=5+4 newklacs p-3 293k f-1/e-m(1.+5)                  94238
 59   plutonium-239 endf/b-iv mat 1264            updated 10/13/89          94239
 60   plutonium-240 endf/b-iv mat 1265            updated 10/13/89          94240
 61   plutonium-241 endf/b-iv mat 1266            updated 10/13/89          94241
 62   plutonium-242 endf/b-iv mat 1161            updated 10/13/89          94242
 63   am-241 1056 sigp=5+4 newklacs 218ngp p-3 293k                         95241
 64   am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                          95243
 65   curium-244  endf/b-iv mat 1162              updated 10/13/89          96244
01/v cross sections normalized to 1.0 at 0.0253 ev                  999    temperature=  975.00
0 hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89      1001   temperature=  607.60
                     thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                   5010   temperature=  607.60
                     thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11      endf/b-iv mat 1160            updated 10/13/89      5011   temperature=  607.60
                     thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276            updated 10/13/89      8016   temperature=  975.00
0 oxygen-16     endf/b-iv mat 1276            updated 10/13/89         6   temperature=  607.60
0 kr-83         mt=102,103,103,105,106,107    updated 10/13/89     36083   temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202          temperature(kelvin)        =  975.000
0potential scatter sigma  =    7.004          lumped nuclear density     = 7.2509016E-07
0spin factor (g)          =  4988.190          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4259261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 2.3550131E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953          sigma(per absorber atom)= 2.6274603E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 11      -9.819651E-04   .000000E+00   -1.251893E-03
 12       2.167537E-02   .000000E+00    9.906985E-03
 13      -2.399784E-01   .000000E+00   -7.504968E-02
 14       4.781998E-05   .000000E+00   -1.721927E-05
0excess resonance integrals
```

INFORMATION ONLY

```
0                resolved
0absorption      1.45000E+02
 fission         .00000E+00
- elapsed time   .00 min.
0 kr-85          mt= 102                                    36085    temperature=  975.00
0 sr-90          mt=102                updated 10/13/89     38090    temperature=  975.00
0 y-89           mt=102                updated 10/13/89     39089    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.644        lumped nuclear density   = 5.474035E-06
0spin factor (g)          =   78.664        lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995        sigma(per absorber atom)= 3.119432E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953        sigma(per absorber atom)= 3.480313E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   9     -7.380091E-07    .000000E+00   9.697895E-06
  10     -3.189627E-05    .000000E+00  -8.988161E-05
0excess resonance integrals
0                resolved
0absorption      1.46470E-01
 fission         .00000E+00
- elapsed time   .00 min.
0 zr-93          mt= 102                                    40093    temperature=  975.00
0 zr-94          mt=102                updated 10/13/89     40094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.100        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.779        lumped nuclear density   = 9.263426E-06
0spin factor (g)          =  180.853        lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995        sigma(per absorber atom)= 1.843375E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953        sigma(per absorber atom)= 2.056632E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   8     -3.995329E-07    .000000E+00  -3.981763E-04
   9     -1.740397E-05    .000000E+00  -1.543847E-03
0excess resonance integrals
0                resolved
0absorption      3.44067E-02
 fission         .00000E+00
- elapsed time   .00 min.
0 zr-95          mt=102                updated 10/13/89     40095    temperature=  975.00
0 zircalloy      endf/b-iv mat 1284    updated 10/13/89     40302    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436        temperature(kelvin)      =  650.000
0potential scatter sigma  =    6.386        lumped nuclear density   = 4.251560E-02
0spin factor (g)          =    1.099        lump dimension (a-bar)   = 5.461000E-01
0inner radius             = 4.787899E-01    dancoff correction (c)   = 5.036463E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
```

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```
  8      -1.788594E-03     .000000E+00   -4.286497E+00
  9      -5.698375E-02     .000000E+00   -2.695297E+00
 10      -6.959255E-02     .000000E+00   -1.601321E+00
 11      -1.883937E-01     .000000E+00   -7.920912E-01
0excess resonance integrals
0                resolved
0absorption      2.28539E-01
 fission          .00000E+00
- elapsed time    .02 min.
0 rb-94          mt=102                updated 10/13/89          41094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.101          temperature(kelvin)       =  975.000
0potential scatter sigma  =    3.779          lumped nuclear density    = 3.601920E-12
0spin factor (g)          = 43808.801          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 4.740952E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  257.953          sigma(per absorber atom)= 5.289269E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  13      1.042787E-02     .000000E+00    9.252072E-04
  14      9.836727E-03     .000000E+00   -4.064848E-04
0excess resonance integrals
0                resolved
0absorption      9.15001E+01
 fission          .00000E+00
- elapsed time    .02 min.
0 mo-95          mt=102                updated 10/13/89          42095     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   94.091          temperature(kelvin)       =  975.000
0potential scatter sigma  =    3.806          lumped nuclear density    = 6.121503E-06
0spin factor (g)          =  607.724          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 2.789505E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  257.953          sigma(per absorber atom)= 3.112218E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10     -1.359311E-03     .000000E+00   -7.621617E-03
  11     -2.295119E-03     .000000E+00   -4.000108E-03
  12     -1.778539E+00     .000000E+00   -2.047869E+00
  13      1.600225E-04     .000000E+00   -2.533864E-05
0excess resonance integrals
0                resolved
0absorption      1.01012E+02
 fission          .00000E+00
- elapsed time    .02 min.
0 tc-99          mt=102                updated 10/13/89          43099     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   98.150          temperature(kelvin)       =  975.000
0potential scatter sigma  =    6.000          lumped nuclear density    = 8.957198E-06
0spin factor (g)          = 4527.940          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
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0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.904271E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 2.124573E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -1.143055E-02    .000000E+00   -5.399383E-03
  12      -2.896091E-03    .000000E+00   -9.676807E-05
  13      -1.866455E-01    .000000E+00   -9.856686E-03
  14      -4.066178E+00    .000000E+00   -1.301287E-01
  15       1.071236E-02    .000000E+00   -5.402104E-04
  16       4.836075E-03    .000000E+00   -2.802250E-04
  17       2.074324E-04    .000000E+00   -1.191662E-05
0excess resonance integrals
0                  resolved
0absorption      3.2972E+02
 fission          .0000E+00
- elapsed time    .03 min.
0 ru-101        mt=102                    updated 10/13/89          44101    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   100.039          temperature(kelvin)       =  975.000
0potential scatter sigma  =     3.965          lumped nuclear density    = 7.899007E-06
0spin factor (g)          =  8785.250          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.161786E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 2.411879E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -3.577315E-02    .000000E+00   -3.650390E-03
  12      -3.629454E-02    .000000E+00   -1.328239E-02
  13      -2.097446E-01    .000000E+00   -5.654530E-03
  14       2.376605E-04    .000000E+00   -4.179698E-05
0excess resonance integrals
0                  resolved
0absorption      7.9672E+01
 fission          .0000E+00
- elapsed time    .03 min.
0 ru-96         mt=102                    updated 10/13/89          44096    temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89          45103    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   102.021          temperature(kelvin)       =  975.000
0potential scatter sigma  =     5.408          lumped nuclear density    = 4.405853E-06
0spin factor (g)          =      .500          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.875745E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 4.324123E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9       1.289190E-03    .000000E+00    2.051222E-03
  10      -2.437226E-03    .000000E+00   -3.482086E-03
  11      -8.577483E-03    .000000E+00   -7.675869E-03
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  12      -1.027892E-04     .000000E+00   -1.704071E-05
  13       .000000E+00      .000000E+00    .000000E+00
  14       .000000E+00      .000000E+00    .000000E+00
  15       2.306213E-01     .000000E+00    3.364654E-03
  16       3.688781E+01     .000000E+00   -4.548918E-02
  17      -1.831598E+02     .000000E+00   -1.432801E-01
  18       8.764003E+01     .000000E+00    2.615952E-01
  19       1.155327E+01     .000000E+00   -1.651123E-03
  20       1.092636E+00     .000000E+00   -2.517397E-03
  21       2.166005E-01     .000000E+00    1.924732E-03
  22       2.583945E-01     .000000E+00    2.928506E-03
  23      -9.880788E-02     .000000E+00    1.799112E-03
0excess resonance integrals
0                 resolved
0absorption      1.15654E+03
 fission          .00000E+00
- elapsed time    .05 min.
0 rh-105          mt=  102                                          46105    temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89          46105    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density    = 2.4911647E-06
0spin factor (g)          = 15210.000          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 6.8546125E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 7.6476109E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  12      -4.953295E-02     .000000E+00   -7.882353E-04
  13       2.276423E-02     .000000E+00   -5.572332E-05
  14       7.777355E-04     .000000E+00   -8.168058E-05
0excess resonance integrals
0                 resolved
0absorption      6.12945E+01
 fission          .00000E+00
- elapsed time    .07 min.
0 pd-108        mt=102                    updated 10/13/89          46108    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density    = 5.4405444E-07
0spin factor (g)          = 21175.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.1386509E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 3.5017556E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11       1.170667E-04     .000000E+00    3.532514E-04
  12      -4.881945E-01     .000000E+00   -3.598531E-01
  13       6.951078E-03     .000000E+00    1.824895E-03
  14       8.561452E-02     .000000E+00   -3.206608E-05
  15      -1.840304E-01     .000000E+00    8.083835E-05
  16       2.946894E-04     .000000E+00   -9.255707E-06
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0excess resonance integrals
0                    resolved
0absorption        2.13516E+02
 fission            .00000E+00
- elapsed time     .07 min.
0 silver-109     endf/b-iv mat 1139          updated 10/13/89          47109     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density    = 3.9128443E-07
0spin factor (g)          =  1441.870          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 4.3640809E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 4.8689538E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      -1.470666E-05    .000000E+00    1.632901E-05
  11      -1.383515E-03    .000000E+00   -1.091168E-03
  12      -7.052492E-01    .000000E+00   -3.163157E-02
  13       7.672281E-01    .000000E+00    3.380755E-02
  14      -3.453321E+00    .000000E+00   -3.333731E-01
0excess resonance integrals
0                    resolved
0absorption        1.39897E+03
 fission            .00000E+00
- elapsed time     .07 min.
0 sb-124         mt=102                      updated 10/13/89          51124     temperature=  975.00
0 xe-131         mt=102,103,104,105,106      updated 10/13/89          54131     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   129.781          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.301          lumped nuclear density    = 4.1628664E-06
0spin factor (g)          =   246.825          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 4.1019738E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 4.5786258E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -1.157132E-06    .000000E+00   -1.109606E-05
  10      -8.302818E-05    .000000E+00   -6.607881E-05
  11      -1.069897E-03    .000000E+00   -8.185382E-04
  12      -2.105278E-02    .000000E+00   -1.964439E-03
  13      -3.601877E+01    .000000E+00   -8.453455E+01
  14       1.100193E-02    .000000E+00    1.539452E-02
0excess resonance integrals
0                    resolved
0absorption        7.98334E+02
 fission            .00000E+00
- elapsed time     .08 min.
0 xe-132         mt=102,103,104,105,106      updated 10/13/89          54132     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   130.771          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.301          lumped nuclear density    = 7.0058654E-06
0spin factor (g)          =   675.899          lump dimension (a-bar)    = 4.6812201E-01
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0inner radius          =  .0000000E+00        dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 2.4373887E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  237.953             sigma(per absorber atom)= 2.7193658E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  9      -1.056912E-05   .000000E+00  -4.704644E-05
 10      -3.331607E-03   .000000E+00  -4.241980E-02
 11       3.344413E-08   .000000E+00  -9.285239E-07
0excess resonance integrals
0                resolved
0absorption      9.78718E-01
 fission         .00000E+00
- elapsed time   .03 min.
0 xenon-135     endf/b-iv mat 1254        updated 10/13/89        54135   temperature=  975.00
0 xe-136          mt=  102, 103, 104, 105, 107                    54136   temperature=  975.00
0 cesium-133    endf/b-iv mat 1141        updated 10/13/89        55133   temperature=  975.00
0resonance data for this nuclide
0mass number (a)       =  131.764            temperature(kelvin)      =  975.000
0potential scatter sigma =   7.100           lumped nuclear density   = 9.7889797E-06
0spin factor (g)       =  374.437            lump dimension (a-bar)   = 4.6812201E-01
0inner radius          =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 1.7444074E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 1.8711057E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  9      -2.907373E-05   .000000E+00  -1.570995E-04
 10      -1.314802E-03   .000000E+00  -2.538390E-03
 11      -5.049485E-02   .000000E+00  -8.863564E-02
 12      -7.794365E-02   .000000E+00  -1.087077E-02
 13      -1.258005E-01   .000000E+00  -7.041851E-03
 14      -5.816834E+00   .000000E+00  -2.551529E-01
 15       5.627014E-03   .000000E+00  -4.058210E-04
 16       2.777945E-03   .000000E+00  -2.215582E-04
 17       2.352170E-03   .000000E+00  -1.830856E-04
 18       2.214988E-03   .000000E+00  -1.679469E-04
 19       1.317094E-03   .000000E+00  -9.670768E-05
0excess resonance integrals
0                resolved
0absorption      3.59757E+02
 fission         .00000E+00
- elapsed time   .10 min.
0 cs-134        mt=102                    updated 10/13/89        55134   temperature=  975.00
0 cs-135          mt=  102                                        55135   temperature=  975.00
0 cs-137        mt=102                    updated 10/13/89        55137   temperature=  975.00
0 ba-136        mt=102                    updated 10/13/89        56136   temperature=  975.00
0resonance data for this nuclide
0mass number (a)       =  134.737            temperature(kelvin)      =  975.000
0potential scatter sigma =   4.835           lumped nuclear density   = 4.3204217E-08
0spin factor (g)       = 1247.690            lump dimension (a-bar)   = 4.6812201E-01
0inner radius          =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 3.9523850E+06
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953              sigma(per absorber atom)= 4.409290E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      1.325435E-06     .000000E+00     5.726989E-07
  11      1.778946E-05     .000000E+00     1.536195E-05
0excess resonance integrals
0                 resolved
0absorption      1.39476E+00
 fission          .00000E+00
- elapsed time    .10 min.
0 la-139        mt=102                    updated 10/13/89          57139    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  137.713          temperature(kelvin)       =  975.000
0potential scatter sigma  =    4.906          lumped nuclear density    = 9.432974E-06
0spin factor (g)          =  145.855          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00     dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995              sigma(per absorber atom)= 1.810422E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953              sigma(per absorber atom)= 2.019668E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      2.513561E-05     .000000E+00     4.217579E-03
  10     -2.130894E-04     .000000E+00    -1.470223E-02
  11      .000000E+00      .000000E+00     .000000E+00
  12     -3.235367E-02     .000000E+00    -1.955698E-02
0excess resonance integrals
0                 resolved
0absorption      8.11172E+00
 fission          .00000E+00
- elapsed time    .12 min.
0 ce-144         mt=  102                                            58144    temperature=  975.00
0 pr-141        mt=102,103,104,105,106,107  updated 10/13/89          59141    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  139.697          temperature(kelvin)       =  975.000
0potential scatter sigma  =    4.953          lumped nuclear density    = 7.618221E-06
0spin factor (g)          = 1026.500          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00     dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995              sigma(per absorber atom)= 2.241875E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953              sigma(per absorber atom)= 2.501234E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10     -2.990048E-03     .000000E+00    -1.015056E-01
  11     -4.969222E-02     .000000E+00    -6.609490E-01
  12     -1.083222E-03     .000000E+00    -1.048369E-04
0excess resonance integrals
0                 resolved
0absorption      1.22139E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 pr-143        mt=102                    updated 10/13/89          59143    temperature=  975.00
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0 nd-143        mt=102                    updated 10/13/89          60143    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  141.682          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.000          lumped nuclear density    = 7.7590876E-06
0spin factor (g)          = 1964.860          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 2.2007703E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 2.4553734E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -7.957541E-05    .000000E+00   -2.374323E-05
  11      -1.830854E-01    .000000E+00   -2.131639E+00
  12      -1.198135E-01    .000000E+00   -5.897775E-02
0excess resonance integrals
0                 resolved
0absorption       5.12357E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 nd-145        mt=102                    updated 10/13/89          60145    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  143.668          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.047          lumped nuclear density    = 5.6350132E-06
0spin factor (g)          = 1007.250          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.0303336E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 3.3809074E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -2.253398E-03    .000000E+00   -3.557378E-02
  11      -3.474493E-02    .000000E+00   -1.048061E-01
  12      -8.615515E-01    .000000E+00   -5.427825E+00
  13       9.626082E-05    .000000E+00    2.037469E-04
  14      -7.513707E-01    .000000E+00   -1.978675E-02
  15       5.908517E-03    .000000E+00   -4.625057E-04
  16       1.326683E-03    .000000E+00   -1.451354E-04
  17       9.642397E-04    .000000E+00   -1.063940E-04
  18       8.539907E-04    .000000E+00   -9.313782E-05
  19       7.634098E-04    .000000E+00   -8.069522E-05
  20       2.839427E-05    .000000E+00   -2.921005E-06
0excess resonance integrals
0                 resolved
0absorption       2.08187E+02
 fission          .00000E+00
- elapsed time    .13 min.
0 nd-147        mt=102                    updated 10/13/89          60147    temperature=  975.00
0 pm-147        mt=102                    updated 10/13/89          61147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density    = 2.4843284E-06
0spin factor (g)          = 21589.500         lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
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0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.873475E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 7.668654E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  12      -1.223085E-01   .000000E+00   -3.948635E-02
  13      -3.141409E-02   .000000E+00   -1.907241E-03
  14      -5.745860E+01   .000000E+00   -2.474550E+01
  15       4.132830E-02   .000000E+00    6.985857E-03
  16       1.697975E-02   .000000E+00    1.746748E-03
  17       1.369755E-02   .000000E+00    1.150447E-03
  18       1.253781E-02   .000000E+00    9.649050E-04
  19       6.998458E-04   .000000E+00    5.072522E-05
0excess resonance integrals
0                 resolved
0absorption      2.04771E+03
 fission          .00000E+00
- elapsed time    .13 min.
0 pm-148          mt=  102                                          61148    temperature=   975.00
0 sm-147        endf/b-v fission product        updated 10/13/89     62147    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density   = 3.658458E-07
0spin factor (g)          =      .000          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.666909E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 5.206815E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11       2.896982E-01   .000000E+00    1.129878E+00
  12       1.167189E+00   .000000E+00   -1.330838E+00
  13      -2.347516E+00   .000000E+00   -8.911353E-01
  14      -1.601623E-01   .000000E+00    1.549642E-04
  15       3.119469E-01   .000000E+00   -1.934654E-03
  16       7.287886E-03   .000000E+00   -3.738721E-04
  17       4.281512E-03   .000000E+00   -2.401627E-04
  18       3.510471E-03   .000000E+00   -1.997298E-04
  19       2.910642E-03   .000000E+00   -1.649535E-04
  20       8.435342E-04   .000000E+00   -4.627657E-05
0excess resonance integrals
0                 resolved
0absorption      7.24261E+02
 fission          .00000E+00
- elapsed time    .15 min.
                          thermal scattering matrix number   3 at a temperature of    900.03 was selected.
0 sm-149        mt=102,103,107                updated 10/13/89     62149    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   147.638          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.260          lumped nuclear density   = 7.519558E-08
0spin factor (g)          = 10407.900          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.270874E+06
0moderator-1 will be treated by the nordheim integral method.
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0mass of moderator-2    =   257.953              sigma(per absorber atom)= 2.5335873E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      8.546639E-03     .000000E+00   3.071180E-02
  12     -5.302144E-02     .000000E+00  -1.779283E-01
  13      2.406209E-02     .000000E+00   2.974950E-03
  14      1.500889E-02     .000000E+00  -6.463817E-03
0excess resonance integrals
0                 resolved
0absorption      8.04352E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-150        mt=102                    updated 10/13/89          62150     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   148.629          temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.162          lumped nuclear density     = 1.7519981E-06
0spin factor (g)          =  4376.420          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 9.7465680E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953              sigma(per absorber atom)= 1.0874131E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10     -6.373778E-04     .000000E+00  -5.756720E-03
  11     -1.306944E-02     .000000E+00  -1.490106E-01
  12     -4.227013E-02     .000000E+00  -1.278060E-02
  13     -3.095668E+00     .000000E+00  -2.440727E+00
  14      1.066137E-04     .000000E+00  -6.413570E-05
0excess resonance integrals
0                 resolved
0absorption      2.91457E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-151        mt=102,103,104,105,106,107   updated 10/13/89          62151     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   149.623          temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.185          lumped nuclear density     = 2.8726369E-07
0spin factor (g)          = 75574.703          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 5.9447675E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953              sigma(per absorber atom)= 6.6325069E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  14     -1.639246E-01     .000000E+00  -1.796795E-02
  15      1.491918E+01     .000000E+00   7.558613E-02
  16     -2.177298E+01     .000000E+00  -6.173761E-02
  17      1.738946E+02     .000000E+00   8.298681E-01
  18     -3.204102E+02     .000000E+00  -1.780888E+00
  19      6.256166E+01     .000000E+00   3.868497E-01
  20      1.141531E+00     .000000E+00  -1.417322E-04
  21     -7.117683E-02     .000000E+00   1.244102E-02
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  22      6.952534E-02     .000000E+00    3.838926E-03
  23     -1.091920E-02     .000000E+00    3.374054E-04
0excess resonance integrals
0                  resolved
0absorption       2.05685E+03
 fission           .00000E+00
-  elapsed time    .15 min.
0 sm-152        mt=102,103,104,105,106,107     updated 10/13/89            62152     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   150.615            temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.208            lumped nuclear density    = 8.480045E-07
0spin factor (g)          =   863.594            lump dimension (a-bar)    = 4.681220E-01
0dimer radius             =  .000000E+00         dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.015302E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 2.244240E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      2.408006E-06     .000000E+00    1.158916E-04
  10     -6.300000E-04     .000000E+00   -1.018422E-02
  11     -9.556684E-03     .000000E+00   -3.651736E-02
  12     -6.559117E-02     .000000E+00   -2.088114E-01
  13      4.246605E-02     .000000E+00    1.053022E-01
  14     -6.047521E+01     .000000E+00   -1.170778E+02
0excess resonance integrals
0                  resolved
0absorption       2.83243E+03
 fission           .00000E+00
-  elapsed time    .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89            63153     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   151.607            temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731            lumped nuclear density    = 3.950820E-07
0spin factor (g)          = 12265.900            lump dimension (a-bar)    = 4.681220E-01
0dimer radius             =  .000000E+00         dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.322677E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 4.822760E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12     -2.700814E-01     .000000E+00   -5.264485E-02
  13     -7.127640E-02     .000000E+00   -2.768018E-04
  14     -5.875798E-01     .000000E+00    3.188234E-03
  15      2.867073E+00     .000000E+00   -2.053510E-02
  16     -3.292299E+00     .000000E+00    8.199347E-03
  17      1.506616E-01     .000000E+00   -3.437751E-03
  18      7.726889E-02     .000000E+00   -2.231245E-03
  19      5.065488E-02     .000000E+00   -1.541107E-03
  20     -1.253801E-01     .000000E+00   -1.275081E-03
0excess resonance integrals
0                  resolved
0absorption       1.35573E+03
 fission           .00000E+00
-  elapsed time    .17 min.
```

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0 eu-154        mt=102,103,104,105,106,107     updated 10/13/89          63154     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   152.601          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 4.6287475E-08
0spin factor (g)          = 19135.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 3.6891120E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 4.1158988E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -3.861222E-01    .000000E+00   -6.032471E-02
  13      -2.990322E-01    .000000E+00   -2.442458E-02
  14       3.518871E-01    .000000E+00    1.505895E-02
  15       2.104515E-01    .000000E+00    2.119006E-02
  16       7.291847E+00    .000000E+00    9.268108E-02
  17      -1.437307E+02    .000000E+00   -1.895209E+00
  18       1.138007E+02    .000000E+00    1.859608E+00
  19      -1.014582E+02    .000000E+00    1.187222E+00
0excess resonance integrals
0                  resolved
0absorption       2.13713E+03
 fission           .00000E+00
-  elapsed time    .18 min.
0 eu-155        mt=102,103,104,105,106,107     updated 10/13/89          63155     temperature=  975.00
0 gd-155        mt=102                         updated 10/13/89          64155     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   153.592          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.277          lumped nuclear density    = 7.9815138E-10
0spin factor (g)          = 12700.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 2.139440E+08
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 2.3869478E+08
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -1.439277E+00    .000000E+00   -1.837441E-01
  13       1.541312E+00    .000000E+00    1.985278E-01
  14       2.191371E-01    .000000E+00    9.808348E-03
  15      -3.311029E-01    .000000E+00   -7.465390E-06
  16       1.477360E+00    .000000E+00   -4.148879E-03
  17       1.568661E-01    .000000E+00   -1.479119E-03
  18       9.605166E-02    .000000E+00   -1.078106E-03
  19       6.295341E-02    .000000E+00   -8.026526E-04
  20       1.670418E-02    .000000E+00    1.626651E-04
  21        .000000E+00    .000000E+00     .000000E+00
  22        .000000E+00    .000000E+00     .000000E+00
  23        .000000E+00    .000000E+00     .000000E+00
  24        .000000E+00    .000000E+00     .000000E+00
  25      -2.127720E+03    .000000E+00   -1.621942E+00
  26      -5.205629E+03    .000000E+00    1.961451E+00
  27      -1.699955E+03    .000000E+00    7.392510E-01
0excess resonance integrals
0                  resolved
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0absorption      3.97067E+04
 fission          .00000E+00
- elapsed time    .18 min.
0u-234 1043 sigo=5+4 ns=klacs p-3 293k f-1/e-m(1.+5)                    92234    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  232.029          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.021          lumped nuclear density   = 5.046297E-06
0spin factor (g)          = 6948.450          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.3835711E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.955          sigma(per absorber atom)= 3.7738547E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -2.415318E-02   .000000E+00  -7.041889E-02
  12     -1.968077E-01   .000000E+00  -8.249157E-02
  13      7.759724E-04   .000000E+00  -6.471135E-04
  14     -1.924428E+01   .000000E+00  -3.151055E+00
0excess resonance integrals
0                 resolved
0absorption      5.80961E+02
 fission          .00000E+00
- elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89          92235    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  233.025          temperature(kelvin)      =  975.000
0potential scatter sigma  =   11.500          lumped nuclear density   = 5.404797E-04
0spin factor (g)          = 15171.100         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.159409E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.049          sigma(per absorber atom)= 3.390575E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  12     -2.237724E+00  -1.395543E+00  -5.229959E-02
  13     -7.708092E+00  -3.834183E+00  -1.662088E-01
  14     -6.189115E+00  -3.789053E+00  -4.212886E-02
0excess resonance integrals
0                 resolved
0absorption      2.09175E+02
 fission          1.24654E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 ns=klacs p-3 293k f-1/e-m(1.+5)                    92236    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  234.017          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.995          lumped nuclear density   = 3.080562E-05
0spin factor (g)          = 6328.490          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 5.542605E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.954          sigma(per absorber atom)= 6.182740E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
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0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -1.523668E-01     .000000E+00   -3.801088E-01
  12      -8.034678E-01     .000000E+00   -5.583958E-01
  13      -6.051546E-02     .000000E+00   -3.357721E-03
  14      -2.886598E+01     .000000E+00   -2.525290E+00
0excess resonance integrals
0                 resolved
0absorption       2.96393E+02
 fission           .00000E+00
- elapsed time    .22 min.
0 uranium-238    endf/b-iv mat 1262          updated 10/13/89          92238    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.006          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density   = 2.196663E-02
0spin factor (g)          =  666.527          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 7.774999E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  235.041            sigma(per absorber atom)= 3.347694E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9      -3.944086E-02     .000000E+00   -4.060720E-01
  10      -1.026518E+00    -1.753316E-05  -6.484920E+00
  11      -9.709722E+00     .000000E+00   -2.690162E+01
  12      -4.305133E+01     .000000E+00   -4.999088E+01
  13      -5.401731E+01     .000000E+00   -1.769348E+01
  14      -1.045068E+02     .000000E+00   -6.060081E+00
0excess resonance integrals
0                 resolved
0absorption       1.79895E+01
 fission          5.03922E-04
- elapsed time    .23 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  235.012          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.500          lumped nuclear density   = 1.257562E-06
0spin factor (g)          = 10100.800         lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.380148E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  233.051            sigma(per absorber atom)= 1.480898E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -6.323133E-02    -1.946361E-06  -7.388205E-03
  12       3.730817E-02    -9.091694E-05   8.668517E-03
  13       1.510195E-02     9.073738E-05   4.388653E-04
  14      -1.946115E-02    -2.886008E-06  -9.108837E-04
0excess resonance integrals
0                 resolved
0absorption       2.98165E+02
 fission          1.38589E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 nsx=lacs p-3 295k f-1/e-m(1.+5)                94238    temperature=  975.00
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0resonance data for this nuclide
0mass number (a)          =  236.167          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.890          lumped nuclear density   = 7.959184E-08
0spin factor (g)          = 13130.600         lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00     dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 2.145420E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 2.301267E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -1.284735E-04  -1.341992E-05  -1.980659E-04
  12     -4.303728E-05  -2.908865E-06  -5.489653E-05
  13      4.134514E-01   7.566257E-02  -9.305859E-03
  14     -3.822731E-01  -6.988654E-02   8.538694E-03
0excess resonance integrals
0                 resolved
0absorption       8.25506E+01
 fission          9.08542E+00
-  elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          94239     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.999          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.200          lumped nuclear density   = 6.540275E-05
0spin factor (g)          = 6435.710          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00     dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 2.610894E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 2.800526E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -1.372717E-01  -5.512485E-02  -4.218880E-02
  12     -1.231102E+00  -4.618338E-01  -1.625047E-01
  13     -4.054652E+00  -2.387267E+00  -6.166678E-02
  14     -1.292015E+00  -6.866961E-01  -1.170952E-02
0excess resonance integrals
0                 resolved
0absorption       3.11634E+02
 fission          1.74952E+02
-  elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89          94240     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  237.992          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density   = 7.157824E-06
0spin factor (g)          =  669.244          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00     dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 2.385674E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 2.558905E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
   9     -2.527904E-05  -4.472240E-07  -4.415883E-05
```

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```
  10      -1.671842E-03  -1.040354E-04  -7.659151E-03
  11      -5.483094E-02  -3.168331E-04  -7.304044E-02
  12      -7.702665E-01  -4.206398E-03  -7.416141E-01
  13      -9.330225E-02  -5.720981E-04  -6.802738E-03
  14       .000000E+00    .000000E+00    .000000E+00
  15       1.750853E-02   3.341580E-06   3.472721E-03
  16       3.195329E+00   6.094609E-04   4.049562E-01
  17       5.207403E+02   9.938658E-02   4.696471E+01
  18      -5.241542E+03  -1.000371E+00  -4.157560E+02
  19       8.658362E+02   1.652487E-01   6.655492E+01
  20      -9.297894E+01  -1.774544E-02   1.798328E+00
0excess resonance integrals
0                 resolved
0absorption      6.3407 5E+03
 fission         2.23112E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9241     temperature=  975.00
0resonance data for this nuclide
0mass number (a)      =   238.978          temperature(kelvin)      =  975.000
0potential scatter sigma =   10.939          lumped nuclear density   = 2.509887E-06
0spin factor (g)      = 16402.100          lump dimension (a-bar)   = 4.681220E-01
0inner radius         = .000000E+00        dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 6.804835E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 7.299078E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      9.910288E-03   8.743984E-03   6.553351E-04
  13     -1.870408E-01  -1.488423E-01  -6.361955E-03
  14     -1.075350E-01  -6.497218E-02   7.055812E-04
  15      1.797773E-02   1.611609E-02  -4.686308E-04
0excess resonance integrals
0                 resolved
0absorption      5.09079E+02
 fission         4.26759E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          9242     temperature=  975.00
0resonance data for this nuclide
0mass number (a)      =   240.145          temperature(kelvin)      =  975.000
0potential scatter sigma =   10.694          lumped nuclear density   = 1.172537E-07
0spin factor (g)      =  6606.710          lump dimension (a-bar)   = 4.681220E-01
0inner radius         = .000000E+00        dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.456326E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.562100E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11     -1.595395E-04   .000000E+00  -5.900082E-04
  12     -5.455534E-03   .000000E+00  -1.111985E-02
  13      1.023480E-04   .000000E+00   4.744354E-06
  14      8.148858E-02   .000000E+00   1.527138E-02
  15     -1.866679E+00   .000000E+00  -1.871458E-01
  16      4.033705E-02   .000000E+00  -3.458952E-03
  17      1.550415E-02   .000000E+00  -1.848246E-03
```

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```
  18      1.11250E-02     .000000E+00   -1.43067E-03
0excess resonance integrals
0                 resolved
0absorption       1.11089E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp-5+4 newklacs 218ngp p-3 293k                          95241     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.950          temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.511          lumped nuclear density   = 3.3970430E-08
0spin factor (g)          = 82058.203          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 5.0267155E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 5.3918115E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  13      4.919184E-01   1.212657E-02   4.954242E-03
  14     -4.313571E-01  -1.109051E-02  -4.482724E-03
0excess resonance integrals
0                 resolved
0absorption       1.93473E+02
 fission          1.07612E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-n 090576 p3 293k                           95243     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   240.940          temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.511          lumped nuclear density   = 4.2647872E-09
0spin factor (g)          = 82052.602          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 4.0039436E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 4.2947548E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  13     -6.647073E-03    .000000E+00   4.374598E-04
  14      2.210911E-02    .000000E+00   2.339746E-04
0excess resonance integrals
0                 resolved
0absorption       1.60152E+02
 fission          .00000E+00
- elapsed time    .32 min.
0 curium-244    endf/b-iv mat 1162          updated 10/13/89            96244     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   242.133          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.320          lumped nuclear density   = 1.6465758E-10
0spin factor (g)          =  5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.0370593E+09
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.1123922E+09
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
```

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```
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11       2.577953E-04   7.054416E-06   3.049273E-04
  12       6.927479E-04   3.252468E-05   1.367911E-04
  13       2.717880E-03   1.335395E-04   7.127342E-04
  14       8.386677E-02   5.017790E-03   1.583305E-02
0excess resonance integrals
0                 resolved
0absorption       6.13903E+02
 fission          3.54221E+01
- elapsed time     .32 min.
- elapsed time     .33 min.
1     this xsdrn working tape was created 02/16/96 at 09:58:23
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron bump library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
         tape id                          4321        number of nuclides              65
         number of neutron groups           27        number of gamma groups           0
         first thermal group                15        logical unit                     4
                                  table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                          id     999
        hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89             id    1001
       b-10 1273 218ngp 042375 p-3 293k                                            id    5010
        boron-11       endf/b-iv mat 1160            updated 10/13/89             id    5011
        oxygen-16      endf/b-iv mat 1276            updated 10/13/89             id    8016
        oxygen-16      endf/b-iv mat 1276            updated 10/13/89             id       6
        kr-83          mt=102,103,103,105,106,107    updated 10/13/89             id   36083
        kr-85            mt=  102                                                 id   36085
        sr-90          mt=102                        updated 10/13/89             id   38090
         y-89          mt=102                        updated 10/13/89             id   39089
        zr-93            mt=  102                                                 id   40093
        zr-94          mt=102                        updated 10/13/89             id   40094
        zr-95          mt=102                        updated 10/13/89             id   40095
        zircalloy      endf/b-iv mat 1284            updated 10/13/89             id   40302
        rb-94          mt=102                        updated 10/13/89             id   41094
        mo-95          mt=102                        updated 10/13/89             id   42095
        tc-99          mt=102                        updated 10/13/89             id   43099
        ru-101         mt=102                        updated 10/13/89             id   44101
        ru-106         mt=102                        updated 10/13/89             id   44106
        rh-103         mt=102                        updated 10/13/89             id   45103
        rh-105           mt=  102                                                 id   45105
        pd-105         mt=102                        updated 10/13/89             id   46105
        pd-108         mt=102                        updated 10/13/89             id   46108
        silver-109     endf/b-iv mat 1139            updated 10/13/89             id   47109
        sb-124         mt=102                        updated 10/13/89             id   51124
        xe-131         mt=102,103,104,105,106        updated 10/13/89             id   54131
        xe-132         mt=102,103,104,105,106        updated 10/13/89             id   54132
        xenon-135      endf/b-iv mat 1294            updated 10/13/89             id   54135
        xe-136           mt=  102, 103, 104, 105, 107                             id   54136
        cesium-133     endf/b-iv mat 1141            updated 10/13/89             id   55133
        cs-134         mt=102                        updated 10/13/89             id   55134
        cs-135           mt=  102                                                 id   55135
        cs-137         mt=102                        updated 10/13/89             id   55137
        ba-136         mt=102                        updated 10/13/89             id   56136
        la-139         mt=102                        updated 10/13/89             id   57139
        ce-144           mt=  102                                                 id   58144
        pr-141         mt=102,103,104,105,106,107    updated 10/13/89             id   59141
        pr-143         mt=102                        updated 10/13/89             id   59143
        nd-143         mt=102                        updated 10/13/89             id   60143
```

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      nd-145        mt=102                    updated 10/13/89          id    60145
      nd-147        mt=102                    updated 10/13/89          id    60147
      pm-147        mt=102                    updated 10/13/89          id    61147
      pm-148          mt=  102                                        id    61148
      sm-147        endf/b-v fission product  updated 10/13/89          id    62147
      sm-149        mt=102,103,107            updated 10/13/89          id    62149
      sm-150        mt=102                    updated 10/13/89          id    62150
      sm-151        mt=102,103,104,105,106,107 updated 10/13/89         id    62151
      sm-152        mt=102,103,104,105,106,107 updated 10/13/89         id    62152
      eu-153        mt=102,103,104,105,106,107 updated 10/13/89         id    63153
      eu-154        mt=102,103,104,105,106,107 updated 10/13/89         id    63154
      eu-155        mt=102,103,104,105,106,107 updated 10/13/89         id    63155
      gd-155        mt=102                    updated 10/13/89          id    64155
     u-234 1043 sigo=5+4 newlacs p-3 293k f-1/e-m(1.+5)                 id    92234
      uranium-235   endf/b-iv mat 1261        updated 10/13/89          id    92235
     u-236 1163 sigo=5+4 newlacs p-3 293k f-1/e-m(1.+5)                 id    92236
      uranium-238   endf/b-iv mat 1262        updated 10/13/89          id    92238
      neptunium-237 endf/b-iv mat 1263        updated 10/13/89          id    93237
     pu-238 1050 sigo=5+4 newlacs p-3 293k f-1/e-m(1.+5)                 id    94238
      plutonium-239 endf/b-iv mat 1264        updated 10/13/89          id    94239
      plutonium-240 endf/b-iv mat 1265        updated 10/13/89          id    94240
      plutonium-241 endf/b-iv mat 1266        updated 10/13/89          id    94241
      plutonium-242 endf/b-iv mat 1161        updated 10/13/89          id    94242
     am-241 1056 sigo=5+4 newlacs 218ngp p-3 293k                       id    95241
     am-243 1057 218 gp wt f-1/e-m 090876 p3 293k                       id    95243
      curium-244    endf/b-iv mat 1162        updated 10/13/89          id    96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx        xx   ssssssssss   dddddddddd   rrrrrrrrrr   m        m  ppppppppp   mm        mm
  xx        xx  ssssssssssss  ddddddddddd  rrrrrrrrrrr  mm       m  pppppppppp  mmm      mmm
   xx    xx   ss        ss   dd       dd  rr       rr  mmm      m  pp      pp  mmmm    mmmm
    xx  xx    ss             dd       dd  rr       rr  m mm     m  pp      pp  mm mm  mm mm
     xx xx    ss             dd       dd  rr       rr  m  m     m  pp      pp  mm  mm mm  mm
      xxx     ssssssssss     dd       dd  rrrrrrrrrr   m   m    m  pppppppppp  mm   mmm   mm
      xxx      ssssssssss    dd       dd  rrrrrrrrr    m    m   m  ppppppppp   mm    m    mm
     xx xx            ss     dd       dd  rr     rr    m     m  m  pp          mm         mm
    xx  xx            ss     dd       dd  rr      rr   m      mm  pp          mm         mm
   xx    xx   ss        ss   dd       dd  rr       rr  m       m  pp          mm         mm
  xx        xx  ssssssssssss  ddddddddddd  rr        rr m       m  pp          mm         mm
 xx        xx    ssssssssss   dddddddddd   rr        rr m       m  pp          mm         mm
0

  dddddddddd     aaaaaaaa    w        w  iiiiiiiiiiii    ssssssssss
  ddddddddddd   aaaaaaaaaa   w        w  iiiiiiiiiiii   ssssssssssss
  dd        dd  aa        aa  w        w      ii        ss        ss
  dd        dd  aa        aa  w        w      ii        ss
  dd        dd  aa        aa  w        w      ii        ss
  dd        dd  aaaaaaaaaaaa  w        w      ii        ssssssssss
  dd        dd  aaaaaaaaaaaa   w      w       ii         ssssssssss
  dd        dd  aa        aa    w    w        ii                ss
  dd        dd  aa        aa     w  w         ii                ss
  dd        dd  aa        aa      w w         ii        ss      ss
  dddddddddd    aa        aa       ww    iiiiiiiiiiii   ssssssssssss
  dddddddddd    aa        aa        v    iiiiiiiiiiii    ssssssssss
0

    000000      222222222222          //      11      666666666666          //  999999999999  666666666666
   00000000     222222222222         //      111     666666666666         //  999999999999  666666666666
  00      00   22        22          //     1111     66                  //  99        99  66
 00        00            22         //       11     66                 //   99        99  66
 00        00            22        //        11     66                //    99        99  66
```

INFORMATION ONLY

```
0
1
0
```

```
program verification information
code system:  scale  version:  4.2

program:  c0:001
creation date:  04/27/95
library:  /nsutronics/scale/exe

this is not a  scale  configuration controlled code
```

```
                    *****          jobname:  davis                    *****
                    *****                                             *****
                    *****  date of execution:  02/16/96               *****
                    *****                                             *****
                    *****  time of execution:  09:59:27               *****
                    *****                                             *****
                    *****                                             *****
                    ***********************************************************
                    ***********************************************************
                    ***********************************************************
1
                    400 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      -1q array has     1 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit  9 requires   12 blocks of length  704 for cross section mixing.
1                   400 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                          general problem data

 ige  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                  8
 ism  number of zones                    4      isct order of scattering               3
 im   number of spacial intervals       24      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          20
 ibr  right boundary condition           3      iom  outer iteration maximum          25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sry/cpt          0
 ms   mixing table length               65      ith  0/1 = forward/adjoint             0
 ign  number of energy groups           27      iflu not used(always wgtd)             0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0      idl  0/1/2/3=no/prt rd/pch n/both      53
 iftg number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt      0
0                          special options

 ifg  0/1 = none/weighting calculation   1      ipn  0/1/2 diff. coef. param            0
 iqn  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 33*     1
 ipn  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    53      iai  0/1=none/activities by interval    0
 itmx maximum time (minutes)            10      ifct 0/1=no/yes upscatter scaling       0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0      ipvt 0/1/2=no/k/alpha parametric srch   0
 isx  broad group fluxes                 0      isen outer iteration acceleration       0
 ibln activity data unit                 0      nbnd band rebaln parameter              0
 jbkl 0/1/2 buckling geometry            0
0                       weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1      ihtf total xsect pan in brd gp tables   3
 ignf number of broad groups            27      ndsf pan g-g or file number             4
 itp  0/10/20/30/40 0/c/e/sc/a           0      nusf table length or max order          4
 ipp  -2/-1/0/n=wgtd xsect print        -2      mxm extra 1-d x-sect positions          0
 iap  -1/n anisn xsect print            -1
0                       floating point parameters

 eps  overall convergence        1.00000E-04     dy   cyl/pla ht for buckling    .00000E+00
 ptc  point convergence          1.00000E-04     dz   plane depth for buckling   .00000E+00
 xnf  normalization factor       1.00000E+00     vac  void streaming correction  .00000E+00
 ev   eigenvalue guess            .00000E+00     pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00     sqt  ev change eps for search   1.00000E-03
 bf   buckling factor=1.42089E2  1.42089E+00     xnpm new param mod for search   7.50000E-01
```

INFORMATION ONLY

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```
    this case will require      2535 locations for mixing
    this case has been allocated 200000 locations
1                 400 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      13q array has     65 entries.
0      14q array has     65 entries.
0      15q array has     65 entries.
0                        data block 2 (mixing table, etc.)
0
```

	nuclides on tape	cccc identification	mixture	mixing table component	atom density	extra xsect id's
1	999		1	92235	5.40480E-04	
2	1001		1	92234	5.04673E-06	
3	5010		1	92236	3.08086E-05	
4	5011		1	92238	2.19627E-02	
5	8016		1	8016	4.55359E-02	
6	6		3	6	2.09710E-02	
7	36083		1	36083	7.25090E-07	
8	36085		1	36085	3.50117E-07	
9	38090		1	38090	7.86170E-06	
10	39089		1	39089	5.47405E-06	
11	40093		1	42095	6.12150E-06	
12	40094		1	40093	5.98109E-06	
13	40095		1	40094	9.26342E-06	
14	40802		1	40095	2.10190E-06	
15	41094		1	41094	3.60192E-12	
16	42095		1	43099	8.96719E-06	
17	43099		1	45103	4.40585E-06	
18	44101		1	45105	1.67519E-08	
19	44106		1	44101	7.89901E-06	
20	45103		1	44106	1.14008E-06	
21	45105		1	46105	2.49114E-06	
22	46105		1	46108	5.44054E-07	
23	46108		1	47109	3.91284E-07	
24	47109		1	51124	1.00594E-10	
25	51124		1	54131	4.16287E-06	
26	54131		1	54132	7.00588E-06	
27	54132		1	54135	6.60408E-09	
28	54135		1	54136	1.50836E-05	
29	54136		1	55134	2.22578E-07	
30	55133		1	55135	4.71148E-06	
31	55134		1	55137	9.46756E-06	
32	55135		1	56136	4.32042E-08	
33	55137		1	57139	9.43297E-06	
34	56136		1	59141	7.61682E-06	
35	57139		1	59143	3.98553E-07	
36	58144		1	58144	5.00712E-06	
37	59141		1	60143	7.75909E-06	
38	59143		1	60145	5.63501E-06	
39	60143		1	61147	2.48439E-06	
40	60145		1	61148	6.82848E-09	
41	60147		1	60147	1.32716E-07	
42	61147		1	62147	3.65895E-07	
43	61148		1	62149	7.51956E-08	
44	62147		1	62150	1.75200E-06	
45	62149		1	62151	2.87244E-07	
46	62150		1	62152	8.48904E-07	
47	62151		1	64155	7.98151E-10	
48	62152		1	63153	3.95082E-07	
49	63153		1	63154	4.62875E-08	
50	63154		1	63155	5.11217E-08	
51	63155		2	40802	4.25156E-02	

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52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	9.78898E-06
56	92238	1	95237	1.23726E-06
57	95237	1	94238	7.99918E-08
58	94238	1	94239	6.54028E-05
59	94239	1	94240	7.15776E-06
60	94240	1	94241	2.50935E-06
61	94241	1	94242	1.17254E-07
62	94242	1	95241	3.39704E-08
63	95241	1	95243	4.26479E-09
64	95243	1	96244	1.64658E-10
65	96244	1	999	1.00000E-20

- elapsed time .00 min.
0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 400 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0 neutron group parameters

gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	.7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00	
15	3.04999E+00	1.50080E+01	2.10601E+06	15	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70622E+06	16	0	16	1.00000E+00	
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00	
21	4.00000E-01	1.70544E+01	8.17974E+05	21	0	21	1.00000E+00	
22	3.25000E-01	1.73420E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.86953E+05	23	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00	
25	5.00000E-02	1.91139E+01	2.71895E+05	25	0	25	1.00000E+00	
26	3.00000E-02	1.96247E+01	1.87283E+05	26	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00	
28	1.00000E-05	2.76310E+01						

1 400 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0

	mixture by zone	order p(l) by zone	activity table matl no.	activity table reaction	quadrature constants weights	quadrature constants directions	quadrature constants refl direc	quadrature constants wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-05

INFORMATION ONLY

3	2	3	5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3	0	-6.04419E-01	8	0
5			5.55953E-02	-5.58410E-01	8	-3.10450E-02
6			5.55953E-02	-2.31301E-01	7	-1.28598E-02
7			5.55953E-02	2.31301E-01	6	1.28598E-02
8			5.55953E-02	5.58410E-01	5	3.10450E-02
9			0	-8.50774E-01	15	0
10			5.22834E-02	-8.21784E-01	15	-4.29665E-02
11			5.22834E-02	-6.01588E-01	14	-3.14537E-02
12			5.22834E-02	-2.20196E-01	13	-1.15128E-02
13			5.22834E-02	2.20196E-01	12	1.15128E-02
14			5.22834E-02	6.01588E-01	11	3.14537E-02
15			5.22834E-02	8.21784E-01	10	4.29665E-02
16			0	-9.83032E-01	24	0
17			4.53365E-02	-9.64143E-01	24	-4.37099E-02
18			4.53365E-02	-8.17361E-01	23	-3.70655E-02
19			4.53365E-02	-5.46143E-01	22	-2.47597E-02
20			4.53365E-02	-1.91780E-01	21	-8.69444E-03
21			4.53365E-02	1.91780E-01	20	8.69444E-03
22			4.53365E-02	5.46143E-01	19	2.47597E-02
23			4.53365E-02	8.17361E-01	18	3.70655E-02
24			4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04436E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44265E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44264E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44265E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44265E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44265E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44265E-01
16	-9.83032E-01	-4.49528E-01	8.36886E-01	5.00708E-01	-7.51008E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.26438E-01
18	-8.17361E-01	-4.49528E-01	3.20952E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20952E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20952E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20952E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.26438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49518E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21299E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22545E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		

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12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0
13	4.78090E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00
14	4.87528E-01	4.99987E-01	3	3.06329E+00	7.82768E-02	1.00000E+00
15	5.12445E-01	5.24903E-01	3	3.21979E+00	8.21777E-02	1.00000E+00
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00
22	7.48592E-01	7.63892E-01	4	4.70854E+00	1.46875E-01	1.00000E+00
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89114E-02	1.00000E+00
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00
25	8.13968E-01			5.11431E+00		

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	138	1.09566E-05	1.09759E+00	-1.07731E-01	1.00000E+00	-3.55729E-02	.00000E+00	.0000
2	213	-1.28319E-05	1.10826E+00	-1.48861E-03	-1.15081E-02	-4.26417E-03	.00000E+00	.0000
3	273	1.62299E-05	1.10914E+00	-1.97899E-04	-1.28293E-03	-8.84204E-04	.00000E+00	.0000
4	319	-1.04679E-05	1.10971E+00	-3.81491E-05	-2.70424E-04	-1.78398E-04	.00000E+00	.0167
5	350	-9.05080E-06	1.10975E+00	-8.04876E-06	-5.43973E-05	-3.29763E-05	.00000E+00	.0167

grp	to grp	inner iters	nfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1	3.80860E-08	24	1.00000E+00	1
2	2	1	1	4.46907E-08	24	1.00000E+00	1
3	3	1	1	4.10794E-08	24	1.00000E+00	1
4	4	1	1	3.97397E-08	24	1.00000E+00	1
5	5	1	1	4.12062E-08	24	1.00000E+00	1
6	6	1	1	2.63373E-08	24	1.00000E+00	1
7	7	1	1	1.85858E-08	24	1.00000E+00	1
8	8	1	1	4.40921E-09	24	1.00000E+00	1
9	9	1	2	2.34214E-09	24	1.00000E+00	1
10	10	1	1	2.37746E-09	24	1.00000E+00	1
11	11	1	1	2.63404E-09	24	1.00000E+00	1
12	12	1	24	4.39035E-09	24	1.00000E+00	1
13	13	1	24	5.87595E-09	24	1.00000E+00	1
14	14	1	24	5.61334E-09	24	1.00000E+00	1
15	15	1	24	4.08595E-05	24	9.99977E-01	1
16	16	1	24	5.07017E-05	24	9.99983E-01	1
17	17	1	18	1.82135E-05	24	9.99956E-01	1
18	18	1	18	2.09272E-05	24	9.99955E-01	1
19	19	1	18	1.73670E-05	24	9.99951E-01	1
20	20	1	24	5.16144E-05	24	9.99965E-01	1
21	21	1	18	2.68156E-05	24	9.99938E-01	1
22	22	1	24	4.66957E-05	24	9.99985E-01	1
23	23	1	24	2.32620E-06	24	1.00000E+00	1
24	24	1	24	1.39544E-05	24	1.00001E+00	1
25	25	1	24	1.72744E-05	24	1.00000E+00	1
26	26	1	1	1.01266E-05	24	9.99997E-01	2
27	27	1	2	4.45654E-06	24	1.00000E+00	2

6	377	-1.79461E-06	1.10967E+00	-1.60890E-06	-1.02061E-05	-6.57033E-06	.00000E+00	.0167

final monitor lambda 1.10965E+00 production/absorption 1.10965E+00 angular flux on 16

- elapsed time .02 min.

1 400 d, ss2h: babcock wilcox 15x15, 3.00w%, 20gd/intu burn high temp

0 int.	zone number	radius	int. midpoint	area	volume	prod density
1	1	.00000E+00	1.29551E-02	.00000E+00	2.10908E-03	3.25098E-03
2	1	2.59102E-02	4.33406E-02	1.62798E-01	9.49318E-03	1.46266E-02
3	1	6.07710E-02	8.75100E-02	3.81835E-01	2.94045E-02	4.53865E-02

INFORMATION ONLY

4	1	1.14249E-01	1.74155E-01	7.17848E-01	1.31104E-01	2.04251E-01
5	1	2.34061E-01	2.99967E-01	1.47065E+00	2.21259E-01	3.52723E-01
6	1	3.53873E-01	3.80612E-01	2.22545E+00	1.27890E-01	2.09002E-01
7	1	4.07351E-01	4.24781E-01	2.55946E+00	9.30423E-02	1.54907E-01
8	1	4.42212E-01	4.55167E-01	2.77850E+00	7.41004E-02	1.25505E-01
9	2	4.68122E-01	4.68814E-01	2.94130E+00	4.07946E-03	.00000E+00
10	2	4.69507E-01	4.71481E-01	2.95000E+00	1.16988E-02	.00000E+00
11	2	4.73456E-01	4.75431E-01	2.97481E+00	1.17968E-02	.00000E+00
12	2	4.77405E-01	4.78098E-01	2.99962E+00	4.16023E-03	.00000E+00
13	3	4.78790E-01	4.85159E-01	3.00833E+00	2.65268E-02	.00000E+00
14	3	4.87528E-01	4.99987E-01	3.06325E+00	7.82768E-02	.00000E+00
15	3	5.12445E-01	5.24903E-01	3.21979E+00	8.21777E-02	.00000E+00
16	3	5.37362E-01	5.41731E-01	3.37634E+00	2.97427E-02	.00000E+00
17	4	5.46100E-01	5.53513E-01	3.43125E+00	5.15631E-02	.00000E+00
18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19	4	5.80874E-01	5.96175E-01	3.64974E+00	1.14628E-01	.00000E+00
20	4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21	4	6.80134E-01	7.14313E-01	4.27278E+00	3.07702E-01	.00000E+00
22	4	7.48592E-01	7.63893E-01	4.70854E+00	1.46875E-01	.00000E+00
23	4	7.79193E-01	7.89167E-01	4.89582E+00	9.89116E-02	.00000E+00
24	4	7.99141E-01	8.06554E-01	5.02115E+00	7.51357E-02	.00000E+00
25		8.13968E-01		5.11431E+00		

1 400 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.75114E-01	1.32204E+00	1.67743E+00	1.04071E+00	1.57532E+00	3.03095E+00	2.90528E+00	2.08005E+00
2	1.75177E-01	1.32267E+00	1.67826E+00	1.04121E+00	1.57602E+00	3.03225E+00	2.90594E+00	2.08012E+00
3	1.75120E-01	1.32205E+00	1.67748E+00	1.04073E+00	1.57523E+00	3.03062E+00	2.90497E+00	2.07992E+00
4	1.74725E-01	1.31778E+00	1.67201E+00	1.03740E+00	1.56972E+00	3.02009E+00	2.89857E+00	2.07857E+00
5	1.73702E-01	1.30685E+00	1.65814E+00	1.02898E+00	1.55660E+00	2.99408E+00	2.88258E+00	2.07627E+00
6	1.72524E-01	1.29439E+00	1.64253E+00	1.01958E+00	1.54181E+00	2.96549E+00	2.86599E+00	2.07339E+00
7	1.71586E-01	1.28464E+00	1.63050E+00	1.01242E+00	1.53069E+00	2.94444E+00	2.85355E+00	2.07122E+00
8	1.70855E-01	1.27515E+00	1.61897E+00	1.00567E+00	1.52034E+00	2.92522E+00	2.84230E+00	2.06918E+00
9	1.70147E-01	1.27002E+00	1.61278E+00	1.00208E+00	1.51490E+00	2.91521E+00	2.83649E+00	2.06810E+00
10	1.70041E-01	1.26898E+00	1.61155E+00	1.00139E+00	1.51390E+00	2.91342E+00	2.83550E+00	2.06790E+00
11	1.69886E-01	1.26748E+00	1.60978E+00	1.00035E+00	1.51248E+00	2.91088E+00	2.83410E+00	2.06762E+00
12	1.69784E-01	1.26649E+00	1.60859E+00	9.99752E-01	1.51156E+00	2.90925E+00	2.83321E+00	2.06743E+00
13	1.69593E-01	1.26465E+00	1.60638E+00	9.98512E-01	1.50975E+00	2.90581E+00	2.83127E+00	2.06705E+00
14	1.69075E-01	1.25943E+00	1.59987E+00	9.94677E-01	1.50398E+00	2.89452E+00	2.82484E+00	2.06601E+00
15	1.68494E-01	1.25310E+00	1.59144E+00	9.89860E-01	1.49553E+00	2.87785E+00	2.81524E+00	2.06488E+00
16	1.68210E-01	1.24960E+00	1.58648E+00	9.85850E-01	1.48980E+00	2.86630E+00	2.80852E+00	2.06437E+00
17	1.68073E-01	1.24759E+00	1.58337E+00	9.83560E-01	1.48682E+00	2.85834E+00	2.80385E+00	2.06425E+00
18	1.67894E-01	1.24499E+00	1.57988E+00	9.80585E-01	1.48078E+00	2.84836E+00	2.79797E+00	2.06409E+00
19	1.67670E-01	1.24190E+00	1.57447E+00	9.77225E-01	1.47507E+00	2.83720E+00	2.79140E+00	2.06386E+00
20	1.67371E-01	1.23750E+00	1.56890E+00	9.73005E-01	1.46799E+00	2.82533E+00	2.78325E+00	2.06353E+00
21	1.67165E-01	1.23511E+00	1.56477E+00	9.70025E-01	1.46298E+00	2.81351E+00	2.77758E+00	2.06344E+00
22	1.67166E-01	1.23499E+00	1.56447E+00	9.69743E-01	1.46344E+00	2.81250E+00	2.77711E+00	2.06366E+00
23	1.67242E-01	1.23584E+00	1.56660E+00	9.70472E-01	1.46362E+00	2.81479E+00	2.77857E+00	2.06395E+00
24	1.67329E-01	1.23685E+00	1.56695E+00	9.71370E-01	1.46508E+00	2.81765E+00	2.78087E+00	2.06422E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58622E+00	1.44471E+00	1.30346E+00	7.94800E-01	6.71758E-01	5.90836E-01	3.71152E-01	2.05765E-01
2	1.58614E+00	1.44461E+00	1.30325E+00	7.94648E-01	6.71548E-01	5.90650E-01	3.71122E-01	2.05744E-01
3	1.58633E+00	1.44482E+00	1.30372E+00	7.95115E-01	6.72001E-01	5.91332E-01	3.71198E-01	2.05786E-01
4	1.58737E+00	1.44605E+00	1.30637E+00	7.98190E-01	6.74985E-01	5.95154E-01	3.71615E-01	2.06025E-01
5	1.58997E+00	1.44909E+00	1.31289E+00	8.05783E-01	6.80963E-01	6.04634E-01	3.72622E-01	2.06610E-01
6	1.59287E+00	1.45239E+00	1.32002E+00	8.14143E-01	6.87975E-01	6.15124E-01	3.73705E-01	2.07248E-01
7	1.59500E+00	1.45481E+00	1.32527E+00	8.20340E-01	6.93165E-01	6.22949E-01	3.74486E-01	2.07713E-01
8	1.59715E+00	1.45701E+00	1.33006E+00	8.26030E-01	6.97922E-01	6.30163E-01	3.75181E-01	2.08136E-01
9	1.59829E+00	1.45815E+00	1.33253E+00	8.28986E-01	7.00395E-01	6.33914E-01	3.75538E-01	2.08355E-01
10	1.59865E+00	1.45833E+00	1.33298E+00	8.29462E-01	7.00799E-01	6.34514E-01	3.75598E-01	2.08392E-01

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11	1.59874E+00	1.45860E+00	1.33350E+00	8.30141E-01	7.01377E-01	6.35372E-01	3.75694E-01	2.08446E-01
12	1.59893E+00	1.45877E+00	1.33387E+00	8.30581E-01	7.01752E-01	6.35927E-01	3.75740E-01	2.08481E-01
13	1.59931E+00	1.45912E+00	1.33462E+00	8.31478E-01	7.02516E-01	6.37061E-01	3.75854E-01	2.08552E-01
14	1.60034E+00	1.46024E+00	1.33700E+00	8.34283E-01	7.04909E-01	6.40612E-01	3.76221E-01	2.08775E-01
15	1.60148E+00	1.46188E+00	1.34040E+00	8.38154E-01	7.08209E-01	6.45508E-01	3.76742E-01	2.09084E-01
16	1.60202E+00	1.46288E+00	1.34263E+00	8.40651E-01	7.10337E-01	6.48651E-01	3.77087E-01	2.09283E-01
17	1.60252E+00	1.46368E+00	1.34429E+00	8.42487E-01	7.11869E-01	6.50945E-01	3.77273E-01	2.09409E-01
18	1.60278E+00	1.46476E+00	1.34656E+00	8.44994E-01	7.13943E-01	6.54072E-01	3.77479E-01	2.09570E-01
19	1.60331E+00	1.46598E+00	1.34915E+00	8.47883E-01	7.16334E-01	6.57676E-01	3.77722E-01	2.09757E-01
20	1.60408E+00	1.46753E+00	1.35244E+00	8.51563E-01	7.19386E-01	6.62270E-01	3.78017E-01	2.09990E-01
21	1.60466E+00	1.46864E+00	1.35479E+00	8.54188E-01	7.21531E-01	6.65525E-01	3.78162E-01	2.10135E-01
22	1.60472E+00	1.46875E+00	1.35501E+00	8.54416E-01	7.21674E-01	6.65778E-01	3.78073E-01	2.10110E-01
23	1.60456E+00	1.46847E+00	1.35442E+00	8.53735E-01	7.21067E-01	6.64901E-01	3.77928E-01	2.10034E-01
24	1.60437E+00	1.46813E+00	1.35369E+00	8.52894E-01	7.20334E-01	6.63825E-01	3.77782E-01	2.09954E-01

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.66004E-02	5.31541E-02	1.31681E-01	4.41028E-01	1.17777E-01	2.07352E-01	7.27214E-01	5.24001E-01
2	8.65773E-02	5.31207E-02	1.31642E-01	4.40923E-01	1.17709E-01	2.07207E-01	7.26784E-01	5.24541E-01
3	8.66202E-02	5.32611E-02	1.31719E-01	4.41119E-01	1.17883E-01	2.07750E-01	7.27824E-01	5.25561E-01
4	8.68721E-02	5.39873E-02	1.32168E-01	4.42268E-01	1.18848E-01	2.10591E-01	7.33650E-01	5.31123E-01
5	8.74954E-02	5.58220E-02	1.33265E-01	4.45090E-01	1.21254E-01	2.17711E-01	7.48091E-01	5.44953E-01
6	8.81809E-02	5.79073E-02	1.34458E-01	4.48175E-01	1.23952E-01	2.25724E-01	7.64055E-01	5.60833E-01
7	8.86888E-02	5.95142E-02	1.35328E-01	4.50442E-01	1.25945E-01	2.31820E-01	7.75950E-01	5.71878E-01
8	8.91555E-02	6.10372E-02	1.36114E-01	4.52510E-01	1.27811E-01	2.37536E-01	7.86911E-01	5.82595E-01
9	8.93985E-02	6.18375E-02	1.36521E-01	4.53583E-01	1.28783E-01	2.40525E-01	7.92603E-01	5.88176E-01
10	8.94391E-02	6.19543E-02	1.36587E-01	4.53762E-01	1.28935E-01	2.40966E-01	7.93486E-01	5.89013E-01
11	8.94972E-02	6.21216E-02	1.36683E-01	4.54017E-01	1.29151E-01	2.41594E-01	7.94743E-01	5.90203E-01
12	8.95347E-02	6.22300E-02	1.36745E-01	4.54183E-01	1.29290E-01	2.42001E-01	7.95563E-01	5.90970E-01
13	8.96115E-02	6.24505E-02	1.36872E-01	4.54520E-01	1.29576E-01	2.42831E-01	7.97212E-01	5.92536E-01
14	8.98514E-02	6.31332E-02	1.37273E-01	4.55575E-01	1.30469E-01	2.45408E-01	8.02576E-01	5.97365E-01
15	9.01818E-02	6.40600E-02	1.37833E-01	4.57023E-01	1.31696E-01	2.48912E-01	8.09389E-01	6.03822E-01
16	9.03989E-02	6.46474E-02	1.38199E-01	4.57949E-01	1.32484E-01	2.51131E-01	8.13816E-01	6.07819E-01
17	9.05475E-02	6.50908E-02	1.38461E-01	4.58609E-01	1.33093E-01	2.52865E-01	8.17473E-01	6.11478E-01
18	9.07569E-02	6.57088E-02	1.38813E-01	4.59509E-01	1.33952E-01	2.55344E-01	8.22927E-01	6.17239E-01
19	9.09985E-02	6.64195E-02	1.39220E-01	4.60553E-01	1.34946E-01	2.58230E-01	8.29438E-01	6.24188E-01
20	9.13070E-02	6.73260E-02	1.39740E-01	4.61895E-01	1.36222E-01	2.61953E-01	8.38099E-01	6.33561E-01
21	9.15234E-02	6.79797E-02	1.40103E-01	4.62830E-01	1.37146E-01	2.64665E-01	8.44652E-01	6.40871E-01
22	9.15380E-02	6.80515E-02	1.40125E-01	4.62874E-01	1.37248E-01	2.64976E-01	8.45642E-01	6.42259E-01
23	9.14775E-02	6.78980E-02	1.40019E-01	4.62589E-01	1.37051E-01	2.64346E-01	8.44340E-01	6.41098E-01
24	9.14045E-02	6.77041E-02	1.39892E-01	4.62251E-01	1.36756E-01	2.63546E-01	8.42618E-01	6.39445E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.16177E-01	1.30156E-01	1.68347E-02
2	2.16028E-01	1.30066E-01	1.68264E-02
3	2.16572E-01	1.30598E-01	1.69881E-02
4	2.19435E-01	1.33224E-01	1.77167E-02
5	2.26662E-01	1.39805E-01	1.95694E-02
6	2.34528E-01	1.47246E-01	2.17378E-02
7	2.40548E-01	1.52954E-01	2.34877E-02
8	2.46178E-01	1.58368E-01	2.52294E-02
9	2.49120E-01	1.61213E-01	2.61617E-02
10	2.49546E-01	1.61598E-01	2.62683E-02
11	2.50151E-01	1.62140E-01	2.64199E-02
12	2.50542E-01	1.62490E-01	2.65176E-02
13	2.51336E-01	1.63202E-01	2.67159E-02
14	2.53747E-01	1.65345E-01	2.73022E-02
15	2.56885E-01	1.68091E-01	2.80273E-02
16	2.58764E-01	1.69699E-01	2.84318E-02
17	2.60644E-01	1.71616E-01	2.90585E-02
18	2.63760E-01	1.74960E-01	3.02029E-02
19	2.67558E-01	1.79023E-01	3.15437E-02
20	2.72740E-01	1.84559E-01	3.33080E-02

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21	2.76874E-01	1.89076E-01	3.47586E-02
22	2.77773E-01	1.90231E-01	3.51897E-02
23	2.77252E-01	1.89831E-01	3.51395E-02
24	2.76401E-01	1.89098E-01	3.49777E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.22774E-02	.00000E+00	1.25166E-02	1.04028E-02	3.17762E-03	1.09607E-02	9.98852E-01
2	.00000E+00	1.91850E-01	2.29592E-03	1.66186E-01	6.60876E-02	1.35819E-02	1.14487E-01	1.00004E+00
3	.00000E+00	2.15499E-01	2.60958E-02	1.60773E-01	8.10388E-02	1.55664E-02	1.44988E-01	1.00000E+00
4	.00000E+00	1.24085E-01	3.88498E-02	1.05171E-01	6.78165E-02	7.43247E-03	8.76831E-02	1.00001E+00
5	.00000E+00	1.64899E-01	6.78165E-02	2.59269E-01	9.47669E-02	4.44868E-03	1.33500E-01	9.99992E-01
6	.00000E+00	1.78574E-01	1.34568E-01	6.53782E-01	5.44055E-02	7.04576E-03	2.51483E-01	1.00003E+00
7	.00000E+00	8.83271E-02	9.84097E-02	7.45204E-01	3.63369E-02	7.63574E-03	1.42763E-01	1.00001E+00
8	.00000E+00	1.36205E-02	4.25737E-02	6.30972E-01	2.14889E-02	1.40324E-02	2.06706E-02	1.00004E+00
9	.00000E+00	9.88735E-04	2.17113E-02	5.35049E-01	2.05661E-02	2.31899E-02	-2.11456E-02	9.99991E-01
10	.00000E+00	7.34411E-05	2.06780E-02	4.59547E-01	1.05795E-02	3.60185E-02	-2.59414E-02	1.00001E+00
11	.00000E+00	5.77788E-06	1.06748E-02	4.20560E-01	8.12718E-03	5.84172E-02	-5.58644E-02	1.00001E+00
12	.00000E+00	4.05887E-07	8.12725E-03	2.37908E-01	9.35703E-03	6.38639E-02	-6.50908E-02	9.99995E-01
13	.00000E+00	6.44511E-08	9.35704E-03	1.76672E-01	6.15561E-03	5.84519E-02	-5.52509E-02	1.00001E+00
14	.00000E+00	1.27725E-08	6.15561E-03	1.51883E-01	7.45442E-03	8.08620E-02	-8.21511E-02	1.00000E+00
15	.00000E+00	1.44343E-09	7.54253E-03	8.50837E-02	8.92281E-03	6.68092E-03	-8.09078E-03	1.00190E+00
16	.00000E+00	4.23842E-10	9.09568E-03	4.31122E-02	9.67830E-03	4.51264E-03	-5.11392E-03	1.00146E+00
17	.00000E+00	1.36498E-10	7.83887E-03	1.49801E-02	7.67337E-03	5.73779E-03	-5.58201E-03	1.00072E+00
18	.00000E+00	9.77284E-11	7.29731E-03	1.02207E-02	5.54822E-03	1.75312E-02	-1.57871E-02	1.00022E+00
19	.00000E+00	1.38167E-10	7.70172E-03	2.52994E-02	9.31264E-03	7.78557E-03	-9.40703E-03	1.00062E+00
20	.00000E+00	2.24674E-10	1.07374E-02	1.05506E-01	9.96470E-03	2.54882E-02	-2.47475E-02	1.00091E+00
21	.00000E+00	3.28850E-11	9.51791E-03	2.29079E-02	8.87943E-03	2.18085E-02	-2.11760E-02	1.00036E+00
22	.00000E+00	3.81541E-11	1.27663E-02	4.69140E-02	1.05478E-02	6.34005E-02	-6.11984E-02	1.00029E+00
23	.00000E+00	3.64798E-11	1.57917E-02	1.77040E-01	1.94305E-02	1.23766E-01	-1.27465E-01	1.00042E+00
24	.00000E+00	9.92926E-12	2.34777E-02	1.20853E-01	2.33516E-02	1.22645E-01	-1.22564E-01	1.00030E+00
25	.00000E+00	2.90664E-12	1.99277E-02	4.55053E-02	1.49592E-02	6.73987E-02	-6.26438E-02	1.00022E+00
26	.00000E+00	2.03815E-12	9.74409E-03	3.14246E-02	6.67925E-03	6.05728E-02	-5.78195E-02	1.00017E+00
27	.00000E+00	4.85702E-13	2.09036E-03	4.65127E-03	1.12921E-03	1.68633E-02	-1.59058E-02	1.00009E+00
28	.00000E+00	1.00000E+00	6.30863E-01	5.44978E+00	6.30863E-01	9.37995E-01	6.39953E-02	1.00016E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*df**2	total flux
1	1.70174E-01	1.09607E-02	1.75054E-01	.00000E+00	2.25497E-03	2.60459E-03	.00000E+00	1.19203E-01
2	1.27025E+00	1.14487E-01	1.32142E+00	.00000E+00	1.73374E-05	1.18240E-02	.00000E+00	8.95746E-01
3	1.61311E+00	1.44988E-01	1.67662E+00	.00000E+00	.00000E+00	1.45425E-02	.00000E+00	1.13668E+00
4	1.00226E+00	8.76831E-02	1.04022E+00	.00000E+00	.00000E+00	6.28508E-03	.00000E+00	7.05515E-01
5	1.51516E+00	1.33500E-01	1.57460E+00	.00000E+00	.00000E+00	1.83944E-03	.00000E+00	1.06716E+00
6	2.91569E+00	2.51482E-01	3.02957E+00	.00000E+00	.00000E+00	1.62738E-03	.00000E+00	2.05279E+00
7	2.83676E+00	1.42763E-01	2.90564E+00	.00000E+00	.00000E+00	1.62640E-03	.00000E+00	1.97980E+00
8	2.06815E+00	2.06706E-02	2.07998E+00	.00000E+00	.00000E+00	1.67775E-03	.00000E+00	1.42852E+00
9	1.59821E+00	-2.11456E-02	1.58631E+00	.00000E+00	.00000E+00	2.26989E-03	.00000E+00	1.09549E+00
10	1.45810E+00	-2.59414E-02	1.44483E+00	.00000E+00	.00000E+00	4.83462E-03	.00000E+00	9.98583E-01
11	1.33263E+00	-5.58644E-02	1.30372E+00	.00000E+00	.00000E+00	1.01361E-02	.00000E+00	9.05949E-01
12	8.28860E-01	-6.50908E-02	7.95094E-01	.00000E+00	.00000E+00	1.31558E-02	.00000E+00	5.57221E-01
13	7.00288E-01	-5.52509E-02	6.72015E-01	.00000E+00	.00000E+00	1.35217E-02	.00000E+00	4.70886E-01
14	6.33755E-01	-8.21511E-02	5.91297E-01	.00000E+00	.00000E+00	8.78186E-03	.00000E+00	4.19398E-01
15	3.75527E-01	-8.09078E-03	3.71197E-01	.00000E+00	.00000E+00	2.20594E-03	.00000E+00	2.56839E-01
16	2.08346E-01	-5.11392E-03	2.05792E-01	.00000E+00	.00000E+00	1.50475E-03	.00000E+00	1.42626E-01
17	8.95908E-02	-5.58201E-03	8.66302E-02	.00000E+00	.00000E+00	2.00824E-03	.00000E+00	6.04398E-02
18	6.18088E-02	-1.57871E-02	5.32102E-02	.00000E+00	.00000E+00	2.00612E-03	.00000E+00	3.90798E-02
19	1.36608E-01	-9.40703E-03	1.31732E-01	.00000E+00	.00000E+00	3.19801E-03	.00000E+00	9.20851E-02
20	4.53547E-01	-2.47475E-02	4.41158E-01	.00000E+00	.00000E+00	1.65072E-02	.00000E+00	3.07527E-01
21	1.28750E-01	-2.11760E-02	1.17871E-01	.00000E+00	.00000E+00	1.39008E-02	.00000E+00	8.42857E-02
22	2.40409E-01	-6.11984E-02	2.07574E-01	.00000E+00	.00000E+00	3.96511E-02	.00000E+00	1.52340E-01
23	7.92361E-01	-1.27465E-01	7.27752E-01	.00000E+00	.00000E+00	8.00365E-02	.00000E+00	5.19798E-01
24	5.87945E-01	-1.22564E-01	5.25378E-01	.00000E+00	.00000E+00	7.97521E-02	.00000E+00	3.79811E-01

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25	2.49004E-01	-6.24438E-02	2.16400E-01	.00000E+00	.00000E+00	4.57852E-02	.00000E+00	1.58399E-01
26	1.61105E-01	-5.76195E-02	1.30331E-01	.00000E+00	.00000E+00	4.20884E-02	.00000E+00	9.85518E-02
27	2.61330E-02	-1.59038E-02	1.68656E-02	.00000E+00	.00000E+00	1.18066E-02	.00000E+00	1.41831E-02
28	2.34541E+01	6.39931E-02	2.34271E+01	.00000E+00	2.25290E-03	4.35177E-01	.00000E+00	1.61386E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.85661E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-8.94070E-08	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.35276E-08	1.00000E+00
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	9.99997E-01
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	9.99999E-01
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.47035E-08	9.99999E-01
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-09	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-6.33229E-08	9.99999E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.69758E-01	1.09605E-02	1.70174E-01	1.09607E-02	.00000E+00	.00000E+00	.00000E+00	5.39883E-03
2	1.26624E+00	1.14487E-01	1.27025E+00	1.14487E-01	.00000E+00	.00000E+00	.00000E+00	4.03478E-02
3	1.60830E+00	1.44988E-01	1.61311E+00	1.44988E-01	.00000E+00	.00000E+00	.00000E+00	5.11145E-02
4	9.99990E-01	8.76831E-02	1.00226E+00	8.76831E-02	.00000E+00	.00000E+00	.00000E+00	3.17635E-02
5	1.51133E+00	1.33502E-01	1.51516E+00	1.33502E-01	.00000E+00	.00000E+00	.00000E+00	4.80215E-02
6	2.90884E+00	2.51482E-01	2.91569E+00	2.51482E-01	.00000E+00	.00000E+00	.00000E+00	9.24181E-02
7	2.83299E+00	1.42763E-01	2.83676E+00	1.42763E-01	.00000E+00	.00000E+00	.00000E+00	8.99634E-02
8	2.06739E+00	2.06705E-02	2.06815E+00	2.06705E-02	.00000E+00	.00000E+00	.00000E+00	6.56209E-02
9	1.59898E+00	-2.11456E-02	1.59821E+00	-2.11456E-02	.00000E+00	.00000E+00	.00000E+00	5.07319E-02
10	1.45881E+00	-2.59414E-02	1.45810E+00	-2.59414E-02	.00000E+00	.00000E+00	.00000E+00	4.62847E-02
11	1.33396E+00	-5.58644E-02	1.33243E+00	-5.58644E-02	.00000E+00	.00000E+00	.00000E+00	4.23079E-02
12	8.30697E-01	-6.50904E-02	8.28860E-01	-6.50908E-02	.00000E+00	.00000E+00	.00000E+00	2.63339E-02
13	7.01835E-01	-5.52508E-02	7.00288E-01	-5.52509E-02	.00000E+00	.00000E+00	.00000E+00	2.22492E-02
14	6.36066E-01	-8.21510E-02	6.33755E-01	-8.21511E-02	.00000E+00	.00000E+00	.00000E+00	2.01500E-02
15	3.75758E-01	-8.09079E-03	3.75527E-01	-8.09078E-03	.00000E+00	.00000E+00	.00000E+00	1.19211E-02
16	2.08491E-01	-5.11392E-03	2.08346E-01	-5.11392E-03	.00000E+00	.00000E+00	.00000E+00	6.61423E-03
17	8.95471E-02	-5.58201E-03	8.95708E-02	-5.58201E-03	.00000E+00	.00000E+00	.00000E+00	2.83929E-03
18	6.22598E-02	-1.57871E-02	6.18088E-02	-1.57871E-02	.00000E+00	.00000E+00	.00000E+00	1.96878E-03
19	1.36766E-01	-9.40705E-03	1.36508E-01	-9.40705E-03	.00000E+00	.00000E+00	.00000E+00	4.33614E-03
20	4.54235E-01	-2.47475E-02	4.53547E-01	-2.47475E-02	.00000E+00	.00000E+00	.00000E+00	1.44043E-02
21	1.29332E-01	-2.11760E-02	1.28750E-01	-2.11760E-02	.00000E+00	.00000E+00	.00000E+00	4.09518E-03
22	2.42108E-01	-6.11984E-02	2.40409E-01	-6.11984E-02	.00000E+00	.00000E+00	.00000E+00	7.65708E-03
23	7.95748E-01	-1.27465E-01	7.92361E-01	-1.27465E-01	.00000E+00	.00000E+00	.00000E+00	2.52013E-02
24	5.91151E-01	-1.22564E-01	5.87945E-01	-1.22564E-01	.00000E+00	.00000E+00	.00000E+00	1.87112E-02
25	2.50636E-01	-6.24438E-02	2.49004E-01	-6.24438E-02	.00000E+00	.00000E+00	.00000E+00	7.93895E-03

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26	1.6257E-01	-5.7619E-02	1.6110E-01	-5.7619E-02	.00000E+00	.00000E+00	.00000E+00	5.1368E-03
27	2.6541E-02	-1.5903E-02	2.6133E-02	-1.5903E-02	.00000E+00	.00000E+00	.00000E+00	8.3602E-04
28	2.3449E+01	6.3993E-02	2.3454E+01	6.3993E-02	.00000E+00	.00000E+00	.00000E+00	7.4425E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.7415E-03	2.8047E-03	1.4373E-05	-2.7190E-03	1.0000E+00
2	.00000E+00	.00000E+00	4.8984E-04	2.5801E-02	1.8513E-02	5.1258E-05	-1.8075E-02	1.0000E+00
3	.00000E+00	.00000E+00	2.6288E-03	5.0026E-02	1.5817E-02	1.3682E-04	-1.3324E-02	9.9999E-01
4	.00000E+00	.00000E+00	5.1105E-03	4.2048E-02	5.4442E-03	1.0322E-04	-4.3670E-04	9.9999E-01
5	.00000E+00	.00000E+00	1.1018E-02	8.1580E-02	5.1594E-03	1.5199E-04	5.7060E-03	1.0000E+00
6	.00000E+00	.00000E+00	1.8431E-02	2.3479E-01	3.2104E-03	3.1997E-04	1.4892E-02	1.0000E+00
7	.00000E+00	.00000E+00	1.2270E-02	2.3513E-01	1.1819E-03	3.4468E-04	1.0744E-02	9.9999E-01
8	.00000E+00	.00000E+00	2.1575E-03	1.5851E-01	7.6327E-03	2.9479E-04	-5.7069E-03	1.0000E+00
9	.00000E+00	.00000E+00	7.6697E-03	1.0515E-01	8.7656E-04	1.1088E-03	5.6807E-03	9.9999E-01
10	.00000E+00	.00000E+00	8.7730E-04	8.5514E-02	8.4852E-04	8.3510E-04	-8.0579E-04	9.9999E-01
11	.00000E+00	.00000E+00	8.4813E-04	7.6977E-02	8.6951E-04	1.3568E-03	-1.3565E-03	1.0000E+00
12	.00000E+00	.00000E+00	8.6957E-04	4.6752E-02	8.6981E-04	4.1625E-05	-4.2154E-05	1.0000E+00
13	.00000E+00	.00000E+00	8.6817E-04	3.9520E-02	8.0619E-04	6.0038E-05	3.6209E-06	1.0000E+00
14	.00000E+00	.00000E+00	8.0619E-04	3.6060E-02	6.7956E-04	9.6048E-05	3.0502E-05	1.0000E+00
15	.00000E+00	.00000E+00	7.2579E-04	2.0673E-02	8.4608E-04	8.3021E-05	-2.0478E-04	9.9994E-01
16	.00000E+00	.00000E+00	9.4781E-04	1.0983E-02	9.5159E-04	5.1760E-05	-5.5179E-05	9.9994E-01
17	.00000E+00	.00000E+00	1.0331E-03	4.1269E-03	1.0158E-03	2.4815E-05	-7.6266E-06	9.9999E-01
18	.00000E+00	.00000E+00	1.0690E-03	2.7468E-03	8.8695E-04	1.8810E-05	1.6330E-04	9.9999E-01
19	.00000E+00	.00000E+00	9.1972E-04	6.8429E-03	1.0104E-03	4.4367E-05	-1.3542E-04	9.9998E-01
20	.00000E+00	.00000E+00	1.2106E-03	2.5055E-02	1.0630E-03	1.8598E-04	-3.7508E-05	9.9996E-01
21	.00000E+00	.00000E+00	1.3487E-03	6.0549E-03	1.4405E-03	6.6602E-05	-1.6181E-04	9.9997E-01
22	.00000E+00	.00000E+00	1.8226E-03	1.2657E-02	1.6648E-03	1.4515E-04	1.2882E-05	9.9999E-01
23	.00000E+00	.00000E+00	2.4114E-03	4.2892E-02	3.1489E-03	6.4956E-04	-1.3870E-03	1.0000E+00
24	.00000E+00	.00000E+00	3.8595E-03	3.0176E-02	4.1412E-03	7.0294E-04	-9.8491E-04	1.0000E+00
25	.00000E+00	.00000E+00	3.7288E-03	1.1600E-02	2.9857E-03	3.9455E-04	3.4846E-04	1.0000E+00
26	.00000E+00	.00000E+00	1.5539E-03	8.4123E-03	1.1117E-03	3.6733E-04	7.4833E-05	1.0000E+00
27	.00000E+00	.00000E+00	3.2236E-04	1.5795E-03	8.1374E-07	1.1551E-04	2.0602E-04	1.0000E+00
28	.00000E+00	.00000E+00	8.4869E-02	1.4053E+00	8.4986E-02	7.7487E-03	-7.6421E-03	9.9998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.6815E-01	8.2415E-03	1.6975E-01	1.0960E-02	1.0021E-04	.00000E+00	.00000E+00	3.6682E-02
2	1.2480E+00	9.6411E-02	1.2662E+00	1.1487E-01	.00000E+00	.00000E+00	.00000E+00	2.7227E-01
3	1.5852E+00	1.3166E-01	1.6083E+00	1.4688E-01	.00000E+00	.00000E+00	.00000E+00	3.4581E-01
4	9.8498E-01	8.7246E-02	9.9990E-01	8.7683E-02	.00000E+00	.00000E+00	.00000E+00	2.1497E-01
5	1.4882E+00	1.3920E-01	1.5113E+00	1.3350E-01	.00000E+00	.00000E+00	.00000E+00	3.2498E-01
6	2.8531E+00	2.6637E-01	2.9088E+00	2.5148E-01	.00000E+00	.00000E+00	.00000E+00	6.2540E-01
7	2.8066E+00	1.5360E-01	2.8529E+00	1.4276E-01	.00000E+00	.00000E+00	.00000E+00	6.1110E-01
8	2.0627E+00	1.4899E-02	2.0673E+00	2.0570E-02	.00000E+00	.00000E+00	.00000E+00	4.4764E-01
9	1.6021E+00	-1.5464E-02	1.5980E+00	-2.1456E-02	.00000E+00	.00000E+00	.00000E+00	3.4694E-01
10	1.4631E+00	-2.6747E-02	1.4588E+00	-2.5914E-02	.00000E+00	.00000E+00	.00000E+00	3.1664E-01
11	1.3432E+00	-5.7220E-02	1.3339E+00	-5.5654E-02	.00000E+00	.00000E+00	.00000E+00	2.9014E-01
12	8.4129E-01	-6.5132E-02	8.3069E-01	-6.5030E-02	.00000E+00	.00000E+00	.00000E+00	1.8124E-01
13	7.1088E-01	-5.5247E-02	7.0185E-01	-5.5250E-02	.00000E+00	.00000E+00	.00000E+00	1.5314E-01
14	6.4963E-01	-8.2120E-02	6.3606E-01	-8.2510E-02	.00000E+00	.00000E+00	.00000E+00	1.3988E-01
15	3.7718E-01	-8.2955E-03	3.7575E-01	-8.0909E-03	.00000E+00	.00000E+00	.00000E+00	8.1596E-02
16	2.0233E-01	-5.1691E-03	2.0849E-01	-5.1139E-03	.00000E+00	.00000E+00	.00000E+00	4.5281E-02
17	9.0515E-02	-5.5886E-03	8.9547E-02	-5.5820E-03	.00000E+00	.00000E+00	.00000E+00	1.9509E-02
18	6.4799E-02	-1.5623E-02	6.2259E-02	-1.5787E-02	.00000E+00	.00000E+00	.00000E+00	1.3785E-02
19	1.3829E-01	-9.5426E-03	1.3676E-01	-9.4070E-03	.00000E+00	.00000E+00	.00000E+00	2.9813E-02
20	4.5819E-01	-2.4785E-02	4.5428E-01	-2.4747E-02	.00000E+00	.00000E+00	.00000E+00	9.8895E-02
21	1.3269E-01	-2.1337E-02	1.2833E-01	-2.1176E-02	.00000E+00	.00000E+00	.00000E+00	2.8412E-02
22	2.5169E-01	-6.1185E-02	2.4210E-01	-6.1198E-02	.00000E+00	.00000E+00	.00000E+00	5.3575E-02
23	8.1498E-01	-1.2865E-01	7.9574E-01	-1.2746E-01	.00000E+00	.00000E+00	.00000E+00	1.7467E-01
24	6.0880E-01	-1.2354E-01	5.9165E-01	-1.2256E-01	.00000E+00	.00000E+00	.00000E+00	1.3017E-01
25	2.5921E-01	-6.2093E-02	2.5063E-01	-6.2438E-02	.00000E+00	.00000E+00	.00000E+00	5.5336E-02
26	1.7007E-01	-5.7544E-02	1.6257E-01	-5.7619E-02	.00000E+00	.00000E+00	.00000E+00	3.6132E-02

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27	2.85232E-02	-1.56978E-02	2.65416E-02	-1.59038E-02	.00000E+00	.00000E+00	.00000E+00	5.99467E-03
28	2.34299E+01	5.63513E-02	2.34499E+01	6.39932E-02	1.00211E-04	.00000E+00	.00000E+00	5.07947E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.91195E-03	7.82498E-03	4.17085E-04	-8.24157E-03	9.99949E-01
2	.00000E+00	.00000E+00	4.48981E-03	7.5959E-02	9.98352E-02	1.06965E-03	-9.64112E-02	9.99962E-01
3	.00000E+00	.00000E+00	4.73567E-02	6.88057E-02	1.79019E-01	5.40804E-06	-1.31663E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.00592E-02	4.57825E-02	1.57304E-01	3.22595E-06	-8.72463E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.2960E-01	1.48577E-01	2.68814E-01	3.77207E-06	-1.39208E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.76570E-01	4.55137E-01	5.40954E-01	1.14731E-05	-2.66375E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.52406E-01	7.94995E-01	7.05897E-01	2.53458E-05	-1.53507E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35272E-01	1.00050E+00	7.50197E-01	4.69920E-05	-1.48998E-02	9.99912E-01
9	.00000E+00	.00000E+00	7.40482E-01	9.15515E-01	7.25003E-01	9.58498E-05	1.54650E-02	9.99889E-01
10	.00000E+00	.00000E+00	7.21750E-01	8.66640E-01	6.94857E-01	2.11270E-04	2.67473E-02	9.99896E-01
11	.00000E+00	.00000E+00	6.99883E-01	8.04457E-01	6.42247E-01	4.56830E-04	5.72210E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.59751E-01	4.19864E-01	4.95433E-01	5.96705E-04	6.51325E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.89397E-01	3.37852E-01	4.33247E-01	8.97357E-04	5.52472E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70024E-01	3.23500E-01	3.86444E-01	1.46407E-03	8.21205E-02	9.99988E-01
15	.00000E+00	.00000E+00	2.51764E-01	1.29273E-01	2.42180E-01	1.28804E-03	8.29675E-03	9.99996E-01
16	.00000E+00	.00000E+00	1.67146E-01	5.46799E-02	1.61092E-01	8.85122E-04	5.17011E-03	9.99995E-01
17	.00000E+00	.00000E+00	8.62418E-02	1.54186E-02	8.02224E-02	4.30679E-04	5.58595E-03	1.00008E+00
18	.00000E+00	.00000E+00	7.65626E-02	1.10905E-02	6.06005E-02	3.39526E-04	1.56203E-02	1.00008E+00
19	.00000E+00	.00000E+00	1.26494E-01	3.50070E-02	1.16188E-01	7.67316E-04	9.53673E-03	1.00004E+00
20	.00000E+00	.00000E+00	3.09794E-01	2.49256E-01	2.81818E-01	3.18886E-03	2.47872E-02	1.00000E+00
21	.00000E+00	.00000E+00	1.46271E-01	4.75720E-02	1.23757E-01	1.17872E-03	2.13296E-02	1.00004E+00
22	.00000E+00	.00000E+00	2.78161E-01	1.37742E-01	2.14356E-01	2.61822E-03	6.11882E-02	9.99996E-01
23	.00000E+00	.00000E+00	6.61823E-01	7.94182E-01	5.21518E-01	1.14496E-02	1.28851E-01	1.00001E+00
24	.00000E+00	.00000E+00	6.75005E-01	6.98008E-01	5.38798E-01	1.26543E-02	1.23547E-01	1.00001E+00
25	.00000E+00	.00000E+00	4.34602E-01	2.83951E-01	3.65304E-01	7.20201E-03	6.20944E-02	1.00000E+00
26	.00000E+00	.00000E+00	3.42940E-01	3.01452E-01	2.78431E-01	6.96614E-03	5.75426E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.13989E-01	6.29167E-02	9.58672E-02	2.39401E-03	1.56979E-02	9.99999E-01
28	.00000E+00	.00000E+00	9.16517E+00	9.08132E+00	9.16517E+00	5.66653E-02	-5.63700E-02	9.99988E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.67374E-01	9.51706E-09	1.68154E-01	8.24158E-03	4.32742E-10	.00000E+00	.00000E+00	1.91561E-01
2	1.23737E+00	-5.43483E-08	1.24880E+00	9.64112E-02	.00000E+00	.00000E+00	.00000E+00	1.41672E+00
3	1.56766E+00	3.61414E-08	1.58525E+00	1.31664E-01	.00000E+00	.00000E+00	.00000E+00	1.79544E+00
4	9.71839E-01	3.75537E-08	9.84981E-01	8.72464E-02	.00000E+00	.00000E+00	.00000E+00	1.11344E+00
5	1.46584E+00	5.84733E-08	1.48825E+00	1.39208E-01	.00000E+00	.00000E+00	.00000E+00	1.67980E+00
6	2.81914E+00	-1.85746E-08	2.85315E+00	2.66375E-01	.00000E+00	.00000E+00	.00000E+00	3.23071E+00
7	2.78133E+00	1.01438E-07	2.80668E+00	1.53507E-01	.00000E+00	.00000E+00	.00000E+00	3.18526E+00
8	2.06435E+00	4.74046E-08	2.06427E+00	1.48999E-02	.00000E+00	.00000E+00	.00000E+00	2.36199E+00
9	1.60426E+00	1.44233E-07	1.60213E+00	-1.54648E-02	.00000E+00	.00000E+00	.00000E+00	1.83600E+00
10	1.46795E+00	3.97199E-08	1.46317E+00	-2.67472E-02	.00000E+00	.00000E+00	.00000E+00	1.67973E+00
11	1.35330E+00	7.56448E-08	1.34321E+00	-5.72209E-02	.00000E+00	.00000E+00	.00000E+00	1.54809E+00
12	8.52453E-01	-4.70533E-08	8.41297E-01	-6.51325E-02	.00000E+00	.00000E+00	.00000E+00	9.74828E-01
13	7.19952E-01	-9.27500E-09	7.10886E-01	-5.52472E-02	.00000E+00	.00000E+00	.00000E+00	8.23472E-01
14	6.63269E-01	-2.58478E-08	6.49463E-01	-8.21205E-02	.00000E+00	.00000E+00	.00000E+00	7.58190E-01
15	3.77714E-01	1.17395E-06	3.77182E-01	-8.29558E-03	.00000E+00	.00000E+00	.00000E+00	4.32571E-01
16	2.09715E-01	1.01414E-06	2.09336E-01	-5.16910E-03	.00000E+00	.00000E+00	.00000E+00	2.40820E-01
17	9.13698E-02	-3.68692E-06	9.04515E-02	-5.58964E-03	.00000E+00	.00000E+00	.00000E+00	1.04515E-01
18	6.76043E-02	-3.45730E-06	6.47998E-02	-1.56238E-02	.00000E+00	.00000E+00	.00000E+00	7.71151E-02
19	1.39831E-01	-5.72888E-06	1.38259E-01	-9.54265E-03	.00000E+00	.00000E+00	.00000E+00	1.59953E-01
20	4.62087E-01	2.19781E-06	4.58159E-01	-2.47850E-02	.00000E+00	.00000E+00	.00000E+00	5.28690E-01
21	1.36618E-01	-8.18188E-06	1.32694E-01	-2.13378E-02	.00000E+00	.00000E+00	.00000E+00	1.55996E-01
22	2.63122E-01	2.64454E-06	2.51697E-01	-6.11855E-02	.00000E+00	.00000E+00	.00000E+00	3.00882E-01
23	8.41693E-01	-5.58053E-07	8.14928E-01	-1.28852E-01	.00000E+00	.00000E+00	.00000E+00	9.60176E-01
24	6.38542E-01	-2.05871E-06	6.08804E-01	-1.23549E-01	.00000E+00	.00000E+00	.00000E+00	7.26469E-01
25	2.75942E-01	-8.83322E-07	2.59214E-01	-6.20953E-02	.00000E+00	.00000E+00	.00000E+00	3.13032E-01
26	1.88983E-01	-2.05815E-06	1.70078E-01	-5.75446E-02	.00000E+00	.00000E+00	.00000E+00	2.12332E-01
27	3.48789E-02	1.46157E-07	2.85232E-02	-1.56978E-02	.00000E+00	.00000E+00	.00000E+00	3.85081E-02

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28	2.34641E+01	-1.91602E-05	2.34239E+01	5.63513E-02	4.32742E-10	.00000E+00	.00000E+00	2.68450E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.22774E-02	.00000E+00	2.21701E-02	2.10525E-02	3.60903E-03	9.51706E-09	9.98826E-01
2	.00000E+00	1.91850E-01	7.27557E-03	2.67948E-01	1.84434E-01	1.47028E-02	-5.43483E-08	1.00002E+00
3	.00000E+00	2.15499E-01	7.60814E-02	2.79605E-01	2.75875E-01	1.57086E-02	3.61414E-08	9.99986E-01
4	.00000E+00	1.24085E-01	1.14020E-01	1.99002E-01	2.30566E-01	7.53892E-03	3.75537E-08	1.00000E+00
5	.00000E+00	1.64899E-01	2.08442E-01	4.88521E-01	3.68741E-01	4.60445E-03	5.84933E-08	9.99989E-01
6	.00000E+00	1.78374E-01	4.27561E-01	1.34390E+00	5.98550E-01	7.37721E-03	-1.89576E-08	1.00001E+00
7	.00000E+00	8.83271E-02	6.63086E-01	1.77534E+00	7.43416E-01	8.00577E-03	1.01438E-07	9.99989E-01
8	.00000E+00	1.36205E-02	7.80003E-01	1.78978E+00	7.79313E-01	1.43741E-02	4.74046E-08	9.99920E-01
9	.00000E+00	9.88735E-04	7.69859E-01	1.55572E+00	7.46535E-01	2.43945E-02	1.44253E-07	9.99878E-01
10	.00000E+00	7.34411E-05	7.43306E-01	1.40770E+00	7.06389E-01	3.70648E-02	3.97199E-08	9.99897E-01
11	.00000E+00	5.77788E-06	7.11406E-01	1.30199E+00	6.51244E-01	6.02097E-02	7.56448E-08	9.99942E-01
12	.00000E+00	4.05887E-07	5.68147E-01	7.04020E-01	5.03660E-01	6.45029E-02	-4.70533E-08	9.99974E-01
13	.00000E+00	6.44511E-08	4.99603E-01	5.54034E-01	4.40209E-01	5.94088E-02	-9.27500E-09	9.99971E-01
14	.00000E+00	1.27725E-08	4.76985E-01	5.11443E-01	3.94578E-01	8.24122E-02	-2.58478E-08	9.99989E-01
15	.00000E+00	1.44343E-09	2.60080E-01	2.35080E-01	2.51946E-01	8.05198E-03	1.17395E-06	1.00011E+00
16	.00000E+00	4.23842E-10	1.77189E-01	1.08776E-01	1.71720E-01	5.44952E-03	1.01414E-06	1.00011E+00
17	.00000E+00	1.36498E-10	9.51139E-02	3.45256E-02	8.89116E-02	6.19540E-03	-3.68692E-06	1.00013E+00
18	.00000E+00	9.77284E-11	8.49290E-02	2.40580E-02	6.70356E-02	1.78895E-02	-3.45730E-06	1.00009E+00
19	.00000E+00	1.38167E-10	1.35115E-01	6.71547E-02	1.26508E-01	8.59726E-03	-5.72888E-06	1.00011E+00
20	.00000E+00	2.26674E-10	3.21742E-01	3.79767E-01	2.92834E-01	2.88629E-02	2.19781E-06	1.00010E+00
21	.00000E+00	3.28860E-11	1.57138E-01	7.65254E-02	1.34080E-01	2.30489E-02	-8.18188E-06	1.00011E+00
22	.00000E+00	3.81541E-11	2.92750E-01	1.97113E-01	2.26669E-01	6.61639E-02	2.64454E-06	1.00005E+00
23	.00000E+00	3.64796E-11	6.80026E-01	1.01413E+00	5.44097E-01	1.35865E-01	-5.58053E-07	1.00010E+00
24	.00000E+00	9.95926E-12	7.02342E-01	8.49118E-01	5.66291E-01	1.36003E-01	-2.05877E-06	1.00007E+00
25	.00000E+00	2.90664E-12	4.58258E-01	3.41057E-01	3.83347E-01	7.49903E-02	-8.83322E-07	1.00004E+00
26	.00000E+00	2.03815E-12	3.54258E-01	3.41288E-01	2.86222E-01	6.80043E-02	-2.05815E-06	1.00004E+00
27	.00000E+00	4.85702E-13	1.16352E-01	6.91474E-02	9.69772E-02	1.98729E-02	1.46157E-07	1.00001E+00
28	.00000E+00	1.00000E+00	9.88100E+00	1.52859E+01	9.88100E+00	1.00241E+00	-1.90419E-05	9.99997E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r4n rate	fiss rate	flux*dr**2	total flux
1	1.67374E-01	9.51706E-09	1.75054E-01	.00000E+00	2.33518E-03	2.60459E-03	.00000E+00	3.52741E-01
2	1.25737E+00	-5.43483E-08	1.32142E+00	.00000E+00	1.73374E-05	1.18240E-02	.00000E+00	2.62499E+00
3	1.56766E+00	3.61414E-08	1.67662E+00	.00000E+00	.00000E+00	1.45423E-02	.00000E+00	3.32905E+00
4	9.71839E-01	3.75537E-08	1.04022E+00	.00000E+00	.00000E+00	6.28508E-03	.00000E+00	2.06570E+00
5	1.46584E+00	5.84933E-08	1.57460E+00	.00000E+00	.00000E+00	1.83944E-03	.00000E+00	3.11997E+00
6	2.81914E+00	-1.89576E-08	3.02957E+00	.00000E+00	.00000E+00	1.62739E-03	.00000E+00	6.00132E+00
7	2.78133E+00	1.01438E-07	2.90454E+00	.00000E+00	.00000E+00	1.62640E-03	.00000E+00	5.86612E+00
8	2.06435E+00	4.74046E-08	2.07996E+00	.00000E+00	.00000E+00	1.67775E-03	.00000E+00	4.30577E+00
9	1.60426E+00	1.44253E-07	1.58631E+00	.00000E+00	.00000E+00	2.28980E-03	.00000E+00	3.32917E+00
10	1.46795E+00	3.97199E-08	1.44483E+00	.00000E+00	.00000E+00	4.83462E-03	.00000E+00	3.04124E+00
11	1.35330E+00	7.56448E-08	1.30372E+00	.00000E+00	.00000E+00	1.01361E-02	.00000E+00	2.78650E+00
12	8.52653E-01	-4.70533E-08	7.95094E-01	.00000E+00	.00000E+00	1.31558E-02	.00000E+00	1.73963E+00
13	7.19952E-01	-9.27500E-09	6.72015E-01	.00000E+00	.00000E+00	1.35217E-02	.00000E+00	1.46975E+00
14	6.63269E-01	-2.58478E-08	5.91297E-01	.00000E+00	.00000E+00	8.78186E-03	.00000E+00	1.33712E+00
15	3.77714E-01	1.17395E-06	3.71197E-01	.00000E+00	.00000E+00	2.20594E-03	.00000E+00	7.82927E-01
16	2.09915E-01	1.01414E-06	2.05792E-01	.00000E+00	.00000E+00	1.50475E-03	.00000E+00	4.34640E-01
17	9.13696E-02	-3.68692E-06	8.66302E-02	.00000E+00	.00000E+00	2.00824E-03	.00000E+00	1.87304E-01
18	6.76043E-02	-3.45730E-06	5.32102E-02	.00000E+00	.00000E+00	2.00512E-03	.00000E+00	1.31946E-01
19	1.39831E-01	-5.72888E-06	1.31732E-01	.00000E+00	.00000E+00	3.19801E-03	.00000E+00	2.86196E-01
20	4.62057E-01	2.19781E-06	4.41158E-01	.00000E+00	.00000E+00	1.65072E-02	.00000E+00	9.49816E-01
21	1.36618E-01	-8.18188E-06	1.17871E-01	.00000E+00	.00000E+00	1.39003E-02	.00000E+00	2.72790E-01
22	2.63122E-01	2.64454E-06	2.07574E-01	.00000E+00	.00000E+00	3.96511E-02	.00000E+00	5.13655E-01
23	8.61693E-01	-5.58053E-07	7.27752E-01	.00000E+00	.00000E+00	8.00565E-02	.00000E+00	1.67984E+00
24	6.38542E-01	-2.05877E-06	5.25378E-01	.00000E+00	.00000E+00	7.97521E-02	.00000E+00	1.25517E+00
25	2.75943E-01	-8.83322E-07	2.16400E-01	.00000E+00	.00000E+00	4.57852E-02	.00000E+00	5.34696E-01
26	1.88682E-01	-2.05815E-06	1.30331E-01	.00000E+00	.00000E+00	4.20884E-02	.00000E+00	3.52153E-01
27	3.48789E-02	1.46157E-07	1.68556E-02	.00000E+00	.00000E+00	1.18064E-02	.00000E+00	5.95219E-02
28	2.34641E+01	-1.91602E-05	2.34271E+01	.00000E+00	2.35251E-03	4.35177E-01	.00000E+00	4.88072E+01

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- elapsed time .02 min.
0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.
1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.35140E-03	2.47475E-02	3.15079E-02	1.90954E-02	2.92078E-02	5.58110E-02	3.17882E-02	4.62073E-03
2	3.68453E-03	3.84858E-02	4.87395E-02	2.94756E-02	4.48780E-02	8.45382E-02	4.79912E-02	6.94858E-03
3	2.99390E-03	3.28340E-02	4.30313E-02	2.71787E-02	4.23465E-02	8.03980E-02	4.59882E-02	5.55032E-03
4	1.05346E-03	1.20820E-02	1.64948E-02	1.09253E-02	1.74268E-02	3.33499E-02	1.92584E-02	1.99253E-03
5	1.71392E-03	1.88345E-02	2.47151E-02	1.56028E-02	2.43366E-02	4.64582E-02	2.66432E-02	3.30782E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.73259E-03	5.81295E-03	1.24849E-02	1.44916E-02	1.28077E-02	1.81939E-02	1.83083E-03	1.14541E-03
2	7.10833E-03	8.72049E-03	1.87794E-02	2.18808E-02	1.85732E-02	2.76159E-02	2.71997E-03	1.71908E-03
3	5.71085E-03	8.18237E-03	1.75632E-02	2.02512E-02	1.71671E-02	2.55214E-02	2.54517E-03	1.59734E-03
4	1.90219E-03	3.32957E-03	7.13284E-03	8.12566E-03	6.98056E-03	1.02636E-02	1.11012E-03	6.69828E-04
5	3.31430E-03	4.73831E-03	1.01667E-02	1.17014E-02	9.95242E-03	1.47398E-02	1.52246E-03	9.39700E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.24160E-03	3.40662E-03	2.11873E-03	5.53585E-03	4.65845E-03	1.33223E-02	2.81858E-02	2.69236E-02
2	1.87639E-03	5.30680E-03	3.16215E-03	8.31885E-03	7.11814E-03	2.05725E-02	4.28491E-02	4.12017E-02
3	1.73551E-03	4.87994E-03	2.94379E-03	7.69526E-03	6.60366E-03	1.90131E-02	3.98161E-02	3.82520E-02
4	7.00612E-04	1.92966E-03	1.20433E-03	3.13711E-03	2.65565E-03	7.62001E-03	1.63514E-02	1.56410E-02
5	1.00523E-03	2.77685E-03	1.71774E-03	4.48411E-03	3.79719E-03	1.08858E-02	2.31125E-02	2.21147E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.36428E-02	1.24020E-02	3.25945E-03	3.84827E-01
2	2.09914E-02	1.93696E-02	5.34630E-03	5.87971E-01
3	1.93504E-02	1.78922E-02	4.91070E-03	5.41912E-01
4	7.84082E-03	7.13736E-03	1.79954E-03	2.18080E-01
5	1.11587E-02	1.01850E-02	2.66043E-03	3.12590E-01

1 400 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.73149E-01	1.30112E+00	1.65109E+00	1.02480E+00	1.55011E+00	2.98179E+00	2.87576E+00	2.07500E+00
2	1.69963E-01	1.26825E+00	1.61065E+00	1.00089E+00	1.51319E+00	2.91216E+00	2.85481E+00	2.06776E+00
3	1.68800E-01	1.25632E+00	1.59565E+00	9.91924E-01	1.49952E+00	2.88571E+00	2.81975E+00	2.06548E+00
4	1.67370E-01	1.23781E+00	1.56870E+00	9.72832E-01	1.46767E+00	2.82272E+00	2.78300E+00	2.06370E+00
5	1.69470E-01	1.26114E+00	1.59940E+00	9.92436E-01	1.49894E+00	2.88325E+00	2.81830E+00	2.06769E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59126E+00	1.45049E+00	1.31594E+00	8.05895E-01	6.83985E-01	6.09198E-01	3.73073E-01	2.06881E-01
2	1.59860E+00	1.45846E+00	1.33321E+00	8.29800E-01	7.01087E-01	6.34941E-01	3.75641E-01	2.08419E-01
3	1.60088E+00	1.46107E+00	1.33877E+00	8.36282E-01	7.06612E-01	6.43135E-01	3.76492E-01	2.08934E-01
4	1.60414E+00	1.46760E+00	1.35259E+00	8.51721E-01	7.19479E-01	6.62442E-01	3.77944E-01	2.09971E-01
5	1.59945E+00	1.46112E+00	1.33873E+00	8.35779E-01	7.06119E-01	6.42401E-01	3.76144E-01	2.08817E-01

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.77912E-02	5.67655E-02	1.33770E-01	4.46408E-01	1.22425E-01	2.21282E-01	7.56026E-01	5.51696E-01
2	8.94680E-02	6.20576E-02	1.36638E-01	4.53889E-01	1.29042E-01	2.41279E-01	7.94111E-01	5.89604E-01
3	9.00218E-02	6.36059E-02	1.37564E-01	4.56321E-01	1.31102E-01	2.47207E-01	8.05973E-01	6.00657E-01
4	9.13165E-02	6.73765E-02	1.39753E-01	4.61924E-01	1.36296E-01	2.62186E-01	8.38920E-01	6.34726E-01
5	8.99875E-02	6.33952E-02	1.37499E-01	4.56086E-01	1.31058E-01	2.46779E-01	8.07058E-01	6.03028E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.30083E-01	1.43152E-01	2.06017E-02
2	2.49847E-01	1.61866E-01	2.63436E-02
3	2.55330E-01	1.66721E-01	2.76604E-02
4	2.73501E-01	1.85517E-01	3.36431E-02
5	2.56887E-01	1.69187E-01	2.85965E-02

0flux disadvantage factors (zone average/cell average-flux)

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02171E+00	1.03170E+00	1.03252E+00	1.03261E+00	1.03413E+00	1.03417E+00	1.03059E+00	1.00354E+00
2	1.00297E+00	1.00562E+00	1.00704E+00	1.00852E+00	1.00950E+00	1.01003E+00	1.00589E+00	1.00008E+00
3	9.96045E-01	9.96177E-01	9.97657E-01	9.99484E-01	1.00038E+00	1.00085E+00	1.00051E+00	9.98934E-01

INFORMATION ONLY

4	9.87609E-01	9.81500E-01	9.80807E-01	9.80247E-01	9.79134E-01	9.79005E-01	9.87477E-01	9.98073E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94874E-01	9.92725E-01	9.82973E-01	9.68429E-01	9.88653E-01	9.48313E-01	9.91825E-01	9.90727E-01
2	9.99444E-01	9.98179E-01	9.95877E-01	9.92864E-01	9.92873E-01	9.88386E-01	9.98656E-01	9.98094E-01
3	1.00088E+00	9.99960E-01	1.00003E+00	1.00060E+00	1.00070E+00	1.00114E+00	1.00092E+00	1.00066E+00
4	1.00293E+00	1.00443E+00	1.01085E+00	1.01907E+00	1.01892E+00	1.03120E+00	1.00478E+00	1.00552E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.75594E-01	8.95451E-01	9.72881E-01	9.78781E-01	9.34160E-01	8.96684E-01	9.35529E-01	9.14875E-01
2	9.94227E-01	9.78616E-01	9.98718E-01	9.95182E-01	9.84616E-01	9.77703E-01	9.83957E-01	9.77739E-01
3	1.00088E+00	1.00340E+00	1.00047E+00	1.00051E+00	1.00083E+00	1.00173E+00	9.98656E-01	9.98068E-01
4	1.01477E+00	1.06284E+00	1.01640E+00	1.01280E+00	1.03997E+00	1.06243E+00	1.03948E+00	1.05256E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 25	grp. 26	grp. 27
1	8.95655E-01	8.46115E-01	7.20428E-01
2	9.72598E-01	9.56730E-01	9.21219E-01
3	9.98559E-01	9.85427E-01	9.67266E-01
4	1.06467E+00	1.09652E+00	1.17655E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

Ocell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.35140E-03	2.47475E-02	3.15079E-02	1.90954E-02	2.98078E-02	5.58110E-02	3.17882E-02	4.62073E-03
2	3.68653E-03	3.84858E-02	4.87593E-02	2.94756E-02	4.48780E-02	8.45382E-02	4.79912E-02	6.94858E-03
3	2.99390E-03	3.28340E-02	4.30313E-02	2.71787E-02	4.25468E-02	8.03980E-02	4.59882E-02	5.55032E-03
4	1.03346E-03	1.20820E-02	1.66948E-02	1.09253E-02	1.74268E-02	3.33499E-02	1.92984E-02	1.99253E-03
5	1.71392E-03	1.88345E-02	2.47151E-02	1.56028E-02	2.43346E-02	4.64582E-02	2.66432E-02	3.30788E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.73259E-03	5.81298E-03	1.24849E-02	1.44916E-02	1.29077E-02	1.81939E-02	1.83083E-03	1.14641E-03
2	7.10833E-03	8.72049E-03	1.87794E-02	2.18800E-02	1.85732E-02	2.76159E-02	2.71977E-03	1.71908E-03
3	5.71039E-03	8.18237E-03	1.75692E-02	2.02512E-02	1.71671E-02	2.55214E-02	2.54517E-03	1.59734E-03
4	1.90219E-03	3.32357E-03	7.13284E-03	8.12556E-03	6.98056E-03	1.02636E-02	1.11012E-03	6.68828E-04
5	3.31430E-03	4.73831E-03	1.01667E-02	1.17014E-02	9.95242E-03	1.47398E-02	1.52346E-03	9.39700E-04

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.24160E-03	3.40663E-03	2.11873E-03	5.53585E-03	4.65845E-03	1.33223E-02	2.81858E-02	2.69236E-02
2	1.87639E-03	5.30680E-03	3.16215E-03	8.31892E-03	7.11816E-03	2.05725E-02	4.28491E-02	4.12017E-02
3	1.73551E-03	4.87994E-03	2.94395E-03	7.66526E-03	6.60366E-03	1.90131E-02	3.98161E-02	3.82520E-02
4	7.00612E-04	1.92966E-03	1.20433E-03	3.13711E-03	2.65566E-03	7.62001E-03	1.63514E-02	1.56410E-02
5	1.00523E-03	2.77685E-03	1.71774E-03	4.48411E-03	3.79719E-03	1.08898E-02	2.31129E-02	2.21147E-02

Ozone	grp. 25	grp. 26	grp. 27
1	1.36428E-02	1.24020E-02	3.25945E-03
2	2.09914E-02	1.93696E-02	5.34630E-03
3	1.95504E-02	1.78922E-02	4.91070E-03
4	7.84082E-03	7.13736E-03	1.79954E-03
5	1.11587E-02	1.01850E-02	2.66043E-03

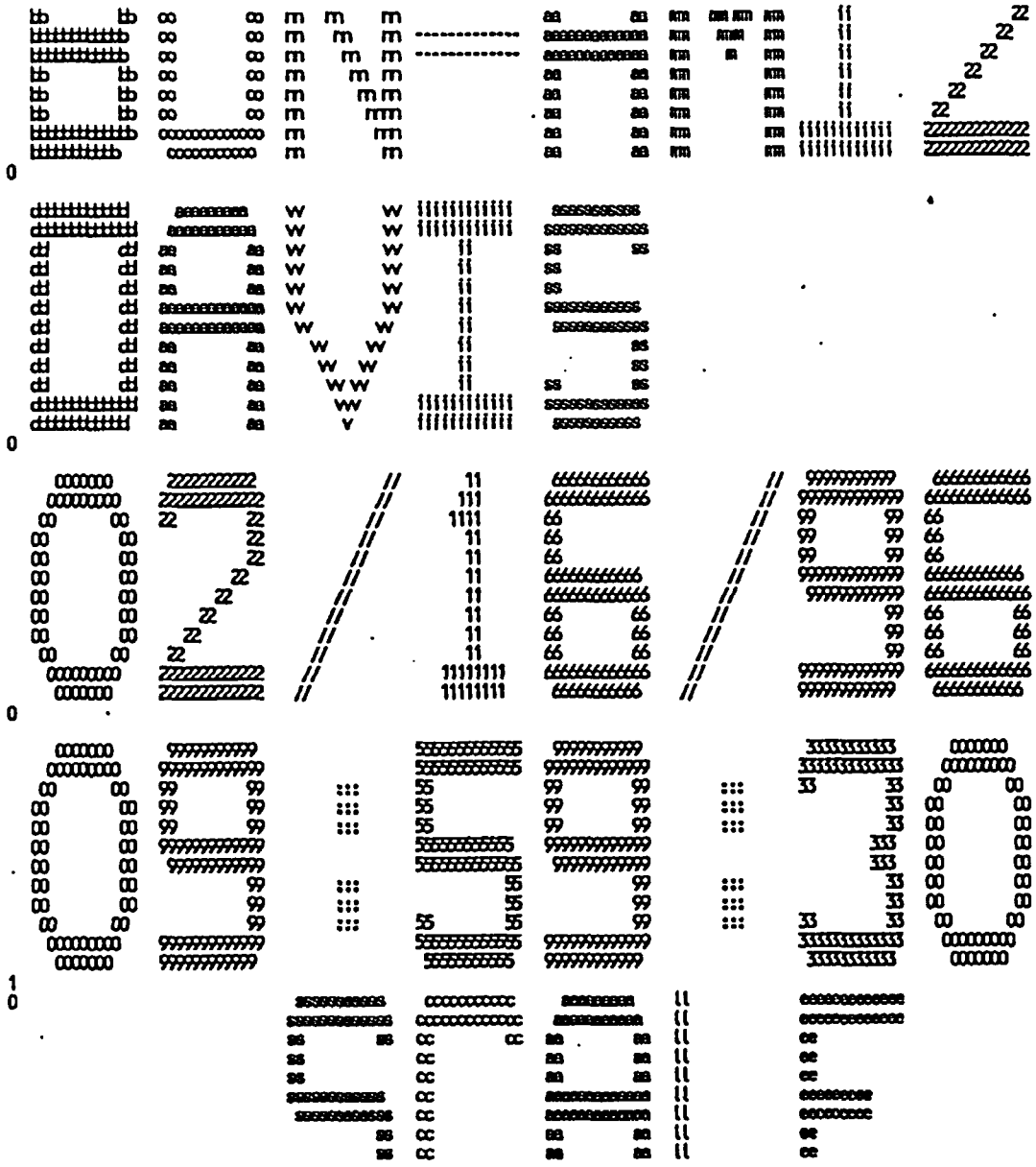
Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

- elapsed time .03 min.

Orequested parm=halt8,skipcellwt,skipshipdata
pass= 3, exec halts after pass 8

```
1 tttttttttttttb     cccccccccccc   mm        mm            aaaaaaaa    mm        mm  iiiiiiiiiiii   zzzzzzzzzz
  tttttttttttttb     cccccccccccc   mm        mm            aaaaaaaaaa  mmm       mmm iiiiiiiiiiii   zzzzzzzzzz
  tb        tb       cc        cc   mmm       m             aa      aa  mmmm     mmmm  ii         zz        zz
  tb        tb       cc        cc   mmm       m             aa      aa  mm mm   mm mm  ii         zz        zz
```

INFORMATION ONLY



INFORMATION ONLY

```
ss       ss  cc       cc  aa       aa  ll          ee
sssssssssss  cccccccccccc  aa       aa  lllllllllllll  eeeeeeeeeeee
 sssssssss    cccccccccc   aa       aa  lllllllllllll  eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0c008

creation date: 04/27/95

library: /neutronics/scale/exe

this is not a scale configuration controlled code

jobname: davis

date of execution: 02/16/96

time of execution: 09:59:30

```
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0ig--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0izm--number of zones or material regions                    4
0ms--mixing table length                                    70
0ibl--shielded cross section edit option (0/1--no/yes)       0
0ibr--bondarenko factor edit option (0/1--no/yes)            0
0iscpt--dancoff factor option                                0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has    70 entries.
0       4q array has    70 entries.
```

INFORMATION ONLY

```
0      5q array has    70 entries.
0      6q array has     4 entries.
0      7q array has     4 entries.
0      8q array has     4 entries.
0      9q array has     4 entries.
0     10q array has    70 entries.
0     11q array has     4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
```

entry	mixture	isotope	number density	new identifier
1	3	8016	2.09710E-02	201
2	3	1001	4.19420E-02	202
3	3	5010	3.81515E-06	203
4	3	5011	1.54884E-05	204
5	2	40302	4.25154E-02	205
6	1	92235	1.78785E-04	200006
7	1	92234	1.66922E-06	200007
8	1	92236	1.01900E-05	200008
9	1	92238	7.26421E-03	200009
10	1	8016	1.50611E-02	200010
11	1	8016	1.15315E-02	200011
12	1	36083	2.39826E-07	200012
13	1	36085	1.15802E-07	200013
14	1	38090	2.60028E-06	200014
15	1	39089	1.81064E-06	200015
16	1	42095	2.02470E-06	200016
17	1	40093	1.97826E-06	200017
18	1	40094	3.06390E-06	200018
19	1	40095	6.95210E-07	200019
20	1	41094	1.19135E-12	200020
21	1	43099	2.96592E-06	200021
22	1	45103	1.45725E-06	200022
23	1	45105	5.54075E-09	200023
24	1	44101	2.61262E-06	200024
25	1	44105	3.77085E-07	200025
26	1	46105	8.23960E-07	200026
27	1	46108	1.79948E-07	200027
28	1	47109	1.29418E-07	200028
29	1	51124	3.32722E-11	200029
30	1	54131	1.37688E-06	200030
31	1	54132	2.31720E-06	200031
32	1	54135	2.18632E-09	200032
33	1	54136	4.97240E-06	200033
34	1	55134	7.36175E-08	200034
35	1	55135	1.55832E-06	200035
36	1	55137	3.13142E-06	200036
37	1	56136	1.42899E-08	200037
38	1	57139	3.11998E-06	200038
39	1	59141	2.51929E-06	200039
40	1	59143	1.30169E-07	200040
41	1	58144	1.65612E-06	200041
42	1	60143	2.56634E-06	200042
43	1	60145	1.86380E-06	200043
44	1	61147	8.21699E-07	200044
45	1	61148	2.25854E-09	200045
46	1	60147	4.38963E-08	200046
47	1	62147	1.21021E-07	200047
48	1	62149	2.48712E-08	200048
49	1	62150	5.79478E-07	200049
50	1	62151	9.50067E-08	200050
51	1	62152	2.80778E-07	200051

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52	1	64155	2.63991E-10	200052
53	1	63153	1.30668E-07	200053
54	1	63154	1.53097E-08	200054
55	1	63155	1.69086E-08	200055
56	1	40802	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	3.23773E-06	200060
61	1	95237	4.09226E-07	200061
62	1	94238	2.63252E-08	200062
63	1	94239	2.16321E-06	200063
64	1	94240	2.36745E-06	200064
65	1	94241	8.29987E-07	200065
66	1	94242	3.87820E-08	200066
67	1	95241	1.12558E-08	200067
68	1	95243	1.41059E-09	200068
69	1	96244	5.44610E-11	200069
70	1	999	3.30753E-21	200070

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.29032E+01	0
3	3	8.14000E-01	6.07600E+02	3.54862E+00	0
4	1	2.96100E+00	9.75000E+02	2.32883E-01	0

8067 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonsai will copy from logical 12 to logical 1

Ocopy	999	1/v cross sectio	from log 12 to log 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 12 to log 18	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 18 to log 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 18 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 12 to log 18	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 18 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 18 to log 1	bondarenko trigger	0
Ocopy	5011	boron-11	from log 12 to log 18	bondarenko trigger	0
Ocopy	5011	boron-11	from log 18 to log 1	bondarenko trigger	0
Ocopy	5011	boron-11	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 12 to log 18	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	36083	kr-83	from log 12 to log 1	bondarenko trigger	0
Ocopy	36085	kr-85	from log 12 to log 1	bondarenko trigger	0
Ocopy	38090	sr-90	from log 12 to log 1	bondarenko trigger	0
Ocopy	39089	y-89	from log 12 to log 1	bondarenko trigger	0
Ocopy	40093	zr-93	from log 12 to log 1	bondarenko trigger	0
Ocopy	40094	zr-94	from log 12 to log 1	bondarenko trigger	0
Ocopy	40095	zr-95	from log 12 to log 1	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 12 to log 18	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 18 to log 1	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 18 to log 1	bondarenko trigger	0
Ocopy	41094	nb-94	from log 12 to log 1	bondarenko trigger	0
Ocopy	42095	mo-95	from log 12 to log 1	bondarenko trigger	0
Ocopy	43099	tc-99	from log 12 to log 1	bondarenko trigger	0
Ocopy	44101	ru-101	from log 12 to log 1	bondarenko trigger	0
Ocopy	44106	ru-106	from log 12 to log 1	bondarenko trigger	0
Ocopy	45103	rh-103	from log 12 to log 1	bondarenko trigger	0
Ocopy	45105	rh-105	from log 12 to log 1	bondarenko trigger	0
Ocopy	46105	pd-105	from log 12 to log 1	bondarenko trigger	0
Ocopy	46108	pd-108	from log 12 to log 1	bondarenko trigger	0

INFORMATION ONLY

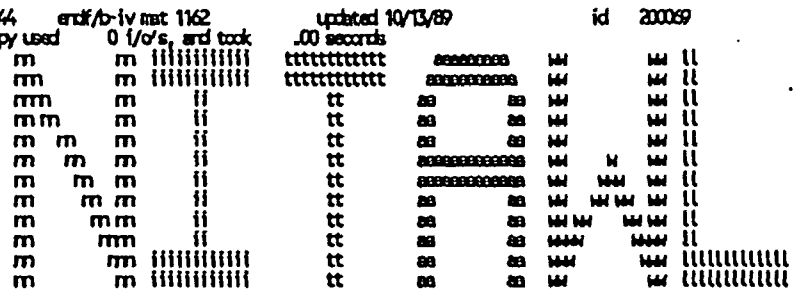
```
0copy   47109  silver-109        from log 12 to log  1   bondarenko trigger 0
0copy   51124  sb-124            from log 12 to log  1   bondarenko trigger 0
0copy   54131  xe-131            from log 12 to log  1   bondarenko trigger 0
0copy   54132  xe-132            from log 12 to log  1   bondarenko trigger 0
0copy   54135  xenon-135         from log 12 to log  1   bondarenko trigger 0
0copy   54136  xe-136            from log 12 to log  1   bondarenko trigger 0
0copy   55133  cesium-133        from log 12 to log  1   bondarenko trigger 0
0copy   55134  cs-134            from log 12 to log  1   bondarenko trigger 0
0copy   55135  cs-135            from log 12 to log  1   bondarenko trigger 0
0copy   55137  cs-137            from log 12 to log  1   bondarenko trigger 0
0copy   56136  ba-136            from log 12 to log  1   bondarenko trigger 0
0copy   57139  la-139            from log 12 to log  1   bondarenko trigger 0
0copy   58144  ce-144            from log 12 to log  1   bondarenko trigger 0
0copy   59141  pr-141            from log 12 to log  1   bondarenko trigger 0
0copy   59143  pr-143            from log 12 to log  1   bondarenko trigger 0
0copy   60143  nd-143            from log 12 to log  1   bondarenko trigger 0
0copy   60145  nd-145            from log 12 to log  1   bondarenko trigger 0
0copy   60147  nd-147            from log 12 to log  1   bondarenko trigger 0
0copy   61147  pm-147            from log 12 to log  1   bondarenko trigger 0
0copy   61148  pm-148            from log 12 to log  1   bondarenko trigger 0
0copy   62147  sm-147            from log 12 to log  1   bondarenko trigger 0
0copy   62149  sm-149            from log 12 to log  1   bondarenko trigger 0
0copy   62150  sm-150            from log 12 to log  1   bondarenko trigger 0
0copy   62151  sm-151            from log 12 to log  1   bondarenko trigger 0
0copy   62152  sm-152            from log 12 to log  1   bondarenko trigger 0
0copy   63153  eu-153            from log 12 to log  1   bondarenko trigger 0
0copy   63154  eu-154            from log 12 to log  1   bondarenko trigger 0
0copy   63155  eu-155            from log 12 to log  1   bondarenko trigger 0
0copy   64155  gd-155            from log 12 to log  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigp   from log 12 to log  1   bondarenko trigger 0
0copy   92235  uranium-235       from log 12 to log  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigp   from log 12 to log  1   bondarenko trigger 0
0copy   92238  uranium-238       from log 12 to log  1   bondarenko trigger 0
0copy   93237  neptunium-237     from log 12 to log  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigp  from log 12 to log  1   bondarenko trigger 0
0copy   94239  plutonium-239     from log 12 to log  1   bondarenko trigger 0
0copy   94240  plutonium-240     from log 12 to log  1   bondarenko trigger 0
0copy   94241  plutonium-241     from log 12 to log  1   bondarenko trigger 0
0copy   94242  plutonium-242     from log 12 to log  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigp  from log 12 to log  1   bondarenko trigger 0
0copy   95243  am-243 1057 218   from log 12 to log  1   bondarenko trigger 0
0copy   96244  curium-244        from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated        9/16/93
              l.m.petrie . -    ornl
        tape id                          4321        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     1
                                table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                          id   200070
       hydrogen        endf/b-iv mat 1269/thml002   updated 10/13/89              id      202
       hydrogen        endf/b-iv mat 1269/thml002   updated 10/13/89              id   200057
      b-10 1273 218ngp 042375 p-3 293k                                            id      203
      b-10 1273 218ngp 042375 p-3 293k                                            id   200058
       boron-11        endf/b-iv mat 1160           updated 10/13/89              id      204
       boron-11        endf/b-iv mat 1160           updated 10/13/89              id   200059
       oxygen-16       endf/b-iv mat 1276           updated 10/13/89              id      201
       oxygen-16       endf/b-iv mat 1276           updated 10/13/89              id   200010
```

INFORMATION ONLY

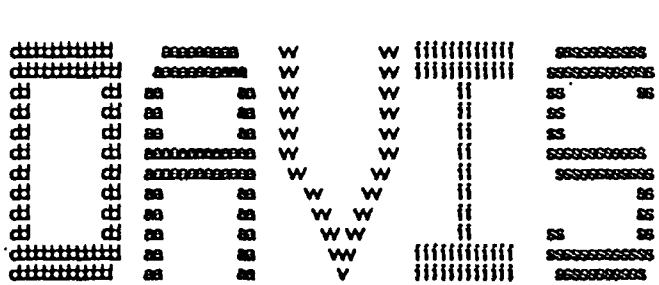
```
oxygen-16      endf/b-iv mat 1276          updated 10/13/89        id  200011
kr-83          mt=102,103,105,105,106,107  updated 10/13/89        id  200012
kr-85            mt= 102                                            id  200013
sr-90          mt=102                      updated 10/13/89        id  200014
 y-89          mt=102                      updated 10/13/89        id  200015
zr-93            mt= 102                                            id  200017
zr-94          mt=102                      updated 10/13/89        id  200018
zr-95          mt=102                      updated 10/13/89        id  200019
zircalloy      endf/b-iv mat 1284          updated 10/13/89        id    205
zircalloy      endf/b-iv mat 1284          updated 10/13/89        id  200056
nb-94          mt=102                      updated 10/13/89        id  200020
mo-95          mt=102                      updated 10/13/89        id  200016
tc-99          mt=102                      updated 10/13/89        id  200021
ru-101         mt=102                      updated 10/13/89        id  200024
ru-106         mt=102                      updated 10/13/89        id  200025
rh-103         mt=102                      updated 10/13/89        id  200022
rh-105           mt= 102                                            id  200023
pd-105         mt=102                      updated 10/13/89        id  200026
pd-108         mt=102                      updated 10/13/89        id  200027
silver-109     endf/b-iv mat 1139          updated 10/13/89        id  200028
sb-124         mt=102                      updated 10/13/89        id  200029
xe-131         mt=102,103,104,105,106      updated 10/13/89        id  200030
xe-132         mt=102,103,104,105,106      updated 10/13/89        id  200031
xenon-135      endf/b-iv mat 1294          updated 10/13/89        id  200032
xe-136           mt= 102, 103, 104, 105, 107                        id  200033
cesium-133     endf/b-iv mat 1141          updated 10/13/89        id  200060
cs-134         mt=102                      updated 10/13/89        id  200034
cs-135           mt= 102                                            id  200035
cs-137         mt=102                      updated 10/13/89        id  200036
ba-136         mt=102                      updated 10/13/89        id  200037
la-139         mt=102                      updated 10/13/89        id  200038
ce-144           mt= 102                                            id  200041
pr-141         mt=102,103,104,105,106,107  updated 10/13/89        id  200039
pr-143         mt=102                      updated 10/13/89        id  200040
nd-143         mt=102                      updated 10/13/89        id  200042
nd-145         mt=102                      updated 10/13/89        id  200043
nd-147         mt=102                      updated 10/13/89        id  200046
pm-147         mt=102                      updated 10/13/89        id  200044
pm-148           mt= 102                                            id  200045
sm-147         endf/b-v fission product    updated 10/13/89        id  200047
sm-149         mt=102,103,107              updated 10/13/89        id  200048
sm-150         mt=102                      updated 10/13/89        id  200049
sm-151         mt=102,103,104,105,106,107  updated 10/13/89        id  200050
sm-152         mt=102,103,104,105,106,107  updated 10/13/89        id  200051
eu-153         mt=102,103,104,105,106,107  updated 10/13/89        id  200053
eu-154         mt=102,103,104,105,106,107  updated 10/13/89        id  200054
eu-155         mt=102,103,104,105,106,107  updated 10/13/89        id  200055
gd-155         mt=102                      updated 10/13/89        id  200052
u-234 1043 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)                id  200007
uranium-235    endf/b-iv mat 1261          updated 10/13/89        id  200006
u-236 1163 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)                id  200008
uranium-238    endf/b-iv mat 1262          updated 10/13/89        id  200009
neptunium-237  endf/b-iv mat 1263          updated 10/13/89        id  200061
pu-238 1050 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)               id  200062
plutonium-239  endf/b-iv mat 1264          updated 10/13/89        id  200063
plutonium-240  endf/b-iv mat 1265          updated 10/13/89        id  200064
plutonium-241  endf/b-iv mat 1266          updated 10/13/89        id  200065
plutonium-242  endf/b-iv mat 1161          updated 10/13/89        id  200066
am-241 1056 sigo=5+4 resxlacs 218ngp p-3 293k                      id  200067
am-243 1057 218 gp wt f-1/e-m 0.0376 p3 293k                       id  200068
```

INFORMATION ONLY

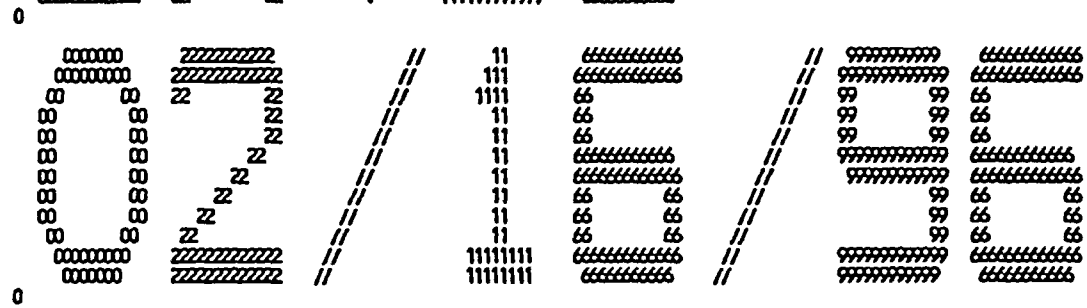
```
      curium-244     endf/b-iv mat 1162        updated 10/13/89          id   200069
0       tape copy used      0 i/o's, and took     .00 seconds
1
```



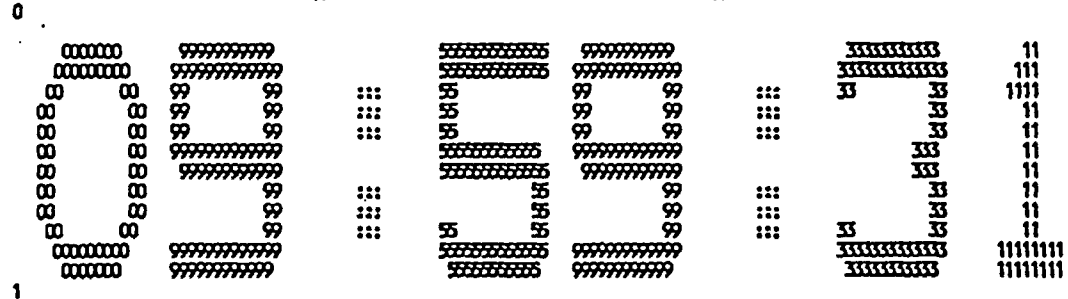
```
0
```



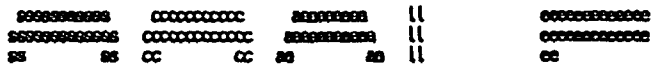
```
0
```



```
0
```



```
1
0
```



INFORMATION ONLY

```
ss           cc           aa         aa  ll             ee
ss           cc           aa         aa  ll             ee
ssssssssss   cc           aaaaaaaaaaaa  ll             eeeeeeee
 ssssssssss  cc           aaaaaaaaaaaa  ll             eeeeeeee
         ss  cc           aa         aa  ll             ee
         ss  cc           aa         aa  ll             ee
ss       ss  cc        cc aa         aa  ll             ee
ssssssssssss cccccccccccc aa         aa  llllllllllll   eeeeeeeeeeee
 ssssssssss   cccccccccc  aa         aa  llllllllllll   eeeeeeeeeeee
```

```
*****************************************************************************
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                  program verification information                 *****
*****                                                                   *****
*****                  code system:   scale  version:   4.2             *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                                                                   *****
*****                  program:  c0c002                                 *****
*****                                                                   *****
*****            creation date:  04/27/95                               *****
*****                                                                   *****
*****                  library:  /neutronics/scale/exe                  *****
*****                                                                   *****
*****                                                                   *****
*****     this is not a  scale  configuration controlled code           *****
*****                                                                   *****
*****                  jobname:  davis                                  *****
*****                                                                   *****
*****        date of execution:  02/16/96                               *****
*****                                                                   *****
*****        time of execution:  09:59:31                               *****
*****                                                                   *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

```
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
         0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     70 entries.
0        3q array has     15 entries.
0        4q array has      5 entries.
```

INFORMATION ONLY

```
0 general information concerning cross section library
    tape identification number          4349
    number of nuclides on tape            65
    number of neutron energy groups       27
    first thermal neutron energy group    15
    number of gamma energy groups          0
0   direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                        compiled for nrc      1/27/89
                          last updated        9/16/93
                            l.m.petrie  -  ornl
- work tape   4349

 xsdrn weighted tape--parent case entitled--  400 d, sas2h: babcock wilcox 15x15,
  3.00wt%, 20gwd/mtu burn high temp


0 nuclides from xsdrn tape
     1    hydrogen        endf/b-iv mat 1269/thrmt002     updated 10/13/89          202
     2   b-10 1273 218ngp 042375 p-3 293k                                              203
     3    boron-11        endf/b-iv mat 1160              updated 10/13/89          204
     4    oxygen-16       endf/b-iv mat 1276              updated 10/13/89          201
     5    zircalloy       endf/b-iv mat 1284              updated 10/13/89          205
0 nuclides from work tape
     6   1/v cross sections normalized to 1.0 at 0.0253 ev                           999
     7    hydrogen        endf/b-iv mat 1269/thrmt002     updated 10/13/89         1001
     8   b-10 1273 218ngp 042375 p-3 293k                                             5010
     9    boron-11        endf/b-iv mat 1160              updated 10/13/89         5011
    10    oxygen-16       endf/b-iv mat 1276              updated 10/13/89         8016
    11    oxygen-16       endf/b-iv mat 1276              updated 10/13/89            6
    12    kr-83           mt=102,103,103,105,106,107      updated 10/13/89        36083
    13    kr-85             mt=  102                                              36085
    14    sr-90           mt=102                          updated 10/13/89        38090
    15     y-89           mt=102                          updated 10/13/89        39089
    16    zr-93             mt=  102                                              40093
    17    zr-94           mt=102                          updated 10/13/89        40094
    18    zr-95           mt=102                          updated 10/13/89        40095
    19    zircalloy       endf/b-iv mat 1284              updated 10/13/89        40302
    20    nb-94           mt=102                          updated 10/13/89        41094
    21    nb-95           mt=102                          updated 10/13/89        42095
    22    tc-99           mt=102                          updated 10/13/89        43099
    23    ru-101          mt=102                          updated 10/13/89        44101
    24    ru-106          mt=102                          updated 10/13/89        44106
    25    rh-103          mt=102                          updated 10/13/89        45103
    26    rh-105            mt=  102                                              45105
    27    pd-105          mt=102                          updated 10/13/89        46105
    28    pd-108          mt=102                          updated 10/13/89        46108
    29    silver-109      endf/b-iv mat 1139              updated 10/13/89        47109
    30    sb-124          mt=102                          updated 10/13/89        51124
    31    xe-131          mt=102,103,104,105,106          updated 10/13/89        54131
    32    xe-132          mt=102,103,104,105,106          updated 10/13/89        54132
    33    xenon-135       endf/b-iv mat 1294              updated 10/13/89        54135
    34    xe-136            mt=  102, 103, 104, 105, 107                          54136
    35    cesium-133      endf/b-iv mat 1141              updated 10/13/89        55133
    36    cs-134          mt=102                          updated 10/13/89        55134
    37    cs-135            mt=  102                                              55135
    38    cs-137          mt=102                          updated 10/13/89        55137
```

INFORMATION ONLY

```
   39    ba-136        mt=102                          updated 10/13/89          56136
   40    la-139        mt=102                          updated 10/13/89          57139
   41    ce-144          mt=  102                                                58144
   42    pr-141        mt=102,103,104,105,106,107      updated 10/13/89          59141
   43    pr-143        mt=102                          updated 10/13/89          59143
   44    nd-143        mt=102                          updated 10/13/89          60143
   45    nd-145        mt=102                          updated 10/13/89          60145
   46    nd-147        mt=102                          updated 10/13/89          60147
   47    pm-147        mt=102                          updated 10/13/89          61147
   48    pm-148          mt=  102                                                61148
   49    sm-147        endf/b-v fission product        updated 10/13/89          62147
   50    sm-149        mt=102,103,107                  updated 10/13/89          62149
   51    sm-150        mt=102                          updated 10/13/89          62150
   52    sm-151        mt=102,103,104,105,106,107      updated 10/13/89          62151
   53    sm-152        mt=102,103,104,105,106,107      updated 10/13/89          62152
   54    eu-153        mt=102,103,104,105,106,107      updated 10/13/89          63153
   55    eu-154        mt=102,103,104,105,106,107      updated 10/13/89          63154
   56    eu-155        mt=102,103,104,105,106,107      updated 10/13/89          63155
   57    gd-155        mt=102                          updated 10/13/89          64155
   58   u-234 1043 sigo=5+4 new-lacs p-3 293k f-1/e-n(1.+5)                      92234
   59    uranium-235   endf/b-iv mat 1261              updated 10/13/89          92235
   60   u-236 1163 sigo=5+4 new-lacs p-3 293k f-1/e-n(1.+5)                      92236
   61    uranium-238   endf/b-iv mat 1262              updated 10/13/89          92238
   62    neptunium-237 endf/b-iv mat 1263              updated 10/13/89          93237
   63   pu-238 1050 sigo=5+4 new-lacs p-3 293k f-1/e-n(1.+5)                      94238
   64    plutonium-239 endf/b-iv mat 1264              updated 10/13/89          94239
   65    plutonium-240 endf/b-iv mat 1265              updated 10/13/89          94240
   66    plutonium-241 endf/b-iv mat 1266              updated 10/13/89          94241
   67    plutonium-242 endf/b-iv mat 1161              updated 10/13/89          94242
   68   am-241 1056 sigo=5+4 new-lacs 218ngp p-3 293k                            95241
   69   am-243 1057 218 gp wt f-1/e-n 0.90576 p3 293k                            95243
   70    curium-244    endf/b-iv mat 1162              updated 10/13/89          96244
0 hydrogen       endf/b-iv mat 1269/thm=1002    updated 10/13/89          202    temperature=  607.60
                                thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 0.42375 p-3 293k                                         203    temperature=  607.60
                                thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11       endf/b-iv mat 1160             updated 10/13/89          204    temperature=  607.60
                                thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16      endf/b-iv mat 1276             updated 10/13/89          201    temperature=  607.60
0 zircalloy      endf/b-iv mat 1284             updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =    90.436          temperature(kelvin)       =   650.000
0potential scatter sigma  =     6.385          lump nuclear density      = 4.251600E-02
0spin factor (g)          =     1.079          lump dimension (a-bar)    = 6.730999E-01
0inner radius             = 6.324600E-01       dancoff correction (c)    = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   8     -1.156752E-03   .000000E+00   -7.806083E-01
   9     -4.625978E-02   .000000E+00   -2.073270E+00
  10     -5.962230E-02   .000000E+00   -1.351984E+00
  11     -1.761672E-01   .000000E+00   -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption      2.92402E-01
 fission          .00000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 09:59:31
```

INFORMATION ONLY

the title of the parent case is as follows
xsdrn weighted tape-parent case entitled-- 400 d, sas2h: babcock wilcox 15x15,
3.00wt%, 20gwd/mtu burn high temp

tape id	8670	number of nuclides	70
number of neutron groups	27	number of gamma groups	0
first thermal group	15	logical unit	4

table of contents

hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	id	202
b-10 1273 218ngp 042375 p-3 293k			id	203
boron-11	endf/b-iv mat 1160	updated 10/13/89	id	204
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	201
zircalloy	endf/b-iv mat 1284	updated 10/13/89	id	205
1/v cross sections normalized to 1.0 at 0.0253 ev			id	999
hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	id	1001
b-10 1273 218ngp 042375 p-3 293k			id	5010
boron-11	endf/b-iv mat 1160	updated 10/13/89	id	5011
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	8016
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	6
kr-83	mt=102,103,103,105,106,107	updated 10/13/89	id	36083
kr-85	mt= 102		id	36085
sr-90	mt=102	updated 10/13/89	id	38090
y-89	mt=102	updated 10/13/89	id	39089
zr-93	mt= 102		id	40093
zr-94	mt=102	updated 10/13/89	id	40094
zr-95	mt=102	updated 10/13/89	id	40095
zircalloy	endf/b-iv mat 1284	updated 10/13/89	id	40802
nb-94	mt=102	updated 10/13/89	id	41094
mo-95	mt=102	updated 10/13/89	id	42095
tc-99	mt=102	updated 10/13/89	id	43099
ru-101	mt=102	updated 10/13/89	id	44101
ru-106	mt=102	updated 10/13/89	id	44106
rh-103	mt=102	updated 10/13/89	id	45103
rh-105	mt= 102		id	45105
pd-105	mt=102	updated 10/13/89	id	46105
pd-108	mt=102	updated 10/13/89	id	46108
silver-109	endf/b-iv mat 1139	updated 10/13/89	id	47109
sb-124	mt=102	updated 10/13/89	id	51124
xe-131	mt=102,103,104,105,106	updated 10/13/89	id	54131
xe-132	mt=102,103,104,105,106	updated 10/13/89	id	54132
xenon-135	endf/b-iv mat 1254	updated 10/13/89	id	54135
xe-136	mt= 102, 103, 104, 105, 107		id	54136
cesium-133	endf/b-iv mat 1141	updated 10/13/89	id	55133
cs-134	mt=102	updated 10/13/89	id	55134
cs-135	mt= 102		id	55135
cs-137	mt=102	updated 10/13/89	id	55137
ba-136	mt=102	updated 10/13/89	id	56136
la-139	mt=102	updated 10/13/89	id	57139
ce-144	mt= 102		id	58144
pr-141	mt=102,103,104,105,106,107	updated 10/13/89	id	59141
pr-143	mt=102	updated 10/13/89	id	59143
nd-143	mt=102	updated 10/13/89	id	60143
nd-145	mt=102	updated 10/13/89	id	60145
nd-147	mt=102	updated 10/13/89	id	60147
pm-147	mt=102	updated 10/13/89	id	61147
pm-148	mt= 102		id	61148
sm-147	endf/b-v fission product	updated 10/13/89	id	62147
sm-149	mt=102,103,107	updated 10/13/89	id	62149
sm-150	mt=102	updated 10/13/89	id	62150
sm-151	mt=102,103,104,105,106,107	updated 10/13/89	id	62151

INFORMATION ONLY

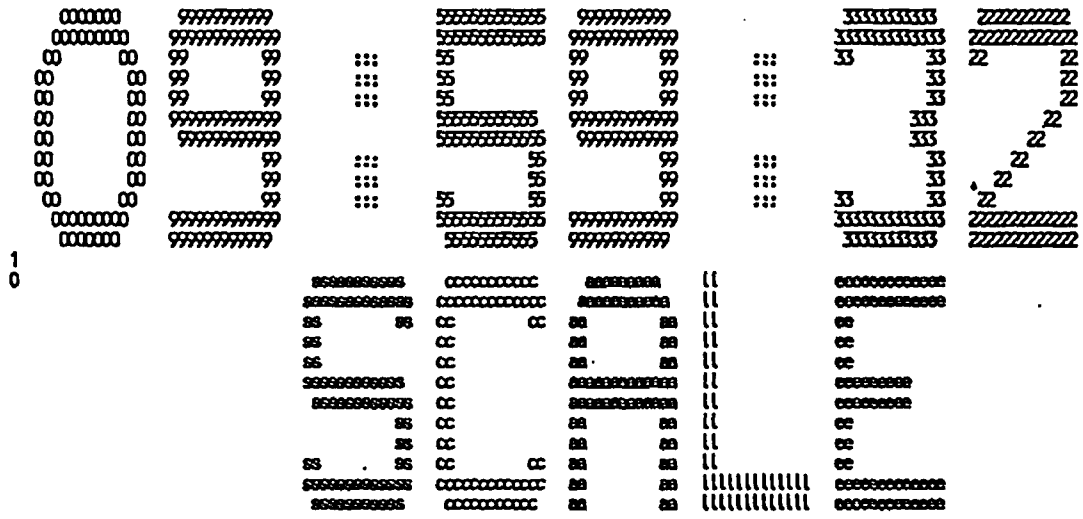
```
      sm-152        mt=102,103,104,105,106,107    updated 10/13/89          id   62152
      eu-153        mt=102,103,104,105,106,107    updated 10/13/89          id   63153
      eu-154        mt=102,103,104,105,106,107    updated 10/13/89          id   63154
      eu-155        mt=102,103,104,105,106,107    updated 10/13/89          id   63155
      gd-155        mt=102                        updated 10/13/89          id   64155
     u-234 1043 sigp=5+4 maxlacs p-3 293k f-1/e-π(1.+5)                     id   92234
      uranium-235   endf/b-iv mat 1261            updated 10/13/89          id   92235
     u-236 1163 sigp=5+4 maxlacs p-3 293k f-1/e-π(1.+5)                     id   92236
      uranium-238   endf/b-iv mat 1262            updated 10/13/89          id   92238
      neptunium-237 endf/b-iv mat 1263            updated 10/13/89          id   93237
     pu-238 1050 sigp=5+4 maxlacs p-3 293k f-1/e-π(1.+5)                     id   94238
      plutonium-239 endf/b-iv mat 1264            updated 10/13/89          id   94239
      plutonium-240 endf/b-iv mat 1265            updated 10/13/89          id   94240
      plutonium-241 endf/b-iv mat 1266            updated 10/13/89          id   94241
      plutonium-242 endf/b-iv mat 1161            updated 10/13/89          id   94242
     am-241 1056 sigp=5+4 maxlacs 218ngp p-3 293k                           id   95241
     am-243 1057 218 gp wt f-1/e-π 090576 p3 293k                           id   95243
      curium-244    endf/b-iv mat 1162            updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took     .00 seconds
```

```
1 xx        xx  sssssssssss  ddddddddddd  rrrrrrrrrr  m       m  pppppppppp  aaa       aaa
  xx        xx  sssssssssssss dddddddddddd rrrrrrrrrr mm      m  pppppppppppp aaaa     aaaa
    xx    xx    ss        ss  dd        dd rr       rr mmm     m  pp       pp  aaaaa   aaaaa
     xx  xx     ss            dd        dd rr       rr mmm m   m  pp       pp  aaa aaa aaa aaa
      xx xx     ss            dd        dd rr       rr m  m  m  m  pp       pp  aaa  aaa  aaa
       xxx      sssssssssss   dd        dd rrrrrrrrrr  m   m m  m  pppppppppp  aaa   aaa  aaa
       xxx       sssssssssss  dd        dd rrrrrrrrrr  m    m   m  pppppppppp  aaa    a   aaa
      xx xx              ss   dd        dd rr     rr   m     m m  pp           aaa        aaa
     xx   xx             ss   dd        dd rr      rr  m      mm  pp           aaa        aaa
    xx     xx   ss        ss  dd        dd rr       rr m       m  pp           aaa        aaa
   xx       xx  sssssssssssss dddddddddddd rr        rr m       m  pp           aaa        aaa
  xx         xx  sssssssssss  dddddddddddd  rr        rr m       m  pp           aaa        aaa
0
```

```
  dddddddddd     aaaaaaaa   w        w  iiiiiiiiiiii   sssssssssss
  dddddddddddd   aaaaaaaaaa w        w  iiiiiiiiiiii   sssssssssssss
  dd        dd   aa      aa w        w      ii        ss         ss
  dd        dd   aa      aa w        w      ii        ss
  dd        dd   aa      aa w        w      ii        ss
  dd        dd   aaaaaaaaaaaa w      w      ii        sssssssssss
  dd        dd   aaaaaaaaaaaa  w      w     ii         sssssssssss
  dd        dd   aa      aa    w    w       ii                  ss
  dd        dd   aa      aa     w  w        ii                  ss
  dd        dd   aa      aa      w w        ii        ss        ss
  dddddddddddd   aa      aa       ww  iiiiiiiiiiii   sssssssssssss
  dddddddddd     aa      aa        v  iiiiiiiiiiii    sssssssssss
0
```

```
    ooooooo     zzzzzzzzzz          //      11      &&&&&&&&&&      //  99999999999  &&&&&&&&&&
   ooooooooo    zzzzzzzzzzzz        //     111      &&&&&&&&&&&&    //  99999999999  &&&&&&&&&&&&
  oo       oo   zz        zz        //    1111      &&          &&  //  99        99 &&
 oo         oo          zz         //      11      &&          &&  //  99        99 &&
oo          oo         zz          //      11      &&          &&  //  99        99 &&
oo          oo        zz           //      11      &&&&&&&&&&&&    //  99999999999  &&&&&&&&&&&&
oo          oo       zz            //      11      &&&&&&&&&&&&    //   99999999999 &&&&&&&&&&&&
oo          oo      zz             //      11      &&      &&      //           99 &&      &&
oo          oo     zz              //      11      &&      &&      //           99 &&      &&
 oo         oo    zz               //      11      &&      &&      //           99 &&      &&
  oooooooo     zzzzzzzzzzzz        //    11111111  &&&&&&&&&&&&    //  99999999999  &&&&&&&&&&&&
   oooooo      zzzzzzzzzzzz        //    11111111  &&&&&&&&&&      //  99999999999  &&&&&&&&&&
0
```

INFORMATION ONLY



```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                program verification information        *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c001                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nsutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:59:32                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
```

INFORMATION ONLY

```
                    ************************************************************
                    ************************************************************
1
                    400 d, second part of sas2h pass to make library
0      -1q array has     1 entries.
0       0q array has    11 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                   400 d, second part of sas2h pass to make library
0general problem description data block
0                          general problem data

 igs  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                  8
 izm  number of zones                    4      isct order of scattering               3
 im   number of special intervals       28      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          20
 ibr  right boundary condition           3      iom  outer iteration maximum          25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sn/cpt           0
 ms   mixing table length               70      ith  0/1 = forward/adjoint             0
 igm  number of energy groups           27      iflu not used(always wgtd)             0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0      idl  0/1/2/3=no/prt nd/pch n/both      14
 iftg number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt     0
0                          special options

 ifg  0/1 = none/weighting calculation   1      ipn  0/1/2 diff. coef. param           0
 iqs  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 39*    0
 ips  boundary sources (0/n=no/yes)      0      isz  0/n = none/n activities by zone   0
 ifn  0/1/2 = input 39*/34*/use last    14      isi  0/1=none/activities by interval   0
 itmx maximum time (minutes)            10      ifct 0/1=no/yes upscatter scaling      0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0      ipvt 0/1/2=no/k/alpha parametric srch  0
 isx  broad group fluxes                 0      isen outer iteration acceleration      0
 ibln activity data unit                 0      nbnd band rebaln parameter             0
 jtkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1      ihtf total xsect pan in brd gp tables  3
 igmf number of broad groups             3      ndsf pan g-g or file number            4
 itp  0/10/20/30/40 0/c/e/ac/a           0      nusf table length or mxx order         6
 ipp  -2/-1/0/n=wgtd xsect print        -2      nscm extra 1-d x-sect positions        0
 iap  -1/n anisn xsect print            -1
0                          floating point parameters

 eps  overall convergence        1.00000E-04     dy   cyl/pla ht for buckling    .00000E+00
 ptc  point convergence          1.00000E-04     dz   plane depth for buckling  2.00000E+02
 xnf  normalization factor       1.00000E+00     vec  void streaming correction  .00000E+00
 ev   eigenvalue guess            .00000E+00     pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00     eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00     xrpm new param mod for search   7.50000E-01
     this case will require      2611 locations for mixing
     this case has been allocated 200000 locations
1                   400 d, second part of sas2h pass to make library
0      13q array has    70 entries.
0      14q array has    70 entries.
0      15q array has    70 entries.
0                          data block 2 (mixing table, etc.)
```

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0	nuclides on tape	cccc identification	mixture	mixing table component	atom density	extra xsect id's
1	202		3	201	2.09710E-02	
2	203		3	202	4.19420E-02	
3	204		3	203	3.81515E-06	
4	201		3	204	1.54884E-05	
5	205		2	205	4.25154E-02	
6	999		1	92235	1.78765E-04	
7	1001		1	92234	1.66922E-06	
8	5010		1	92236	1.01900E-05	
9	5011		1	92238	7.26421E-03	
10	8016		1	8016	1.50611E-02	
11	6		1	6	1.15315E-02	
12	36083		1	36083	2.39826E-07	
13	36085		1	36085	1.15802E-07	
14	38090		1	38090	2.60028E-06	
15	39089		1	39089	1.81056E-06	
16	40093		1	40093	2.02470E-06	
17	40094		1	40093	1.97826E-06	
18	40095		1	40094	3.06390E-06	
19	40302		1	40095	6.95210E-07	
20	41094		1	41094	1.19135E-12	
21	42095		1	43099	2.96592E-06	
22	43099		1	45103	1.45725E-06	
23	44101		1	45105	5.54075E-09	
24	44106		1	44101	2.61262E-06	
25	45103		1	44106	3.77085E-07	
26	45105		1	46105	8.23960E-07	
27	46105		1	46103	1.79948E-07	
28	46103		1	47109	1.29418E-07	
29	47109		1	51124	3.32722E-11	
30	51124		1	54131	1.37688E-06	
31	54131		1	54132	2.31720E-06	
32	54132		1	54135	2.18632E-09	
33	54135		1	54136	4.97240E-06	
34	54136		1	55134	7.36175E-08	
35	55133		1	55135	1.55832E-06	
36	55134		1	55137	3.13142E-06	
37	55135		1	56136	1.42897E-08	
38	55137		1	57139	3.11998E-06	
39	56136		1	59141	2.51925E-06	
40	57139		1	59143	1.30169E-07	
41	58144		1	58144	1.65612E-06	
42	59141		1	60143	2.56634E-06	
43	59143		1	60145	1.86380E-06	
44	60143		1	61147	8.21697E-07	
45	60145		1	61148	2.25854E-09	
46	60147		1	60147	4.33963E-08	
47	61147		1	62147	1.21021E-07	
48	61148		1	62149	2.48712E-08	
49	62147		1	62150	5.79478E-07	
50	62149		1	62151	9.50067E-08	
51	62150		1	62152	2.80778E-07	
52	62151		1	64155	2.63991E-10	
53	62152		1	63153	1.30658E-07	
54	63153		1	63154	1.53097E-08	
55	63154		1	63155	1.69086E-08	
56	63155		1	40302	4.42681E-03	
57	64155		1	1001	2.30630E-02	
58	92234		1	5010	2.09787E-06	

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```
   59  92235                                  1        5011    8.51673E-06
   60  92236                                  1       55133    3.23773E-06
   61  92238                                  1       95237    4.09226E-07
   62  95237                                  1       94238    2.63252E-08
   63  94238                                  1       94239    2.16321E-05
   64  94239                                  1       94240    2.36745E-06
   65  94240                                  1       94241    8.29987E-07
   66  94241                                  1       94242    3.87820E-08
   67  94242                                  1       95241    1.12558E-08
   68  95241                                  1       95243    1.41059E-09
   69  95243                                  1       96244    5.44610E-11
   70  96244                                  1         999    3.30753E-21
- elapsed time    .00 min.
0  24259 locations will be used
0      35q array has     29 entries.
0      36q array has     28 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                    400 d, second part of sas2h pass to make library
                          neutron group parameters
0  gp   energy     lethargy   weighted   broad gp    calc      group     right     left
       boundaries  boundaries  velocities  numbers    type      band      albedo    albedo
    1  2.00000E+07 -6.93147E-01 4.60581E+09   1        0         1      1.00000E+00
    2  6.43400E+06 4.40989E-01 2.88737E+09   1        0         2      1.00000E+00
    3  3.00000E+06 1.20397E+00 2.12201E+09   1        0         3      1.00000E+00
    4  1.85000E+06 1.68740E+00 1.75673E+09   1        0         4      1.00000E+00
    5  1.40000E+06 1.96611E+00 1.46535E+09   1        0         5      1.00000E+00
    6  9.00000E+05 2.40795E+00 1.06620E+09   2        0         6      1.00000E+00
    7  4.00000E+05 3.21888E+00 6.07557E+08   2        0         7      1.00000E+00
    8  1.00000E+05 4.60517E+00 2.72415E+08   2        0         8      1.00000E+00
    9  1.70000E+04 6.37713E+00 1.13526E+08   2        0         9      1.00000E+00
   10  3.00000E+03 8.11173E+00 4.82126E+07   2        0        10      1.00000E+00
   11  5.50000E+02 9.80818E+00 2.05946E+07   2        0        11      1.00000E+00
   12  1.00000E+02 1.15129E+01 1.01036E+07   2        0        12      1.00000E+00
   13  3.00000E+01 1.27169E+01 5.69595E+06   2        0        13      1.00000E+00
   14  1.00000E+01 1.38155E+01 3.20957E+06   2        0        14      1.00000E+00
   15  3.04999E+00 1.50030E+01 2.10601E+06   2        0        15      1.00000E+00
   16  1.77000E+00 1.55471E+01 1.70522E+06   2        0        16      1.00000E+00
   17  1.25999E+00 1.58557E+01 1.52543E+06   2        0        17      1.00000E+00
   18  1.12999E+00 1.59959E+01 1.42867E+06   2        0        18      1.00000E+00
   19  1.00000E+00 1.61181E+01 1.31002E+06   2        0        19      1.00000E+00
   20  8.00000E-01 1.63412E+01 9.05898E+05   2        0        20      1.00000E+00
   21  4.00000E-01 1.70844E+01 8.17974E+05   3        0        21      1.00000E+00
   22  3.25000E-01 1.72420E+01 6.90070E+05   3        0        22      1.00000E+00
   23  2.25000E-01 1.76098E+01 4.85953E+05   3        0        23      1.00000E+00
   24  9.99999E-02 1.84207E+01 3.57766E+05   3        0        24      1.00000E+00
   25  5.00000E-02 1.91138E+01 2.71895E+05   3        0        25      1.00000E+00
   26  3.00000E-02 1.95247E+01 1.87283E+05   3        0        26      1.00000E+00
   27  1.00000E-02 2.07233E+01 8.88201E+04   3        0        27      1.00000E+00
   28  1.00000E-05 2.76310E+01
1                    400 d, second part of sas2h pass to make library
0        mixture   order p(l)     activity table                quadrature constants
         by zone   by zone    matl no.    reaction    weights   directions   refl direc   wt x cos
    1      3         3                                  0       -2.79004E-01    3          0
    2      2         3                              5.06143E-02 -1.97286E-01    3       -9.98548E-05
    3      3         3                              5.06143E-02  1.97286E-01    2        9.98548E-05
    4      1         3                                  0       -6.04419E-01    8          0
    5                                                 5.59753E-02 -5.58410E-01    8       -3.10550E-02
```

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6	5.55953E-02	-2.31301E-01	7	-1.28598E-02
7	5.55953E-02	2.31301E-01	6	1.28598E-02
8	5.55953E-02	5.58410E-01	5	3.10650E-02
9	0	-8.50774E-01	15	0
10	5.22844E-02	-8.21784E-01	15	-4.29665E-02
11	5.22844E-02	-6.01588E-01	14	-3.14537E-02
12	5.22844E-02	-2.20196E-01	13	-1.15128E-02
13	5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83032E-01	24	0
17	4.53355E-02	-9.64143E-01	24	-4.37099E-02
18	4.53355E-02	-8.17361E-01	23	-3.70555E-02
19	4.53355E-02	-5.46143E-01	22	-2.47597E-02
20	4.53355E-02	-1.91780E-01	21	-8.69444E-03
21	4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97289E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97289E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26863E-01	-1.98356E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24338E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17234E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17234E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24338E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius scd	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95289E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02			
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52631E+00	2.19422E-01			

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   15 7.67053E-01 7.90517E-01      3      4.81941E+00 2.33283E-01
   16 8.14000E-01 8.62795E-01      4      5.11451E+00 5.29051E-01
   17 9.11597E-01 9.60886E-01      4      5.72769E+00 5.88897E-01
   18 1.00918E+00 1.10577E+00      4      6.34088E+00 1.35731E+00
   19 1.20036E+00 1.30195E+00      4      7.56724E+00 1.59667E+00
   20 1.39955E+00 1.49714E+00      4      8.79360E+00 1.83603E+00
   21 1.59473E+00 1.69232E+00      4      1.00200E+01 2.07540E+00
   22 1.78991E+00 1.88750E+00      4      1.12463E+01 2.31476E+00
   23 1.98509E+00 2.08268E+00      4      1.24727E+01 2.55412E+00
   24 2.18027E+00 2.27786E+00      4      1.36991E+01 2.79349E+00
   25 2.37545E+00 2.47305E+00      4      1.49254E+01 3.03285E+00
   26 2.57064E+00 2.66823E+00      4      1.61518E+01 3.27221E+00
   27 2.76582E+00 2.81461E+00      4      1.73781E+01 1.72587E+00
   28 2.85341E+00 2.91220E+00      4      1.79913E+01 1.78577E+00
   29 2.96100E+00                         1.86045E+01
- elapsed time    .00 min.
1 outer inner 1 - balance   eigenvalue 1 - source  1 - scatter 1 - upscat    search        time
  iter iters                             ratio      ratio      ratio      parameter      (min)
    1   209 -6.79447E-06 1.10345E+00 -1.13242E-01 1.00000E+00 -3.37148E-02 .00000E+00      .0000
    2   310 9.83679E-06 1.11343E+00 -1.52187E-03 -1.43890E-02 -4.02258E-03 .00000E+00      .0167
    3   391 -1.79683E-07 1.11486E+00 -1.88561E-04 -1.61512E-03 -8.38010E-04 .00000E+00      .0167
    4   450 3.41931E-07 1.11512E+00 -3.48735E-05 -3.42568E-04 -1.73054E-04 .00000E+00      .0167
    5   490 -3.09952E-07 1.11519E+00 -7.12895E-06 -7.15464E-05 -3.53365E-05 .00000E+00      .0167
                                                                grp to grp inner  wfd   max. flux  msf  max. scale coarse
                                                                            iters int.  difference int.   factor  mesh
                                                                  1     1     1   17  1.87323E-06  28  1.00000E+00   1
                                                                  2     2     1   17  2.27993E-06  28  1.00000E+00   1
                                                                  3     3     1   17  2.11386E-06  28  1.00000E+00   1
                                                                  4     4     1   17  2.06738E-06  28  1.00000E+00   1
                                                                  5     5     1   17  2.17286E-06  28  1.00000E+00   1
                                                                  6     6     1   17  1.48735E-06  28  1.00000E+00   1
                                                                  7     7     1   24  8.67078E-07  28  1.00000E+00   2
                                                                  8     8     1    3  1.58248E-07  20  1.00000E+00   2
                                                                  9     9     1   27  9.38686E-06  28  1.00001E+00   3
                                                                 10    10     1   26  2.98893E-06  28  1.00000E+00   3
                                                                 11    11     1   26  2.40436E-06  28  1.00000E+00   3
                                                                 12    12     1   26  6.88131E-07  28  1.00000E+00   3
                                                                 13    13     1   26  3.40379E-06  28  9.99997E-01   3
                                                                 14    14     1   25  1.09215E-06  28  9.99999E-01   3
                                                                 15    15     1    2  3.61842E-05  28  9.99959E-01   2
                                                                 16    16     1    2  4.46262E-05  28  9.99963E-01   2
                                                                 17    17     1   27  9.69786E-05  28  1.00002E+00   3
                                                                 18    18     1    2  5.90621E-05  28  9.99986E-01   3
                                                                 19    19     1    2  5.16568E-05  28  9.99895E-01   3
                                                                 20    20     1    2  4.13515E-05  28  9.99919E-01   3
                                                                 21    21     1    2  6.33977E-05  28  9.99945E-01   3
                                                                 22    22     1   25  2.90040E-05  28  9.99968E-01   3
                                                                 23    23     1   27  2.77437E-05  28  1.00001E+00   4
                                                                 24    24     1    1  3.29003E-05   9  1.00002E+00   4
                                                                 25    25     1    1  3.33657E-05   8  1.00002E+00   5
                                                                 26    26     1    1  2.69997E-05   6  1.00002E+00   6
                                                                 27    27     1    1  2.52230E-05   5  1.00001E+00   8
    6   517 -1.47045E-06 1.11521E+00 -1.33887E-06 -1.47463E-05 -7.73286E-06 .00000E+00      .0167
          final monitor
                 lambda 1.11520E+00        production/absorption 1.12581E+00        angular flux on  16
- elapsed time    .02 min.
1                 400 d, second part of mesh pass to make library
0 int. zone number   radius   int. midpoint   area       volume    prod density
    1      1       .00000E+00 1.97644E-02 .00000E+00 4.90881E-03 .00000E+00
    2      1      3.95287E-02 5.92931E-02 2.48366E-01 1.47264E-02 .00000E+00
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3	1	7.90575E-02	1.18686E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1	3.16230E-01	3.55759E-01	1.98698E+00	1.76717E-01	.00000E+00
7	1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1	5.53403E-01	5.73167E-01	3.47713E+00	1.42355E-01	.00000E+00
10	1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2	6.52780E-01	6.62940E-01	4.10154E+00	8.46405E-02	.00000E+00
13	3	6.73100E-01	6.96683E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62795E-01	5.11451E+00	5.25051E-01	2.53798E-02
17	4	9.11591E-01	9.60386E-01	5.72769E+00	5.88897E-01	2.76386E-02
18	4	1.00918E+00	1.10577E+00	6.34088E+00	1.35731E+00	6.24247E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	7.19621E-02
20	4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	8.15879E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	9.12362E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31476E+00	1.01001E-01
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.10800E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.20579E-01
25	4	2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.30355E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.40159E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	7.42165E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.68256E-02
29		2.96100E+00		1.86045E+01		

1 400 d, second part of sas2h pass to make library

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.25057E-02	8.95631E-02	1.11854E-01	6.87739E-02	1.02549E-01	1.92650E-01	1.92998E-01	1.46916E-01
2	1.25008E-02	8.95125E-02	1.11789E-01	6.87356E-02	1.02498E-01	1.92564E-01	1.92556E-01	1.46910E-01
3	1.25013E-02	8.95252E-02	1.11810E-01	6.87536E-02	1.02531E-01	1.92634E-01	1.93010E-01	1.46921E-01
4	1.25078E-02	8.96048E-02	1.11923E-01	6.88318E-02	1.02660E-01	1.92877E-01	1.93166E-01	1.46950E-01
5	1.25196E-02	8.97448E-02	1.12117E-01	6.89647E-02	1.02877E-01	1.93276E-01	1.93415E-01	1.46992E-01
6	1.25358E-02	8.99574E-02	1.12385E-01	6.91479E-02	1.03174E-01	1.93826E-01	1.93754E-01	1.47050E-01
7	1.25562E-02	9.01835E-02	1.12730E-01	6.93857E-02	1.03563E-01	1.94544E-01	1.94197E-01	1.47120E-01
8	1.25808E-02	9.04917E-02	1.13168E-01	6.96928E-02	1.04069E-01	1.95481E-01	1.94774E-01	1.47208E-01
9	1.26015E-02	9.07625E-02	1.13561E-01	6.99745E-02	1.04537E-01	1.96350E-01	1.95311E-01	1.47272E-01
10	1.26156E-02	9.09748E-02	1.13885E-01	7.02224E-02	1.04958E-01	1.97157E-01	1.95799E-01	1.47320E-01
11	1.26275E-02	9.11508E-02	1.14163E-01	7.04305E-02	1.05312E-01	1.97814E-01	1.96217E-01	1.47365E-01
12	1.26404E-02	9.12817E-02	1.14336E-01	7.05388E-02	1.05481E-01	1.98151E-01	1.96420E-01	1.47408E-01
13	1.26674E-02	9.15202E-02	1.14605E-01	7.06764E-02	1.05671E-01	1.98492E-01	1.96613E-01	1.47477E-01
14	1.27071E-02	9.19001E-02	1.15057E-01	7.09315E-02	1.06047E-01	1.99153E-01	1.96998E-01	1.47568E-01
15	1.27538E-02	9.23889E-02	1.15679E-01	7.13178E-02	1.06644E-01	2.00227E-01	1.97629E-01	1.47669E-01
16	1.28264E-02	9.31720E-02	1.16692E-01	7.19625E-02	1.07660E-01	2.02071E-01	1.98718E-01	1.47838E-01
17	1.28981E-02	9.39521E-02	1.17705E-01	7.26107E-02	1.08693E-01	2.03969E-01	1.99864E-01	1.48035E-01
18	1.29553E-02	9.45857E-02	1.18537E-01	7.31472E-02	1.09561E-01	2.05610E-01	2.00884E-01	1.48239E-01
19	1.30052E-02	9.51498E-02	1.19286E-01	7.36332E-02	1.10355E-01	2.07143E-01	2.01854E-01	1.48451E-01
20	1.30346E-02	9.54890E-02	1.19744E-01	7.39536E-02	1.10853E-01	2.08131E-01	2.02496E-01	1.48605E-01
21	1.30531E-02	9.57079E-02	1.20045E-01	7.41314E-02	1.11184E-01	2.08806E-01	2.02943E-01	1.48722E-01
22	1.30650E-02	9.58513E-02	1.20235E-01	7.42641E-02	1.11408E-01	2.09273E-01	2.03259E-01	1.48809E-01
23	1.30725E-02	9.59435E-02	1.20376E-01	7.43514E-02	1.11557E-01	2.09598E-01	2.03478E-01	1.48872E-01
24	1.30769E-02	9.59998E-02	1.20456E-01	7.44048E-02	1.11650E-01	2.09798E-01	2.03620E-01	1.48914E-01
25	1.30788E-02	9.60249E-02	1.20494E-01	7.44305E-02	1.11695E-01	2.09900E-01	2.03694E-01	1.48935E-01
26	1.30785E-02	9.60221E-02	1.20492E-01	7.44295E-02	1.11695E-01	2.09908E-01	2.03701E-01	1.48936E-01
27	1.30768E-02	9.60022E-02	1.20466E-01	7.44120E-02	1.11666E-01	2.09853E-01	2.03664E-01	1.48922E-01
28	1.30743E-02	9.59726E-02	1.20426E-01	7.43853E-02	1.11622E-01	2.09762E-01	2.03600E-01	1.48902E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15651E-01	1.07023E-01	1.00742E-01	6.53261E-02	5.58631E-02	5.34703E-02	2.91697E-02	1.62030E-02

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2	1.15851E-01	1.07025E-01	1.00746E-01	6.53311E-02	5.58679E-02	5.34771E-02	2.91719E-02	1.62060E-02
3	1.15849E-01	1.07015E-01	1.00725E-01	6.53072E-02	5.58657E-02	5.34451E-02	2.91656E-02	1.62027E-02
4	1.15845E-01	1.06994E-01	1.00675E-01	6.52498E-02	5.57984E-02	5.33681E-02	2.91503E-02	1.61949E-02
5	1.15838E-01	1.06960E-01	1.00599E-01	6.51622E-02	5.57115E-02	5.32510E-02	2.91274E-02	1.61831E-02
6	1.15828E-01	1.06915E-01	1.00498E-01	6.50432E-02	5.56021E-02	5.30922E-02	2.90972E-02	1.61674E-02
7	1.15815E-01	1.06854E-01	1.00359E-01	6.48873E-02	5.54593E-02	5.28844E-02	2.90591E-02	1.61475E-02
8	1.15801E-01	1.06774E-01	1.00179E-01	6.46818E-02	5.52724E-02	5.26115E-02	2.90112E-02	1.61220E-02
9	1.15790E-01	1.06698E-01	1.00003E-01	6.44900E-02	5.50988E-02	5.23572E-02	2.89682E-02	1.60988E-02
10	1.15790E-01	1.06627E-01	9.98521E-02	6.43155E-02	5.49420E-02	5.21263E-02	2.89306E-02	1.60788E-02
11	1.15795E-01	1.06571E-01	9.97279E-02	6.41785E-02	5.48174E-02	5.19440E-02	2.89978E-02	1.60607E-02
12	1.15790E-01	1.06550E-01	9.96815E-02	6.41249E-02	5.47661E-02	5.18708E-02	2.88794E-02	1.60521E-02
13	1.15745E-01	1.06523E-01	9.96181E-02	6.40429E-02	5.46928E-02	5.17622E-02	2.88642E-02	1.60436E-02
14	1.15674E-01	1.06459E-01	9.94736E-02	6.38652E-02	5.45380E-02	5.15298E-02	2.88395E-02	1.60279E-02
15	1.15597E-01	1.06352E-01	9.92570E-02	6.35855E-02	5.42561E-02	5.11648E-02	2.88021E-02	1.60034E-02
16	1.15440E-01	1.06176E-01	9.88950E-02	6.31250E-02	5.38967E-02	5.05607E-02	2.87335E-02	1.59609E-02
17	1.15395E-01	1.06001E-01	9.84532E-02	6.26647E-02	5.34921E-02	4.99536E-02	2.86511E-02	1.59139E-02
18	1.15326E-01	1.05854E-01	9.81182E-02	6.22715E-02	5.31377E-02	4.94330E-02	2.85619E-02	1.58667E-02
19	1.15272E-01	1.05718E-01	9.78056E-02	6.19052E-02	5.28019E-02	4.89466E-02	2.84672E-02	1.58180E-02
20	1.15246E-01	1.05632E-01	9.76034E-02	6.16686E-02	5.25803E-02	4.86311E-02	2.83957E-02	1.57825E-02
21	1.15233E-01	1.05573E-01	9.74625E-02	6.15042E-02	5.24238E-02	4.84108E-02	2.83411E-02	1.57555E-02
22	1.15227E-01	1.05532E-01	9.73628E-02	6.13897E-02	5.23111E-02	4.82535E-02	2.82996E-02	1.57351E-02
23	1.15223E-01	1.05503E-01	9.72917E-02	6.13088E-02	5.22305E-02	4.81415E-02	2.82685E-02	1.57202E-02
24	1.15221E-01	1.05483E-01	9.72433E-02	6.12472E-02	5.21755E-02	4.80653E-02	2.82479E-02	1.57100E-02
25	1.15218E-01	1.05471E-01	9.72144E-02	6.12134E-02	5.21430E-02	4.80102E-02	2.82361E-02	1.57043E-02
26	1.15214E-01	1.05467E-01	9.72050E-02	6.12026E-02	5.21336E-02	4.80069E-02	2.82344E-02	1.57034E-02
27	1.15213E-01	1.05469E-01	9.72108E-02	6.12094E-02	5.21414E-02	4.80166E-02	2.82398E-02	1.57060E-02
28	1.15212E-01	1.05475E-01	9.72284E-02	6.12279E-02	5.21608E-02	4.80427E-02	2.82492E-02	1.57106E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.18856E-03	5.77404E-03	1.11361E-02	3.67568E-02	1.17026E-02	2.45114E-02	8.25524E-02	6.72903E-02
2	7.18914E-03	5.77505E-03	1.11370E-02	3.67991E-02	1.17085E-02	2.45130E-02	8.25472E-02	6.72749E-02
3	7.18974E-03	5.76971E-03	1.11326E-02	3.67463E-02	1.16988E-02	2.44814E-02	8.22386E-02	6.71417E-02
4	7.18094E-03	5.75685E-03	1.11221E-02	3.67161E-02	1.16714E-02	2.44096E-02	8.19679E-02	6.68551E-02
5	7.17214E-03	5.73712E-03	1.11061E-02	3.66707E-02	1.16377E-02	2.43017E-02	8.15812E-02	6.66307E-02
6	7.16031E-03	5.71012E-03	1.10846E-02	3.66095E-02	1.15919E-02	2.41561E-02	8.10660E-02	6.58652E-02
7	7.14487E-03	5.67441E-03	1.10567E-02	3.65314E-02	1.15322E-02	2.39668E-02	8.04095E-02	6.51457E-02
8	7.12469E-03	5.62688E-03	1.10205E-02	3.64295E-02	1.14537E-02	2.37201E-02	7.95802E-02	6.42412E-02
9	7.10594E-03	5.58210E-03	1.09870E-02	3.63366E-02	1.13805E-02	2.34919E-02	7.88345E-02	6.34329E-02
10	7.08890E-03	5.54098E-03	1.09567E-02	3.62528E-02	1.13135E-02	2.32861E-02	7.81864E-02	6.27365E-02
11	7.07524E-03	5.50932E-03	1.09324E-02	3.61857E-02	1.12621E-02	2.31311E-02	7.77151E-02	6.22517E-02
12	7.06958E-03	5.49785E-03	1.09222E-02	3.61580E-02	1.12443E-02	2.30792E-02	7.75701E-02	6.21288E-02
13	7.06188E-03	5.47757E-03	1.09090E-02	3.61211E-02	1.12153E-02	2.29849E-02	7.72897E-02	6.18219E-02
14	7.04569E-03	5.43221E-03	1.08814E-02	3.60443E-02	1.11480E-02	2.27717E-02	7.66657E-02	6.11202E-02
15	7.02004E-03	5.36034E-03	1.08383E-02	3.59251E-02	1.10431E-02	2.24408E-02	7.57563E-02	6.01143E-02
16	6.97771E-03	5.24045E-03	1.07667E-02	3.57294E-02	1.08713E-02	2.19032E-02	7.43979E-02	5.86188E-02
17	6.93481E-03	5.12325E-03	1.06925E-02	3.55267E-02	1.07018E-02	2.13714E-02	7.29415E-02	5.71296E-02
18	6.89685E-03	5.03039E-03	1.06245E-02	3.53397E-02	1.05580E-02	2.09211E-02	7.15856E-02	5.57125E-02
19	6.86046E-03	4.94801E-03	1.05580E-02	3.51531E-02	1.04257E-02	2.05008E-02	7.02214E-02	5.42902E-02
20	6.83405E-03	4.88314E-03	1.05126E-02	3.50242E-02	1.03364E-02	2.02273E-02	6.92483E-02	5.32798E-02
21	6.81853E-03	4.86492E-03	1.04798E-02	3.49297E-02	1.02749E-02	2.00342E-02	6.85188E-02	5.25261E-02
22	6.80577E-03	4.84202E-03	1.04558E-02	3.48592E-02	1.02306E-02	1.98945E-02	6.79658E-02	5.19580E-02
23	6.79658E-03	4.82608E-03	1.04385E-02	3.48083E-02	1.01987E-02	1.97980E-02	6.75511E-02	5.15330E-02
24	6.79052E-03	4.81535E-03	1.04266E-02	3.47728E-02	1.01764E-02	1.97221E-02	6.72513E-02	5.12251E-02
25	6.78570E-03	4.80890E-03	1.04197E-02	3.47518E-02	1.01627E-02	1.96769E-02	6.70536E-02	5.10182E-02
26	6.78581E-03	4.80639E-03	1.04178E-02	3.47450E-02	1.01574E-02	1.96571E-02	6.69571E-02	5.09080E-02
27	6.78591E-03	4.80730E-03	1.04192E-02	3.47503E-02	1.01588E-02	1.96581E-02	6.69478E-02	5.08833E-02
28	6.78947E-03	4.81043E-03	1.04234E-02	3.47624E-02	1.01648E-02	1.96730E-02	6.69992E-02	5.09183E-02

0 int.	grp. 25	grp. 26	grp. 27
1	3.03896E-02	2.19068E-02	4.15995E-03
2	3.03783E-02	2.18923E-02	4.15685E-03
3	3.03061E-02	2.18294E-02	4.14383E-03

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4	3.01527E-02	2.16951E-02	4.11622E-03
5	2.99252E-02	2.14946E-02	4.07445E-03
6	2.96217E-02	2.12253E-02	4.01718E-03
7	2.92355E-02	2.08794E-02	3.94217E-03
8	2.87521E-02	2.04428E-02	3.86524E-03
9	2.83226E-02	2.00533E-02	3.75774E-03
10	2.79380E-02	1.97200E-02	3.68178E-03
11	2.77139E-02	1.95052E-02	3.63597E-03
12	2.76618E-02	1.94729E-02	3.63295E-03
13	2.74883E-02	1.93123E-02	3.58986E-03
14	2.70915E-02	1.89501E-02	3.48563E-03
15	2.65368E-02	1.83881E-02	3.32999E-03
16	2.57319E-02	1.76111E-02	3.10172E-03
17	2.49630E-02	1.68790E-02	2.90579E-03
18	2.41993E-02	1.62261E-02	2.75982E-03
19	2.34580E-02	1.55963E-02	2.62914E-03
20	2.29381E-02	1.51174E-02	2.55060E-03
21	2.25547E-02	1.48750E-02	2.49817E-03
22	2.22691E-02	1.46591E-02	2.46212E-03
23	2.20574E-02	1.45029E-02	2.43469E-03
24	2.19060E-02	1.43925E-02	2.41907E-03
25	2.18021E-02	1.43185E-02	2.40741E-03
26	2.17448E-02	1.42760E-02	2.40071E-03
27	2.17277E-02	1.42609E-02	2.39818E-03
28	2.17389E-02	1.42640E-02	2.39807E-03

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	4.87090E-04	6.44704E-04	5.36821E-05	-6.98354E-04	9.99954E-01
2	.00000E+00	.00000E+00	3.69919E-04	6.08007E-03	7.99113E-03	1.73746E-04	-7.79466E-03	9.99963E-01
3	.00000E+00	.00000E+00	3.79334E-03	5.43308E-03	1.41358E-02	9.22434E-05	-1.04344E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.54790E-03	3.58874E-03	1.25306E-02	4.18804E-05	-6.82441E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02112E-02	1.15085E-02	2.08497E-02	4.95944E-05	-1.06881E-02	9.99992E-01
6	.00000E+00	.00000E+00	2.14361E-02	3.44799E-02	4.09796E-02	8.42484E-05	-1.96277E-02	9.99999E-01
7	.00000E+00	.00000E+00	4.21852E-02	6.09506E-02	5.41196E-02	6.12018E-05	-1.19940E-02	9.99988E-01
8	.00000E+00	.00000E+00	5.63329E-02	7.83160E-02	5.87228E-02	3.63888E-05	-2.42178E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.77629E-02	7.25727E-02	5.74709E-02	2.92600E-05	2.69512E-04	9.99886E-01
10	.00000E+00	.00000E+00	5.70519E-02	6.91067E-02	5.55375E-02	3.60291E-05	1.48634E-03	9.99895E-01
11	.00000E+00	.00000E+00	5.58257E-02	6.55068E-02	5.22981E-02	5.50834E-05	3.47392E-03	9.99959E-01
12	.00000E+00	.00000E+00	4.53517E-02	3.50518E-02	4.12427E-02	6.05735E-05	4.04963E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.05122E-02	2.85695E-02	3.66385E-02	8.46520E-05	3.79026E-03	9.99989E-01
14	.00000E+00	.00000E+00	3.94478E-02	2.83211E-02	3.38317E-02	1.36678E-04	5.47987E-03	9.99988E-01
15	.00000E+00	.00000E+00	2.17288E-02	1.09097E-02	2.03384E-02	1.13197E-04	1.17730E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.42777E-02	4.61551E-03	1.35977E-02	7.69716E-05	6.02984E-04	1.00000E+00
17	.00000E+00	.00000E+00	7.35010E-03	1.32571E-03	6.88720E-03	3.78428E-05	4.25050E-04	9.99994E-01
18	.00000E+00	.00000E+00	6.53283E-03	1.02337E-03	5.59193E-03	3.20218E-05	9.08861E-04	1.00000E+00
19	.00000E+00	.00000E+00	1.09093E-02	3.03867E-03	1.00651E-02	6.80572E-05	7.56118E-04	1.00001E+00
20	.00000E+00	.00000E+00	2.68510E-02	2.16304E-02	2.44561E-02	2.82106E-04	2.11266E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.30419E-02	4.41230E-03	1.14784E-02	1.10653E-04	1.45278E-03	1.00000E+00
22	.00000E+00	.00000E+00	2.60528E-02	1.37934E-02	2.14635E-02	2.64914E-04	4.32348E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.85292E-02	8.34136E-02	5.47754E-02	1.21087E-03	1.25403E-02	1.00004E+00
24	.00000E+00	.00000E+00	7.33842E-02	7.86564E-02	6.05612E-02	1.42734E-03	1.13952E-02	1.00008E+00
25	.00000E+00	.00000E+00	4.85734E-02	3.32269E-02	4.27465E-02	8.44487E-04	5.28160E-03	1.00003E+00
26	.00000E+00	.00000E+00	3.90251E-02	3.71037E-02	3.42702E-02	8.58082E-04	3.80628E-03	1.00001E+00
27	.00000E+00	.00000E+00	1.32387E-02	8.05151E-03	1.22656E-02	3.06472E-04	6.56608E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.05411E-01	8.00971E-01	8.05411E-01	6.62813E-03	-6.60952E-03	9.99977E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.26224E-02	-6.98354E-04	1.25088E-02	.00000E+00	3.56540E-11	.00000E+00	1.98222E-05	1.57829E-02
2	9.10870E-02	-7.79466E-03	8.96060E-02	.00000E+00	.00000E+00	.00000E+00	8.81274E-05	1.13599E-01
3	1.14068E-01	-1.04344E-02	1.11909E-01	.00000E+00	.00000E+00	.00000E+00	9.18164E-05	1.41773E-01

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4	7.03623E-02	-6.82441E-03	6.88079E-02	.00000E+00	.00000E+00	.00000E+00	4.16276E-05	8.72795E-02
5	1.05198E-01	-1.06881E-02	1.02598E-01	.00000E+00	.00000E+00	.00000E+00	4.98034E-05	1.30290E-01
6	1.97587E-01	-1.96277E-02	1.92734E-01	.00000E+00	.00000E+00	.00000E+00	8.33793E-05	2.44704E-01
7	1.96079E-01	-1.99449E-02	1.93089E-01	.00000E+00	.00000E+00	.00000E+00	5.92586E-05	2.44207E-01
8	1.47344E-01	-2.42178E-03	1.46923E-01	.00000E+00	.00000E+00	.00000E+00	3.27104E-05	1.84890E-01
9	1.15793E-01	2.69512E-04	1.15650E-01	.00000E+00	.00000E+00	.00000E+00	2.16620E-05	1.45540E-01
10	1.06585E-01	1.48334E-03	1.07020E-01	.00000E+00	.00000E+00	.00000E+00	1.91432E-05	1.34253E-01
11	9.97614E-02	3.47392E-03	1.00734E-01	.00000E+00	.00000E+00	.00000E+00	1.78840E-05	1.26061E-01
12	6.42154E-02	4.04963E-03	6.53172E-02	.00000E+00	.00000E+00	.00000E+00	1.04989E-05	8.14795E-02
13	5.48522E-02	3.79026E-03	5.58546E-02	.00000E+00	.00000E+00	.00000E+00	8.74493E-06	6.96388E-02
14	5.19940E-02	5.47987E-03	5.34581E-02	.00000E+00	.00000E+00	.00000E+00	8.50472E-06	6.63766E-02
15	2.89100E-02	1.17730E-03	2.91671E-02	.00000E+00	.00000E+00	.00000E+00	4.49456E-06	3.65061E-02
16	1.60667E-02	6.02984E-04	1.62088E-02	.00000E+00	.00000E+00	.00000E+00	2.25869E-06	2.02853E-02
17	7.07912E-03	4.25050E-04	7.18759E-03	.00000E+00	.00000E+00	.00000E+00	9.18383E-07	8.97278E-03
18	5.51736E-03	9.08861E-04	5.77216E-03	.00000E+00	.00000E+00	.00000E+00	7.10512E-07	7.11580E-03
19	1.09396E-02	7.56118E-04	1.11345E-02	.00000E+00	.00000E+00	.00000E+00	1.45276E-06	1.38842E-02
20	3.62062E-02	2.11265E-03	3.67535E-02	.00000E+00	.00000E+00	.00000E+00	5.37749E-06	4.58796E-02
21	1.12751E-02	1.45278E-03	1.17000E-02	.00000E+00	.00000E+00	.00000E+00	1.32665E-06	1.44687E-02
22	2.31684E-02	4.32368E-03	2.45089E-02	.00000E+00	.00000E+00	.00000E+00	2.76687E-06	3.00478E-02
23	7.78188E-02	1.23403E-02	8.23315E-02	.00000E+00	.00000E+00	.00000E+00	8.31792E-06	1.00848E-01
24	6.23427E-02	1.13952E-02	6.72752E-02	.00000E+00	.00000E+00	.00000E+00	5.00516E-06	8.16654E-02
25	2.77532E-02	5.28160E-03	3.03848E-02	.00000E+00	.00000E+00	.00000E+00	1.73456E-06	3.66298E-02
26	1.95322E-02	3.89626E-03	2.19042E-02	.00000E+00	.00000E+00	.00000E+00	9.13946E-07	2.61344E-02
27	3.63920E-03	6.56605E-04	4.16017E-03	.00000E+00	.00000E+00	.00000E+00	1.07667E-07	4.92798E-03
28	1.75780E+00	-6.60754E-03	1.76484E+00	.00000E+00	3.56540E-11	.00000E+00	5.87347E-04	2.21307E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.15385E-04	1.61457E-04	2.42210E-06	-1.58120E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.81981E-05	1.44083E-03	1.05387E-03	1.39778E-05	-1.01956E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.47884E-04	2.75486E-03	8.71089E-04	2.01597E-05	-7.43311E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.84131E-04	2.29810E-03	2.97554E-04	1.30594E-05	-2.64714E-05	9.99998E-01
5	.00000E+00	.00000E+00	6.11481E-04	4.41046E-03	2.78928E-04	1.68405E-05	3.15690E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.01580E-03	1.23994E-02	1.69411E-04	2.70556E-05	8.19316E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.69131E-04	1.25914E-02	6.32907E-05	2.68088E-05	5.79082E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17095E-04	9.20419E-03	4.43198E-04	2.21031E-05	-3.48250E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45029E-04	6.35590E-03	5.29839E-05	7.66649E-05	3.16394E-04	9.99977E-01
10	.00000E+00	.00000E+00	5.30482E-05	4.98332E-03	4.94032E-05	5.92845E-05	-5.56846E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.94465E-05	4.44910E-03	5.02461E-05	8.99049E-05	-9.07094E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.02464E-05	2.75837E-03	5.13184E-05	5.66705E-06	-6.74324E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13185E-05	2.35694E-03	4.80799E-05	6.31534E-06	-3.07290E-06	9.99999E-01
14	.00000E+00	.00000E+00	4.80800E-05	2.23946E-03	4.21840E-05	8.54857E-06	-2.65427E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.47981E-05	1.22008E-03	4.99314E-05	6.31821E-06	-1.14141E-06	9.99969E-01
16	.00000E+00	.00000E+00	5.60781E-05	6.49237E-04	5.62444E-05	3.84793E-06	-3.98967E-06	9.99963E-01
17	.00000E+00	.00000E+00	6.20020E-05	2.48563E-04	6.13815E-05	1.85364E-06	-1.21919E-06	9.99971E-01
18	.00000E+00	.00000E+00	6.47016E-05	1.82791E-04	5.90224E-05	1.52182E-06	4.16752E-06	9.99990E-01
19	.00000E+00	.00000E+00	6.02860E-05	4.18390E-04	6.17296E-05	3.24660E-06	-4.67128E-06	9.99977E-01
20	.00000E+00	.00000E+00	7.57261E-05	1.52450E-03	6.48122E-05	1.31069E-05	-2.13273E-06	9.99973E-01
21	.00000E+00	.00000E+00	8.70456E-05	3.99105E-04	9.53318E-05	4.94729E-06	-1.32096E-05	9.99986E-01
22	.00000E+00	.00000E+00	1.26263E-04	8.95497E-04	1.19680E-04	1.15625E-05	-4.96162E-06	9.99996E-01
23	.00000E+00	.00000E+00	1.82549E-04	3.17592E-03	2.33312E-04	5.19052E-05	-1.02700E-04	1.00000E+00
24	.00000E+00	.00000E+00	2.99436E-04	2.40258E-03	3.29773E-04	5.88847E-05	-8.58902E-05	1.00001E+00
25	.00000E+00	.00000E+00	3.05008E-04	9.67478E-04	2.49016E-04	3.42578E-05	2.17282E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.29578E-04	7.56319E-04	9.99495E-05	3.39527E-05	-4.33787E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.89815E-05	1.59608E-04	8.22357E-06	1.18615E-05	1.70544E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.09332E-03	8.14601E-02	5.09332E-03	6.26039E-04	-6.20222E-04	9.99994E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.26481E-02	-8.56476E-04	1.26224E-02	-6.98354E-04	5.76869E-06	.00000E+00	1.59470E-06	2.16592E-03
2	9.13489E-02	-8.81422E-03	9.10870E-02	-7.79466E-03	.00000E+00	.00000E+00	1.10152E-05	1.52047E-02
3	1.14414E-01	-1.11777E-02	1.14068E-01	-1.06344E-02	.00000E+00	.00000E+00	1.26347E-05	1.90441E-02
4	7.05789E-02	-6.85088E-03	7.03623E-02	-6.82441E-03	.00000E+00	.00000E+00	7.41779E-06	1.17490E-02

5	1.05537E-01	-1.03724E-02	1.05198E-01	-1.06881E-02	.00000E+00	.00000E+00	8.63403E-06	1.75684E-02
6	1.98262E-01	-1.88084E-02	1.97587E-01	-1.96277E-02	.00000E+00	.00000E+00	1.01711E-05	3.30015E-02
7	1.96485E-01	-1.14159E-02	1.96079E-01	-1.19949E-02	.00000E+00	.00000E+00	8.35158E-06	3.27840E-02
8	1.47632E-01	-2.77001E-03	1.47344E-01	-2.42178E-03	.00000E+00	.00000E+00	5.27251E-06	2.45674E-02
9	1.15782E-01	5.84705E-04	1.15793E-01	2.69812E-04	.00000E+00	.00000E+00	4.58111E-06	1.93011E-02
10	1.06545E-01	1.42866E-03	1.06585E-01	1.48634E-03	.00000E+00	.00000E+00	4.90574E-06	1.77622E-02
11	9.96685E-02	3.38321E-03	9.97614E-02	3.47392E-03	.00000E+00	.00000E+00	4.75836E-06	1.66194E-02
12	6.41083E-02	4.04289E-03	6.42154E-02	4.04963E-03	.00000E+00	.00000E+00	3.21119E-06	1.06952E-02
13	5.47497E-02	3.78719E-03	5.48522E-02	3.79026E-03	.00000E+00	.00000E+00	2.73684E-06	9.13298E-03
14	5.18477E-02	5.47721E-03	5.19940E-02	5.47987E-03	.00000E+00	.00000E+00	2.58635E-06	8.65217E-03
15	2.88734E-02	1.16589E-03	2.89100E-02	1.17730E-03	.00000E+00	.00000E+00	1.41874E-06	4.81530E-03
16	1.60494E-02	5.98994E-04	1.60667E-02	6.02984E-04	.00000E+00	.00000E+00	7.88577E-07	2.67637E-03
17	7.05775E-03	4.23830E-04	7.07912E-03	4.25050E-04	.00000E+00	.00000E+00	3.47178E-07	1.17887E-03
18	5.49442E-03	9.13028E-04	5.51736E-03	9.08861E-04	.00000E+00	.00000E+00	2.70079E-07	9.17358E-04
19	1.09191E-02	7.51447E-04	1.09396E-02	7.56118E-04	.00000E+00	.00000E+00	5.36007E-07	1.82142E-03
20	3.61504E-02	2.11051E-03	3.62062E-02	2.11265E-03	.00000E+00	.00000E+00	1.77184E-06	6.02954E-03
21	1.12395E-02	1.43957E-03	1.12751E-02	1.45278E-03	.00000E+00	.00000E+00	5.50808E-07	1.87573E-03
22	2.30648E-02	4.31871E-03	2.31684E-02	4.32368E-03	.00000E+00	.00000E+00	1.12842E-06	3.85126E-03
23	7.75285E-02	1.22576E-02	7.78185E-02	1.23403E-02	.00000E+00	.00000E+00	3.77857E-06	1.29418E-02
24	6.20970E-02	1.13088E-02	6.23427E-02	1.13952E-02	.00000E+00	.00000E+00	3.00818E-06	1.03661E-02
25	2.76489E-02	5.30333E-03	2.77532E-02	5.28160E-03	.00000E+00	.00000E+00	1.33133E-06	4.61513E-03
26	1.94675E-02	3.89192E-03	1.95322E-02	3.89626E-03	.00000E+00	.00000E+00	9.27235E-07	3.24852E-03
27	3.63316E-03	6.73660E-04	3.63920E-03	6.56606E-04	.00000E+00	.00000E+00	1.67621E-07	6.05812E-04
28	1.75854E+00	-7.22974E-03	1.75780E+00	-6.60954E-03	5.76869E-06	.00000E+00	1.05875E-04	2.93069E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.58233E-04	3.41793E-04	2.86598E-05	-3.70235E-04	9.99985E-01
2	.00000E+00	.00000E+00	1.98114E-04	3.26546E-03	4.26555E-03	9.27431E-05	-4.16202E-03	9.99988E-01
3	.00000E+00	.00000E+00	2.03449E-03	2.90447E-03	7.55686E-03	4.93124E-05	-5.58153E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.96483E-03	1.92142E-03	6.60181E-03	2.24228E-05	-3.69552E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.46216E-03	6.17154E-03	1.11810E-02	2.65958E-05	-5.74531E-03	9.99996E-01
6	.00000E+00	.00000E+00	1.14852E-02	1.84847E-02	2.19692E-02	4.51656E-05	-1.05312E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26100E-02	2.23819E-02	2.87528E-02	3.25154E-05	-6.17498E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99803E-02	4.11483E-02	3.08538E-02	1.91192E-05	-8.89860E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04122E-02	3.79673E-02	3.00666E-02	1.53077E-05	3.33721E-04	9.99869E-01
10	.00000E+00	.00000E+00	2.98807E-02	3.60666E-02	2.89845E-02	1.88085E-05	8.80195E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.91533E-02	3.40130E-02	2.71547E-02	2.86010E-05	1.97182E-03	9.99945E-01
12	.00000E+00	.00000E+00	2.35738E-02	1.80730E-02	2.12652E-02	3.11292E-05	2.27801E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.09422E-02	1.47188E-02	1.88751E-02	4.35999E-05	2.02418E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.05471E-02	1.44569E-02	1.72699E-02	6.97665E-05	3.00769E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.11306E-02	5.67224E-03	1.06264E-02	5.88538E-05	4.45320E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.36354E-03	2.40001E-03	7.07066E-03	4.00243E-05	2.52856E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.79802E-03	6.83820E-04	3.55788E-03	1.95752E-05	2.20581E-04	9.99995E-01
18	.00000E+00	.00000E+00	3.37567E-03	5.13196E-04	2.80421E-03	1.60581E-05	5.55392E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.61321E-03	1.56669E-03	5.19965E-03	3.50891E-05	3.78374E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.38132E-02	1.11805E-02	1.26411E-02	1.45818E-04	1.02620E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.68412E-03	2.23468E-03	5.81345E-03	5.60422E-05	8.14637E-04	1.00000E+00
22	.00000E+00	.00000E+00	1.32322E-02	6.86523E-03	1.06833E-02	1.31863E-04	2.41643E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.39578E-02	4.16726E-02	2.73653E-02	6.04941E-04	5.96659E-03	1.00002E+00
24	.00000E+00	.00000E+00	3.61385E-02	3.85702E-02	2.97727E-02	7.01708E-04	5.66250E-03	1.00003E+00
25	.00000E+00	.00000E+00	2.38828E-02	1.61333E-02	2.07555E-02	4.10035E-04	2.71698E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.88825E-02	1.76232E-02	1.62774E-02	4.07566E-04	2.29739E-03	1.00001E+00
27	.00000E+00	.00000E+00	6.39842E-03	3.72651E-03	5.67391E-03	1.41769E-04	5.82721E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.13381E-01	4.10651E-01	4.13381E-01	3.25089E-03	-3.28245E-03	9.99975E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.27800E-02	-1.22657E-03	1.26481E-02	-8.56474E-04	1.89021E-11	.00000E+00	1.02438E-05	8.36737E-03
2	9.26692E-02	-1.29762E-02	9.13439E-02	-8.81422E-03	.00000E+00	.00000E+00	4.70411E-05	6.05306E-02
3	1.16041E-01	-1.67592E-02	1.14414E-01	-1.11777E-02	.00000E+00	.00000E+00	4.90841E-05	7.57903E-02
4	7.15465E-02	-1.05102E-02	7.05789E-02	-6.85088E-03	.00000E+00	.00000E+00	2.22874E-05	4.67294E-02
5	1.07001E-01	-1.61177E-02	1.05537E-01	-1.03724E-02	.00000E+00	.00000E+00	2.64339E-05	6.98591E-02

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6	2.00871E-01	-2.95395E-02	1.98262E-01	-1.88084E-02	.00000E+00	.00000E+00	4.46998E-05	1.31210E-01
7	1.98001E-01	-1.75909E-02	1.96485E-01	-1.14159E-02	.00000E+00	.00000E+00	3.14830E-05	1.29743E-01
8	1.47723E-01	-3.66987E-03	1.47432E-01	-2.77001E-03	.00000E+00	.00000E+00	1.71865E-05	9.71437E-02
9	1.15554E-01	9.18426E-04	1.15782E-01	5.84706E-04	.00000E+00	.00000E+00	1.13328E-05	7.61409E-02
10	1.06287E-01	2.30885E-03	1.06545E-01	1.42866E-03	.00000E+00	.00000E+00	9.99080E-06	7.00663E-02
11	9.90944E-02	5.35503E-03	9.96685E-02	3.38321E-03	.00000E+00	.00000E+00	9.28597E-06	6.54545E-02
12	6.34182E-02	6.32092E-03	6.41083E-02	4.04285E-03	.00000E+00	.00000E+00	5.41334E-06	4.20115E-02
13	5.41521E-02	5.81137E-03	5.47497E-02	3.78719E-03	.00000E+00	.00000E+00	4.50513E-06	3.58759E-02
14	5.09467E-02	8.48490E-03	5.18477E-02	5.47721E-03	.00000E+00	.00000E+00	4.34136E-06	3.38829E-02
15	2.87815E-02	1.61121E-03	2.88734E-02	1.16589E-03	.00000E+00	.00000E+00	2.33683E-06	1.89804E-02
16	1.59893E-02	8.51850E-04	1.60494E-02	5.98994E-04	.00000E+00	.00000E+00	1.17450E-06	1.05481E-02
17	7.00473E-03	6.44412E-04	7.05775E-03	4.29830E-04	.00000E+00	.00000E+00	4.74431E-07	4.63528E-03
18	5.31703E-03	1.46842E-03	5.49442E-03	9.13028E-04	.00000E+00	.00000E+00	3.56304E-07	3.56840E-03
19	1.08129E-02	1.12982E-03	1.09191E-02	7.51447E-04	.00000E+00	.00000E+00	7.49018E-07	7.15846E-03
20	3.58660E-02	3.13671E-03	3.61504E-02	2.11051E-03	.00000E+00	.00000E+00	2.77957E-06	2.37147E-02
21	1.09799E-02	2.25421E-03	1.12395E-02	1.43957E-03	.00000E+00	.00000E+00	6.71905E-07	7.32790E-03
22	2.22435E-02	6.73514E-03	2.30646E-02	4.31871E-03	.00000E+00	.00000E+00	1.36727E-06	1.49565E-02
23	7.52274E-02	1.82042E-02	7.75285E-02	1.22578E-02	.00000E+00	.00000E+00	4.15556E-06	5.03827E-02
24	5.95314E-02	1.69667E-02	6.20970E-02	1.13098E-02	.00000E+00	.00000E+00	2.46050E-06	4.01429E-02
25	2.62168E-02	8.03028E-03	2.76489E-02	5.30533E-03	.00000E+00	.00000E+00	8.42212E-07	1.77855E-02
26	1.80720E-02	6.18931E-03	1.94675E-02	3.89192E-03	.00000E+00	.00000E+00	4.34097E-07	1.24131E-02
27	3.23510E-03	1.25638E-03	3.63316E-03	6.73660E-04	.00000E+00	.00000E+00	4.98052E-08	2.27997E-03
28	1.75535E+00	-1.05122E-02	1.75864E+00	-7.22974E-03	1.89021E-11	.00000E+00	3.11186E-04	1.15671E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.25011E-02	.00000E+00	2.08848E-02	1.98131E-02	3.68826E-03	1.22670E-03	9.98900E-01
2	.00000E+00	1.92525E-01	6.85378E-03	2.48705E-01	1.71191E-01	1.52242E-02	1.29761E-02	1.00002E+00
3	.00000E+00	2.15618E-01	7.05690E-02	2.56701E-01	2.53277E-01	1.62444E-02	1.67591E-02	9.99988E-01
4	.00000E+00	1.24001E-01	1.04653E-01	1.76351E-01	2.10673E-01	7.77117E-03	1.05101E-02	1.00000E+00
5	.00000E+00	1.66661E-01	1.91269E-01	4.44024E-01	3.34607E-01	5.20950E-03	1.61178E-02	9.99990E-01
6	.00000E+00	1.77976E-01	3.90072E-01	1.19096E+00	5.30032E-01	8.26884E-03	2.95394E-02	1.00001E+00
7	.00000E+00	8.80747E-02	5.92882E-01	1.56641E+00	6.55091E-01	8.28064E-03	1.75914E-02	9.99990E-01
8	.00000E+00	1.35773E-02	6.89252E-01	1.57537E+00	6.85878E-01	1.33484E-02	3.65991E-03	9.99920E-01
9	.00000E+00	9.85518E-04	6.77988E-01	1.37120E+00	6.57991E-01	2.19720E-02	-9.12558E-04	9.99885E-01
10	.00000E+00	7.32011E-05	6.55054E-01	1.24591E+00	6.24314E-01	3.31867E-02	-2.30688E-03	9.99899E-01
11	.00000E+00	5.75899E-06	6.28420E-01	1.15921E+00	5.79823E-01	3.59932E-02	-5.35353E-03	9.99940E-01
12	.00000E+00	4.06599E-07	5.05087E-01	6.33429E-01	4.53169E-01	5.82623E-02	-6.32114E-03	9.99975E-01
13	.00000E+00	6.42405E-08	4.47809E-01	5.02815E-01	3.99520E-01	5.41136E-02	-5.81247E-03	9.99974E-01
14	.00000E+00	1.27307E-08	4.30994E-01	4.71038E-01	3.63406E-01	7.60782E-02	-8.48526E-03	9.99990E-01
15	.00000E+00	1.43871E-09	2.37987E-01	2.16462E-01	2.32045E-01	7.52740E-03	-1.61400E-03	1.00013E+00
16	.00000E+00	4.23456E-10	1.62648E-01	1.00837E-01	1.58397E-01	5.08498E-03	-8.55121E-04	1.00013E+00
17	.00000E+00	1.36051E-10	8.74822E-02	3.19811E-02	8.25589E-02	5.75978E-03	-6.43208E-04	1.00008E+00
18	.00000E+00	9.74088E-11	7.82257E-02	2.25708E-02	6.28919E-02	1.67968E-02	-1.47086E-03	1.00007E+00
19	.00000E+00	1.37715E-10	1.26769E-01	6.25665E-02	1.17846E-01	8.04357E-03	-1.13503E-03	1.00011E+00
20	.00000E+00	2.23939E-10	2.98152E-01	3.55475E-01	2.74113E-01	2.71452E-02	-3.14665E-03	1.00014E+00
21	.00000E+00	3.27775E-11	1.48254E-01	7.32826E-02	1.28399E-01	2.21013E-02	-2.25739E-03	1.00007E+00
22	.00000E+00	3.80298E-11	2.85287E-01	1.95241E-01	2.24417E-01	6.55885E-02	-6.73578E-03	1.00007E+00
23	.00000E+00	3.63602E-11	6.84853E-01	1.04821E+00	5.62382E-01	1.40611E-01	-1.81967E-02	1.00008E+00
24	.00000E+00	9.89678E-12	7.26704E-01	8.98756E-01	5.99529E-01	1.44095E-01	-1.69575E-02	1.00007E+00
25	.00000E+00	2.89713E-12	4.80701E-01	3.63708E-01	4.08696E-01	8.00060E-02	-8.01983E-03	1.00004E+00
26	.00000E+00	2.03149E-12	3.72597E-01	3.64711E-01	3.05864E-01	7.26891E-02	-6.18951E-03	1.00008E+00
27	.00000E+00	4.84114E-13	1.22721E-01	7.36768E-02	1.03332E-01	2.03441E-02	-1.25642E-03	1.00001E+00
28	.00000E+00	1.00000E+00	9.19945E+00	1.46682E+01	9.19945E+00	9.91732E-01	1.04954E-02	9.99999E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux^db**2	total flux
1	1.30728E-02	-8.23645E-09	1.27800E-02	-1.22671E-03	2.19980E-03	2.45359E-03	2.88654E-04	3.32259E-01
2	9.59542E-02	-9.25957E-08	9.26692E-02	-1.29762E-02	1.60923E-05	1.09749E-02	1.57732E-03	2.43648E+00
3	1.20401E-01	-8.61707E-08	1.16041E-01	-1.67592E-02	.00000E+00	1.33511E-02	1.82264E-03	3.05635E+00
4	7.43687E-02	-7.46995E-08	7.15465E-02	-1.05102E-02	.00000E+00	5.72283E-03	8.82679E-04	1.88748E+00
5	1.11593E-01	-1.30847E-07	1.07001E-01	-1.61177E-02	.00000E+00	1.66916E-03	1.03129E-03	2.83115E+00
6	2.09705E-01	-1.37524E-07	2.00871E-01	-2.95395E-02	.00000E+00	1.44218E-03	1.73119E-03	5.31835E+00

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7	2.08560E-01	4.72277E-07	1.98009E-01	-1.75909E-02	.00000E+00	1.43317E-03	1.22604E-03	5.16917E+00
8	1.48889E-01	3.86691E-08	1.47723E-01	-3.65987E-03	.00000E+00	1.47659E-03	6.97612E-04	3.78777E+00
9	1.15211E-01	5.86745E-06	1.15554E-01	9.18426E-04	.00000E+00	2.00066E-03	4.70875E-04	2.93430E+00
10	1.05478E-01	1.96873E-06	1.06287E-01	2.30885E-03	.00000E+00	4.27290E-03	4.28297E-04	2.68789E+00
11	9.72367E-02	1.50113E-06	9.90944E-02	5.35503E-03	.00000E+00	9.03446E-03	3.86674E-04	2.48091E+00
12	6.12403E-02	-2.23212E-07	6.34188E-02	6.32098E-03	.00000E+00	1.18367E-02	2.27595E-04	1.56520E+00
13	5.21738E-02	-1.09516E-06	5.41521E-02	5.81137E-03	.00000E+00	1.22719E-02	1.95662E-04	1.33390E+00
14	4.80601E-02	-3.63766E-07	5.09467E-02	8.48490E-03	.00000E+00	8.08807E-03	1.76823E-04	1.23149E+00
15	2.82560E-02	-4.78684E-06	2.87815E-02	1.61121E-03	.00000E+00	2.03167E-03	1.11532E-04	7.21075E-01
16	1.57140E-02	-3.27042E-06	1.59893E-02	8.51850E-04	.00000E+00	1.38800E-03	5.82700E-05	4.00918E-01
17	6.79082E-03	1.20404E-06	7.00473E-03	6.44412E-04	.00000E+00	1.86029E-03	2.28359E-05	1.73500E-01
18	4.81286E-03	-2.43980E-06	5.31703E-03	1.46842E-03	.00000E+00	1.88211E-03	1.34026E-05	1.23798E-01
19	1.04274E-02	-5.21187E-06	1.08129E-02	1.12982E-03	.00000E+00	2.97904E-03	3.57887E-05	2.66559E-01
20	3.47734E-02	-9.93118E-06	3.58560E-02	3.13671E-03	.00000E+00	1.56512E-02	1.28659E-04	8.88591E-01
21	1.01828E-02	-3.17839E-06	1.09799E-02	2.25421E-03	.00000E+00	1.33112E-02	2.91887E-05	2.61231E-01
22	1.96854E-02	-3.66302E-06	2.22635E-02	6.73514E-03	.00000E+00	3.92745E-02	5.30524E-05	5.08776E-01
23	6.70855E-02	7.43641E-06	7.52274E-02	1.82042E-02	.00000E+00	8.27260E-02	1.80689E-04	1.73629E+00
24	5.09464E-02	-7.86148E-07	5.95316E-02	1.69667E-02	.00000E+00	8.44330E-02	1.07313E-04	1.32884E+00
25	2.17490E-02	4.55754E-07	2.62168E-02	8.02028E-03	.00000E+00	4.88251E-02	3.65120E-05	5.70198E-01
26	1.42682E-02	-2.01242E-07	1.80720E-02	6.18831E-03	.00000E+00	4.49767E-02	1.79214E-05	3.76320E-01
27	2.39824E-03	-3.56412E-08	3.23510E-03	1.25638E-03	.00000E+00	1.25808E-02	1.83465E-06	6.34222E-02
28	1.74397E+00	-1.67794E-05	1.75535E+00	-1.05122E-02	2.21589E-03	4.37757E-01	1.19400E-02	4.44725E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.25011E-02	.00000E+00	2.18455E-02	2.09611E-02	3.77282E-03	-8.23645E-09	9.98868E-01
2	.00000E+00	1.92525E-01	7.44807E-03	2.59471E-01	1.84483E-01	1.55044E-02	-9.29967E-08	1.00001E+00
3	.00000E+00	2.15618E-01	7.66247E-02	2.67798E-01	2.75841E-01	1.64062E-02	-8.61707E-08	9.99987E-01
4	.00000E+00	1.24001E-01	1.13750E-01	1.84159E-01	2.29908E-01	7.84853E-03	-7.46999E-08	9.99999E-01
5	.00000E+00	1.64661E-01	2.07554E-01	4.66115E-01	3.66916E-01	5.30253E-03	-1.30847E-07	9.99990E-01
6	.00000E+00	1.77978E-01	4.24007E-01	1.25632E+00	5.98550E-01	8.42531E-03	-1.39526E-07	1.00001E+00
7	.00000E+00	8.80747E-02	6.58346E-01	1.67033E+00	7.39026E-01	8.40117E-03	4.72277E-07	9.99990E-01
8	.00000E+00	1.35773E-02	7.75682E-01	1.70404E+00	7.75897E-01	1.34260E-02	3.86691E-08	9.99919E-01
9	.00000E+00	9.85518E-04	7.66606E-01	1.48809E+00	7.45581E-01	2.20952E-02	5.86745E-06	9.99885E-01
10	.00000E+00	7.32011E-05	7.42040E-01	1.35607E+00	7.08888E-01	3.33008E-02	1.96873E-06	9.99895E-01
11	.00000E+00	5.75899E-06	7.13446E-01	1.26318E+00	6.59526E-01	5.41668E-02	1.50113E-06	9.99940E-01
12	.00000E+00	4.04559E-07	5.74053E-01	6.89512E-01	5.15718E-01	5.83594E-02	-2.23212E-07	9.99975E-01
13	.00000E+00	6.42408E-08	5.09315E-01	5.48460E-01	4.55082E-01	5.62482E-02	-1.09516E-06	9.99973E-01
14	.00000E+00	1.27307E-08	4.90837E-01	5.16054E-01	4.14550E-01	7.62952E-02	-3.63766E-07	9.99989E-01
15	.00000E+00	1.43871E-09	2.70897E-01	2.34264E-01	2.63160E-01	7.70577E-03	-4.78684E-06	1.00011E+00
16	.00000E+00	4.22456E-10	1.86345E-01	1.08002E-01	1.79121E-01	5.20683E-03	-3.27042E-06	1.00011E+00
17	.00000E+00	1.34051E-10	9.86984E-02	3.42380E-02	9.28654E-02	5.81911E-03	1.20404E-06	1.00007E+00
18	.00000E+00	9.74088E-11	8.81969E-02	2.42902E-02	7.13471E-02	1.68464E-02	-2.43980E-06	1.00007E+00
19	.00000E+00	1.37715E-10	1.41352E-01	6.75802E-02	1.33190E-01	8.15076E-03	-5.21187E-06	1.00010E+00
20	.00000E+00	2.23935E-10	3.38892E-01	3.89810E-01	3.11275E-01	2.75863E-02	-9.93118E-06	1.00012E+00
21	.00000E+00	3.27775E-11	1.68057E-01	8.03287E-02	1.45788E-01	2.22730E-02	-3.17839E-06	1.00006E+00
22	.00000E+00	3.80258E-11	3.22659E-01	2.16794E-01	2.56684E-01	6.59968E-02	-3.66302E-06	1.00007E+00
23	.00000E+00	3.63603E-11	7.87302E-01	1.17648E+00	6.44754E-01	1.42679E-01	7.43641E-06	1.00008E+00
24	.00000E+00	9.89678E-12	8.36526E-01	1.01839E+00	6.90195E-01	1.46281E-01	-7.86148E-07	1.00006E+00
25	.00000E+00	2.89713E-12	5.53762E-01	4.14030E-01	4.72447E-01	8.12947E-02	4.55754E-07	1.00004E+00
26	.00000E+00	2.03149E-12	4.30514E-01	4.20194E-01	3.56512E-01	7.39887E-02	-2.01242E-07	1.00003E+00
27	.00000E+00	4.86114E-13	1.42578E-01	8.56141E-02	1.21272E-01	2.11042E-02	-3.56412E-08	1.00001E+00
28	.00000E+00	1.00000E+00	1.04253E+01	1.59613E+01	1.04253E+01	1.00228E+00	-1.67535E-05	9.99997E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nsn rate	fiss rate	flux*dt**2	total flux
1	1.30728E-02	-8.23645E-09	1.25098E-02	.00000E+00	2.20557E-03	2.45359E-03	3.19615E-04	3.58548E-01
2	9.59542E-02	-9.29967E-08	8.96060E-02	.00000E+00	1.60923E-05	1.09749E-02	1.72350E-03	2.62561E+00
3	1.20401E-01	-8.61707E-08	1.11909E-01	.00000E+00	.00000E+00	1.33511E-02	1.97816E-03	3.29926E+00
4	7.43487E-02	-7.46999E-08	6.88097E-02	.00000E+00	.00000E+00	5.74283E-03	9.54011E-04	2.03324E+00
5	1.11593E-01	-1.30847E-07	1.02578E-01	.00000E+00	.00000E+00	1.66916E-03	1.11566E-03	3.04888E+00
6	2.09705E-01	-1.39526E-07	1.92734E-01	.00000E+00	.00000E+00	1.44218E-03	1.86944E-03	5.72731E+00
7	2.08560E-01	4.72277E-07	1.98009E-01	.00000E+00	.00000E+00	1.43317E-03	1.32514E-03	5.57586E+00

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8	1.48889E-01	3.86691E-03	1.46923E-01	.00000E+00	.00000E+00	1.47659E-03	7.52782E-04	4.09337E+00
9	1.15211E-01	5.86745E-06	1.15850E-01	.00000E+00	.00000E+00	2.00066E-03	5.08451E-04	3.17528E+00
10	1.05478E-01	1.96873E-06	1.07020E-01	.00000E+00	.00000E+00	4.27250E-03	4.62337E-04	2.90997E+00
11	9.72367E-02	1.50113E-06	1.00734E-01	.00000E+00	.00000E+00	9.03446E-03	4.18502E-04	2.68904E+00
12	6.12403E-02	-2.25212E-07	6.53117E-02	.00000E+00	.00000E+00	1.18367E-02	2.46718E-04	1.69958E+00
13	5.21738E-02	-1.09516E-06	5.58546E-02	.00000E+00	.00000E+00	1.22719E-02	2.11649E-04	1.44854E+00
14	4.80601E-02	-3.63766E-07	5.34581E-02	.00000E+00	.00000E+00	8.08807E-03	1.92258E-04	1.34040E+00
15	2.82560E-02	-4.78584E-06	2.91671E-02	.00000E+00	.00000E+00	2.03167E-03	1.19782E-04	7.81377E-01
16	1.57140E-02	-3.27042E-06	1.62088E-02	.00000E+00	.00000E+00	1.38800E-03	6.26918E-05	4.34428E-01
17	6.79082E-03	1.20404E-06	7.18759E-03	.00000E+00	.00000E+00	1.86025E-03	2.45759E-05	1.88288E-01
18	4.81286E-03	-2.43980E-06	5.77216E-03	.00000E+00	.00000E+00	1.88211E-03	1.47395E-05	1.35394E-01
19	1.04274E-02	-5.21187E-06	1.11345E-02	.00000E+00	.00000E+00	2.97904E-03	3.85265E-05	2.89468E-01
20	3.47734E-02	-9.93118E-06	3.67535E-02	.00000E+00	.00000E+00	1.54512E-02	1.38527E-04	9.64214E-01
21	1.01693E-02	-3.17838E-06	1.17000E-02	.00000E+00	.00000E+00	1.33112E-02	3.17376E-05	2.84908E-01
22	1.96854E-02	-3.64302E-06	2.45039E-02	.00000E+00	.00000E+00	3.92745E-02	5.82949E-05	5.57632E-01
23	6.70355E-02	7.43641E-06	8.25315E-02	.00000E+00	.00000E+00	8.27260E-02	1.96941E-04	1.90047E+00
24	5.09464E-02	-7.86148E-07	6.72752E-02	.00000E+00	.00000E+00	8.44330E-02	1.17787E-04	1.46100E+00
25	2.17490E-02	4.55754E-07	3.03848E-02	.00000E+00	.00000E+00	4.88251E-02	4.04201E-05	6.29225E-01
26	1.42682E-02	-2.01242E-07	2.19042E-02	.00000E+00	.00000E+00	4.49767E-02	2.01967E-05	4.18116E-01
27	2.39824E-03	-3.56412E-08	4.16017E-03	.00000E+00	.00000E+00	1.25803E-02	2.15974E-06	7.12356E-02
28	1.74397E+00	-1.67794E-05	1.76484E+00	.00000E+00	2.22166E-03	4.37757E-01	1.29424E-02	4.81351E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.11943E-03	5.00359E-03	5.27358E-03	2.50524E-03	3.18195E-03	5.52755E-03	3.71888E-03	1.74298E-03
2	6.81981E-04	4.94262E-03	5.77098E-03	3.43856E-03	4.29882E-03	6.19941E-03	4.33682E-03	2.14774E-03
3	1.14767E-03	5.42478E-03	5.85714E-03	2.91225E-03	3.86410E-03	6.78687E-03	4.38250E-03	1.82336E-03
4	7.88463E-04	4.26023E-03	4.91986E-03	2.38575E-03	2.82822E-03	4.80213E-03	3.32659E-03	1.79705E-03
5	8.11503E-04	4.32615E-03	4.96356E-03	2.41016E-03	2.87801E-03	4.85087E-03	3.37616E-03	1.79733E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11254E-03	1.01473E-03	1.09556E-03	8.73455E-04	7.88082E-04	1.02144E-03	3.14856E-04	1.58611E-04
2	1.79015E-03	1.95321E-03	2.04368E-03	1.60047E-03	1.41666E-03	1.67774E-03	6.25492E-04	3.42242E-04
3	1.12161E-03	1.05598E-03	1.29907E-03	1.22050E-03	1.11105E-03	1.54174E-03	3.75369E-04	1.92583E-04
4	1.19657E-03	1.09447E-03	1.03050E-03	6.77878E-04	6.01821E-04	6.40114E-04	3.11243E-04	1.61381E-04
5	1.19269E-03	1.09511E-03	1.04602E-03	7.05350E-04	6.27420E-04	6.85339E-04	3.14842E-04	1.63104E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.68412E-05	1.52564E-04	1.49937E-04	4.60025E-04	2.50989E-04	7.31279E-04	2.15102E-03	1.94683E-03
2	1.71037E-04	2.46108E-04	2.79257E-04	8.64857E-04	4.13488E-04	1.14295E-03	3.34340E-03	3.00861E-03
3	1.22631E-04	2.54226E-04	2.13178E-04	6.21447E-04	3.97153E-04	1.17985E-03	3.26831E-03	3.01913E-03
4	7.01335E-05	7.08925E-05	1.14890E-04	3.85285E-04	1.34023E-04	3.36726E-04	1.09503E-03	8.85210E-04
5	7.27610E-05	7.98759E-05	1.19833E-04	3.97241E-04	1.47339E-04	3.79755E-04	1.20876E-03	9.95644E-04

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.90710E-04	6.32943E-04	9.64889E-05	4.20086E-02
2	1.39218E-03	1.01683E-03	1.74955E-04	5.52800E-02
3	1.41351E-03	1.06838E-03	1.99854E-04	5.18804E-02
4	3.70880E-04	2.25540E-04	2.79488E-05	3.45350E-02
5	4.25833E-04	2.69069E-04	3.60738E-05	3.54158E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6459E+06	1.9663E+09	7.1931E-01
2	9.0000E+05	1.5094E+05	9.7774E+06	2.8069E-01
3	4.0000E-01	1.2654E-01	3.6728E+05	1.2248E-10
4	1.0000E-05			

1 400 d, second part of sas2h pass to make library

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.88749E-01	1.13781E+00	2.34521E-01
2	3.98985E-01	1.13922E+00	2.24799E-01

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    3 3.96952E-01 1.13956E+00 2.20714E-01
    4 4.14091E-01 1.14221E+00 1.90284E-01
    5 4.12403E-01 1.14193E+00 1.95240E-01
0flux disadventage factors (zone average/cell average-flux)

0zone  grp. 1     grp. 2     grp. 3
    1 9.42642E-01 9.96394E-01 1.21363E+00
    2 9.55339E-01 9.97625E-01 1.16435E+00
    3 9.62485E-01 9.97925E-01 1.14218E+00
    4 1.00409E+00 1.00025E+00 9.84705E-01
    5 1.00000E+00 1.00000E+00 1.00000E+00
0cell averaged currents

0zone  grp. 1     grp. 2     grp. 3
    1 1.70852E-02 1.82180E-02 6.70026E-03
    2 1.91329E-02 2.56545E-02 1.04924E-02
    3 1.98059E-02 2.21225E-02 1.05520E-02
    4 1.51825E-02 1.62791E-02 3.07336E-03
    5 1.53894E-02 1.66635E-02 3.46346E-03
0zone      volume      vol. fraction

   1    1.25665E+00    4.56234E-02
   2    1.66687E-01    6.05168E-03
   3    6.58265E-01    2.39987E-02
   4    2.54634E+01    9.24426E-01
   5    2.75440E+01    1.00000E+00
- elapsed time   .03 min.
1  ooooooooo    ooooooooo   EE      EE  PPPPPPPPP   LL          eeeeeeeeeee
  ooooooooooo  ooooooooooo  EE      EE  PPPPPPPPPP  LL          eeeeeeeeeee
  oo       oo  oo       oo  EE      EE  PP      PP  LL          ee
  oo           oo       oo  EE      EE  PP      PP  LL          ee
  oo           oo       oo  EE      EE  PP      PP  LL          ee
  oo           oo       oo  EE      EE  PPPPPPPPPP  LL          eeeeeeee
  oo           oo       oo  EE      EE  PPPPPPPPP   LL          eeeeeeee
  oo           oo       oo  EE      EE  PP          LL          ee
  oo           oo       oo  EE      EE  PP          LL          ee
  oo       oo  oo       oo  EE      EE  PP          LL          ee
  ooooooooooo  ooooooooooo  EEEEEEEEEEE  PP          LLLLLLLLLLL eeeeeeeeeee
   ooooooooo    ooooooooo    EEEEEEEEE   PP          LLLLLLLLLLL eeeeeeeeeee
0

  ddddddddd     aaaaaaaa    W       W  iiiiiiiiii    sssssssss
  ddddddddddd   aaaaaaaaa   W       W  iiiiiiiiii   sssssssssss
  dd       dd   aa      aa  W       W     ii       ss      ss
  dd       dd   aa      aa  W       W     ii       ss
  dd       dd   aa      aa  W       W     ii       ss
  dd       dd   aaaaaaaaaa  W       W     ii       sssssssss
  dd       dd   aaaaaaaaaa   W     W      ii        sssssssss
  dd       dd   aa      aa    W   W       ii              ss
  dd       dd   aa      aa     W W        ii              ss
  dd       dd   aa      aa      W W       ii       ss      ss
  dddddddddddd  aa      aa       W      iiiiiiiiii  sssssssssss
  ddddddddddd   aa      aa       V      iiiiiiiiii   sssssssss
0

   000000     ZZZZZZZZZZ          //     11     666666666          //  99999999    666666666
  00000000   ZZZZZZZZZZZZ         //    111     666666666          //  99999999999 666666666
 00      00  ZZ        ZZ         //   1111     66                 //  99      99  66
 00      00            ZZ         //     11     66                 //  99      99  66
 00      00            ZZ         //     11     66                 //  99      99  66
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 88      88       22      //       11     666666666      //    999999999999  666666666
 8888    8888     22      //       11     666666666      //     99999999999  666666666
 8888    8888    22       //       11     66      66     //            99    66      66
 8888    8888   22        //       11     66      66     //            99    66      66
  88      88   22         //       11     66      66     //            99    66      66
   00000000    2222222222 //    11111111  666666666     //    999999999999  666666666
    000000     2222222222 //    11111111   66666666     //     99999999999   66666666
0
   000000     999999999                   555555555     999999999            333333333   555555555
  00000000    999999999                   555555555     999999999            333333333   555555555
 88      88   99      99     :::          55            99      99     :::  33      33   55
 8888    8888 99      99     :::          55            99      99     :::          33   55
 8888    8888 99      99     :::          55            99      99     :::          33   55
 8888    8888 999999999                    555555555     999999999                333   555555555
 8888    8888  99999999                    555555555     99999999                 333   555555555
 8888    8888         99     :::                   55           99     :::          33           55
 8888    8888         99     :::                   55           99     :::          33           55
  88      88          99     :::          55       55           99     :::  33      33   55       55
   00000000    999999999                   555555555     999999999            333333333   555555555
    000000     999999999                    55555555      99999999             333333333   55555555
1
0                          ssssssssss   cccccccccc    aaaaaaaa   ll          eeeeeeeeeeee
                          ssssssssssss cccccccccccc  aaaaaaaaaa ll          eeeeeeeeeeee
                          ss      ss   cc      cc    aa      aa ll          ee
                          ss           cc            aa      aa ll          ee
                          ss           cc            aa      aa ll          ee
                          ssssssssss   cc            aaaaaaaaaa ll          eeeeeeeeee
                           ssssssssss  cc            aaaaaaaaaa ll          eeeeeeeeee
                                   ss  cc            aa      aa ll          ee
                                   ss  cc            aa      aa ll          ee
                          ss       ss  cc      cc    aa      aa ll          ee
                          ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                           ssssssssss   cccccccccc  aa      aa llllllllllll eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0c005

creation date: 04/27/95

library: /neutronics/scale/exe

this is not a scale configuration controlled code

```
*****                 jobname:  davis                                  *****
*****                                                                  *****
*****        date of execution:  02/16/96                              *****
*****                                                                  *****
*****        time of execution:  09:59:36                              *****
*****                                                                  *****
*****                                                                  *****
*********************************************************************
*********************************************************************
*********************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       2q array has      1 entries.
0        * core allocated to array-data (by -1$$ or default) was   200000 words. *
1        * broad 3-group flux weighting factors *
0
0              therm =    .5096
0              res   =    .4040
0              fast  =   3.0945
0 user requested (see jatt) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from arpx (normalized to thermal flux), barns

                 10010 to  10020  2.78615E-01
                 10010 tot-cap    2.78615E-01
                 50100 to  40100  2.20952E-02
                 50100 to  10010  2.20952E-02
                 50100 to  40090  3.32706E-03
                 50100 to  10020  3.32706E-03
                 50100 to  30090  3.20410E+03
                 50100 to  20040  3.20427E+03
                 50100 to  10080  8.26806E-02
                 50100 tot-cap    3.20421E+03
                 50110 to  50100  9.51858E-06
                 50110 to  50120  4.23931E-03
                 50110 to  40110  1.21472E-06
                 50110 to  10010  1.21472E-06
                 50110 to  40090  1.08401E-06
                 50110 to  10080  1.08401E-06
                 50110 to  30080  1.41512E-04
                 50110 to  20040  1.41512E-04
                 50110 tot-cap    4.40340E-03
                 80160 to  80170  1.48835E-04
                 80160 to  70160  8.32895E-05
                 80160 to  10010  8.32895E-05
                 80160 to  70150  1.57083E-05
                 80160 to  10020  1.57083E-05
                 80160 to  60130  2.35267E-02
                 80160 to  20040  2.35267E-02
                 80160 to  80161  3.65278E-03
                 80160 tot-cap    2.37745E-02
                360830 to 360820  1.89114E-02
                360830 to 360810  1.99657E-09
```

INFORMATION ONLY

360830 to 360840	1.50852E+02
360830 to 350830	7.81413E-04
360830 to 10010	7.81413E-04
360830 to 350820	6.26591E-06
360830 to 10020	6.26591E-06
360830 to 350810	2.18306E-06
360830 to 10030	2.18306E-06
360830 to 340810	3.53311E-08
360830 to 20030	3.53311E-08
360830 to 340800	4.15132E-05
360830 to 20040	4.15132E-05
360830 tot-cap	1.50871E+02
360850 to 360860	1.35661E+00
360850 tot-cap	1.35661E+00
380900 to 380910	6.18195E-01
380900 tot-cap	6.18195E-01
390890 to 390900	9.64542E-01
390890 tot-cap	9.64542E-01
400980 to 400940	1.24328E+01
400980 tot-cap	1.24328E+01
400940 to 400950	1.73545E-01
400940 tot-cap	1.73545E-01
400950 to 400960	2.06668E+00
400950 tot-cap	2.06668E+00
410940 to 410950	3.60758E+01
410940 tot-cap	3.60758E+01
420950 to 420960	3.64035E+01
420950 tot-cap	3.64035E+01
430990 to 430980	5.75799E-03
430990 to 431000	8.45551E+01
430990 tot-cap	8.45608E+01
441010 to 441020	2.61938E+01
441010 tot-cap	2.61938E+01
441060 to 441070	8.02991E-01
441060 tot-cap	8.02991E-01
451030 to 451020	2.07809E-03
451030 to 451040	3.46027E+02
451030 tot-cap	3.46029E+02
451050 to 451060	8.01728E+03
451050 tot-cap	8.01728E+03
461050 to 461060	3.17534E+01
461050 tot-cap	3.17534E+01
461080 to 461090	6.36886E+01
461080 tot-cap	6.36886E+01
471090 to 471080	4.83245E-03
471090 to 471100	3.49156E+02
471090 to 461090	2.75182E-04
471090 to 10010	2.75182E-04
471090 to 451060	2.26861E-04
471090 to 20040	2.26861E-04
471090 to 471091	5.85322E-01
471090 tot-cap	3.49162E+02
511240 to 511250	1.13699E+01
511240 tot-cap	1.13699E+01
541310 to 541300	5.85952E-02
541310 to 541250	1.22534E-05
541310 to 541320	2.46987E+02
541310 to 531310	3.55357E-05
541310 to 10010	3.55357E-05
541310 to 531300	4.91379E-07

INFORMATION ONLY

541310	to 10020	4.91379E-07
541310	to 531290	5.03860E-07
541310	to 10030	5.03860E-07
541310	to 521280	1.65901E-05
541310	to 20040	1.65901E-05
541310	tot-cap	2.47045E+02
541320	to 541310	9.46579E-03
541320	to 541300	2.00762E-05
541320	to 541330	8.72303E-01
541320	to 531320	7.24232E-06
541320	to 10010	7.24232E-06
541320	to 531310	3.05084E-07
541320	to 10020	3.05084E-07
541320	to 531300	4.10795E-08
541320	to 10030	4.10795E-08
541320	to 521290	8.89626E-07
541320	to 20040	8.89626E-07
541320	tot-cap	8.81797E-01
541350	to 541360	1.45326E+06
541350	tot-cap	1.45326E+06
541360	to 541350	1.61918E-02
541360	to 541340	4.94538E-05
541360	to 541370	1.20415E-01
541360	to 531360	2.99028E-07
541360	to 10010	2.99028E-07
541360	to 531350	1.11314E-07
541360	to 10020	1.11314E-07
541360	to 531340	2.51478E-08
541360	to 10030	2.51478E-08
541360	to 521330	2.50809E-07
541360	to 20040	2.50809E-07
541360	tot-cap	1.36657E-01
551330	to 551320	7.58235E-03
551330	to 551340	9.64131E+01
551330	to 541330	8.28029E-04
551330	to 10010	8.28029E-04
551330	to 531300	1.29558E-05
551330	to 20040	1.29558E-05
551330	tot-cap	9.64215E+01
551340	to 551350	1.24610E+02
551340	tot-cap	1.24610E+02
551350	to 551360	2.00841E+01
551350	tot-cap	2.00841E+01
551370	to 551380	2.15936E-01
551370	tot-cap	2.15936E-01
561360	to 561370	8.46268E-01
561360	tot-cap	8.46268E-01
571390	to 571400	7.70902E+00
571390	tot-cap	7.70902E+00
581440	to 581450	1.18140E+00
581440	tot-cap	1.18140E+00
591410	to 591400	5.43332E-03
591410	to 591390	1.56113E-06
591410	to 571370	2.34117E-06
591410	to 20040	4.83929E-05
591410	to 581400	1.65777E-05
591410	to 10010	4.73127E-05
591410	to 591420	1.14107E+01
591410	to 581410	4.45780E-05
591410	to 10020	1.38430E-05

INFORMATION ONLY

591410	to 581390	1.45175E-06
591410	to 10080	1.45175E-06
591410	to 571390	1.40204E-08
591410	to 20080	1.40204E-08
591410	to 571380	4.60817E-05
591410	tot-cap	1.14163E+01
591430	to 591440	9.39733E+01
591430	tot-cap	9.39733E+01
601430	to 601420	8.31713E-02
601430	to 601410	8.48474E-06
601430	to 581390	1.85769E-05
601430	to 20040	5.19258E-04
601430	to 591420	3.55170E-06
601430	to 10010	3.66370E-05
601430	to 601440	1.96475E+02
601430	to 591430	3.52989E-05
601430	to 10020	2.21360E-06
601430	to 591410	3.18980E-06
601430	to 10080	3.18980E-06
601430	to 581410	1.53257E-08
601430	to 20080	1.53257E-08
601430	to 581400	5.00921E-04
601430	tot-cap	1.96659E+02
601450	to 601440	1.06753E-01
601450	to 601430	1.08331E-04
601450	to 581410	7.70977E-06
601450	to 20040	1.95360E-04
601450	to 591440	2.03498E-06
601450	to 10010	1.32486E-05
601450	to 601460	7.45570E+01
601450	to 591450	1.24369E-05
601450	to 10020	1.22524E-06
601450	to 591430	1.92846E-06
601450	to 10080	1.92846E-06
601450	to 581430	3.92634E-09
601450	to 20080	3.92634E-09
601450	to 581420	1.85652E-04
601450	tot-cap	7.46641E+01
601470	to 601480	1.76354E+02
601470	tot-cap	1.76354E+02
611470	to 611460	2.91898E-02
611470	to 611450	9.10767E-05
611470	to 591430	8.10518E-06
611470	to 20040	7.52552E-05
611470	to 601460	1.11681E-05
611470	to 10010	2.54828E-05
611470	to 611480	5.53018E+02
611470	to 601470	2.27148E-05
611470	to 10020	8.40014E-06
611470	to 601450	3.17158E-06
611470	to 10080	3.17158E-06
611470	to 591450	4.76856E-09
611470	to 20080	4.76856E-09
611470	to 591440	6.71520E-05
611470	tot-cap	5.53047E+02
611480	to 611490	1.17726E+04
611480	tot-cap	1.17726E+04
621470	to 621460	7.61521E-02
621470	to 621450	6.85655E-08
621470	to 601430	5.97975E-05

INFORMATION ONLY

621470	to 20040	1.15630E-03
621470	to 611460	1.38191E-04
621470	to 10010	1.97999E-04
621470	to 621480	2.17637E+02
621470	to 611470	1.74704E-04
621470	to 10020	1.14896E-04
621470	to 611450	1.23372E-04
621470	to 10030	1.23372E-04
621470	to 601450	5.67657E-06
621470	to 20030	5.67657E-06
621470	to 601440	1.09651E-03
621470	to 621471	1.53107E+00
621470	tot-cap	2.17722E+02
621490	to 621480	4.30478E-02
621490	to 621470	3.41769E-05
621490	to 621500	4.48465E+04
621490	to 611490	4.42698E-04
621490	to 10010	4.42698E-04
621490	to 601460	4.42698E-04
621490	to 20040	4.42698E-04
621490	tot-cap	4.48465E+04
621500	to 621510	1.28329E+02
621500	tot-cap	1.28329E+02
621510	to 621500	1.43962E-01
621510	to 621490	1.28605E-04
621510	to 601470	1.44849E-05
621510	to 20040	1.13153E-04
621510	to 611500	1.76098E-06
621510	to 10010	1.37227E-05
621510	to 621520	4.86412E+03
621510	to 611510	1.26468E-05
621510	to 10020	6.85087E-07
621510	to 611490	1.24510E-06
621510	to 10030	1.24510E-06
621510	to 601490	1.28269E-09
621510	to 20030	1.28269E-09
621510	to 601480	9.86677E-05
621510	tot-cap	4.86427E+03
621520	to 621510	1.72216E-02
621520	to 621500	1.16367E-04
621520	to 601480	2.60120E-06
621520	to 20040	1.08056E-05
621520	to 611510	7.45938E-07
621520	to 10010	2.20124E-06
621520	to 621530	7.01828E+02
621520	to 611520	1.95538E-06
621520	to 10020	5.00079E-07
621520	to 611500	1.30059E-07
621520	to 10030	1.30059E-07
621520	to 601500	3.94152E-10
621520	to 20030	3.94152E-10
621520	to 601490	8.20436E-06
621520	tot-cap	7.01846E+02
631530	to 631520	1.67262E-02
631530	to 631510	2.49775E-05
631530	to 611490	4.05236E-05
631530	to 20040	5.83415E-04
631530	to 621520	7.00077E-06
631530	to 10010	5.93402E-05
631530	to 631540	5.87260E+02

INFORMATION ONLY

631530	to 621530	5.68491E-05
631530	to 10020	4.60967E-06
631530	to 621510	1.03267E-06
631530	to 10030	1.03267E-06
631530	to 611510	2.36057E-08
631530	to 20030	2.36057E-08
631530	to 611500	5.41891E-04
631530	tot-cap	5.87278E+02
631540	to 631530	2.67389E-02
631540	to 631520	9.60517E-06
631540	to 611500	9.33931E-11
631540	to 20040	6.96791E-04
631540	to 621530	2.10257E-06
631540	to 10010	1.12821E-03
631540	to 631550	1.04373E+03
631540	to 621540	1.12821E-03
631540	to 10020	2.10140E-06
631540	to 621520	3.55999E-06
631540	to 10030	3.55999E-06
631540	to 611520	1.50913E-08
631540	to 20030	1.50913E-08
631540	to 611510	6.96791E-04
631540	tot-cap	1.04376E+03
631550	to 631540	2.19537E-02
631550	to 631530	6.14752E-05
631550	to 611510	1.65527E-06
631550	to 20040	8.14666E-06
631550	to 621540	3.35213E-06
631550	to 10010	7.04497E-06
631550	to 631560	2.52614E+03
631550	to 621550	5.41392E-06
631550	to 10020	1.72109E-06
631550	to 621530	5.69740E-07
631550	to 10030	5.69740E-07
631550	to 611530	1.29134E-10
631550	to 20030	1.29134E-10
631550	to 611520	6.49139E-06
631550	tot-cap	2.52417E+03
641550	to 641560	1.67300E+04
641550	tot-cap	1.67300E+04
922340	to 922330	5.75156E-03
922340	fission	4.07947E+00
922340	nu-sigf	1.07202E+01
922340	to 922320	8.33942E-05
922340	to 922350	1.75502E+02
922340	to 922341	2.74662E+00
922340	tot-cap	1.79587E+02
922350	to 922340	2.63156E-02
922350	fission	3.55154E+02
922350	nu-sigf	8.59995E+02
922350	to 922330	2.51212E-05
922350	to 922340	8.29762E+01
922350	to 922351	7.80918E-02
922350	tot-cap	4.38156E+02
922360	to 922350	2.92996E-02
922360	fission	1.74637E+00
922360	nu-sigf	4.79174E+00
922360	to 922340	3.90467E-04
922360	to 922370	7.08988E+01
922360	to 922361	3.00376E+00

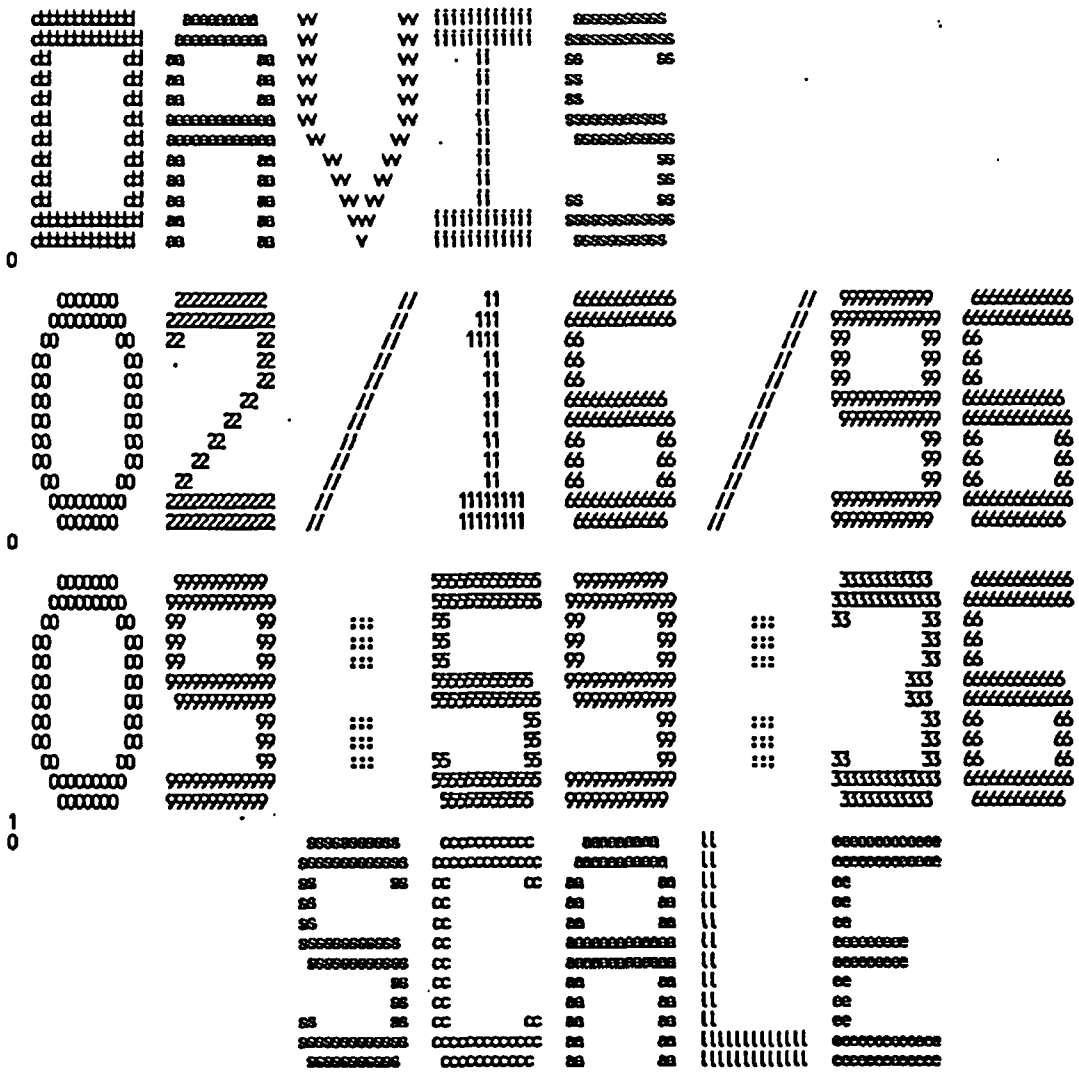
INFORMATION ONLY

922360	tot-cap	7.26699E+01
922380	to 922370	5.85224E-02
922380	fission	8.74312E-01
922380	nu-sigf	2.46057E+00
922380	to 922360	3.78177E-04
922380	to 922390	7.93004E+00
922380	tot-cap	8.86345E+00
932370	to 932360	1.33402E-02
932370	fission	4.73060E+00
932370	nu-sigf	1.42424E+01
932370	to 932350	5.10554E-05
932370	to 932380	2.86381E+02
932370	to 932371	7.04022E-01
932370	tot-cap	2.91125E+02
942380	to 942370	2.14425E-03
942380	fission	2.09637E+01
942380	nu-sigf	5.93916E+01
942380	to 942360	1.20003E-05
942380	to 942390	2.60244E+02
942380	to 942381	2.74889E+00
942380	tot-cap	2.81210E+02
942390	to 942380	1.13665E-02
942390	fission	8.48173E+02
942390	nu-sigf	2.43855E+03
942390	to 942370	1.93198E-05
942390	to 942360	1.91520E-03
942390	to 942400	4.78014E+02
942390	tot-cap	1.32620E+03
942400	to 942390	5.34014E-03
942400	fission	5.45402E+00
942400	nu-sigf	1.70563E+01
942400	to 942380	5.21113E-05
942400	to 942410	1.75951E+03
942400	tot-cap	1.76497E+03
942410	to 942400	6.76750E-02
942410	fission	8.92208E+02
942410	nu-sigf	2.61778E+03
942410	to 942390	1.11504E-04
942410	to 942420	2.95726E+02
942410	tot-cap	1.18600E+03
942420	to 942410	2.17690E-02
942420	fission	4.09857E+00
942420	nu-sigf	1.28355E+01
942420	to 942400	2.64650E-04
942420	to 942430	3.10808E+02
942420	tot-cap	3.14429E+02
952410	fission	1.19256E+01
952410	nu-sigf	3.84612E+01
952410	to 952420	1.00850E+03
952410	tot-cap	1.02042E+03
952430	fission	3.16277E+00
952430	nu-sigf	1.06259E+01
952430	to 952440	3.97104E+02
952430	tot-cap	4.00267E+02
962440	to 962430	5.23148E-03
962440	fission	1.42553E+01
962440	nu-sigf	4.76814E+01
962440	to 962420	5.21725E-05
962440	to 962450	1.31908E+02
962440	to 962441	3.50653E+00

INFORMATION ONLY

```
                    952440 tot-cap    1.46148E+02
0the reaction   50100 to  30070 was not used, because   50100 is not in library., (in subr pool)
                                        in the search of library number 3
0the reaction   50100 to  40090 was not used, because   50100 is not in library., (in subr pool)
                                        in the search of library number 3
0the reaction   50110 to  40090 was not used, because   50110 is not in library., (in subr pool)
                                        in the search of library number 3
0the reaction   50100 to  40100 was not used, because   50100 is not in library., (in subr pool)
                                        in the search of library number 3
0the reaction   80160 to  80161 was not used, because   80161 is not in library., (in subr pool)
0the reaction  621470 to 621471 was not used, because  621471 is not in library., (in subr pool)
0the fission product transitions for  922340 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  922340 to 922341 was not used, because  922341 is not in library., (in subr pool)
0the reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
0the fission product transitions for  922360 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
0the fission product transitions for  952370 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  952370 to 952371 was not used, because  952371 is not in library., (in subr pool)
0the fission product transitions for  942380 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
0the fission product transitions for  942400 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  942420 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952410 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  952440 to 952441 was not used, because  952441 is not in library., (in subr pool)
1
0                         case completed.  date,   2/16/1996
0 * normal termination *
1  oooooooooo   rrrrrrrrrr   iiiiiiiiiiii   gggggggggg   eeeeeeeeeeee   m        m   ssssssssss
   oooooooooooo rrrrrrrrrrr  iiiiiiiiiiii   gggggggggggg eeeeeeeeeeee   mm       m   ssssssssssss
   oo        oo rr        rr    ii        gg        gg ee           mmm      m ss        ss
   oo        oo rr        rr    ii        gg           ee           m mm     m ss
   oo        oo rr        rr    ii        gg           ee           m  m     m ss
   oo        oo rrrrrrrrrrr     ii        gg   gggggg  eeeeeeee     m   m    m   ssssssssss
   oo        oo rrrrrrrrrrr     ii        gg   gggggg  eeeeeeee     m    m   m    ssssssssss
   oo        oo rr      rr      ii        gg       gg  ee           m     m  m           ss
   oo        oo rr       rr     ii        gg       gg  ee           m      mm           ss
   oo        oo rr        rr    ii        gg        gg ee           m       mm ss       ss
   oooooooooooo rr         rr iiiiiiiiiiii gggggggggggg eeeeeeeeeeee m        mm ssssssssssss
    oooooooooo  rr         rr iiiiiiiiiiii  gggggggggg  eeeeeeeeeeee m        m   ssssssssss
0
```

...ION ONLY



```
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c004                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a   scale  configuration controlled code *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:59:36                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0        dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0            short-lived split test fraction, qn =    9.1188E-04
0            half-norm of matrix used, aan =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

        cross-section data taken from position number  1 of library on unit 15.

        pass  3
        pass  1
        pass  0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass  1
        pass  0
```

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```
*scale-system control module sas2 library*
used a time-dependent neutron spectrum, for each of the above passes
  pass 0 applies start-up fuel densities
  pass n applies mid time densities of nth library interval
first library updated was...
*****************************************************************
*                                                               *
*          prelim lwr origen-s binary working library--id = 1143 *
*        made from modified card-image origen-s libraries of scale 4.2 *
*      data from the light element, actinide, and fission product libraries *
*        decay data, including gamma and total energy, are from endf/b-vi *
*                                                               *
*      neutron flux spectrum factors and cross sections were produced from *
*      the "presas2" case updating all nuclides on the scale "burnup" library *
*                                                               *
*                fission product yields are from endf/b-v       *
*                                                               *
*              photon libraries use an 18-energy-group structure *
*             the photon data are from the master photon data base, *
*              produced to include bremsstrahlung from uo2 matrix *
*                                                               *
*        see information above this box (if present) for later updates *
*                                                               *
*****************************************************************
*                                                               *
0 *****************************************************************
0              .other identification and sizes of library.
0              data set name:  ft15f001
0            2/16/1996    date library was produced
0                 1697    total number of nuclides in library
                   689    number of light-element nuclides
                   129    number of actinide nuclides
                   879    number of fission product nuclides
0                 7925    number of nonzero off-diagonal matrix elements
0 *****************************************************************
1
   sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp                    actinides      page  1
     power= 8.466E-05mw, burnup=2.0518E-03mwd, flux= 1.62E+13n/cm**2-sec
0                                  nuclide concentrations, gram atoms
                                   basis = converted to atoms/(barn-cm)
```

	change	360.0 d	400.0 d	440.0 d	480.0 d	480.0 d	520.0 d	560.0 d
u230	9.63E-22	1.21E-21	1.49E-21	1.82E-21	2.18E-21	2.18E-21	2.60E-21	3.08E-21
u231	2.22E-20	2.82E-20	3.39E-20	4.04E-20	4.77E-20	4.75E-20	5.59E-20	6.51E-20
u232	2.94E-13	3.63E-13	4.42E-13	5.32E-13	6.36E-13	6.36E-13	7.53E-13	8.86E-13
u233	1.71E-11	1.90E-11	2.09E-11	2.26E-11	2.43E-11	2.43E-11	2.59E-11	2.74E-11
u234	5.14E-06	5.09E-06	5.04E-06	4.99E-06	4.95E-06	4.95E-06	4.90E-06	4.85E-06
u235	5.67E-04	5.54E-04	5.40E-04	5.27E-04	5.15E-04	5.15E-04	5.02E-04	4.90E-04
u236	2.59E-05	2.84E-05	3.09E-05	3.32E-05	3.55E-05	3.55E-05	3.77E-05	3.98E-05
u237	4.08E-08	4.44E-08	4.67E-08	4.88E-08	5.11E-08	5.10E-08	5.32E-08	5.54E-08
u238	2.20E-02	2.20E-02	2.20E-02	2.20E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02
u239	3.23E-09	5.73E-09	5.72E-09	5.71E-09	5.71E-09	2.52E-09	5.71E-09	5.71E-09
u240	.00E+00	1.49E-36	4.66E-36	1.30E-35	3.28E-35	3.28E-35	7.67E-35	1.68E-34
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	7.21E-15	9.47E-15	1.20E-14	1.49E-14	1.80E-14	1.80E-14	2.15E-14	2.52E-14
np236m	1.60E-14	2.01E-14	2.32E-14	2.65E-14	2.98E-14	2.94E-14	3.33E-14	3.69E-14
np236	5.75E-13	7.68E-13	9.92E-13	1.25E-12	1.54E-12	1.54E-12	1.87E-12	2.23E-12
np237	9.17E-07	1.08E-06	1.24E-06	1.42E-06	1.60E-06	1.60E-06	1.79E-06	1.98E-06
np238	1.09E-09	1.31E-09	1.52E-09	1.73E-09	1.95E-09	1.94E-09	2.18E-09	2.41E-09
np239	8.03E-07	8.27E-07	8.26E-07	8.25E-07	8.24E-07	8.23E-07	8.24E-07	8.24E-07
np240m	.00E+00	1.27E-38	3.98E-38	1.11E-37	2.80E-37	2.80E-37	6.55E-37	1.43E-36

INFORMATION ONLY

```
     np240  1.09E-11  1.42E-11  1.42E-11  1.42E-11  1.41E-11  1.04E-11  1.41E-11  1.42E-11
     np241   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236  7.27E-13  9.64E-13  1.24E-12  1.54E-12  1.88E-12  1.89E-12  2.27E-12  2.69E-12
     pu237  8.31E-14  9.77E-14  1.11E-13  1.24E-13  1.37E-13  1.37E-13  1.49E-13  1.61E-13
     pu238  4.76E-08  6.27E-08  8.03E-08  1.00E-07  1.23E-07  1.23E-07  1.49E-07  1.77E-07
     pu239  5.57E-05  6.11E-05  6.61E-05  7.07E-05  7.50E-05  7.50E-05  7.90E-05  8.27E-05
     pu240  5.13E-06  6.14E-06  7.22E-06  8.30E-06  9.39E-06  9.39E-06  1.05E-05  1.14E-05
     pu241  1.47E-06  1.90E-06  2.41E-06  2.98E-06  3.61E-06  3.61E-06  4.30E-06  5.05E-06
     pu242  5.43E-08  8.09E-08  1.15E-07  1.57E-07  2.08E-07  2.08E-07  2.69E-07  3.41E-07
     pu243  6.51E-12  1.05E-11  1.48E-11  2.02E-11  2.69E-11  2.52E-11  3.48E-11  4.41E-11
     pu244  2.08E-26  7.43E-26  2.32E-25  6.46E-25  1.63E-24  1.64E-24  3.82E-24  8.35E-24
     pu245   .00E+00  5.35E-32  1.67E-31  4.64E-31  1.17E-30  1.14E-30  2.74E-30  6.00E-30
     pu246   .00E+00  1.58E-34  5.23E-34  1.50E-33  3.90E-33  3.88E-33  9.31E-33  2.08E-32
     am239  2.33E-19  3.67E-19  5.17E-19  7.02E-19  9.24E-19  8.99E-19  1.19E-18  1.49E-18
     am240  1.02E-16  1.58E-16  2.23E-16  3.03E-16  3.99E-16  3.98E-16  5.13E-16  6.44E-16
     am241  1.60E-08  2.37E-08  3.35E-08  4.54E-08  5.98E-08  5.98E-08  7.69E-08  9.66E-08
     am242m 1.84E-10  2.98E-10  4.54E-10  6.59E-10  9.19E-10  9.19E-10  1.24E-09  1.63E-09
     am242  1.81E-11  2.70E-11  3.80E-11  5.14E-11  6.79E-11  6.68E-11  8.72E-11  1.10E-10
     am243  1.57E-09  2.70E-09  4.32E-09  6.57E-09  9.57E-09  9.57E-09  1.35E-08  1.85E-08
     am244m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244  5.06E-13  9.10E-13  1.44E-12  2.21E-12  3.22E-12  3.12E-12  4.53E-12  6.22E-12
     am245  1.35E-30  4.91E-30  1.52E-29  4.19E-29  1.05E-28  1.05E-28  2.42E-28  5.23E-28
     am246   .00E+00  3.95E-37  1.31E-36  3.75E-36  9.74E-36  9.73E-36  2.33E-35  5.19E-35
    totals  2.26E-02  2.26E-02  2.26E-02  2.26E-02  2.26E-02  2.26E-02  2.26E-02  2.26E-02
0    flux            1.62E+13  1.62E+13  1.62E+13  1.62E+13   .00E+00  1.62E+13  1.62E+13
0  .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
0                                  table of contents for material tables
0                                    case or subcase printed      page

                                          1                 1
0rdset        33
          15        4        1       27        6        0        0        0        0        0
           0        0        0        0        0        0       -1     1698      690      130
         880     7935        0        5       99        2       16       96       18       18
          18        0       71
0      56q array has      2 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      57q array has      3 entries.
0       1q array has     20 entries.
0       1q array has     10 entries.
    l90  97376
    l116 60826
    l32  33663 rudata (library) storage size
    l44  33734
    l103 75953
0      58q array has      4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
```

```
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
    l140  66991
    used   101044 in size   200000
0jqpt          12
          0          0          0          0          0          0          0          0          0          0
          0          0
0thenn          4
  5.09636E-01 4.04022E-01 3.09452E+00 1.000000E-31
0nn             5
       7935         20          6         18       1697
0mm            19
          7          7          0          0          1          1          0          0          0          0
         21        100       1697          4          3         74          4          1          0
0tconst         5
  8.640000E+04 3.200192E+02  .000000E+00  .000000E+00 1.000000E-08
0nzero          4
          0        689        129        879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 lirp          9
          6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total nev/fission =          5.7355E+00     1.9541E+02     2.0115E+02
 start of interval flux =        1.61872E+13
 n-gamma, fission and total nev/fission =          5.8325E+00     1.9552E+02     2.0136E+02
 start of interval flux =        1.61661E+13
 n-gamma, fission and total nev/fission =          5.9353E+00     1.9563E+02     2.0157E+02
 start of interval flux =        1.61526E+13
 n-gamma, fission and total nev/fission =          6.0383E+00     1.9574E+02     2.0178E+02
 start of interval flux =        1.61473E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total nev/fission =          6.1508E+00     1.9584E+02     2.0199E+02
 start of interval flux =        1.61482E+13
 n-gamma, fission and total nev/fission =          6.2440E+00     1.9593E+02     2.0218E+02
 start of interval flux =        1.61575E+13
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has     20 entries.
0requested parm=halt8,skipcellut,skipshipdata
  pass= 4, exec halts after pass   8
1 tttttttttttb    cccccccccccc  m        m              aaaaaaaa    mm        mm  iiiiiiiiiiii    zzzzzzzzzz
  tttttttttttb    cccccccccccc  mm       m              aaaaaaaaaa  mmm      mmm  iiiiiiiiiiii    zzzzzzzzzzzz
  tb        tb    cc        cc  mmm      m             aa        aa  mmmm    mmmm     ii        zz        zz
  tb        tb    cc        cc  mmm      m             aa        aa  mmm mm  mm mmm    ii                  zz
  tb        tb    cc        cc  m  m     m             aa        aa  mm  mmm mmm  mm    ii                  zz
  tttttttttttb    cc        cc  m   m    m  ------------ aaaaaaaaaaaa  mm   mmm  mm    ii                zz
  tttttttttttb    cc        cc  m    m   m  ------------ aaaaaaaaaaaa  mm    m   mm    ii              zz
  tb        tb    cc        cc  m     m  m             aa        aa  mm        mm    ii            zz
  tb        tb    cc        cc  m      mm             aa        aa  mm        mm    ii          zz
  tb        tb    cc        cc  m       m             aa        aa  mm        mm    ii        zz
  tttttttttttb    cccccccccccc  m       m             aa        aa  mm        mm  iiiiiiiiiiii    zzzzzzzzzzzz
  tttttttttttb     cccccccccccc m       m             aa        aa  mm        mm  iiiiiiiiiiii    zzzzzzzzzzzz
```

INFORMATION ONLY

INFORMATION ONLY

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c008                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nsutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:59:41                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0izar--number of zones or material regions                    4
0ms--mixing table length                                     66
0ibl--shielded cross section edit option (0/1--no/yes)        0
0ibr--bondarenko factor edit option (0/1--no/yes)             0
0issqpt--dancoff factor option                                0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has    66 entries.
0       4q array has    66 entries.
0       5q array has    66 entries.
0       6q array has     4 entries.
0       7q array has     4 entries.
0       8q array has     4 entries.
0       9q array has     4 entries.
0      10q array has    66 entries.
0      11q array has     4 entries.
0m i x i n g   t a b l e
```

INFORMATION ONLY

Dentry	mixture	Isotope	number density	new identifier
1	1	92235	4.90251E-04	92235
2	1	92234	4.84988E-06	92234
3	1	92236	3.98239E-05	92236
4	1	92238	2.19185E-02	92238
5	1	8016	4.55359E-02	8016
6	3	8016	2.09710E-02	6
7	1	36083	9.77039E-07	36083
8	1	36085	4.70956E-07	36085
9	1	38090	1.06191E-05	38090
10	1	39089	7.90165E-06	39089
11	1	42095	9.68029E-06	42095
12	1	40093	8.21428E-06	40093
13	1	40094	1.27843E-05	40094
14	1	40095	2.07596E-06	40095
15	1	41094	5.48977E-12	41094
16	1	43099	1.24470E-05	43099
17	1	45103	6.47551E-06	45103
18	1	45105	1.88693E-08	45105
19	1	44101	1.10665E-05	44101
20	1	44106	1.65007E-06	44106
21	1	46105	3.81543E-06	46105
22	1	46108	9.30827E-07	46108
23	1	47109	6.68335E-07	47109
24	1	51124	1.62036E-10	51124
25	1	54131	5.77241E-06	54131
26	1	54132	1.00606E-05	54132
27	1	54135	6.65420E-09	54135
28	1	54136	2.10435E-05	54136
29	1	55134	4.21443E-07	55134
30	1	55135	6.63814E-06	55135
31	1	55137	1.31904E-05	55137
32	1	56136	8.15114E-08	56136
33	1	57139	1.31073E-05	57139
34	1	59141	1.09870E-05	59141
35	1	59143	3.85024E-07	59143
36	1	58144	5.87019E-06	58144
37	1	60143	1.06631E-05	60143
38	1	60145	7.73967E-06	60145
39	1	61147	3.14142E-06	61147
40	1	61148	8.83978E-09	61148
41	1	60147	1.31597E-07	60147
42	1	62147	6.67818E-07	62147
43	1	62149	8.02025E-08	62149
44	1	62150	2.54419E-06	62150
45	1	62151	3.32006E-07	62151
46	1	62152	1.24460E-06	62152
47	1	64155	1.18371E-09	64155
48	1	63153	6.30790E-07	63153
49	1	63154	9.52980E-08	63154
50	1	63155	7.31344E-08	63155
51	2	40302	4.25156E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	1.36295E-05	55133
56	1	93237	1.97949E-06	93237
57	1	94238	1.77348E-07	94238
58	1	94239	8.26635E-05	94239
59	1	94240	1.15798E-05	94240

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```
  60     1      94241   5.05481E-06        94241
  61     1      94242   3.41071E-07        94242
  62     1      95241   9.66555E-08        95241
  63     1      95243   1.84683E-08        95243
  64     1      96244   1.04617E-09        96244
  65     1        999   1.00000E-20          999
  66     4        999   1.00000E-20           66
Ogeometry and material description
Ozone  mixture  outer dimension  temperature     extra xs  type (0/1--fuel/mod)
   1      1        4.68122E-01   9.75000E+02   9.05844E-01          0
   2      4        4.78790E-01   2.93000E+02   5.49010E-01          0
   3      2        5.46100E-01   6.50000E+02    .00000E+00          0
   4      3        8.13968E-01   6.07600E+02    .00000E+00          0
     7711 locations of   200000 available are required to make a new master containing the self-shielded values
Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical  1
Ocopy     999  1/v cross sectio from log 12 to log 18   bondarenko trigger 0
Ocopy     999  1/v cross sectio from log 18 to log  1   bondarenko trigger 0
Ocopy     999  1/v cross sectio from log 18 to log  1   bondarenko trigger 0
Ocopy    1001  hydrogen        from log 12 to log  1   bondarenko trigger 0
Ocopy    5010  b-10 1273 218mp from log 12 to log  1   bondarenko trigger 0
Ocopy    5011  boron-11        from log 12 to log  1   bondarenko trigger 0
Ocopy    8016  oxygen-16       from log 12 to log 18   bondarenko trigger 0
Ocopy    8016  oxygen-16       from log 18 to log  1   bondarenko trigger 0
Ocopy    8016  oxygen-16       from log 18 to log  1   bondarenko trigger 0
Ocopy   36083  kr-83           from log 12 to log  1   bondarenko trigger 0
Ocopy   36085  kr-85           from log 12 to log  1   bondarenko trigger 0
Ocopy   38090  sr-90           from log 12 to log  1   bondarenko trigger 0
Ocopy   39089   y-89           from log 12 to log  1   bondarenko trigger 0
Ocopy   40093  zr-93           from log 12 to log  1   bondarenko trigger 0
Ocopy   40094  zr-94           from log 12 to log  1   bondarenko trigger 0
Ocopy   40095  zr-95           from log 12 to log  1   bondarenko trigger 0
Ocopy   40302  zircalloy        from log 12 to log  1   bondarenko trigger 0
Ocopy   41094  nb-94           from log 12 to log  1   bondarenko trigger 0
Ocopy   42095  mo-95           from log 12 to log  1   bondarenko trigger 0
Ocopy   43099  tc-99           from log 12 to log  1   bondarenko trigger 0
Ocopy   44101  ru-101          from log 12 to log  1   bondarenko trigger 0
Ocopy   44106  ru-106          from log 12 to log  1   bondarenko trigger 0
Ocopy   45103  rh-103          from log 12 to log  1   bondarenko trigger 0
Ocopy   45105  rh-105          from log 12 to log  1   bondarenko trigger 0
Ocopy   46105  pd-105          from log 12 to log  1   bondarenko trigger 0
Ocopy   46108  pd-108          from log 12 to log  1   bondarenko trigger 0
Ocopy   47109  silver-109      from log 12 to log  1   bondarenko trigger 0
Ocopy   51124  sb-124          from log 12 to log  1   bondarenko trigger 0
Ocopy   54131  xe-131          from log 12 to log  1   bondarenko trigger 0
Ocopy   54132  xe-132          from log 12 to log  1   bondarenko trigger 0
Ocopy   54135  xenon-135       from log 12 to log  1   bondarenko trigger 0
Ocopy   54136  xe-136          from log 12 to log  1   bondarenko trigger 0
Ocopy   55133  cesium-133      from log 12 to log  1   bondarenko trigger 0
Ocopy   55134  cs-134          from log 12 to log  1   bondarenko trigger 0
Ocopy   55135  cs-135          from log 12 to log  1   bondarenko trigger 0
Ocopy   55137  cs-137          from log 12 to log  1   bondarenko trigger 0
Ocopy   56136  ba-136          from log 12 to log  1   bondarenko trigger 0
Ocopy   57139  la-139          from log 12 to log  1   bondarenko trigger 0
Ocopy   58144  ce-144          from log 12 to log  1   bondarenko trigger 0
Ocopy   59141  pr-141          from log 12 to log  1   bondarenko trigger 0
Ocopy   59143  pr-143          from log 12 to log  1   bondarenko trigger 0
Ocopy   60143  nd-143          from log 12 to log  1   bondarenko trigger 0
Ocopy   60145  nd-145          from log 12 to log  1   bondarenko trigger 0
Ocopy   60147  nd-147          from log 12 to log  1   bondarenko trigger 0
Ocopy   61147  pm-147          from log 12 to log  1   bondarenko trigger 0
```

```
0copy   61148  pm-148          from log 12 to log  1   bondarenko trigger 0
0copy   62147  sm-147          from log 12 to log  1   bondarenko trigger 0
0copy   62149  sm-149          from log 12 to log  1   bondarenko trigger 0
0copy   62150  sm-150          from log 12 to log  1   bondarenko trigger 0
0copy   62151  sm-151          from log 12 to log  1   bondarenko trigger 0
0copy   62152  sm-152          from log 12 to log  1   bondarenko trigger 0
0copy   63153  eu-153          from log 12 to log  1   bondarenko trigger 0
0copy   63154  eu-154          from log 12 to log  1   bondarenko trigger 0
0copy   63155  eu-155          from log 12 to log  1   bondarenko trigger 0
0copy   64155  gd-155          from log 12 to log  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigo= from log 12 to log  1   bondarenko trigger 0
0copy   92235  uranium-235     from log 12 to log  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigo= from log 12 to log  1   bondarenko trigger 0
0copy   92238  uranium-238     from log 12 to log  1   bondarenko trigger 0
0copy   93237  neptunium-237   from log 12 to log  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigo from log 12 to log  1   bondarenko trigger 0
0copy   94239  plutonium-239   from log 12 to log  1   bondarenko trigger 0
0copy   94240  plutonium-240   from log 12 to log  1   bondarenko trigger 0
0copy   94241  plutonium-241   from log 12 to log  1   bondarenko trigger 0
0copy   94242  plutonium-242   from log 12 to log  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigo from log 12 to log  1   bondarenko trigger 0
0copy   95243  am-243 1057 218 from log 12 to log  1   bondarenko trigger 0
0copy   96244  curium-244      from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated      9/16/93
              l.m.petrie  -  ornl
        tape id                          4321        number of nuclides              66
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     1
                                  table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                    id     999
      1/v cross sections normalized to 1.0 at 0.0253 ev                    id      66
       hydrogen        endf/b-iv mat 1269/thm1002   updated 10/13/89       id    1001
      b-10 1273 218ngp 042375 p-3 295k                                     id    5010
       boron-11        endf/b-iv mat 1160           updated 10/13/89       id    5011
       oxygen-16       endf/b-iv mat 1276           updated 10/13/89       id    8016
       oxygen-16       endf/b-iv mat 1276           updated 10/13/89       id       6
       kr-83           mt=102,103,103,105,106,107   updated 10/13/89       id   36083
       kr-85             mt=  102                                         id   36085
       sr-90           mt=102                       updated 10/13/89       id   38090
        y-89           mt=102                       updated 10/13/89       id   39089
       zr-93             mt=  102                                         id   40093
       zr-94           mt=102                       updated 10/13/89       id   40094
       zr-95           mt=102                       updated 10/13/89       id   40095
       zircalloy       endf/b-iv mat 1284           updated 10/13/89       id   40302
       nb-94           mt=102                       updated 10/13/89       id   41094
       mo-95           mt=102                       updated 10/13/89       id   42095
       tc-99           mt=102                       updated 10/13/89       id   43099
       ru-101          mt=102                       updated 10/13/89       id   44101
       ru-106          mt=102                       updated 10/13/89       id   44106
       rh-103          mt=102                       updated 10/13/89       id   45103
       rh-105            mt=  102                                         id   45105
       pd-105          mt=102                       updated 10/13/89       id   46105
       pd-108          mt=102                       updated 10/13/89       id   46108
       silver-109      endf/b-iv mat 1139           updated 10/13/89       id   47109
       sb-124          mt=102                       updated 10/13/89       id   51124
       xe-131          mt=102,103,104,105,106       updated 10/13/89       id   54131
       xe-132          mt=102,103,104,105,106       updated 10/13/89       id   54132
```

INFORMATION ONLY

```
xenon-135      endf/b-iv mat 1254          updated 10/13/89          id   54135
xe-136           mt= 102, 103, 104, 105, 107                         id   54136
cesium-133     endf/b-iv mat 1141          updated 10/13/89          id   55133
cs-134         mt=102                      updated 10/13/89          id   55134
cs-135           mt= 102                                             id   55135
cs-137         mt=102                      updated 10/13/89          id   55137
ba-136         mt=102                      updated 10/13/89          id   56136
la-139         mt=102                      updated 10/13/89          id   57139
ce-144           mt= 102                                             id   58144
pr-141         mt=102,103,104,105,106,107  updated 10/13/89          id   59141
pr-143         mt=102                      updated 10/13/89          id   59143
nd-143         mt=102                      updated 10/13/89          id   60143
nd-145         mt=102                      updated 10/13/89          id   60145
nd-147         mt=102                      updated 10/13/89          id   60147
pm-147         mt=102                      updated 10/13/89          id   61147
pm-148           mt= 102                                             id   61148
sm-147         endf/b-v fission product    updated 10/13/89          id   62147
sm-149         mt=102,103,107              updated 10/13/89          id   62149
sm-150         mt=102                      updated 10/13/89          id   62150
sm-151         mt=102,103,104,105,106,107  updated 10/13/89          id   62151
sm-152         mt=102,103,104,105,106,107  updated 10/13/89          id   62152
eu-153         mt=102,103,104,105,106,107  updated 10/13/89          id   63153
eu-154         mt=102,103,104,105,106,107  updated 10/13/89          id   63154
eu-155         mt=102,103,104,105,106,107  updated 10/13/89          id   63155
gd-155         mt=102                      updated 10/13/89          id   64155
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92234
uranium-235    endf/b-iv mat 1261          updated 10/13/89          id   92235
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92236
uranium-238    endf/b-iv mat 1262          updated 10/13/89          id   92238
neptunium-237  endf/b-iv mat 1263          updated 10/13/89          id   93237
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   94238
plutonium-239  endf/b-iv mat 1264          updated 10/13/89          id   94239
plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id   94240
plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id   94241
plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   94242
am-241 1056 sigo=5+4 nsxlacs 218grp p-3 293k                         id   95241
am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                         id   95243
curium-244     endf/b-iv mat 1162          updated 10/13/89          id   96244
0      tape copy used     0 i/o's, and took     .00 seconds
1            m       m  iiiiiiiiiiiii   ttttttttttttt    aaaaaaaa    ww        ww  ll
             mm      m  iiiiiiiiiiiii   ttttttttttttt   aaaaaaaaaa   ww        ww  ll
             mm      m      ii             tt        aa        aa  ww        ww  ll
             m m     m      ii             tt        aa        aa  ww        ww  ll
             m  m    m      ii             tt        aa        aa  ww        ww  ll
             m   m   m      ii             tt        aaaaaaaaaaaa  ww    w   ww  ll
             m    m  m      ii             tt        aaaaaaaaaaaa  ww   www  ww  ll
             m     m m      ii             tt        aa        aa  ww  ww ww  ll
             m      mm      ii             tt        aa        aa  ww ww   ww ll
             m       mm     ii             tt        aa        aa  wwww    wwww ll
             m        m iiiiiiiiiiiii      tt        aa        aa  www      www lllllllllllll
             m        m iiiiiiiiiiiii      tt        aa        aa  ww        ww lllllllllllll
0

dddddddddd     aaaaaaaa    w        w iiiiiiiiiiiii   ssssssssss
dddddddddddd  aaaaaaaaaa   w        w iiiiiiiiiiiii  ssssssssssss
dd        dd  aa        aa w        w      ii        ss        ss
dd        dd  aa        aa w        w      ii        ss
dd        dd  aa        aa w        w      ii        ss
dd        dd  aaaaaaaaaaaa w        w      ii        ssssssssss
dd        dd  aaaaaaaaaaaa  w      w       ii         ssssssssss
```

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```
  dd      dd   aa      aa    w   w     ii            ss
  dd      dd   aa      aa     w w      ii            ss
  dd      dd   aa      aa      w w     ii     ss     ss
  dddddddddd   aa      aa       w      iiiiiiiiiii   sssssssssss
  dddddddddd   aa      aa       v      iiiiiiiiiii    sssssssss
0

   000000     22222222222        //     11     666666666666        //  999999999   666666666666
  00000000    22222222222       //      111    666666666666       //   999999999   666666666666
 00      00   22        22      //      1111   66                 //   99      99  66
00        00            22     //        11   66                 //    99      99 66
00        00            22    //         11   66                //     99      99 66
00        00          22     //          11   666666666666     //      999999999  666666666666
00        00        22      //           11   666666666666    //       999999999  666666666666
00        00      22       //            11   66      66    //                99  66      66
00        00    22        //             11   66      66   //                 99  66      66
 00      00   22          //              11   66      66  //                  99  66      66
  00000000    22222222222 //              11111111   666666666666 //           999999999  666666666666
   000000     22222222222 //              11111111    666666666666 //           999999999   666666666666
0

   000000     999999999          555555555555   999999999                 44       11
  00000000    999999999          555555555555   999999999                 44       111
 00      00   99      99   :::   55      99     99      99   :::         444      1111
00        00  99      99   :::   55      99     99      99   :::        44 44      11
00        00  99      99   :::   55      99     99      99   :::       44  44      11
00        00  999999999          555555555     999999999              44   44     11
00        00   999999999         555555555555   999999999             44    44     11
00        00          99   :::          55      99      99   :::    44444444444   11
00        00          99   :::          55      99      99   :::    44444444444   11
 00      00           99   :::   55     55      99      99   :::            44    11
  00000000    999999999          555555555555   999999999                 44    11111111
   000000     999999999           555555555     999999999                 44    11111111
1
0
                  sssssssssss   cccccccccc    aaaaaaaa   ll        eeeeeeeeeeee
                 sssssssssssss  cccccccccccc  aaaaaaaaaa ll        eeeeeeeeeeee
                 ss       ss    cc      cc    aa      aa ll        ee
                 ss             cc            aa      aa ll        ee
                 ss             cc            aa      aa ll        ee
                 sssssssssss    cc            aaaaaaaaaaaa ll      eeeeeeeee
                  sssssssssss   cc            aaaaaaaaaaaa ll      eeeeeeeee
                         ss     cc            aa      aa ll        ee
                         ss     cc            aa      aa ll        ee
                 ss      ss     cc      cc    aa      aa ll        ee
                 sssssssssssss  cccccccccccc  aa      aa llllllllllll eeeeeeeeeeee
                  sssssssssss   cccccccccc    aa      aa llllllllllll eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

```
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c002                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a   scale  configuration controlled code *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  09:59:41                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0       -1q array has      1 entries.
0        0q array has      9 entries.
0        1q array has     12 entries.
0select 65 nuclides from the master  library on logical  1
        0 nuclides from the working library on logical  2
        0 nuclides from the working library on logical  3
          to create the new working library on logical  4

       61 resonance calculations have been requested
        0 output option for aapx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     65 entries.
0        3q array has    915 entries.
0        4q array has     65 entries.
0 general  information concerning cross section library
    tape identification number                4321
    number of nuclides on tape                  66
    number of neutron energy groups             27
    first thermal neutron energy group          15
    number of gamma energy groups                0
0   direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                          based on endf-b version 4 data with endf-b version 5 fission products
                             compiled for nrc      1/27/89
                                last updated       9/16/93
                                  l.m.petrie  -   ornl
0 nuclides from xsdrn tape
     1    1/v cross sections normalized to 1.0 at 0.0253 ev                                  999
     2     hydrogen        endf/b-iv mat 1269/thrmal002    updated 10/13/89                 1001
     3    b-10 1273 218rup 042395 p-3 293k                                                   5010
     4     boron-11        endf/b-iv mat 1160              updated 10/13/89                 5011
     5     oxygen-16       endf/b-iv mat 1276              updated 10/13/89                 8016
     6     oxygen-16       endf/b-iv mat 1276              updated 10/13/89                    6
     7     kr-83           mt=102,103,105,105,106,107      updated 10/13/89                36083
     8     kr-85             mt=  102                                                      36085
     9     sr-90           mt=102                          updated 10/13/89                38090
```

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```
 10    y-89          mt=102                          updated 10/13/89          39089
 11    zr-93           mt=  102                                                40093
 12    zr-94         mt=102                          updated 10/13/89          40094
 13    zr-95         mt=102                          updated 10/13/89          40095
 14    zircalloy     endf/b-iv mat 1284              updated 10/13/89          40302
 15    nb-94         mt=102                          updated 10/13/89          41094
 16    mo-95         mt=102                          updated 10/13/89          42095
 17    tc-99         mt=102                          updated 10/13/89          43099
 18    ru-101        mt=102                          updated 10/13/89          44101
 19    ru-106        mt=102                          updated 10/13/89          44106
 20    rh-103        mt=102                          updated 10/13/89          45103
 21    rh-105          mt=  102                                                45105
 22    pd-105        mt=102                          updated 10/13/89          46105
 23    pd-108        mt=102                          updated 10/13/89          46108
 24    silver-109    endf/b-iv mat 1139              updated 10/13/89          47109
 25    sb-124        mt=102                          updated 10/13/89          51124
 26    xe-131        mt=102,103,104,105,106          updated 10/13/89          54131
 27    xe-132        mt=102,103,104,105,106          updated 10/13/89          54132
 28    xenon-135     endf/b-iv mat 1294              updated 10/13/89          54135
 29    xe-136          mt=  102, 103, 104, 105, 107                            54136
 30    cesium-133    endf/b-iv mat 1141              updated 10/13/89          55133
 31    cs-134        mt=102                          updated 10/13/89          55134
 32    cs-135          mt=  102                                                55135
 33    cs-137        mt=102                          updated 10/13/89          55137
 34    ba-136        mt=102                          updated 10/13/89          56136
 35    la-139        mt=102                          updated 10/13/89          57139
 36    ce-144          mt=  102                                                58144
 37    pr-141        mt=102,103,104,105,106,107      updated 10/13/89          59141
 38    pr-143        mt=102                          updated 10/13/89          59143
 39    nd-143        mt=102                          updated 10/13/89          60143
 40    nd-145        mt=102                          updated 10/13/89          60145
 41    nd-147        mt=102                          updated 10/13/89          60147
 42    pm-147        mt=102                          updated 10/13/89          61147
 43    pm-148          mt=  102                                                61148
 44    sm-147        endf/b-v fission product        updated 10/13/89          62147
 45    sm-149        mt=102,103,107                  updated 10/13/89          62149
 46    sm-150        mt=102                          updated 10/13/89          62150
 47    sm-151        mt=102,103,104,105,106,107      updated 10/13/89          62151
 48    sm-152        mt=102,103,104,105,106,107      updated 10/13/89          62152
 49    eu-153        mt=102,103,104,105,106,107      updated 10/13/89          63153
 50    eu-154        mt=102,103,104,105,106,107      updated 10/13/89          63154
 51    eu-155        mt=102,103,104,105,106,107      updated 10/13/89          63155
 52    gd-155        mt=102                          updated 10/13/89          64155
 53   u-234 1043 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)                      92234
 54    uranium-235   endf/b-iv mat 1261              updated 10/13/89          92235
 55   u-236 1163 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)                      92236
 56    uranium-238   endf/b-iv mat 1262              updated 10/13/89          92238
 57    neptunium-237 endf/b-iv mat 1263              updated 10/13/89          93237
 58   pu-238 1050 sigo=5+4 resxlacs p-3 293k f-1/e-m(1.+5)                      94238
 59    plutonium-239 endf/b-iv mat 1264              updated 10/13/89          94239
 60    plutonium-240 endf/b-iv mat 1265              updated 10/13/89          94240
 61    plutonium-241 endf/b-iv mat 1266              updated 10/13/89          94241
 62    plutonium-242 endf/b-iv mat 1161              updated 10/13/89          94242
 63   am-241 1056 sigo=5+4 resxlacs 218ngp p-3 293k                            95241
 64   am-243 1057 218 gp wt f-1/e-m 0.03576 p3 293k                            95243
 65    curium-244    endf/b-iv mat 1162              updated 10/13/89          96244
01/v cross sections normalized to 1.0 at 0.0253 ev                   999    temperature=  975.00
0 hydrogen      endf/b-iv mat 1269/thm1002    updated 10/13/89       1001    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 0.2375 p-3 293k                                   5010    temperature=  607.60
```

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```
                    thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11     endf/b-iv mat 1160        updated 10/13/89          5011     temperature=  607.60
                    thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16    endf/b-iv mat 1276        updated 10/13/89          8016     temperature=  975.00
0 oxygen-16    endf/b-iv mat 1276        updated 10/13/89             6     temperature=  607.60
0 kr-83        mt=102,103,103,105,106,107 updated 10/13/89        36083     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202        temperature(kelvin)      =  975.000
0potential scatter sigma  =    7.004        lumped nuclear density   = 9.7708985E-07
0spin factor (g)          =  4988.190        lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00     dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995        sigma(per absorber atom)= 1.7477258E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  257.953        sigma(per absorber atom)= 1.9499170E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -1.385983E-03   .0000000E+00  -1.759590E-03
  12      2.166790E-02   .0000000E+00   9.901676E-03
  13     -3.216016E-01   .0000000E+00  -9.862398E-02
  14      4.782766E-05   .0000000E+00  -1.722850E-05
0excess resonance integrals
0                resolved
0absorption      1.44905E+02
 fission         .00000E+00
- elapsed time   .00 min.
0 kr-85          mt=  102                                   36085     temperature=  975.00
0 sr-90        mt=102                    updated 10/13/89    38090     temperature=  975.00
0  y-89        mt=102                    updated 10/13/89    39089     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.644        lumped nuclear density   = 7.9016527E-06
0spin factor (g)          =   78.664        lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00     dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995        sigma(per absorber atom)= 2.1610631E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  257.953        sigma(per absorber atom)= 2.4110725E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   9     -1.668715E-06   .0000000E+00  -8.242978E-05
  10     -4.720001E-05   .0000000E+00  -1.330576E-04
0excess resonance integrals
0                resolved
0absorption      1.46444E-01
 fission         .00000E+00
- elapsed time   .00 min.
0 zr-93          mt=  102                                   40093     temperature=  975.00
0 zr-94        mt=102                    updated 10/13/89    40094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.100        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.779        lumped nuclear density   = 1.2784308E-05
0spin factor (g)          =  180.853        lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00     dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995        sigma(per absorber atom)= 1.3356976E+04
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.490220E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  8      -6.747734E-07     .000000E+00   -6.500250E-04
  9      -2.446607E-05     .000000E+00   -2.167085E-03
0excess resonance integrals
0                  resolved
0absorption       3.43940E-02
 fission           .00000E+00
- elapsed time     .00 min.
0 zr-95          mt=102                    updated 10/13/89          40095     temperature=  975.00
0 zircalloy      endf/b-iv mat 1284        updated 10/13/89          40302     temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =    90.436          temperature(kelvin)       =   650.000
0potential scatter sigma  =     6.385          lumped nuclear density    = 4.2515602E-02
0spin factor (g)          =     1.079          lump dimension (a-bar)    = 5.4610002E-01
0inner radius             = 4.7878999E-01      dancoff correction (c)    = 5.0364637E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  8      -1.780592E-03     .000000E+00   -1.286907E+00
  9      -5.855373E-02     .000000E+00   -2.695297E+00
 10      -6.959985E-02     .000000E+00   -1.601321E+00
 11      -1.883937E-01     .000000E+00   -7.920912E-01
0excess resonance integrals
0                  resolved
0absorption       2.28539E-01
 fission           .00000E+00
- elapsed time     .02 min.
0 nb-94          mt=102                    updated 10/13/89          41094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    93.101          temperature(kelvin)       =   975.000
0potential scatter sigma  =     3.779          lumped nuclear density    = 5.4897688E-12
0spin factor (g)          = 43808.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.1105079E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 3.4708569E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
 13       1.043419E-02     .000000E+00    9.253895E-04
 14       9.836701E-03     .000000E+00   -4.064784E-04
0excess resonance integrals
0                  resolved
0absorption       9.15001E+01
 fission           .00000E+00
- elapsed time     .02 min.
0 sr-95          mt=102                    updated 10/13/89          42095     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    94.091          temperature(kelvin)       =   975.000
0potential scatter sigma  =     3.806          lumped nuclear density    = 9.6802851E-06
0spin factor (g)          =   607.724          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.763995E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.968067E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -2.101411E-03    .000000E+00   -1.219284E-02
  11      -3.741213E-03    .000000E+00   -6.328940E-03
  12      -2.768852E+00    .000000E+00   -3.186731E+00
  13       1.591845E-04    .000000E+00   -2.397023E-05
0excess resonance integrals
0                  resolved
0absorption      9.97885E+01
 fission          .00000E+00
-  elapsed time    .02 min.
0 tc-99          mt=102                    updated 10/13/89          43099     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =    98.150          temperature(kelvin)       =   975.000
0potential scatter sigma  =     6.000          lumped nuclear density    = 1.244681E-05
0spin factor (g)          =  4527.940          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.371896E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.530608E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -1.596682E-02    .000000E+00   -7.532893E-03
  12      -4.130031E-03    .000000E+00   -1.416189E-04
  13      -2.602912E-01    .000000E+00   -1.372298E-02
  14      -5.629467E+00    .000000E+00   -1.798383E-01
  15       1.070845E-02    .000000E+00   -5.397120E-04
  16       4.836022E-03    .000000E+00   -2.802516E-04
  17       2.074402E-04    .000000E+00   -1.192082E-05
0excess resonance integrals
0                  resolved
0absorption      3.27545E+02
 fission          .00000E+00
-  elapsed time    .03 min.
0 ru-101         mt=102                    updated 10/13/89          44101     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   100.089          temperature(kelvin)       =   975.000
0potential scatter sigma  =     3.965          lumped nuclear density    = 1.106653E-05
0spin factor (g)          =  8785.290          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.543027E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.721537E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -3.600798E-02    .000000E+00   -3.661688E-03
  12      -7.148226E-02    .000000E+00   -2.072446E-02
  13      -2.960912E-01    .000000E+00   -7.977196E-03
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  14   2.374839E-04    .000000E+00   -4.170895E-05
0excess resonance integrals
0                 resolved
0absorption      7.95266E+01
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89          46106    temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89          46103    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   102.021          temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.408          lumped nuclear density     = 6.475510 9E-06
0spin factor (g)          =      .500          lump dimension (a-bar)     = 4.681220 1E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 2.637007 4E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 2.942077 9E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      1.271471E-03    .000000E+00    1.996385E-03
  10     -2.977088E-03    .000000E+00   -4.186531E-03
  11     -1.281989E-02    .000000E+00   -1.136710E-02
  12     -1.833917E-04    .000000E+00   -1.934018E-05
  13      .000000E+00     .000000E+00    .000000E+00
  14      .000000E+00     .000000E+00    .000000E+00
  15      2.298652E-01    .000000E+00    3.324061E-03
  16      3.506692E+01    .000000E+00   -5.387975E-02
  17     -1.842000E+02    .000000E+00   -1.504310E-01
  18      8.739133E+01    .000000E+00    2.613078E-01
  19      1.151897E+01    .000000E+00   -1.560780E-03
  20      1.058838E+00    .000000E+00   -2.495795E-03
  21      2.165989E-01    .000000E+00    1.924895E-03
  22      2.583943E-01    .000000E+00    2.928526E-03
  23     -9.880321E-02    .000000E+00    1.799084E-03
0excess resonance integrals
0                 resolved
0absorption      1.15157E+03
 fission          .00000E+00
- elapsed time    .07 min.
0 rh-105        mt=  102                                            46105    temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89          46105    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density     = 3.815434 9E-06
0spin factor (g)          =  15210.000         lump dimension (a-bar)     = 4.681220 1E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 4.475497 7E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 4.993598 E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12     -5.267409E-02    .000000E+00   -1.049825E-03
  13      5.370175E-03    .000000E+00   -3.614218E-04
  14      7.773445E-04    .000000E+00   -8.157203E-05
0excess resonance integrals
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0                resolved
0absorption      6.12702E+01
 fission         .00000E+00
- elapsed time   .07 min.
0 pd-108        mt=102                    updated 10/13/89          46108    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  106.977        temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.146        lumped nuclear density  = 9.303272E-07
0spin factor (g)          = 21175.100        lump dimension (a-bar)  = 4.681220 1E-01
0inner radius             = .0000000E+00     dancoff correction (c)  = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995         sigma(per absorber atom)= 1.835479E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953         sigma(per absorber atom)= 2.047825E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      1.170385E-04   .000000E+00   3.531856E-04
  12     -8.421333E-01   .000000E+00  -6.202699E-01
  13      6.888835E-03   .000000E+00   1.834003E-03
  14      8.561365E-02   .000000E+00  -3.207094E-05
  15     -1.840486E-01   .000000E+00   8.083802E-05
  16      2.946588E-04   .000000E+00  -9.255640E-06
0excess resonance integrals
0                resolved
0absorption      2.13080E+02
 fission         .00000E+00
- elapsed time   .07 min.
0 silver-109    endf/b-iv mat 1139        updated 10/13/89          47109    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  107.969         temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.988        lumped nuclear density  = 6.683345 1E-07
0spin factor (g)          = 1441.870         lump dimension (a-bar)  = 4.681220 1E-01
0inner radius             = .0000000E+00     dancoff correction (c)  = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995         sigma(per absorber atom)= 2.555005 3E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953         sigma(per absorber atom)= 2.850587E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  10     -5.320484E-05   .000000E+00  -3.392181E-05
  11     -2.755409E-03   .000000E+00  -2.078652E-03
  12     -7.117940E-01   .000000E+00  -3.246698E-02
  13      7.671432E-01   .000000E+00   3.380747E-02
  14     -6.185493E+00   .000000E+00  -5.847073E-01
0excess resonance integrals
0                resolved
0absorption      1.39527E+03
 fission         .00000E+00
- elapsed time   .07 min.
0 sb-124        mt=102                    updated 10/13/89          51124    temperature=  975.00
0 xe-131        mt=102,103,104,105,106    updated 10/13/89          54131    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  129.781         temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.301        lumped nuclear density  = 5.778405E-06
0spin factor (g)          =  246.825         lump dimension (a-bar)  = 4.681220 1E-01
0inner radius             = .0000000E+00     dancoff correction (c)  = 3.426926 1E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.958066E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 3.300436E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9      -1.746571E-06     .000000E+00   -1.644019E-05
 10      -1.217036E-04     .000000E+00   -1.011725E-04
 11      -1.522097E-03     .000000E+00   -1.149861E-03
 12      -2.946790E-02     .000000E+00   -2.748222E-03
 13      -4.860811E+01     .000000E+00   -1.140201E+02
 14       1.086607E-02     .000000E+00    1.520949E-02
0excess resonance integrals
0                    resolved
0absorption        7.83722E+02
 fission            .00000E+00
- elapsed time     .03 min.
0 xe-132        mt=102,103,104,105,106        updated 10/13/89          54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   130.771          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.301          lumped nuclear density   = 1.006062E-05
0spin factor (g)          =   675.899          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.697307E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.893665E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9      -1.536122E-05     .000000E+00   -6.967560E-05
 10      -4.775116E-03     .000000E+00   -6.079132E-02
 11       3.338809E-03     .000000E+00   -9.216575E-07
0excess resonance integrals
0                    resolved
0absorption        9.76256E-01
 fission            .00000E+00
- elapsed time     .03 min.
0 xenon-135     endf/b-iv mat 1294            updated 10/13/89          54135    temperature=  975.00
0 xe-136          mt=  102, 103, 104, 105, 107                          54136    temperature=  975.00
0 cesium-133    endf/b-iv mat 1141            updated 10/13/89          55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   131.764          temperature(kelvin)      =   975.000
0potential scatter sigma  =     7.100          lumped nuclear density   = 1.362953E-05
0spin factor (g)          =   374.437          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.252864E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.343861E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9      -3.902142E-05     .000000E+00   -2.371830E-04
 10      -1.855911E-03     .000000E+00   -3.566480E-03
 11      -7.030141E-02     .000000E+00   -1.231307E-01
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  12      -1.08736E-01     .000000E+00   -1.51459E-02
  13      -1.80667E-01     .000000E+00   -9.83493E-03
  14      -8.02765E+00     .000000E+00   -3.51723E-01
  15       5.62501E-03     .000000E+00   -4.05442E-04
  16       2.77885E-03     .000000E+00   -2.21527E-04
  17       2.35227E-03     .000000E+00   -1.83070E-04
  18       2.21507E-03     .000000E+00   -1.67948E-04
  19       1.31765E-03     .000000E+00   -9.67162E-05
0excess resonance integrals
0                  resolved
0absorption      3.56736E+02
 fission          .00000E+00
- elapsed time    .10 min.
0 cs-134        mt=102                    updated 10/13/89          55134    temperature=  975.00
0 cs-135          mt=  102                                        55135    temperature=  975.00
0 cs-137        mt=102                    updated 10/13/89          55137    temperature=  975.00
0 ba-136        mt=102                    updated 10/13/89          56136    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   134.737          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.835          lumped nuclear density     = 8.151140E-08
0spin factor (g)          =  1347.690          lump dimension (a-bar)     = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 2.094917E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 2.337275E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10       1.264037E-06     .000000E+00   5.433292E-07
  11       1.019501E-05     .000000E+00   8.952431E-06
0excess resonance integrals
0                  resolved
0absorption      1.39475E+00
 fission          .00000E+00
- elapsed time    .10 min.
0 la-139        mt=102                    updated 10/13/89          57139    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   137.713          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.906          lumped nuclear density     = 1.310731E-05
0spin factor (g)          =   145.855          lump dimension (a-bar)     = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.302813E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.453497E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9       1.241050E-05     .000000E+00   2.717702E-03
  10      -2.747689E-04     .000000E+00  -1.731751E-02
  11       .000000E+00      .000000E+00   .000000E+00
  12      -4.498419E-02     .000000E+00  -2.717459E-02
0excess resonance integrals
0                  resolved
0absorption      8.09612E+00
 fission          .00000E+00
- elapsed time    .12 min.
```

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0 ce-144          mt= 102                                          58144    temperature=  975.00
0 pr-141          mt=102,103,104,105,106,107    updated 10/13/89   59141    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   139.697          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.953          lumped nuclear density     = 1.0987034E-05
0spin factor (g)          =  1026.500          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.5541922E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 1.7339945E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      -4.312013E-03    .000000E+00   -1.464163E-01
  11      -7.124887E-02    .000000E+00   -9.475036E-01
  12      -1.590714E-03    .000000E+00   -1.548419E-04
0excess resonance integrals
0                 resolved
0absorption       1.21742E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 pr-143          mt=102                    updated 10/13/89   59143    temperature=  975.00
0 nd-143          mt=102                    updated 10/13/89   60143    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   141.682          temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.000          lumped nuclear density     = 1.0663101E-05
0spin factor (g)          =  1964.860          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.6014073E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 1.7866713E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      -1.073421E-04    .000000E+00   -4.672364E-05
  11      -2.50263E-01     .000000E+00   -2.911259E+00
  12      -1.644718E-01    .000000E+00   -8.092445E-02
0excess resonance integrals
0                 resolved
0absorption       5.10661E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 nd-145          mt=102                    updated 10/13/89   60145    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   143.668          temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.047          lumped nuclear density     = 7.7396685E-06
0spin factor (g)          =  1007.250          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 2.2062980E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 2.4615338E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
```

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  10      -3.127119E-03     .000000E+00   -4.925112E-02
  11      -4.786503E-02     .000000E+00   -1.440322E-01
  12      -1.169613E+00     .000000E+00   -7.364430E+00
  13       9.609872E-05     .000000E+00    2.040021E-04
  14      -1.043070E+00     .000000E+00   -2.743980E-02
  15       5.904857E-03     .000000E+00   -4.619551E-04
  16       1.326684E-03     .000000E+00   -1.451367E-04
  17       9.642499E-04     .000000E+00   -1.065983E-04
  18       8.539784E-04     .000000E+00   -9.314087E-05
  19       7.634346E-04     .000000E+00   -8.070501E-05
  20       2.838992E-05     .000000E+00   -2.919078E-06
0excess resonance integrals
0                 resolved
0absorption      2.07412E+02
 fission          .00000E+00
- elapsed time    .13 min.
0 nd-147        mt=102                    updated 10/13/89          60147    temperature=  975.00
0 pm-147        mt=102                    updated 10/13/89          61147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density    = 3.1414177E-06
0spin factor (g)          = 21589.500          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 5.4357527E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 6.0646055E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -1.563805E-01     .000000E+00   -5.028190E-02
  13      -4.012225E-02     .000000E+00   -2.350455E-03
  14      -7.182008E+01     .000000E+00   -3.089703E+01
  15       4.130403E-02     .000000E+00    6.981774E-03
  16       1.697950E-02     .000000E+00    1.746737E-03
  17       1.369752E-02     .000000E+00    1.150408E-03
  18       1.253762E-02     .000000E+00    9.649074E-04
  19       6.999463E-04     .000000E+00    5.069173E-05
0excess resonance integrals
0                 resolved
0absorption      2.02910E+03
 fission          .00000E+00
- elapsed time    .13 min.
0 pm-148        mt=  102                                                61148    temperature=  975.00
0 sm-147        endf/b-v fission product  updated 10/13/89          62147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density    = 6.6781757E-07
0spin factor (g)          =     .000          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 2.5569811E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 2.8527958E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11       2.836913E-01     .000000E+00    1.112904E+00
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```
  12    1.088946E+00    .000000E+00   -1.408553E+00
  13   -2.806831E+00    .000000E+00   -1.302609E+00
  14   -2.406620E-01    .000000E+00   -1.391501E-03
  15    3.117678E-01    .000000E+00   -1.918673E-03
  16    7.287842E-03    .000000E+00   -3.738702E-04
  17    4.281479E-03    .000000E+00   -2.401533E-04
  18    3.510398E-03    .000000E+00   -1.997058E-04
  19    2.910600E-03    .000000E+00   -1.649439E-04
  20    8.434993E-04    .000000E+00   -4.626885E-05
0excess resonance integrals
0                resolved
0absorption      7.23525E+02
 fission          .00000E+00
- elapsed time    .15 min.
                    thermal scattering matrix number  3 at a temperature of   900.03 was selected.
0 sm-149      mt=102,103,107          updated 10/13/89          62149    temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =  147.638          temperature(kelvin)      =  975.000
0potential scatter sigma =   3.260          lumped nuclear density   = 8.0202490E-08
0spin factor (g)        = 10407.900         lump dimension (a-bar)   = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 2.1291073E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953          sigma(per absorber atom)= 2.3754198E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     8.546618E-03    .000000E+00   3.071172E-02
  12    -5.400369E-02    .000000E+00  -1.796964E-01
  13     2.356363E-02    .000000E+00   2.899014E-03
  14     9.786990E-03    .000000E+00  -7.090896E-03
0excess resonance integrals
0                resolved
0absorption      8.04343E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-150      mt=102                  updated 10/13/89          62150    temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =  148.629          temperature(kelvin)      =  975.000
0potential scatter sigma =   5.162          lumped nuclear density   = 2.5441905E-06
0spin factor (g)        = 4376.420          lump dimension (a-bar)   = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 6.7117500E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953          sigma(per absorber atom)= 7.4882203E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  10    -8.860412E-04    .000000E+00  -8.258277E-03
  11    -1.909252E-02    .000000E+00  -2.169535E-01
  12    -6.202067E-02    .000000E+00  -1.874718E-02
  13    -4.471614E+00    .000000E+00  -3.522457E+00
  14     1.065973E-04    .000000E+00  -6.409712E-05
0excess resonance integrals
0                resolved
0absorption      2.89862E+02
```

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 fission          .00000E+00
- elapsed time    .15 min.
0 sm-151        mt=102,103,104,105,106,107     updated 10/13/89              62151     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   149.623              temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.185              lumped nuclear density     = 3.320057E-07
0spin factor (g)          = 75574.703              lump dimension (a-bar)     = 4.681220E-01
0inner radius             =  .0000000E+00          dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 5.143275E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 5.738292E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  14      -1.902656E-01    .000000E+00   -1.953556E-02
  15       1.489455E+01    .000000E+00    7.541747E-02
  16      -2.179166E+01    .000000E+00   -6.184455E-02
  17       1.737730E+02    .000000E+00    8.287368E-01
  18      -3.205274E+02    .000000E+00   -1.782191E+00
  19       6.255297E+01    .000000E+00    3.868173E-01
  20       1.141397E+00    .000000E+00   -1.408118E-04
  21      -7.117594E-02    .000000E+00    1.244099E-02
  22       6.952561E-02    .000000E+00    3.838921E-03
  23      -1.091915E-02    .000000E+00    3.374035E-04
0excess resonance integrals
0                 resolved
0absorption      2.05658E+03
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-152        mt=102,103,104,105,106,107     updated 10/13/89              62152     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   150.615              temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.208              lumped nuclear density     = 1.244601E-06
0spin factor (g)          =   863.594              lump dimension (a-bar)     = 4.681220E-01
0inner radius             =  .0000000E+00          dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.372003E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.530727E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9       2.402917E-06    .000000E+00    1.158824E-04
  10      -9.668040E-04    .000000E+00   -1.527281E-02
  11      -1.426155E-02    .000000E+00   -5.438628E-02
  12      -9.672706E-02    .000000E+00   -3.073028E-01
  13       4.225400E-02    .000000E+00    1.027757E-01
  14      -8.745422E+01    .000000E+00   -1.690672E+02
0excess resonance integrals
0                 resolved
0absorption      2.79773E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   151.607              temperature(kelvin)        =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density     = 6.307897E-07
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0spin factor (g)          = 12265.900          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 2.7070775E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 3.0202547E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12      -2.772846E-01    .000000E+00   -5.409002E-02
  13      -1.013753E-01    .000000E+00   -2.071329E-03
  14      -6.834808E-01    .000000E+00    1.708121E-03
  15       2.400970E+00    .000000E+00   -2.694528E-02
  16      -3.294738E+00    .000000E+00    8.158251E-03
  17       1.506606E-01    .000000E+00   -3.437719E-03
  18       7.726888E-02    .000000E+00   -2.231196E-03
  19       5.055466E-02    .000000E+00   -1.541131E-03
  20      -1.253801E-01    .000000E+00   -1.275065E-03
0excess resonance integrals
0                  resolved
0absorption       1.35519E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-154        mt=102,103,104,105,106,107     updated 10/13/89          63154     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   152.601          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 9.529801E-08
0spin factor (g)          = 19135.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.7918495E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 1.9991453E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12      -3.879111E-01    .000000E+00   -6.058321E-02
  13      -3.050694E-01    .000000E+00   -2.464727E-02
  14       3.428014E-01    .000000E+00    1.488880E-02
  15       1.898024E-01    .000000E+00    2.110245E-02
  16       7.259676E+00    .000000E+00    9.253874E-02
  17      -1.438728E+02    .000000E+00   -1.895837E+00
  18       1.137163E+02    .000000E+00    1.859022E+00
  19      -1.014623E+02    .000000E+00    1.187256E+00
0excess resonance integrals
0                  resolved
0absorption       2.13692E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-155        mt=102,103,104,105,106,107     updated 10/13/89          63155     temperature=   975.00
0 gd-155        mt=102                         updated 10/13/89          64155     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   153.592          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.277          lumped nuclear density    = 1.1837075E-09
0spin factor (g)          = 12700.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.4425835E+08
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.609473E+08
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -1.439291E+00    .000000E+00   -1.839456E-01
  13       1.541241E+00    .000000E+00    1.985185E-01
  14       2.190766E-01    .000000E+00    9.807291E-03
  15      -3.322711E-01    .000000E+00   -3.651623E-05
  16       1.477359E+00    .000000E+00   -4.148859E-03
  17       1.568654E-01    .000000E+00   -1.479120E-03
  18       9.605173E-02    .000000E+00   -1.078083E-03
  19       6.295319E-02    .000000E+00   -8.026669E-04
  20       1.670382E-02    .000000E+00    1.627042E-04
  21        .000000E+00    .000000E+00     .000000E+00
  22        .000000E+00    .000000E+00     .000000E+00
  23        .000000E+00    .000000E+00     .000000E+00
  24        .000000E+00    .000000E+00     .000000E+00
  25      -2.127761E+03    .000000E+00   -1.621977E+00
  26      -5.205660E+03    .000000E+00    1.961465E+00
  27      -1.659969E+03    .000000E+00    7.392578E-01
0excess resonance integrals
0                  resolved
0absorption      3.97057E+04
 fission          .00000E+00
- elapsed time    .18 min.
0u-234 1043 sigp=5+4 resklacs p-3 293k f-1/e-x(1.+5)                    92234    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   232.029          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.021          lumped nuclear density   = 4.849578E-06
0spin factor (g)          =  6948.450          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995             sigma(per absorber atom)= 3.521269E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.955              sigma(per absorber atom)= 3.927439E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -2.320080E-02    .000000E+00   -6.765317E-02
  12      -1.891160E-01    .000000E+00   -7.934187E-02
  13       7.759874E-04    .000000E+00   -6.471546E-04
  14      -1.852598E+01    .000000E+00   -3.033657E+00
0excess resonance integrals
0                  resolved
0absorption      5.81870E+02
 fission          .00000E+00
- elapsed time    .20 min.
0 uranium-235    endf/b-iv set 1261          updated 10/13/89          92235    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   233.025          temperature(kelvin)      =   975.000
0potential scatter sigma  =    11.500          lumped nuclear density   = 4.902529E-04
0spin factor (g)          = 15171.100          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995             sigma(per absorber atom)= 3.483105E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.049              sigma(per absorber atom)= 3.737953E+02
```

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0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12      -2.044447E+00   -1.273228E+00   -4.783008E-02
  13      -7.108612E+00   -3.537716E+00   -1.535470E-01
  14      -5.710854E+00   -3.502140E+00   -3.898792E-02
0excess resonance integrals
0                 resolved
0absorption       2.10693E+02
 fission          1.25499E+02
- elapsed time     .22 min.
0u-236 1163 sigo=5+4 nsw=lacs p-3 293k f-1/e-m(1.+5)                    92236     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   234.017          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.995          lumped nuclear density    = 3.982580E-05
0spin factor (g)          =  6328.490          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 4.287880E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.954          sigma(per absorber atom)= 4.783102E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11      -1.949282E-01    .000000E+00   -4.880892E-01
  12      -1.041916E+00    .000000E+00   -7.155065E-01
  13      -6.303462E-02    .000000E+00   -3.415031E-03
  14      -3.580088E+01    .000000E+00   -3.132152E+00
0excess resonance integrals
0                 resolved
0absorption       2.87438E+02
 fission          .00000E+00
- elapsed time     .22 min.
0 uranium-238    endf/b-iv mat 1262          updated 10/13/89          92238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.006          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density    = 2.191854E-02
0spin factor (g)          =   656.527          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 7.790689E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   235.041          sigma(per absorber atom)= 3.354329E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -3.959976E-02    .000000E+00   -4.046975E-01
  10      -1.025897E+00   -1.750593E-05   -6.481733E+00
  11      -9.708024E+00    .000000E+00   -2.689807E+01
  12      -4.304811E+01    .000000E+00   -4.998876E+01
  13      -5.401412E+01    .000000E+00   -1.769151E+01
  14      -1.045006E+02    .000000E+00   -6.097761E+00
0excess resonance integrals
0                 resolved
0absorption       1.80080E+01
 fission          5.03969E-04
- elapsed time     .23 min.
```

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0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  235.012          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.500          lumped nuclear density    = 1.979491E-06
0spin factor (g)          = 10100.800         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 8.626441E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 9.252989E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -6.338631E-02  -2.012413E-06  -7.400325E-03
  12       3.148655E-02  -9.852386E-05   7.995239E-03
  13      -4.917695E-03   8.985276E-05  -4.406471E-04
  14      -4.483762E-02  -5.801127E-06  -1.160987E-03
0excess resonance integrals .
0                 resolved
0absorption       2.95103E+02
 fission          1.38574E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 nsnlacs p-3 293k f-1/e-m(1.+5)                 94238    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.167          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.800          lumped nuclear density    = 1.773472E-07
0spin factor (g)          = 13130.600         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 9.626250E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 1.052785E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -8.052604E-04  -1.198829E-04  -8.325950E-04
  12      -5.152005E-04  -5.715002E-05  -2.714376E-04
  13       4.091211E-01   7.547670E-02  -9.684728E-03
  14      -3.823655E-01  -6.990144E-02   8.539011E-03
0excess resonance integrals
0                 resolved
0absorption       8.25438E+01
 fission          9.08494E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          94239    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.999          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.200          lumped nuclear density    = 8.266486E-05
0spin factor (g)          = 6435.710          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 2.057207E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 2.215756E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
```

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  11      -1.731143E-01   -6.962558E-02   -5.309264E-02
  12      -1.543933E+00   -5.794014E-01   -2.033134E-01
  13      -5.069869E+00   -2.983989E+00   -7.734127E-02
  14      -1.616615E+00   -8.598553E-01   -1.447852E-02
0excess resonance integrals
0                 resolved
0absorption       3.09609E+02
 fission          1.73873E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89          9240     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   237.992          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density    = 1.1579618E-05
0spin factor (g)          =   669.244          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.4746573E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.5817633E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -3.527370E-05   -8.454460E-07   -1.122140E-04
  10      -2.741197E-03   -1.699441E-04   -1.253630E-02
  11      -8.856678E-02   -5.120134E-04   -1.178721E-01
  12      -1.236512E+00   -6.752137E-03   -1.188553E+00
  13      -1.511770E-01   -9.269665E-04   -1.101984E-02
  14       .000000E+00     .000000E+00     .000000E+00
  15       1.744944E-02    3.330308E-06    3.451913E-03
  16       3.075249E+00    5.869248E-04    3.877850E-01
  17       4.904770E+02    9.360970E-02    4.405704E+01
  18      -6.409365E+03   -1.225256E+00   -5.070545E+02
  19       7.663346E+02    1.462583E-01    5.942587E+01
  20      -9.327890E+01   -1.780269E-02    1.798134E+00
0excess resonance integrals
0                 resolved
0absorption       5.56424E+03
 fission          2.07910E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9241     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.978          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.959          lumped nuclear density    = 5.0548110E-06
0spin factor (g)          = 16402.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 3.3781617E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 3.6235211E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12       5.990875E-03    5.138614E-03    6.305210E-04
  13      -3.513053E-01   -2.733082E-01   -1.093470E-02
  14      -2.874569E-01   -1.940983E-01   -1.548980E-05
  15       1.79442E-02    1.608441E-02    -4.673214E-04
0excess resonance integrals
0                 resolved
```

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0absorption      5.08611E+02
 fission         4.26404E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          94242    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.145          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.694          lumped nuclear density   = 3.4107089E-07
0spin factor (g)          =  6606.710         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 5.0065744E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 5.3702075E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11      -7.845986E-04   .000000E+00   -2.272789E-03
  12      -1.841652E-02   .000000E+00   -3.615677E-02
  13       5.776821E-05   .000000E+00    4.300362E-06
  14       8.144961E-02   .000000E+00    1.525802E-02
  15      -6.458304E+00   .000000E+00   -5.533113E-01
  16       4.032914E-02   .000000E+00   -3.457235E-03
  17       1.550372E-02   .000000E+00   -1.848240E-03
  18       1.112569E-02   .000000E+00   -1.430698E-03
0excess resonance integrals
0                resolved
0absorption      1.10785E+03
 fission         .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 new-lacs 218grp p-3 295k                          95241    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.950          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density   = 9.6635489E-08
0spin factor (g)          = 82058.203         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.7670494E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 1.8953921E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  13       4.908576E-01    1.212019E-02   4.871396E-03
  14      -4.369514E-01   -1.113387E-02  -4.603611E-03
0excess resonance integrals
0                resolved
0absorption      1.93465E+02
 fission         1.07605E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                           95243    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.940          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density   = 1.8468327E-08
0spin factor (g)          = 82052.602         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 9.2460830E+06
0moderator-1 will be treated by the nordheim integral method.
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0mass of moderator-2    =   238.051          sigma(per absorber atom)= 9.9176360E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  13     -6.806792E-03    .000000E+00    4.328656E-04
  14      2.134225E-02    .000000E+00    2.224311E-04
0excess resonance integrals
0                  resolved
0absorption       1.60150E+02
 fission          .00000E+00
- elapsed time    .32 min.
0 curium-244    endf/b-iv mat 1162          updated 10/13/89          96244    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   242.133          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.320          lumped nuclear density   = 1.0461749E-09
0spin factor (g)          =  5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.6322289E+08
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.7507795E+08
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      2.553260E-04    6.986540E-06   3.015316E-04
  12      6.831913E-04    3.211379E-05   1.340608E-04
  13      2.708639E-03    1.329417E-04   7.121908E-04
  14      7.958634E-02    4.761576E-03   1.462926E-02
0excess resonance integrals
0                  resolved
0absorption       6.13898E+02
 fission          3.54218E+01
- elapsed time    .33 min.
- elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 09:59:42
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
        tape id                    4321        number of nuclides              65
        number of neutron groups     27        number of gamma groups           0
        first thermal group          15        logical unit                     4
                          table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                    id     999
      hydrogen        endf/b-iv mat 1269/thrmal002   updated 10/13/89      id    1001
      b-10 1273 218ngp 042375 p-3 293k                                     id    5010
      boron-11        endf/b-iv mat 1160             updated 10/13/89      id    5011
      oxygen-16       endf/b-iv mat 1276             updated 10/13/89      id    8016
      oxygen-16       endf/b-iv mat 1276             updated 10/13/89      id       6
      kr-83           mt=102,103,103,105,106,107     updated 10/13/89      id   36083
      kr-85             mt=  102                                           id   36085
      sr-90           mt=102                         updated 10/13/89      id   38090
       y-89           mt=102                         updated 10/13/89      id   39089
      zr-93             mt=  102                                           id   40093
      zr-94           mt=102                         updated 10/13/89      id   40094
      zr-95           mt=102                         updated 10/13/89      id   40095
      zircalloy       endf/b-iv mat 1284             updated 10/13/89      id   40302
      nb-94           mt=102                         updated 10/13/89      id   41094
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      mo-95        mt=102                    updated 10/13/89          id   42095
      tc-99        mt=102                    updated 10/13/89          id   43099
      ru-101       mt=102                    updated 10/13/89          id   44101
      ru-106       mt=102                    updated 10/13/89          id   44106
      rh-103       mt=102                    updated 10/13/89          id   45103
      rh-105         mt=  102                                        id   45105
      pd-105       mt=102                    updated 10/13/89          id   46105
      pd-108       mt=102                    updated 10/13/89          id   46108
      silver-109   endf/b-iv mat 1139        updated 10/13/89          id   47109
      sb-124       mt=102                    updated 10/13/89          id   51124
      xe-131       mt=102,103,104,105,106    updated 10/13/89          id   54131
      xe-132       mt=102,103,104,105,106    updated 10/13/89          id   54132
      xenon-135    endf/b-iv mat 1254        updated 10/13/89          id   54135
      xe-136         mt=  102, 103, 104, 105, 107                    id   54136
      cesium-133   endf/b-iv mat 1141        updated 10/13/89          id   55133
      cs-134       mt=102                    updated 10/13/89          id   55134
      cs-135         mt=  102                                        id   55135
      cs-137       mt=102                    updated 10/13/89          id   55137
      ba-136       mt=102                    updated 10/13/89          id   56136
      la-139       mt=102                    updated 10/13/89          id   57139
      ce-144         mt=  102                                        id   58144
      pr-141       mt=102,103,104,105,106,107 updated 10/13/89         id   59141
      pr-143       mt=102                    updated 10/13/89          id   59143
      nd-143       mt=102                    updated 10/13/89          id   60143
      nd-145       mt=102                    updated 10/13/89          id   60145
      nd-147       mt=102                    updated 10/13/89          id   60147
      pm-147       mt=102                    updated 10/13/89          id   61147
      pm-148         mt=  102                                        id   61148
      sm-147       endf/b-v fission product  updated 10/13/89          id   62147
      sm-149       mt=102,103,107            updated 10/13/89          id   62149
      sm-150       mt=102                    updated 10/13/89          id   62150
      sm-151       mt=102,103,104,105,106,107 updated 10/13/89         id   62151
      sm-152       mt=102,103,104,105,106,107 updated 10/13/89         id   62152
      eu-153       mt=102,103,104,105,106,107 updated 10/13/89         id   63153
      eu-154       mt=102,103,104,105,106,107 updated 10/13/89         id   63154
      eu-155       mt=102,103,104,105,106,107 updated 10/13/89         id   63155
      gd-155       mt=102                    updated 10/13/89          id   64155
     u-234 1043 sigp=544 newlacs p-3 295k f-1/e-m(1.+5)                id   92234
      uranium-235  endf/b-iv mat 1261        updated 10/13/89          id   92235
     u-236 1163 sigp=544 newlacs p-3 295k f-1/e-m(1.+5)                id   92236
      uranium-238  endf/b-iv mat 1262        updated 10/13/89          id   92238
      neptunium-237 endf/b-iv mat 1263       updated 10/13/89          id   93237
     pu-238 1050 sigp=544 newlacs p-3 295k f-1/e-m(1.+5)               id   94238
      plutonium-239 endf/b-iv mat 1264       updated 10/13/89          id   94239
      plutonium-240 endf/b-iv mat 1265       updated 10/13/89          id   94240
      plutonium-241 endf/b-iv mat 1266       updated 10/13/89          id   94241
      plutonium-242 endf/b-iv mat 1161       updated 10/13/89          id   94242
     am-241 1056 sigp=544 newlacs 218grp p-3 295k                      id   95241
     am-243 1057 218 gp wt f-1/e-m 090576 p3 295k                      id   95243
      curium-244   endf/b-iv mat 1162        updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx        xx  sssssssss   ddddddddddd   rrrrrrrrr   m       m  ppppppppp   mm       mm
  xx      xx  sssssssssss  ddddddddddd   rrrrrrrrrr  mm      m  pppppppppp  mmm     mmm
   xx    xx   ss       ss  dd       dd   rr       rr  mmm     m  pp      pp   mmmm   mmmm
    xx  xx    ss           dd       dd   rr       rr  mmm m   m  pp      pp   mm mm mm mm
     xx xx    ss           dd       dd   rr       rr  m   m   m  pp      pp   mm  mm  mm
      xxx     sssssssssss  dd       dd   rrrrrrrrrr  m   m   m  pppppppppp   mm   mm  mm
      xxx      sssssssssss dd       dd   rrrrrrrrr   m   m   m  pppppppppp   mm   m   mm
     xx xx           ss    dd       dd   rr     rr   m   m m m  pp           mm       mm
    xx   xx          ss    dd       dd   rr      rr  m    mmm  pp           mm       mm
```

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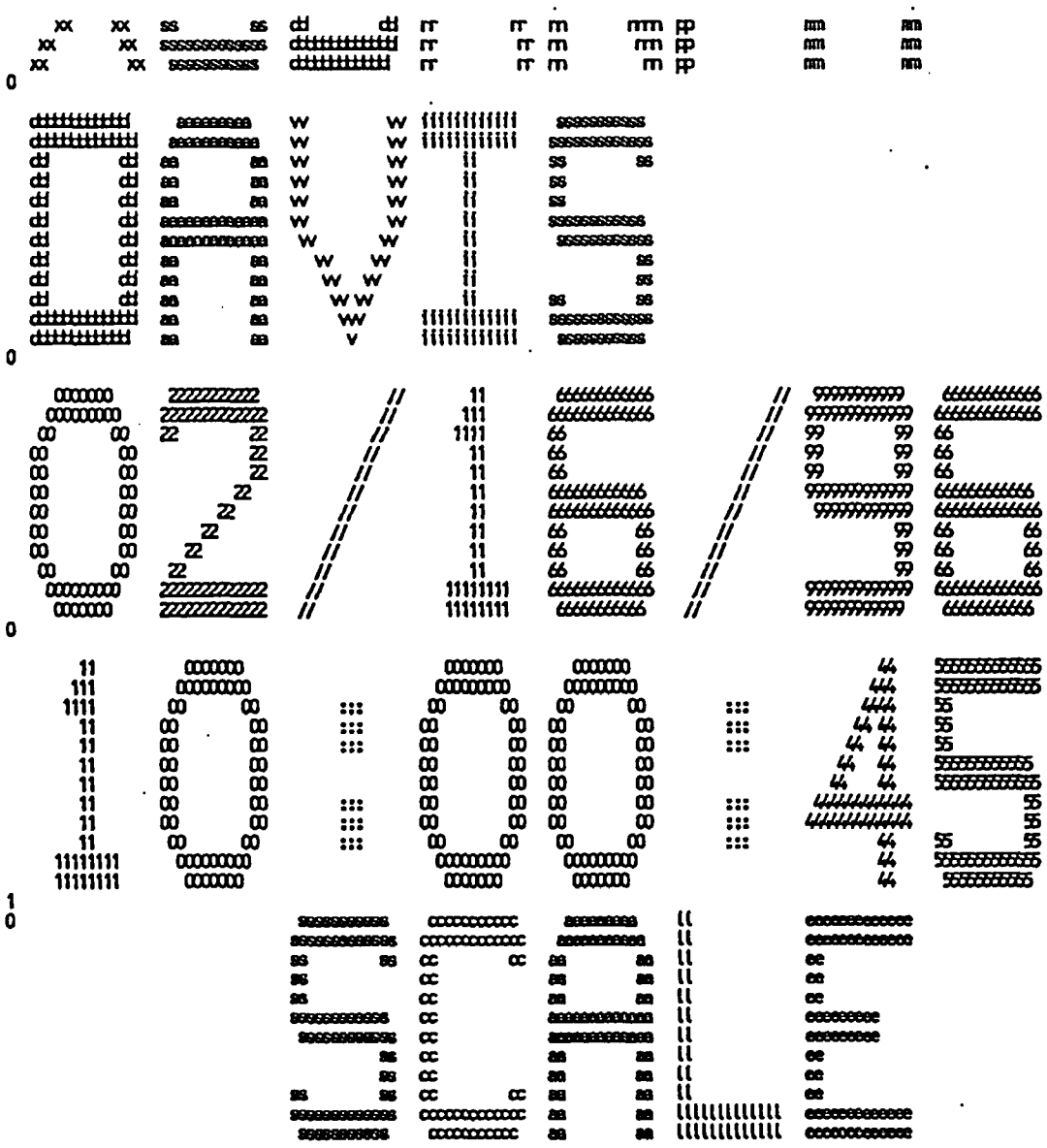

INFORMATION ONLY

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****              program verification information          *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****            program:  c0c001                           *****
*****                                                       *****
*****       creation date:  04/27/95                        *****
*****                                                       *****
*****            library:  /neutronics/scale/exe            *****
*****                                                       *****
*****                                                       *****
*****   this is not a   scale  configuration controlled code *****
*****                                                       *****
*****            jobname:  davis                            *****
*****                                                       *****
*****   date of execution:  02/16/96                        *****
*****                                                       *****
*****   time of execution:  10:00:45                        *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
1                    560 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/mtu burn high temp
0       -1q array has     1 entries.
0        1q array has    15 entries.
0        2q array has    10 entries.
0        3q array has    12 entries.
0        4q array has     9 entries.
0        5q array has    12 entries.
0direct access unit  9 requires    12 blocks of length  704 for cross section mixing.
1                    560 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/mtu burn high temp
0general problem description data block
0                          general problem data

 ige  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                    8
 izm  number of zones                    4      isct order of scattering                 3
 im   number of spacial intervals       24      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            20
 ibr  right boundary condition           3      iom  outer iteration maximum            25
 mxx  number of mixtures                 3      iclc -1/0/n--flux res/sn/cpt             0
 ms   mixing table length               65      ith  0/1 = forward/adjoint               0
 ign  number of energy groups           27      iflu not used(always wgtd)               0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print       -2
 ngg  number of gamma groups             0      idl  0/1/2/3=no/prt nd/pch n/both       53
 iftg number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt       0
0                          special options
```

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```
 ifg  0/1 = none/weighting calculation    1        ipn  0/1/2 diff. coef. param          0
 iqn  volumetric sources (0/n=no/yes)     0        idfm 0/1 = none/density factors 33*   1
 ipn  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     53        iai  0/1=none/activities by interval  0
 itmx maximum time (minutes)             10        ifct 0/1=no/yes upscatter scaling     0
 idt1 0/1/2/3=no/xsect/srce/flux--out     0        ipvt 0/1/2=no/k/alpha parametric srch 0
 isx  broad group fluxes                  0        isen outer iteration acceleration     0
 ibln activity data unit                  0        rtnd band retain parameter            0
 jtkl 0/1/2 buckling geometry             0
0                          weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight     -1        intf total xsect pan in brd gp tables 3
 ignf number of broad groups             27        ndsf pan g-g or file number           4
 itp  0/10/20/30/40 0/c/e/ac/a            0        nusf table length or max order        4
 ipp  -2/-1/0/n=gated xsect print        -2        nscm extra 1-d x-sect positions       0
 iap  -1/n anisn xsect print             -1
0                          floating point parameters

 eps  overall convergence        1.00000E-04        dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04        dz   plane depth for buckling    .00000E+00
 xnf  normalization factor       1.00000E+00        vsc  void streaming correction   .00000E+00
 ev   eigenvalue guess            .00000E+00        pv   ipvt=1/2--k/alpha           1.00000E+00
 evm  eigenvalue modifier         .00000E+00        eql  ev change eps for search    1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00        xrpm new param mod for search    7.50000E-01
      this case will require      2535 locations for mixing
      this case has been allocated 200000 locations
1                 560 d, sas2h: babcock wilcox 15x15, 3.00w/o, 20gd/mtu burn high temp
0       13q array has     65 entries.
0       14q array has     65 entries.
0       15q array has     65 entries.
0                          data block 2 (mixing table, etc.)
0     nuclides        cccc                          mixing table                          extra
       on tape     identification            mixture  component     atom density        xsect id's
    1     999                                   1       92235       4.90251E-04
    2    1001                                   1       92234       4.84938E-06
    3    5010                                   1       92236       3.98238E-05
    4    5011                                   1       92238       2.19185E-02
    5    8016                                   1        8016       4.56359E-02
    6       6                                   3           6       2.09710E-02
    7   36083                                   1       36083       9.77039E-07
    8   36085                                   1       36085       4.70956E-07
    9   38090                                   1       38090       1.06191E-05
   10   39089                                   1       39089       7.90165E-06
   11   40093                                   1       42095       9.68029E-06
   12   40094                                   1       40093       8.21428E-06
   13   40095                                   1       40094       1.27843E-05
   14   40302                                   1       40095       2.07594E-06
   15   41094                                   1       41094       5.48977E-12
   16   42095                                   1       43099       1.24470E-05
   17   43099                                   1       45105       6.47551E-06
   18   44101                                   1       45105       1.88698E-08
   19   44106                                   1       44101       1.10669E-05
   20   45105                                   1       44106       1.65007E-06
   21   45105                                   1       46105       3.81543E-06
   22   46105                                   1       46108       9.30527E-07
   23   46108                                   1       47109       6.68335E-07
   24   47109                                   1       51124       1.62036E-10
   25   51124                                   1       54131       5.77261E-06
   26   54131                                   1       54132       1.00606E-05
   27   54132                                   1       54135       6.65420E-09
```

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28	54136	1	54136	2.10436E-05
29	54136	1	55134	4.21443E-07
30	55133	1	55135	6.63814E-06
31	55134	1	55137	1.31904E-05
32	55135	1	56136	8.15114E-08
33	55137	1	57139	1.31073E-05
34	56136	1	59141	1.09870E-05
35	57139	1	59143	3.85034E-07
36	58144	1	58144	5.87019E-06
37	59141	1	60143	1.06631E-05
38	59143	1	60145	7.73967E-06
39	60143	1	61147	3.14142E-06
40	60145	1	61148	8.83976E-09
41	60147	1	60147	1.31597E-07
42	61147	1	62147	6.67818E-07
43	61148	1	62149	8.02025E-08
44	62147	1	62150	2.54419E-06
45	62149	1	62151	3.32006E-07
46	62150	1	62152	1.24460E-06
47	62151	1	64155	1.18371E-09
48	62152	1	63153	6.30790E-07
49	63153	1	63154	9.52980E-08
50	63154	1	63155	7.31344E-08
51	63155	2	40302	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	1.36295E-05
56	92238	1	93237	1.97949E-06
57	93237	1	94238	1.77345E-07
58	94238	1	94239	8.26636E-05
59	94239	1	94240	1.15798E-05
60	94240	1	94241	5.05481E-06
61	94241	1	94242	3.41071E-07
62	94242	1	95241	9.66355E-08
63	95241	1	95243	1.84683E-08
64	95243	1	96244	1.04617E-09
65	96244	1	999	1.00000E-20

- elapsed time .00 min.
0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 560 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	

10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69999E+06	13	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00
17	1.29999E+00	1.58657E+01	1.52549E+06	17	0	17	1.00000E+00
18	1.12999E+00	1.59999E+01	1.42857E+06	18	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05698E+05	20	0	20	1.00000E+00
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00
22	3.25000E-01	1.72620E+01	6.90070E+05	22	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86953E+05	23	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	26	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 560 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/mtu burn high temp

0

	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28595E-02
7					5.55953E-02	2.31301E-01	6	1.28595E-02
8					5.55953E-02	5.58410E-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	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83032E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70555E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07864E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07864E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26863E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01

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13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17254E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17254E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93567E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07944E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06323E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24908E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63828E-01	4	4.70854E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89114E-02	1.00000E+00		
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		
25	8.13968E-01			5.11431E+00				

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	134	1.17436E-05	1.07271E+00	-8.01027E-02	1.00000E+00	-2.70213E-02	.00000E+00	.0000
2	209	-9.52064E-06	1.08075E+00	-1.44108E-03	-8.42885E-03	-3.60698E-03	.00000E+00	.0000
3	269	1.26498E-05	1.08152E+00	-2.11928E-04	-1.04968E-03	-7.90829E-04	.00000E+00	.0000
4	314	3.15023E-06	1.08185E+00	-4.38725E-05	-2.33589E-04	-1.69822E-04	.00000E+00	.0167
5	343	-1.49547E-05	1.08211E+00	-9.74334E-06	-4.97663E-05	-3.29620E-05	.00000E+00	.0167

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1	1.84055E-08	24	1.00000E+00	1
2	2	1	1	1.97450E-08	24	1.00000E+00	1
3	3	1	1	1.70298E-08	24	1.00000E+00	1
4	4	1	1	1.49748E-08	24	1.00000E+00	1
5	5	1	1	8.71266E-09	24	1.00000E+00	1
6	6	1	1	3.09274E-09	24	1.00000E+00	1
7	7	1	2	1.84984E-09	24	1.00000E+00	1
8	8	1	24	1.01951E-09	24	1.00000E+00	1
9	9	1	1	1.96840E-09	24	1.00000E+00	1
10	10	1	1	1.75084E-09	24	1.00000E+00	1
11	11	1	1	1.78388E-09	24	1.00000E+00	1
12	12	1	24	3.26841E-09	24	1.00000E+00	1

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                                                                13   13   1   24 4.40522E-09   24 1.00000E+00   1
                                                                14   14   1   24 4.21909E-09   24 1.00000E+00   1
                                                                15   15   1   24 3.79112E-05   24 9.99977E-01   1
                                                                16   16   1   24 4.69885E-05   24 9.99982E-01   1
                                                                17   17   1   24 6.01809E-05   24 9.99989E-01   1
                                                                18   18   1   18 2.16487E-05   24 9.99959E-01   1
                                                                19   19   1   24 5.91300E-05   24 9.99984E-01   1
                                                                20   20   1   24 4.62845E-05   24 9.99967E-01   1
                                                                21   21   1   18 2.49877E-05   24 9.99945E-01   1
                                                                22   22   1   24 4.22500E-05   24 9.99989E-01   1
                                                                23   23   1   24 1.98220E-06   24 1.00000E+00   1
                                                                24   24   1    2 9.31992E-06   24 1.00001E+00   1
                                                                25   25   1   24 1.63619E-05   24 1.00000E+00   1
                                                                26   26   1    1 1.06731E-05   24 9.99996E-01   2
                                                                27   27   1    2 4.91808E-06   24 1.00000E+00   2
    6  370 -3.35889E-07  1.08195E+00 -2.18376E-06 -9.78602E-06 -6.60634E-06  .00000E+00      .0167
          final monitor
                lambda 1.08195E+00          production/absorption 1.08195E+00          angular flux on  16
- elapsed time    .02 min.
1                 560 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0 int.  zone number     radius   int. midpoint    area        volume   prod density
    1        1        .00000E+00  1.29551E-02  .00000E+00  2.10906E-03  3.16633E-03
    2        1        2.59102E-02  4.33406E-02  1.62798E-01  9.49518E-03  1.42456E-02
    3        1        6.07710E-02  8.75100E-02  3.81835E-01  2.94045E-02  4.42066E-02
    4        1        1.14246E-01  1.74155E-01  7.17868E-01  1.31104E-01  1.98987E-01
    5        1        2.34061E-01  2.99967E-01  1.47065E+00  2.21259E-01  3.43822E-01
    6        1        3.53873E-01  3.80612E-01  2.22345E+00  1.27890E-01  2.03851E-01
    7        1        4.07351E-01  4.26781E-01  2.55946E+00  9.30429E-02  1.51156E-01
    8        1        4.42212E-01  4.55167E-01  2.77850E+00  7.41004E-02  1.22515E-01
    9        2        4.68122E-01  4.68814E-01  2.94130E+00  4.07944E-03  .00000E+00
   10        2        4.69507E-01  4.71481E-01  2.95000E+00  1.16988E-02  .00000E+00
   11        2        4.73456E-01  4.75431E-01  2.97481E+00  1.17968E-02  .00000E+00
   12        2        4.77405E-01  4.78098E-01  2.99962E+00  4.16023E-03  .00000E+00
   13        3        4.78790E-01  4.83159E-01  3.00833E+00  2.65268E-02  .00000E+00
   14        3        4.87528E-01  4.99987E-01  3.06329E+00  7.82768E-02  .00000E+00
   15        3        5.12445E-01  5.24903E-01  3.21979E+00  8.21777E-02  .00000E+00
   16        3        5.37362E-01  5.41731E-01  3.37634E+00  2.97427E-02  .00000E+00
   17        4        5.46100E-01  5.53513E-01  3.43125E+00  5.15631E-02  .00000E+00
   18        4        5.60926E-01  5.70900E-01  3.52440E+00  7.15548E-02  .00000E+00
   19        4        5.80874E-01  5.96175E-01  3.64974E+00  1.14628E-01  .00000E+00
   20        4        6.11475E-01  6.45755E-01  3.84201E+00  2.78169E-01  .00000E+00
   21        4        6.80034E-01  7.14313E-01  4.27278E+00  3.07702E-01  .00000E+00
   22        4        7.48592E-01  7.63893E-01  4.70354E+00  1.46875E-01  .00000E+00
   23        4        7.79195E-01  7.89167E-01  4.89582E+00  9.89114E-02  .00000E+00
   24        4        7.99141E-01  8.09554E-01  5.02115E+00  7.51357E-02  .00000E+00
   25                 8.13968E-01               5.11431E+00
1                 560 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0 total flux
0 int.   grp. 1     grp. 2     grp. 3     grp. 4     grp. 5     grp. 6     grp. 7     grp. 8
    1  1.77256E-01  1.32813E+00  1.68089E+00  1.04172E+00  1.57595E+00  3.03114E+00  2.90546E+00  2.08063E+00
    2  1.77319E-01  1.32876E+00  1.68142E+00  1.04222E+00  1.57665E+00  3.03244E+00  2.90613E+00  2.08069E+00
    3  1.77263E-01  1.32814E+00  1.68064E+00  1.04174E+00  1.57586E+00  3.03083E+00  2.90510E+00  2.08050E+00
    4  1.76865E-01  1.32388E+00  1.67519E+00  1.03842E+00  1.57058E+00  3.02033E+00  2.89871E+00  2.07944E+00
    5  1.75833E-01  1.31293E+00  1.66134E+00  1.03005E+00  1.55730E+00  2.99433E+00  2.88322E+00  2.07684E+00
    6  1.74643E-01  1.30044E+00  1.64574E+00  1.02064E+00  1.54254E+00  2.96584E+00  2.86626E+00  2.07395E+00
    7  1.73694E-01  1.29066E+00  1.63371E+00  1.01349E+00  1.53144E+00  2.94482E+00  2.85385E+00  2.07178E+00
    8  1.72753E-01  1.28113E+00  1.62217E+00  1.00674E+00  1.52110E+00  2.92562E+00  2.84261E+00  2.06973E+00
    9  1.72238E-01  1.27597E+00  1.61597E+00  1.00315E+00  1.51567E+00  2.91563E+00  2.83681E+00  2.06865E+00
   10  1.72131E-01  1.27485E+00  1.61473E+00  1.00246E+00  1.51467E+00  2.91384E+00  2.83582E+00  2.06846E+00
   11  1.71973E-01  1.27342E+00  1.61295E+00  1.00147E+00  1.51325E+00  2.91130E+00  2.83442E+00  2.06817E+00
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12	1.71870E-01	1.27263E+00	1.61178E+00	1.00083E+00	1.51233E+00	2.90967E+00	2.83353E+00	2.06798E+00
13	1.71677E-01	1.27068E+00	1.60956E+00	9.99588E-01	1.51052E+00	2.90623E+00	2.83140E+00	2.06760E+00
14	1.71152E-01	1.26533E+00	1.60304E+00	9.95751E-01	1.50471E+00	2.89496E+00	2.82517E+00	2.06656E+00
15	1.70564E-01	1.25897E+00	1.59465E+00	9.90433E-01	1.49631E+00	2.87831E+00	2.81558E+00	2.06543E+00
16	1.70276E-01	1.25545E+00	1.58963E+00	9.86962E-01	1.49058E+00	2.86676E+00	2.80887E+00	2.06491E+00
17	1.70138E-01	1.25343E+00	1.58652E+00	9.84632E-01	1.48661E+00	2.85880E+00	2.80420E+00	2.06477E+00
18	1.69956E-01	1.25082E+00	1.58253E+00	9.81660E-01	1.48154E+00	2.84882E+00	2.79833E+00	2.06463E+00
19	1.69730E-01	1.24772E+00	1.57791E+00	9.78296E-01	1.47586E+00	2.83767E+00	2.79178E+00	2.06440E+00
20	1.69426E-01	1.24370E+00	1.57203E+00	9.74080E-01	1.46878E+00	2.82392E+00	2.78361E+00	2.06407E+00
21	1.69218E-01	1.24090E+00	1.56790E+00	9.71095E-01	1.46378E+00	2.81400E+00	2.77792E+00	2.06397E+00
22	1.69219E-01	1.24077E+00	1.56760E+00	9.70813E-01	1.46324E+00	2.81298E+00	2.77748E+00	2.06420E+00
23	1.69256E-01	1.24163E+00	1.56873E+00	9.71542E-01	1.46441E+00	2.81528E+00	2.77898E+00	2.06448E+00
24	1.69384E-01	1.24264E+00	1.57009E+00	9.72439E-01	1.46587E+00	2.81813E+00	2.78078E+00	2.06475E+00
0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58702E+00	1.44599E+00	1.30607E+00	7.95612E-01	6.71182E-01	5.87528E-01	3.70105E-01	2.04382E-01
2	1.58694E+00	1.44589E+00	1.30487E+00	7.95281E-01	6.70971E-01	5.87241E-01	3.70074E-01	2.04359E-01
3	1.58713E+00	1.44610E+00	1.30533E+00	7.95825E-01	6.71425E-01	5.87957E-01	3.70751E-01	2.04404E-01
4	1.58816E+00	1.44733E+00	1.30797E+00	7.98909E-01	6.74040E-01	5.91827E-01	3.70574E-01	2.04662E-01
5	1.59075E+00	1.45033E+00	1.31447E+00	8.06515E-01	6.80488E-01	6.01479E-01	3.71595E-01	2.05298E-01
6	1.59363E+00	1.45361E+00	1.32158E+00	8.14890E-01	6.87572E-01	6.12163E-01	3.72694E-01	2.05975E-01
7	1.59582E+00	1.45601E+00	1.32681E+00	8.21028E-01	6.92817E-01	6.20137E-01	3.73485E-01	2.06482E-01
8	1.59789E+00	1.45819E+00	1.33158E+00	8.26798E-01	6.97627E-01	6.27485E-01	3.74189E-01	2.06935E-01
9	1.59899E+00	1.45931E+00	1.33404E+00	8.29780E-01	7.00126E-01	6.31313E-01	3.74551E-01	2.07175E-01
10	1.59919E+00	1.45950E+00	1.33444E+00	8.30236E-01	7.00535E-01	6.31925E-01	3.74612E-01	2.07216E-01
11	1.59947E+00	1.45976E+00	1.33501E+00	8.30917E-01	7.01118E-01	6.32795E-01	3.74699E-01	2.07274E-01
12	1.59966E+00	1.45993E+00	1.33537E+00	8.31357E-01	7.01484E-01	6.33360E-01	3.74755E-01	2.07312E-01
13	1.60038E+00	1.46027E+00	1.33612E+00	8.32255E-01	7.02268E-01	6.34513E-01	3.74871E-01	2.07388E-01
14	1.60106E+00	1.46138E+00	1.33851E+00	8.35064E-01	7.04883E-01	6.38125E-01	3.75243E-01	2.07629E-01
15	1.60220E+00	1.46296E+00	1.34188E+00	8.38940E-01	7.08014E-01	6.43092E-01	3.75771E-01	2.07962E-01
16	1.60273E+00	1.46401E+00	1.34410E+00	8.41440E-01	7.10162E-01	6.46296E-01	3.76120E-01	2.08177E-01
17	1.60303E+00	1.46480E+00	1.34576E+00	8.43278E-01	7.11708E-01	6.48629E-01	3.76309E-01	2.08315E-01
18	1.60346E+00	1.46587E+00	1.34802E+00	8.45791E-01	7.13803E-01	6.51803E-01	3.76518E-01	2.08491E-01
19	1.60401E+00	1.46708E+00	1.35060E+00	8.48682E-01	7.16220E-01	6.55472E-01	3.76763E-01	2.08698E-01
20	1.60477E+00	1.46862E+00	1.35388E+00	8.52367E-01	7.19299E-01	6.60142E-01	3.77061E-01	2.08956E-01
21	1.60534E+00	1.46972E+00	1.35622E+00	8.54994E-01	7.21465E-01	6.63449E-01	3.77208E-01	2.09115E-01
22	1.60540E+00	1.46983E+00	1.35644E+00	8.55225E-01	7.21609E-01	6.63707E-01	3.77117E-01	2.09092E-01
23	1.60525E+00	1.46955E+00	1.35585E+00	8.54642E-01	7.20998E-01	6.62816E-01	3.76970E-01	2.09013E-01
24	1.60508E+00	1.46921E+00	1.35512E+00	8.53700E-01	7.20258E-01	6.61726E-01	3.76822E-01	2.08927E-01
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.44255E-02	4.40822E-02	1.26326E-01	4.31253E-01	1.11293E-01	1.88316E-01	6.92556E-01	5.05696E-01
2	8.43974E-02	4.40589E-02	1.26283E-01	4.31126E-01	1.11225E-01	1.88182E-01	6.92536E-01	5.05349E-01
3	8.44475E-02	4.42477E-02	1.26374E-01	4.31332E-01	1.11413E-01	1.88773E-01	6.92574E-01	5.05328E-01
4	8.47397E-02	4.51682E-02	1.26900E-01	4.32512E-01	1.12444E-01	1.92805E-01	6.92964E-01	5.11670E-01
5	8.54635E-02	4.75197E-02	1.28185E-01	4.35412E-01	1.15019E-01	2.00427E-01	7.13720E-01	5.24952E-01
6	8.62611E-02	5.02350E-02	1.29583E-01	4.38580E-01	1.17893E-01	2.09044E-01	7.29600E-01	5.39721E-01
7	8.68531E-02	5.23698E-02	1.30602E-01	4.40909E-01	1.20059E-01	2.15638E-01	7.41441E-01	5.50804E-01
8	8.73979E-02	5.44291E-02	1.31522E-01	4.43027E-01	1.22073E-01	2.21852E-01	7.52356E-01	5.61089E-01
9	8.76817E-02	5.55185E-02	1.31996E-01	4.44127E-01	1.23122E-01	2.25109E-01	7.58025E-01	5.66447E-01
10	8.77287E-02	5.56665E-02	1.32074E-01	4.44309E-01	1.23284E-01	2.25578E-01	7.58902E-01	5.67250E-01
11	8.77959E-02	5.58784E-02	1.32185E-01	4.44571E-01	1.23514E-01	2.26349E-01	7.60148E-01	5.68392E-01
12	8.78394E-02	5.60162E-02	1.32256E-01	4.44739E-01	1.23664E-01	2.26883E-01	7.60954E-01	5.69128E-01
13	8.79284E-02	5.62956E-02	1.32408E-01	4.45085E-01	1.23968E-01	2.27568E-01	7.62600E-01	5.70632E-01
14	8.82066E-02	5.71589E-02	1.32869E-01	4.46165E-01	1.24921E-01	2.30314E-01	7.67724E-01	5.75269E-01
15	8.85891E-02	5.83268E-02	1.33521E-01	4.47648E-01	1.26228E-01	2.34044E-01	7.74681E-01	5.81488E-01
16	8.88349E-02	5.90646E-02	1.33947E-01	4.48597E-01	1.27066E-01	2.36404E-01	7.79071E-01	5.85305E-01
17	8.90140E-02	5.96209E-02	1.34253E-01	4.49267E-01	1.27712E-01	2.38265E-01	7.82697E-01	5.88816E-01
18	8.92589E-02	6.03961E-02	1.34665E-01	4.50175E-01	1.28623E-01	2.40875E-01	7.88088E-01	5.94347E-01
19	8.95415E-02	6.12874E-02	1.35141E-01	4.51235E-01	1.29677E-01	2.43956E-01	7.94526E-01	6.01023E-01
20	8.99014E-02	6.24211E-02	1.35747E-01	4.52592E-01	1.31030E-01	2.47880E-01	8.03097E-01	6.10351E-01
21	9.01556E-02	6.32556E-02	1.36172E-01	4.53533E-01	1.32009E-01	2.50746E-01	8.09564E-01	6.17057E-01

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22	9.01746E-02	6.33218E-02	1.36197E-01	4.53566E-01	1.32115E-01	2.51067E-01	8.10532E-01	6.18391E-01
23	9.01057E-02	6.31275E-02	1.36075E-01	4.53270E-01	1.31882E-01	2.50398E-01	8.09236E-01	6.17274E-01
24	9.00219E-02	6.28831E-02	1.35927E-01	4.52920E-01	1.31588E-01	2.49540E-01	8.07525E-01	6.15685E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.09177E-01	1.26496E-01	1.64760E-02
2	2.09027E-01	1.26407E-01	1.64770E-02
3	2.09545E-01	1.26908E-01	1.66308E-02
4	2.12277E-01	1.29414E-01	1.75268E-02
5	2.19075E-01	1.35680E-01	1.90952E-02
6	2.26671E-01	1.42760E-01	2.11622E-02
7	2.33408E-01	1.48185E-01	2.28270E-02
8	2.37771E-01	1.53328E-01	2.44812E-02
9	2.40573E-01	1.56030E-01	2.53661E-02
10	2.40980E-01	1.56395E-01	2.54678E-02
11	2.41557E-01	1.56913E-01	2.56125E-02
12	2.41930E-01	1.57247E-01	2.57058E-02
13	2.42688E-01	1.57934E-01	2.58950E-02
14	2.44988E-01	1.59966E-01	2.64544E-02
15	2.47983E-01	1.62583E-01	2.71464E-02
16	2.49775E-01	1.64114E-01	2.75324E-02
17	2.51572E-01	1.65943E-01	2.81312E-02
18	2.54545E-01	1.69133E-01	2.92247E-02
19	2.58174E-01	1.73011E-01	3.05063E-02
20	2.63128E-01	1.78296E-01	3.21925E-02
21	2.67081E-01	1.82611E-01	3.35798E-02
22	2.67942E-01	1.83714E-01	3.39921E-02
23	2.67426E-01	1.83334E-01	3.39442E-02
24	2.66632E-01	1.82635E-01	3.37898E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.25466E-02	.00000E+00	1.26592E-02	1.05289E-02	3.20981E-03	1.10953E-02	9.98834E-01
2	.00000E+00	1.92653E-01	2.32567E-03	1.66826E-01	6.63876E-02	1.36156E-02	1.14988E-01	1.00004E+00
3	.00000E+00	2.15639E-01	2.62332E-02	1.61014E-01	8.11843E-02	1.55567E-02	1.45130E-01	1.00001E+00
4	.00000E+00	1.23985E-01	3.80532E-02	1.05308E-01	6.78544E-02	7.41953E-03	8.76617E-02	1.00001E+00
5	.00000E+00	1.64614E-01	6.79468E-02	2.59535E-01	9.47660E-02	4.42974E-03	1.33369E-01	9.99992E-01
6	.00000E+00	1.77501E-01	1.34714E-01	6.53812E-01	5.43928E-02	6.99367E-03	2.51218E-01	1.00003E+00
7	.00000E+00	8.80271E-02	9.86539E-02	7.45017E-01	3.63355E-02	7.55446E-03	1.42590E-01	1.00001E+00
8	.00000E+00	1.35691E-02	4.25773E-02	6.30878E-01	2.14972E-02	1.39252E-02	2.07217E-02	1.00004E+00
9	.00000E+00	9.84911E-04	2.17199E-02	5.35315E-01	2.06753E-02	2.30517E-02	-2.10198E-02	9.99991E-01
10	.00000E+00	7.31557E-05	2.06952E-02	4.60513E-01	1.06902E-02	3.57908E-02	-2.57133E-02	1.00001E+00
11	.00000E+00	5.75541E-06	1.06912E-02	4.22014E-01	8.14066E-03	5.82081E-02	-5.56523E-02	1.00001E+00
12	.00000E+00	4.06308E-07	8.14071E-03	2.38761E-01	9.36720E-03	6.39537E-02	-6.51767E-02	9.99958E-01
13	.00000E+00	6.42004E-03	9.36721E-03	1.77659E-01	6.15371E-03	5.89860E-02	-5.57725E-02	1.00001E+00
14	.00000E+00	1.27228E-03	6.15371E-03	1.51950E-01	7.41759E-03	8.22587E-02	-8.35227E-02	1.00000E+00
15	.00000E+00	1.43782E-09	7.50498E-03	8.47901E-02	8.89666E-03	6.76067E-03	-8.19649E-03	1.00282E+00
16	.00000E+00	4.22195E-10	9.06421E-03	4.28271E-02	9.61462E-03	4.93331E-03	-5.52444E-03	1.00211E+00
17	.00000E+00	1.35967E-10	7.74308E-03	1.46958E-02	7.51474E-03	6.68130E-03	-6.46574E-03	1.00090E+00
18	.00000E+00	9.73489E-11	7.17519E-03	9.31984E-03	4.81169E-03	2.21906E-02	-1.98332E-02	1.00022E+00
19	.00000E+00	1.37630E-10	7.02763E-03	2.44089E-02	8.96946E-03	8.96532E-03	-1.09213E-02	1.00073E+00
20	.00000E+00	2.23800E-10	1.02560E-02	1.03125E-01	9.74676E-03	2.57831E-02	-2.53119E-02	1.00132E+00
21	.00000E+00	3.27571E-11	9.21705E-03	2.17526E-02	8.63469E-03	2.33262E-02	-2.25584E-02	1.00046E+00
22	.00000E+00	3.80057E-11	1.21888E-02	4.32562E-02	9.73527E-03	6.75239E-02	-6.50953E-02	1.00130E+00
23	.00000E+00	3.63377E-11	1.48498E-02	1.68795E-01	1.85363E-02	1.22697E-01	-1.26468E-01	1.00060E+00
24	.00000E+00	9.89064E-12	2.25067E-02	1.16329E-01	2.26844E-02	1.17694E-01	-1.17733E-01	1.00044E+00
25	.00000E+00	2.89533E-12	1.92130E-02	4.39146E-02	1.44653E-02	6.43358E-02	-5.96142E-02	1.00133E+00
26	.00000E+00	2.03022E-12	9.42339E-03	3.04365E-02	6.47986E-03	5.78554E-02	-5.49278E-02	1.00025E+00
27	.00000E+00	4.83813E-13	2.02860E-03	4.52622E-03	1.10054E-03	1.61192E-02	-1.51956E-02	1.00014E+00
28	.00000E+00	1.00000E+00	6.26179E-01	5.42938E+00	6.26179E-01	9.39831E-01	6.20714E-02	1.00025E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux

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1	1.72266E-01	1.10953E-02	1.77195E-01	.00000E+00	2.25841E-03	2.62977E-03	.00000E+00	1.20666E-01
2	1.27624E+00	1.14985E-01	1.32751E+00	.00000E+00	1.71854E-05	1.18502E-02	.00000E+00	8.99916E-01
3	1.61630E+00	1.45130E-01	1.67978E+00	.00000E+00	.00000E+00	1.45322E-02	.00000E+00	1.13888E+00
4	1.00333E+00	8.76617E-02	1.04123E+00	.00000E+00	.00000E+00	6.27267E-03	.00000E+00	7.06237E-01
5	1.51593E+00	1.33369E-01	1.57523E+00	.00000E+00	.00000E+00	1.82307E-03	.00000E+00	1.06764E+00
6	2.91611E+00	2.51218E-01	3.02978E+00	.00000E+00	.00000E+00	1.58370E-03	.00000E+00	2.05301E+00
7	2.83707E+00	1.42590E-01	2.90473E+00	.00000E+00	.00000E+00	1.55715E-03	.00000E+00	1.97997E+00
8	2.06870E+00	2.07217E-02	2.08053E+00	.00000E+00	.00000E+00	1.58895E-03	.00000E+00	1.42891E+00
9	1.59894E+00	-2.10198E-02	1.58711E+00	.00000E+00	.00000E+00	2.13181E-03	.00000E+00	1.09602E+00
10	1.45928E+00	-2.57133E-02	1.44611E+00	.00000E+00	.00000E+00	4.54090E-03	.00000E+00	9.99431E-01
11	1.33394E+00	-5.56523E-02	1.30533E+00	.00000E+00	.00000E+00	9.59878E-03	.00000E+00	9.07030E-01
12	8.29634E-01	-6.51767E-02	7.95806E-01	.00000E+00	.00000E+00	1.25419E-02	.00000E+00	5.57729E-01
13	7.00018E-01	-5.57729E-02	6.71440E-01	.00000E+00	.00000E+00	1.33683E-02	.00000E+00	4.70578E-01
14	6.31151E-01	-8.35227E-02	5.87894E-01	.00000E+00	.00000E+00	8.47353E-03	.00000E+00	4.17286E-01
15	3.74539E-01	-8.19649E-03	3.70150E-01	.00000E+00	.00000E+00	2.09234E-03	.00000E+00	2.56137E-01
16	2.07166E-01	-5.52444E-03	2.04111E-01	.00000E+00	.00000E+00	1.44179E-03	.00000E+00	1.41533E-01
17	8.76697E-02	-6.46574E-03	8.44542E-02	.00000E+00	.00000E+00	1.82542E-03	.00000E+00	5.90743E-02
18	5.54811E-02	-1.98332E-02	4.41396E-02	.00000E+00	.00000E+00	1.59461E-03	.00000E+00	3.35806E-02
19	1.31977E-01	-1.09213E-02	1.26380E-01	.00000E+00	.00000E+00	2.89268E-03	.00000E+00	8.88652E-02
20	4.44088E-01	-2.53119E-02	4.31366E-01	.00000E+00	.00000E+00	1.60106E-02	.00000E+00	3.00687E-01
21	1.29088E-01	-2.25584E-02	1.11389E-01	.00000E+00	.00000E+00	1.45424E-02	.00000E+00	8.00556E-02
22	2.24985E-01	-6.50953E-02	1.89539E-01	.00000E+00	.00000E+00	4.15271E-02	.00000E+00	1.40645E-01
23	7.57785E-01	-1.26468E-01	6.93485E-01	.00000E+00	.00000E+00	7.74830E-02	.00000E+00	4.96109E-01
24	5.66222E-01	-1.17733E-01	5.06153E-01	.00000E+00	.00000E+00	7.46668E-02	.00000E+00	3.69856E-01
25	2.40462E-01	-5.96142E-02	2.09385E-01	.00000E+00	.00000E+00	4.26923E-02	.00000E+00	1.53130E-01
26	1.55931E-01	-5.49278E-02	1.26664E-01	.00000E+00	.00000E+00	3.92310E-02	.00000E+00	9.55977E-02
27	2.53388E-02	-1.51956E-02	1.65069E-02	.00000E+00	.00000E+00	1.10368E-02	.00000E+00	1.38219E-02
28	2.33536E+01	6.20775E-02	2.33237E+01	.00000E+00	2.27559E-03	4.19530E-01	.00000E+00	1.60682E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.65661E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.98023E-08	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.98023E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	6.89179E-08	9.99997E-01
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-6.70552E-08	1.00000E+00
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	8.56817E-08	9.99998E-01
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.77889E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.65661E-09	9.99999E-01
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.58794E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.79397E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-09	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.14553E-07	9.99997E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.71863E-01	1.10953E-02	1.72266E-01	1.10953E-02	.00000E+00	.00000E+00	.00000E+00	5.46010E-03

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2	1.27218E+00	1.14985E-01	1.27624E+00	1.14985E-01	.00000E+00	.00000E+00	.00000E+00	4.04362E-02
3	1.61148E+00	1.45130E-01	1.61630E+00	1.45130E-01	.00000E+00	.00000E+00	.00000E+00	5.12156E-02
4	1.00066E+00	8.76617E-02	1.00333E+00	8.76617E-02	.00000E+00	.00000E+00	.00000E+00	3.17978E-02
5	1.51210E+00	1.33369E-01	1.51593E+00	1.33369E-01	.00000E+00	.00000E+00	.00000E+00	4.80460E-02
6	2.90928E+00	2.51218E-01	2.91611E+00	2.51218E-01	.00000E+00	.00000E+00	.00000E+00	9.26314E-02
7	2.83331E+00	1.42590E-01	2.83707E+00	1.42590E-01	.00000E+00	.00000E+00	.00000E+00	8.99735E-02
8	2.06794E+00	2.07218E-02	2.06870E+00	2.07217E-02	.00000E+00	.00000E+00	.00000E+00	6.56385E-02
9	1.59971E+00	-2.10199E-02	1.59894E+00	-2.10198E-02	.00000E+00	.00000E+00	.00000E+00	5.07551E-02
10	1.45997E+00	-2.57133E-02	1.45926E+00	-2.57133E-02	.00000E+00	.00000E+00	.00000E+00	4.63216E-02
11	1.33546E+00	-5.56522E-02	1.33394E+00	-5.56525E-02	.00000E+00	.00000E+00	.00000E+00	4.23578E-02
12	8.31467E-01	-6.51767E-02	8.29634E-01	-6.51767E-02	.00000E+00	.00000E+00	.00000E+00	2.63585E-02
13	7.01597E-01	-5.57725E-02	7.00018E-01	-5.57725E-02	.00000E+00	.00000E+00	.00000E+00	2.22407E-02
14	6.33502E-01	-8.35227E-02	6.31151E-01	-8.35227E-02	.00000E+00	.00000E+00	.00000E+00	2.00680E-02
15	3.74774E-01	-8.19649E-03	3.74539E-01	-8.19649E-03	.00000E+00	.00000E+00	.00000E+00	1.18858E-02
16	2.07323E-01	-5.52445E-03	2.07166E-01	-5.52444E-03	.00000E+00	.00000E+00	.00000E+00	6.57697E-03
17	8.78504E-02	-6.46573E-03	8.76693E-02	-6.46574E-03	.00000E+00	.00000E+00	.00000E+00	2.78515E-03
18	5.60524E-02	-1.98332E-02	5.54811E-02	-1.98332E-02	.00000E+00	.00000E+00	.00000E+00	1.76994E-03
19	1.32275E-01	-1.09213E-02	1.31997E-01	-1.09213E-02	.00000E+00	.00000E+00	.00000E+00	4.19314E-03
20	4.44792E-01	-2.53119E-02	4.44088E-01	-2.53119E-02	.00000E+00	.00000E+00	.00000E+00	1.41044E-02
21	1.23706E-01	-2.25584E-02	1.23085E-01	-2.25584E-02	.00000E+00	.00000E+00	.00000E+00	3.91608E-03
22	2.26792E-01	-6.50933E-02	2.24988E-01	-6.50933E-02	.00000E+00	.00000E+00	.00000E+00	7.16938E-03
23	7.61147E-01	-1.26448E-01	7.57785E-01	-1.26448E-01	.00000E+00	.00000E+00	.00000E+00	2.41036E-02
24	5.69301E-01	-1.17733E-01	5.66222E-01	-1.17733E-01	.00000E+00	.00000E+00	.00000E+00	1.80198E-02
25	2.42020E-01	-5.96142E-02	2.40462E-01	-5.96142E-02	.00000E+00	.00000E+00	.00000E+00	7.65666E-03
26	1.57328E-01	-5.49278E-02	1.55951E-01	-5.49278E-02	.00000E+00	.00000E+00	.00000E+00	4.97139E-03
27	2.57287E-02	-1.51936E-02	2.53388E-02	-1.51936E-02	.00000E+00	.00000E+00	.00000E+00	8.10510E-04
28	2.33498E+01	6.20716E-02	2.33536E+01	6.20715E-02	.00000E+00	.00000E+00	.00000E+00	7.41067E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.78748E-03	2.83920E-03	1.45497E-05	-2.75248E-03	1.00002E+00
2	.00000E+00	.00000E+00	4.95860E-04	2.59229E-02	1.86005E-02	5.14987E-05	-1.81564E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.64593E-03	5.01259E-02	1.58493E-02	1.37098E-04	-1.33394E-02	9.99998E-01
4	.00000E+00	.00000E+00	5.13070E-03	4.20944E-02	5.45051E-03	1.08337E-04	-4.22552E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.10582E-02	8.16275E-02	5.16252E-03	1.52070E-04	5.76348E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.84734E-02	2.35015E-01	3.21098E-03	3.20023E-04	1.49424E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.22958E-02	2.35167E-01	1.18207E-03	3.44723E-04	1.07690E-02	1.00000E+00
8	.00000E+00	.00000E+00	2.16023E-03	1.58558E-01	7.65480E-03	2.94873E-04	-5.76991E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.66809E-03	1.05199E-01	8.76650E-04	1.10980E-03	5.68217E-03	9.99986E-01
10	.00000E+00	.00000E+00	8.78127E-04	8.55812E-02	8.49114E-04	8.35752E-04	-8.06693E-04	9.99998E-01
11	.00000E+00	.00000E+00	8.49175E-04	7.70634E-02	8.70317E-04	1.33717E-03	-1.35857E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.70323E-04	4.67963E-02	8.70330E-04	4.16641E-05	-4.20883E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.70631E-04	3.95088E-02	8.05955E-04	5.99859E-05	4.71622E-06	1.00000E+00
14	.00000E+00	.00000E+00	8.05956E-04	3.59234E-02	6.76981E-04	9.58835E-05	3.32668E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.20969E-04	2.06197E-02	8.43858E-04	8.28063E-05	-2.05243E-04	9.99946E-01
16	.00000E+00	.00000E+00	9.43792E-04	1.09248E-02	9.46429E-04	5.14799E-05	-5.37680E-05	9.99947E-01
17	.00000E+00	.00000E+00	1.01657E-03	4.05272E-03	9.97588E-04	2.44834E-05	-5.33655E-06	9.99979E-01
18	.00000E+00	.00000E+00	1.04767E-03	2.49420E-03	8.05368E-04	1.70802E-05	2.25250E-04	9.99999E-01
19	.00000E+00	.00000E+00	8.46045E-04	6.63142E-03	9.78406E-04	4.29625E-05	-1.75057E-04	9.99978E-01
20	.00000E+00	.00000E+00	1.16855E-03	2.44908E-02	1.04119E-03	1.82091E-04	-5.39571E-05	9.99971E-01
21	.00000E+00	.00000E+00	1.30334E-03	5.79153E-03	1.38339E-03	6.38049E-05	-1.43766E-04	9.99996E-01
22	.00000E+00	.00000E+00	1.74531E-03	1.17028E-02	1.56408E-03	1.36656E-04	4.52359E-05	9.99996E-01
23	.00000E+00	.00000E+00	2.29337E-03	4.10463E-02	3.01349E-03	6.21609E-04	-1.34172E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.70652E-03	2.90697E-02	3.98800E-03	6.76985E-04	-9.59478E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.59428E-03	1.11990E-02	2.88348E-03	3.80907E-04	3.30836E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.50017E-03	8.13789E-03	1.07542E-03	3.55341E-04	6.95463E-05	1.00000E+00
27	.00000E+00	.00000E+00	3.11835E-04	1.53008E-03	7.88522E-07	1.11907E-04	1.99131E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.43998E-02	1.40005E+00	8.43998E-02	7.66540E-03	-7.54130E-03	9.99984E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.70219E-01	8.34280E-03	1.71843E-01	1.10953E-02	1.01442E-04	.00000E+00	.00000E+00	3.70529E-02
2	1.25465E+00	9.68289E-02	1.27218E+00	1.14985E-01	.00000E+00	.00000E+00	.00000E+00	2.73550E-01

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3	1.58841E+00	1.31790E-01	1.61148E+00	1.45130E-01	.00000E+00	.00000E+00	.00000E+00	3.46502E-01
4	9.86054E-01	8.72391E-02	1.00066E+00	8.76617E-02	.00000E+00	.00000E+00	.00000E+00	2.15206E-01
5	1.48904E+00	1.39112E-01	1.51210E+00	1.33369E-01	.00000E+00	.00000E+00	.00000E+00	3.25150E-01
6	2.86361E+00	2.66161E-01	2.90926E+00	2.51218E-01	.00000E+00	.00000E+00	.00000E+00	6.25499E-01
7	2.80702E+00	1.53359E-01	2.83331E+00	1.42590E-01	.00000E+00	.00000E+00	.00000E+00	6.11180E-01
8	2.06482E+00	1.49519E-02	2.06794E+00	2.07218E-02	.00000E+00	.00000E+00	.00000E+00	4.47759E-01
9	1.60284E+00	-1.53377E-02	1.59971E+00	-2.10199E-02	.00000E+00	.00000E+00	.00000E+00	3.47104E-01
10	1.46429E+00	-2.65200E-02	1.45997E+00	-2.57133E-02	.00000E+00	.00000E+00	.00000E+00	3.16895E-01
11	1.34468E+00	-5.70106E-02	1.33546E+00	-5.56522E-02	.00000E+00	.00000E+00	.00000E+00	2.90467E-01
12	8.42089E-01	-6.52188E-02	8.31467E-01	-6.51767E-02	.00000E+00	.00000E+00	.00000E+00	1.81412E-01
13	7.10716E-01	-5.57682E-02	7.01591E-01	-5.57725E-02	.00000E+00	.00000E+00	.00000E+00	1.53094E-01
14	6.47122E-01	-8.34894E-02	6.33502E-01	-8.35227E-02	.00000E+00	.00000E+00	.00000E+00	1.38853E-01
15	3.76217E-01	-8.40173E-03	3.74774E-01	-8.19649E-03	.00000E+00	.00000E+00	.00000E+00	8.13838E-02
16	2.08234E-01	-5.57822E-03	2.07325E-01	-5.52346E-03	.00000E+00	.00000E+00	.00000E+00	4.50855E-02
17	8.88982E-02	-6.47107E-03	8.78604E-02	-6.46573E-03	.00000E+00	.00000E+00	.00000E+00	1.91592E-02
18	5.92547E-02	-1.96079E-02	5.60524E-02	-1.98332E-02	.00000E+00	.00000E+00	.00000E+00	1.25175E-02
19	1.34059E-01	-1.10963E-02	1.32275E-01	-1.09213E-02	.00000E+00	.00000E+00	.00000E+00	2.88692E-02
20	4.48850E-01	-2.53659E-02	4.44792E-01	-2.53119E-02	.00000E+00	.00000E+00	.00000E+00	9.68608E-02
21	1.27887E-01	-2.27022E-02	1.25709E-01	-2.25684E-02	.00000E+00	.00000E+00	.00000E+00	2.72195E-02
22	2.37005E-01	-6.50481E-02	2.26792E-01	-6.50953E-02	.00000E+00	.00000E+00	.00000E+00	5.03294E-02
23	7.80174E-01	-1.27809E-01	7.61147E-01	-1.26468E-01	.00000E+00	.00000E+00	.00000E+00	1.67158E-01
24	5.86248E-01	-1.18693E-01	5.69301E-01	-1.17733E-01	.00000E+00	.00000E+00	.00000E+00	1.25360E-01
25	2.50104E-01	-5.92833E-02	2.42020E-01	-5.96142E-02	.00000E+00	.00000E+00	.00000E+00	5.34223E-02
26	1.64475E-01	-5.48584E-02	1.57328E-01	-5.49278E-02	.00000E+00	.00000E+00	.00000E+00	3.49527E-02
27	2.76196E-02	-1.49945E-02	2.57287E-02	-1.51986E-02	.00000E+00	.00000E+00	.00000E+00	5.80739E-03
28	2.33241E+01	5.45300E-02	2.33496E+01	6.20716E-02	1.01442E-04	.00000E+00	.00000E+00	5.05778E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.98456E-03	7.92106E-03	4.22157E-04	-8.34281E-03	9.99951E-01
2	.00000E+00	.00000E+00	4.54495E-03	7.63158E-02	1.00303E-01	1.07467E-03	-9.68289E-02	9.99961E-01
3	.00000E+00	.00000E+00	4.75877E-02	6.89432E-02	1.79877E-01	5.41885E-06	-1.31790E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.02395E-02	4.58529E-02	1.57477E-01	3.22950E-06	-8.72391E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.29846E-01	1.48657E-01	2.68960E-01	3.77411E-06	-1.39112E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.74876E-01	4.55215E-01	5.41027E-01	1.14751E-05	-2.66161E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.52647E-01	7.95099E-01	7.05989E-01	2.53491E-05	-1.53359E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35415E-01	1.00075E+00	7.50383E-01	4.70041E-05	-1.49520E-02	9.99912E-01
9	.00000E+00	.00000E+00	7.40666E-01	9.19508E-01	7.25314E-01	9.58909E-05	1.53397E-02	9.99889E-01
10	.00000E+00	.00000E+00	7.22057E-01	8.65279E-01	6.95380E-01	2.11426E-04	2.65199E-02	9.99896E-01
11	.00000E+00	.00000E+00	7.00356E-01	8.05312E-01	6.42580E-01	4.57316E-04	5.70105E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.59704E-01	4.19760E-01	4.98895E-01	5.97270E-04	6.52188E-02	9.99976E-01
13	.00000E+00	.00000E+00	4.80846E-01	3.37798E-01	4.33195E-01	8.97250E-04	5.57682E-02	9.99969E-01
14	.00000E+00	.00000E+00	4.70148E-01	3.22462E-01	3.85204E-01	1.45937E-03	8.34894E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.51253E-01	1.28945E-01	2.41567E-01	1.28478E-03	8.40258E-03	9.99998E-01
16	.00000E+00	.00000E+00	1.66756E-01	5.44108E-02	1.60298E-01	8.80758E-04	5.57890E-03	9.99994E-01
17	.00000E+00	.00000E+00	8.58657E-02	1.51818E-02	7.89905E-02	4.24066E-04	6.47153E-03	9.99996E-01
18	.00000E+00	.00000E+00	7.61187E-02	1.02846E-02	5.61973E-02	3.14669E-04	1.98048E-02	1.00008E+00
19	.00000E+00	.00000E+00	1.26710E-01	3.40075E-02	1.12868E-01	7.45409E-04	1.10970E-02	9.99998E-01
20	.00000E+00	.00000E+00	3.04630E-01	2.44232E-01	2.76137E-01	3.12458E-03	2.53677E-02	1.00000E+00
21	.00000E+00	.00000E+00	1.42897E-01	4.57608E-02	1.19045E-01	1.13385E-03	2.26651E-02	1.00008E+00
22	.00000E+00	.00000E+00	2.70382E-01	1.30851E-01	2.08865E-01	2.47774E-03	6.50501E-02	9.99996E-01
23	.00000E+00	.00000E+00	6.38528E-01	7.61024E-01	4.99744E-01	1.09715E-02	1.27809E-01	1.00001E+00
24	.00000E+00	.00000E+00	6.49668E-01	6.72083E-01	5.18787E-01	1.21843E-02	1.18696E-01	1.00000E+00
25	.00000E+00	.00000E+00	4.18654E-01	2.73939E-01	3.52423E-01	6.94805E-03	5.98326E-02	1.00000E+00
26	.00000E+00	.00000E+00	3.30556E-01	2.91208E-01	2.68966E-01	6.72748E-03	5.48562E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.09957E-01	6.08041E-02	9.26287E-02	2.31363E-03	1.49946E-02	9.99999E-01
28	.00000E+00	.00000E+00	9.05787E+00	8.98536E+00	9.05787E+00	5.48425E-02	-5.45342E-02	9.99966E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.69430E-01	-6.09055E-09	1.70219E-01	8.34280E-05	4.38057E-10	.00000E+00	.00000E+00	1.93914E-01
2	1.24317E+00	-1.05055E-08	1.25465E+00	9.68289E-02	.00000E+00	.00000E+00	.00000E+00	1.42336E+00
3	1.57079E+00	1.33250E-08	1.58841E+00	1.31790E-01	.00000E+00	.00000E+00	.00000E+00	1.79908E+00

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4	9.72908E-01	-1.06295E-08	9.86054E-01	8.72391E-02	.00000E+00	.00000E+00	.00000E+00	1.11467E+00
5	1.46663E+00	-4.71665E-08	1.48904E+00	1.39112E-01	.00000E+00	.00000E+00	.00000E+00	1.68071E+00
6	2.81953E+00	4.11372E-08	2.85361E+00	2.66161E-01	.00000E+00	.00000E+00	.00000E+00	3.23127E+00
7	2.78169E+00	1.78610E-08	2.80702E+00	1.53359E-01	.00000E+00	.00000E+00	.00000E+00	3.18568E+00
8	2.06488E+00	-1.28764E-07	2.06482E+00	1.49519E-02	.00000E+00	.00000E+00	.00000E+00	2.36260E+00
9	1.60495E+00	-4.49942E-08	1.60284E+00	-1.53377E-02	.00000E+00	.00000E+00	.00000E+00	1.83679E+00
10	1.46908E+00	-6.20540E-08	1.46429E+00	-2.65200E-02	.00000E+00	.00000E+00	.00000E+00	1.68097E+00
11	1.35474E+00	-7.11370E-08	1.34468E+00	-5.70105E-02	.00000E+00	.00000E+00	.00000E+00	1.54974E+00
12	8.53259E-01	-1.05156E-08	8.42086E-01	-6.52188E-02	.00000E+00	.00000E+00	.00000E+00	9.75749E-01
13	7.19872E-01	-1.09998E-08	7.10716E-01	-5.57682E-02	.00000E+00	.00000E+00	.00000E+00	8.23374E-01
14	6.61157E-01	-1.69050E-09	6.47122E-01	-8.34894E-02	.00000E+00	.00000E+00	.00000E+00	7.55758E-01
15	3.76753E-01	6.47627E-07	3.76217E-01	-8.40173E-03	.00000E+00	.00000E+00	.00000E+00	4.31478E-01
16	2.08865E-01	6.75455E-07	2.08234E-01	-5.57822E-03	.00000E+00	.00000E+00	.00000E+00	2.39135E-01
17	8.99783E-02	4.58511E-07	8.89982E-02	-6.47107E-03	.00000E+00	.00000E+00	.00000E+00	1.02910E-01
18	6.27563E-02	-3.11249E-06	5.92547E-02	-1.96079E-02	.00000E+00	.00000E+00	.00000E+00	7.15114E-02
19	1.35851E-01	6.49785E-07	1.34059E-01	-1.10968E-02	.00000E+00	.00000E+00	.00000E+00	1.55387E-01
20	4.52750E-01	1.84102E-06	4.48850E-01	-2.53659E-02	.00000E+00	.00000E+00	.00000E+00	5.18034E-01
21	1.31440E-01	-7.10584E-06	1.27287E-01	-2.27022E-02	.00000E+00	.00000E+00	.00000E+00	1.50057E-01
22	2.49090E-01	2.05832E-06	2.37005E-01	-6.50481E-02	.00000E+00	.00000E+00	.00000E+00	2.83581E-01
23	8.06605E-01	-3.86636E-07	7.80174E-01	-1.27809E-01	.00000E+00	.00000E+00	.00000E+00	9.20188E-01
24	6.14815E-01	3.47787E-06	5.86368E-01	-1.18695E-01	.00000E+00	.00000E+00	.00000E+00	6.99487E-01
25	2.66193E-01	-7.20197E-07	2.50204E-01	-5.98833E-02	.00000E+00	.00000E+00	.00000E+00	3.01994E-01
26	1.82238E-01	-2.24975E-06	1.64475E-01	-5.48584E-02	.00000E+00	.00000E+00	.00000E+00	2.05116E-01
27	3.36952E-02	1.04078E-07	2.76198E-02	-1.49945E-02	.00000E+00	.00000E+00	.00000E+00	3.72151E-02
28	2.33652E+01	-3.95649E-06	2.33261E+01	5.45300E-02	4.38057E-10	.00000E+00	.00000E+00	2.67300E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.25466E-02	.00000E+00	2.24312E-02	2.12892E-02	3.64651E-03	-6.09055E-09	9.98829E-01
2	.00000E+00	1.92653E-01	7.36648E-03	2.69064E-01	1.85291E-01	1.47418E-02	-1.05055E-08	1.00008E+00
3	.00000E+00	2.15639E-01	7.64668E-02	2.80085E-01	2.76410E-01	1.56992E-02	1.33290E-08	9.99987E-01
4	.00000E+00	1.23985E-01	1.14329E-01	1.98235E-01	2.30782E-01	7.52609E-03	-1.06295E-08	1.00000E+00
5	.00000E+00	1.64614E-01	2.08654E-01	4.89620E-01	3.68888E-01	4.58559E-03	-4.71665E-08	9.99989E-01
6	.00000E+00	1.77901E-01	4.28063E-01	1.34404E+00	5.98630E-01	7.32517E-03	4.11372E-08	1.00001E+00
7	.00000E+00	8.80271E-02	6.63398E-01	1.77528E+00	7.43507E-01	7.92653E-03	1.78610E-08	9.99989E-01
8	.00000E+00	1.35691E-02	7.80152E-01	1.79019E+00	7.79518E-01	1.42670E-02	-1.28764E-07	9.99920E-01
9	.00000E+00	9.84911E-04	7.70054E-01	1.55642E+00	7.46865E-01	2.42569E-02	-4.49942E-08	9.99825E-01
10	.00000E+00	7.31557E-05	7.43610E-01	1.41137E+00	7.06920E-01	3.68380E-02	-6.20540E-08	9.99900E-01
11	.00000E+00	5.75541E-06	7.11896E-01	1.30439E+00	6.51941E-01	6.00026E-02	-7.11370E-08	9.99942E-01
12	.00000E+00	4.06308E-07	5.68715E-01	7.05317E-01	5.04137E-01	6.45927E-02	-1.05156E-08	9.99974E-01
13	.00000E+00	6.42004E-08	5.00084E-01	5.54959E-01	4.40155E-01	5.99433E-02	-1.09998E-08	9.99971E-01
14	.00000E+00	1.27228E-08	4.77108E-01	5.10835E-01	3.95259E-01	8.38137E-02	-1.69050E-09	9.99990E-01
15	.00000E+00	1.43782E-09	2.59479E-01	2.34355E-01	2.51307E-01	8.12826E-03	6.47627E-07	1.00017E+00
16	.00000E+00	4.22198E-10	1.76764E-01	1.08162E-01	1.70859E-01	5.87555E-03	6.75455E-07	1.00017E+00
17	.00000E+00	1.35967E-10	9.46654E-02	3.39804E-02	8.75028E-02	7.12985E-03	4.58511E-07	1.00013E+00
18	.00000E+00	9.73483E-11	8.43415E-02	2.20986E-02	6.18142E-02	2.25224E-02	-3.11249E-06	1.00010E+00
19	.00000E+00	1.37630E-10	1.32584E-01	6.50477E-02	1.22814E-01	9.75470E-03	6.49785E-07	1.00010E+00
20	.00000E+00	2.23800E-10	3.16064E-01	3.71848E-01	2.86925E-01	2.90898E-02	1.84102E-06	1.00015E+00
21	.00000E+00	3.27571E-11	1.53399E-01	7.32849E-02	1.28863E-01	2.45239E-02	-7.10584E-06	1.00013E+00
22	.00000E+00	3.80057E-11	2.86314E-01	1.85310E-01	2.14154E-01	7.01380E-02	2.05832E-06	1.00008E+00
23	.00000E+00	3.63377E-11	6.55671E-01	9.70830E-01	5.21293E-01	1.34290E-01	-3.86636E-07	1.00013E+00
24	.00000E+00	9.89064E-12	6.75880E-01	8.17468E-01	5.45259E-01	1.30555E-01	3.47787E-06	1.00009E+00
25	.00000E+00	2.89533E-12	4.41463E-01	3.29052E-01	3.69770E-01	7.16648E-02	-7.20197E-07	1.00006E+00
26	.00000E+00	2.03022E-12	3.41479E-01	3.29782E-01	2.76524E-01	6.49583E-02	-2.24975E-06	1.00006E+00
27	.00000E+00	4.83813E-13	1.12277E-01	6.68603E-02	9.37302E-02	1.85447E-02	1.04078E-07	1.00002E+00
28	.00000E+00	1.00000E+00	9.77845E+00	1.58148E+01	9.77845E+00	1.00252E+00	-3.99449E-06	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.69430E-01	-6.09055E-09	1.77195E-01	.00000E+00	2.35985E-03	2.62977E-03	.00000E+00	3.57072E-01
2	1.26317E+00	-1.05055E-08	1.32751E+00	.00000E+00	1.71854E-05	1.18508E-02	.00000E+00	2.63726E+00
3	1.57079E+00	1.33290E-08	1.67978E+00	.00000E+00	.00000E+00	1.45322E-02	.00000E+00	3.33563E+00
4	9.72908E-01	-1.06295E-08	1.04123E+00	.00000E+00	.00000E+00	6.27267E-03	.00000E+00	2.06791E+00

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5	1.46663E+00	-4.71665E-03	1.57523E+00	.00000E+00	.00000E+00	1.82307E-03	.00000E+00	3.12155E+00
6	2.81963E+00	4.11372E-03	3.02978E+00	.00000E+00	.00000E+00	1.58370E-03	.00000E+00	6.00220E+00
7	2.78169E+00	1.78610E-03	2.90473E+00	.00000E+00	.00000E+00	1.55715E-03	.00000E+00	5.86680E+00
8	2.06488E+00	-1.28764E-07	2.08053E+00	.00000E+00	.00000E+00	1.58895E-03	.00000E+00	4.30491E+00
9	1.60495E+00	-4.49942E-03	1.58711E+00	.00000E+00	.00000E+00	2.13181E-03	.00000E+00	3.33067E+00
10	1.46903E+00	-6.20540E-03	1.44611E+00	.00000E+00	.00000E+00	4.54090E-03	.00000E+00	3.04362E+00
11	1.35474E+00	-7.11370E-03	1.30533E+00	.00000E+00	.00000E+00	9.59878E-03	.00000E+00	2.78959E+00
12	8.53259E-01	-1.05156E-03	7.95806E-01	.00000E+00	.00000E+00	1.25419E-02	.00000E+00	1.74125E+00
13	7.19872E-01	-1.09995E-03	6.71440E-01	.00000E+00	.00000E+00	1.33683E-02	.00000E+00	1.46929E+00
14	6.61157E-01	-1.69060E-09	5.87894E-01	.00000E+00	.00000E+00	8.47353E-03	.00000E+00	1.33196E+00
15	3.76753E-01	6.47627E-07	3.70150E-01	.00000E+00	.00000E+00	2.09234E-03	.00000E+00	7.80886E-01
16	2.08885E-01	6.75455E-07	2.04411E-01	.00000E+00	.00000E+00	1.44179E-03	.00000E+00	4.32280E-01
17	8.99783E-02	4.58511E-07	8.44542E-02	.00000E+00	.00000E+00	1.82542E-03	.00000E+00	1.83929E-01
18	6.27563E-02	-3.11249E-06	4.41396E-02	.00000E+00	.00000E+00	1.59461E-03	.00000E+00	1.19380E-01
19	1.35851E-01	6.49785E-07	1.26380E-01	.00000E+00	.00000E+00	2.89268E-03	.00000E+00	2.77104E-01
20	4.52750E-01	1.84102E-06	4.31366E-01	.00000E+00	.00000E+00	1.60105E-02	.00000E+00	9.29685E-01
21	1.31440E-01	-7.10584E-06	1.11389E-01	.00000E+00	.00000E+00	1.45424E-02	.00000E+00	2.61248E-01
22	2.49090E-01	2.05832E-06	1.89539E-01	.00000E+00	.00000E+00	4.15271E-02	.00000E+00	4.82125E-01
23	8.06606E-01	-3.86636E-07	6.95485E-01	.00000E+00	.00000E+00	7.74830E-02	.00000E+00	1.60744E+00
24	6.14815E-01	3.47787E-06	5.06153E-01	.00000E+00	.00000E+00	7.46668E-02	.00000E+00	1.20872E+00
25	2.66193E-01	-7.20197E-07	2.09385E-01	.00000E+00	.00000E+00	4.26925E-02	.00000E+00	5.16208E-01
26	1.82258E-01	-2.24975E-06	1.26664E-01	.00000E+00	.00000E+00	3.92310E-02	.00000E+00	3.40538E-01
27	3.36952E-02	1.04078E-07	1.65059E-02	.00000E+00	.00000E+00	1.10868E-02	.00000E+00	5.76549E-02
28	2.33632E+01	-3.95649E-06	2.33257E+01	.00000E+00	2.37703E-03	4.19530E-01	.00000E+00	4.85970E+01

- elapsed time .02 min.

0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.

1 transport cross section weighting function

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.37800E-03	2.48358E-02	3.15170E-02	1.90785E-02	2.91626E-02	5.57354E-02	3.17414E-02	4.63097E-03
2	3.72979E-03	3.86535E-02	4.87859E-02	2.94684E-02	4.48333E-02	8.44495E-02	4.79530E-02	6.96581E-03
3	3.08067E-03	3.29767E-02	4.30731E-02	2.71742E-02	4.23109E-02	8.03236E-02	4.59382E-02	5.56634E-03
4	1.04615E-03	1.21344E-02	1.65107E-02	1.09844E-02	1.74148E-02	3.33232E-02	1.92749E-02	1.99890E-03
5	1.73421E-03	1.89099E-02	2.47319E-02	1.55961E-02	2.43107E-02	4.64094E-02	2.66114E-02	3.31664E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.70655E-03	5.76194E-03	1.26337E-02	1.45107E-02	1.24227E-02	1.84916E-02	1.85482E-03	1.23484E-03
2	7.06606E-03	8.66380E-03	1.87081E-02	2.19098E-02	1.87488E-02	2.80770E-02	2.75530E-03	1.85708E-03
3	5.67164E-03	8.11162E-03	1.74975E-02	2.02581E-02	1.73291E-02	2.59472E-02	2.57808E-03	1.72469E-03
4	1.88639E-03	3.30102E-03	7.10645E-03	8.13598E-03	6.99508E-03	1.04338E-02	1.12452E-03	7.20699E-04
5	3.29160E-03	4.69733E-03	1.01288E-02	1.17166E-02	1.00455E-02	1.49832E-02	1.54228E-03	1.01328E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.43647E-03	4.20291E-03	2.46130E-03	5.66414E-03	4.95029E-03	1.40983E-02	2.79502E-02	2.58665E-02
2	2.17352E-03	6.66691E-03	3.67127E-03	8.50867E-03	7.58290E-03	2.18818E-02	4.25139E-02	3.95780E-02
3	2.00381E-03	6.12758E-03	3.42052E-03	7.87317E-03	7.03047E-03	2.02184E-02	3.94995E-02	3.67274E-02
4	8.08923E-04	2.41974E-03	1.39866E-03	3.21777E-03	2.82514E-03	8.09754E-03	1.62196E-02	1.50528E-02
5	1.16233E-03	3.46088E-03	1.99532E-03	4.59231E-03	4.03864E-03	1.15545E-02	2.29804E-02	2.12492E-02

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.30801E-02	1.18326E-02	3.12027E-03	3.85114E-01
2	2.00402E-02	1.86648E-02	5.10756E-03	5.88778E-01
3	1.84738E-02	1.70567E-02	4.69107E-03	5.42640E-01
4	7.48920E-03	6.80681E-03	1.71927E-03	2.18357E-01
5	1.06570E-02	9.71408E-03	2.54374E-03	3.12931E-01

1 560 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp

0cell averaged fluxes

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.75274E-01	1.30718E+00	1.85429E+00	1.02585E+00	1.55081E+00	2.98210E+00	2.87601E+00	2.07557E+00
2	1.72053E-01	1.27417E+00	1.61384E+00	1.00197E+00	1.51398E+00	2.91258E+00	2.83513E+00	2.06831E+00
3	1.70873E-01	1.26220E+00	1.59882E+00	9.92998E-01	1.50080E+00	2.88616E+00	2.82009E+00	2.06608E+00
4	1.69425E-01	1.24361E+00	1.57184E+00	9.73903E-01	1.46846E+00	2.82520E+00	2.78337E+00	2.06424E+00
5	1.71550E-01	1.26704E+00	1.60256E+00	9.95477E-01	1.49771E+00	2.88369E+00	2.81852E+00	2.06824E+00

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Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59203E+00	1.45173E+00	1.31751E+00	8.10131E-01	6.83540E-01	6.06130E-01	3.72052E-01	2.05584E-01
2	1.59553E+00	1.45963E+00	1.33472E+00	8.30675E-01	7.00825E-01	6.32567E-01	3.74655E-01	2.07245E-01
3	1.60160E+00	1.46221E+00	1.34029E+00	8.37065E-01	7.06403E-01	6.40589E-01	3.75518E-01	2.07801E-01
4	1.60483E+00	1.46869E+00	1.35403E+00	8.52526E-01	7.19394E-01	6.60316E-01	3.76986E-01	2.08935E-01
5	1.60017E+00	1.46227E+00	1.34022E+00	8.36559E-01	7.05895E-01	6.39904E-01	3.75146E-01	2.07685E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.58084E-02	4.87777E-02	1.28778E-01	4.36764E-01	1.16288E-01	2.04294E-01	7.20625E-01	5.31425E-01
2	8.77622E-02	5.57722E-02	1.32129E-01	4.44439E-01	1.23399E-01	2.25912E-01	7.59522E-01	5.67817E-01
3	8.84088E-02	5.77576E-02	1.33207E-01	4.46925E-01	1.25594E-01	2.32228E-01	7.71290E-01	5.78429E-01
4	8.99142E-02	6.24807E-02	1.35763E-01	4.52613E-01	1.31107E-01	2.48118E-01	8.03894E-01	6.11151E-01
5	8.83662E-02	5.73543E-02	1.33131E-01	4.46655E-01	1.25513E-01	2.31630E-01	7.72281E-01	5.80714E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.22430E-01	1.38861E-01	2.00771E-02
2	2.41267E-01	1.56652E-01	2.55397E-02
3	2.46499E-01	1.61278E-01	2.67963E-02
4	2.63854E-01	1.79213E-01	3.25153E-02
5	2.48003E-01	1.63665E-01	2.76995E-02

0flux disadvantage factors (zone average/cell average-flux)

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02170E+00	1.03168E+00	1.03228E+00	1.03256E+00	1.03408E+00	1.03413E+00	1.02036E+00	1.00855E+00
2	1.00259E+00	1.00563E+00	1.00704E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00586E+00	1.00004E+00
3	9.96052E-01	9.96186E-01	9.97667E-01	9.99495E-01	1.00089E+00	1.00085E+00	1.00052E+00	9.98935E-01
4	9.87612E-01	9.81511E-01	9.80830E-01	9.80275E-01	9.79166E-01	9.75025E-01	9.87495E-01	9.98067E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94505E-01	9.92795E-01	9.83053E-01	9.68403E-01	9.68325E-01	9.47190E-01	9.91700E-01	9.85894E-01
2	9.99472E-01	9.98195E-01	9.95897E-01	9.92846E-01	9.92812E-01	9.88178E-01	9.98638E-01	9.97850E-01
3	1.00089E+00	9.99959E-01	1.00003E+00	1.00060E+00	1.00071E+00	1.00115E+00	1.00094E+00	1.00057E+00
4	1.00291E+00	1.00439E+00	1.01080E+00	1.01909E+00	1.01912E+00	1.03187E+00	1.00485E+00	1.00605E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.71057E-01	8.50462E-01	9.67291E-01	9.77856E-01	9.26477E-01	8.81963E-01	9.33112E-01	9.15123E-01
2	9.95168E-01	9.72614E-01	9.98474E-01	9.95040E-01	9.83153E-01	9.75314E-01	9.85478E-01	9.77792E-01
3	1.00043E+00	1.00708E+00	1.00057E+00	1.00061E+00	1.00065E+00	1.00258E+00	9.98720E-01	9.98066E-01
4	1.01752E+00	1.08938E+00	1.01977E+00	1.01334E+00	1.04457E+00	1.07118E+00	1.04093E+00	1.05241E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 25	grp. 26	grp. 27
1	8.96885E-01	8.48498E-01	7.26817E-01
2	9.72839E-01	9.57210E-01	9.22029E-01
3	9.98587E-01	9.85475E-01	9.67397E-01
4	1.06378E+00	1.09507E+00	1.17386E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.57800E-03	2.48358E-02	3.15170E-02	1.90785E-02	2.91626E-02	5.57354E-02	3.17414E-02	4.63097E-03
2	3.72975E-03	3.86535E-02	4.87869E-02	2.94684E-02	4.48333E-02	8.44496E-02	4.79530E-02	6.96581E-03
3	3.05057E-03	3.29769E-02	4.30731E-02	2.71742E-02	4.23109E-02	8.03234E-02	4.59382E-02	5.56634E-03
4	1.04615E-03	1.21344E-02	1.65107E-02	1.09244E-02	1.74148E-02	3.33252E-02	1.92744E-02	1.99800E-03
5	1.73421E-03	1.88097E-02	2.47319E-02	1.55961E-02	2.43107E-02	4.64094E-02	2.66114E-02	3.31664E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.70655E-03	5.76194E-03	1.24377E-02	1.45107E-02	1.24227E-02	1.84916E-02	1.85482E-03	1.23684E-03
2	7.06606E-03	8.64380E-03	1.87081E-02	2.19098E-02	1.87488E-02	2.80770E-02	2.75530E-03	1.85708E-03
3	5.67164E-03	8.11162E-03	1.74975E-02	2.02581E-02	1.75291E-02	2.59472E-02	2.57808E-03	1.72469E-03
4	1.88659E-03	3.30102E-03	7.10645E-03	8.13598E-03	6.99506E-03	1.04338E-02	1.12652E-03	7.20699E-04
5	3.29160E-03	4.69733E-03	1.01289E-02	1.17166E-02	1.00655E-02	1.49852E-02	1.54228E-03	1.01328E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.43647E-03	4.20291E-03	2.46130E-03	5.66414E-03	4.95025E-03	1.40983E-02	2.79508E-02	2.58665E-02

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    2 2.17352E-03 6.66691E-03 3.67127E-03 8.50867E-03 7.58290E-03 2.18818E-02 4.25139E-02 3.95780E-02
    3 2.00981E-03 6.12758E-03 3.42052E-03 7.87317E-03 7.03047E-03 2.02184E-02 3.94995E-02 3.67274E-02
    4 8.03923E-04 2.41974E-03 1.39868E-03 3.21777E-03 2.82516E-03 8.09754E-03 1.62198E-02 1.50528E-02
    5 1.16233E-03 3.46035E-03 1.99532E-03 4.59231E-03 4.03846E-03 1.15545E-02 2.29344E-02 2.12492E-02
Ozone  grp. 25     grp. 26     grp. 27
    1 1.30301E-02 1.18326E-02 3.12027E-03
    2 2.00402E-02 1.84648E-02 5.10756E-03
    3 1.84758E-02 1.70567E-02 4.69107E-03
    4 7.48920E-03 6.80681E-03 1.71927E-03
    5 1.06570E-02 9.71408E-03 2.54374E-03
Ozone      volume      vol. fraction

    1    6.88943E-01    3.30753E-01
    2    3.17352E-02    1.52468E-02
    3    2.16724E-01    1.04122E-01
    4    1.14454E+00    5.49878E-01
    5    2.08144E+00    1.00000E+00
- elapsed time    .03 min.
0requested parm=halt8,skipcellwt,skipshipdata
 pass= 4, exec halts after pass  8
1 ttttttttttb   cccccccccc  m       m              aaaaaaaa   mm       mm  iiiiiiiiiiii   zzzzzzzzzz
  ttttttttttb  cccccccccccc  mm      m              aaaaaaaaaa  mmm     mmm  iiiiiiiiiiii  zzzzzzzzzzzz
  tb      tb  cc      cc  mmm     m             aa      aa  mmmm   mmmm     ii        zz      zz
  tb      tb  cc      cc  m mm    m             aa      aa  mm mm  mm mm    ii                zz
  tb      tb  cc      cc  m  m    m             aa      aa  mm  mmm  mm     ii                zz
  ttttttttttb  cc      cc  m   m   m  ------------ aaaaaaaaaaaa  mm   mm   mm     ii              zz
  ttttttttttb  cc      cc  m    m  m  ------------ aaaaaaaaaaaa  mm    m   mm     ii            zz
  tb      tb  cc      cc  m     m m             aa      aa  mm        mm     ii          zz
  tb      tb  cc      cc  m      mm             aa      aa  mm        mm     ii        zz
  tb      tb  cc      cc  m       m             aa      aa  mm        mm     ii      zz
  ttttttttttb  cccccccccccc  m       m             aa      aa  mm        mm  iiiiiiiiiiii  zzzzzzzzzzzz
  ttttttttttb   cccccccccc  m       m             aa      aa  mm        mm  iiiiiiiiiiii  zzzzzzzzzzzz
0

  dddddddddd    aaaaaaaa   w       w  iiiiiiiiiiii   ssssssssss
  dddddddddddd  aaaaaaaaaa  w       w  iiiiiiiiiiii  ssssssssssss
  dd      dd  aa      aa  w       w     ii      ss      ss
  dd      dd  aa      aa  w       w     ii      ss
  dd      dd  aa      aa  w       w     ii      ss
  dd      dd  aaaaaaaaaaaa  w       w     ii      ssssssssssss
  dd      dd  aaaaaaaaaaaa   w     w     ii       ssssssssssss
  dd      dd  aa      aa    w   w       ii              ss
  dd      dd  aa      aa     w  w       ii              ss
  dd      dd  aa      aa      w w       ii      ss      ss
  dddddddddddd aa      aa       ww   iiiiiiiiiiii  ssssssssssss
  dddddddddddd aa      aa       v    iiiiiiiiiiii   ssssssssss
0

   000000    zzzzzzzzzz          //     11     666666666666          //  99999999999  666666666666
  00000000   zzzzzzzzzzzz        //    111     666666666666          //  99999999999  666666666666
 00      00  zz      zz          //   1111     66                    //  99      99  66
00        00          zz        //     11     66                    //  99      99  66
00        00          zz        //     11     66                    //  99      99  66
00        00        zz          //     11     666666666666          //  99999999999  666666666666
00        00      zz            //     11     666666666666          //   99999999  666666666666
00        00    zz              //     11     66      66            //         99  66      66
00        00  zz                //     11     66      66            //         99  66      66
 00      00  zz                 //     11     66      66            //         99  66      66
  00000000   zzzzzzzzzzzz       //  11111111  666666666666          //  99999999999  666666666666
   000000    zzzzzzzzzz         //  11111111   666666666666         //  99999999999   666666666666
```

0

```
   11      000000              000000    000000                  44   88888888
  111     00000000            00000000  00000000                444   88888888
 1111    00     00    :::    00     00 00     00    :::        4444   88     88
  11     00     00    :::    00     00 00     00    :::       44 44   88     88
  11     00     00    :::    00     00 00     00    :::      44  44   88     88
  11     00     00           00     00 00     00             44  44    88888888
  11     00     00           00     00 00     00             44  44    88888888
  11     00     00    :::    00     00 00     00    :::      4444444   88     88
  11     00     00    :::    00     00 00     00    :::      4444444   88     88
  11     00     00    :::    00     00 00     00    :::          44    88     88
11111111  00000000            00000000  00000000                 44    88888888
11111111   000000              000000    000000                  44    88888888
```

1
0

```
 SSSSSSSSSS   CCCCCCCCCC   AAAAAAAA   LL        EEEEEEEEEEE
SSSSSSSSSSS  CCCCCCCCCCC  AAAAAAAAA  LL        EEEEEEEEEEE
SS      SS   CC      CC   AA      AA  LL        EE
SS           CC           AA      AA  LL        EE
SS           CC           AA      AA  LL        EE
SSSSSSSSSS   CC           AAAAAAAAAA  LL        EEEEEEEEE
 SSSSSSSSSS  CC           AAAAAAAAAA  LL        EEEEEEEEE
        SS   CC           AA      AA  LL        EE
        SS   CC           AA      AA  LL        EE
SS      SS   CC      CC   AA      AA  LL        EE
SSSSSSSSSSS  CCCCCCCCCCC  AA      AA  LLLLLLLLLLL EEEEEEEEEEE
 SSSSSSSSSS   CCCCCCCCCC  AA      AA  LLLLLLLLLLL EEEEEEEEEEE
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****     code system:   scale  version:   4.2              *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c008                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nautronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:00:48                         *****
*****                                                       *****
*****                                                       *****
```

INFORMATION ONLY

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```
                    ****************************************************************
                    ****************************************************************
                    ****************************************************************
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has      6 entries.
0        2q array has      2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       70
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     70 entries.
0       4q array has     70 entries.
0       5q array has     70 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     70 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
    1        3     8016    2.09710E-02             201
    2        3     1001    4.19420E-02             202
    3        3     5010    3.81515E-06             203
    4        3     5011    1.54884E-05             204
    5        2    40302    4.25156E-02             205
    6        1    92235    1.62152E-04          200006
    7        1    92234    1.60395E-06          200007
    8        1    92236    1.31718E-05          200008
    9        1    92238    7.24962E-03          200009
   10        1     8016    1.50611E-02          200010
   11        1     8016    1.15315E-02          200011
   12        1    36083    3.23159E-07          200012
   13        1    36085    1.55770E-07          200013
   14        1    38090    3.51229E-06          200014
   15        1    39089    2.61349E-06          200015
   16        1    42095    3.20178E-06          200016
   17        1    40093    2.71690E-06          200017
   18        1    40094    4.22845E-06          200018
   19        1    40095    6.86629E-07          200019
   20        1    41094    1.81576E-12          200020
   21        1    43099    4.11687E-06          200021
   22        1    45103    2.14179E-06          200022
   23        1    45105    6.24106E-09          200023
   24        1    44101    3.66029E-06          200024
   25        1    44106    5.45766E-07          200025
   26        1    46105    1.26197E-06          200026
   27        1    46108    3.07708E-07          200027
```

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28	1	47109	2.21053E-07	200028
29	1	51124	5.35940E-11	200029
30	1	54131	1.90924E-06	200030
31	1	54132	3.32758E-06	200031
32	1	54135	2.20090E-09	200032
33	1	54136	6.96021E-06	200033
34	1	55134	1.39393E-07	200034
35	1	55135	2.19558E-06	200035
36	1	55137	4.36275E-06	200036
37	1	56136	2.69601E-08	200037
38	1	57139	4.33528E-06	200038
39	1	59141	3.63399E-06	200039
40	1	59143	1.27348E-07	200040
41	1	58144	1.94159E-06	200041
42	1	60143	3.52685E-06	200042
43	1	60145	2.59992E-06	200043
44	1	61147	1.03903E-06	200044
45	1	61148	2.92578E-09	200045
46	1	60147	4.35262E-08	200046
47	1	62147	2.20863E-07	200047
48	1	62149	2.65272E-08	200048
49	1	62150	8.41498E-07	200049
50	1	62151	1.09812E-07	200050
51	1	62152	4.11665E-07	200051
52	1	64155	3.91515E-10	200052
53	1	63153	2.08535E-07	200053
54	1	63154	3.15201E-08	200054
55	1	63155	2.41894E-08	200055
56	1	40302	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	4.50801E-06	200060
61	1	95237	6.54722E-07	200061
62	1	94238	5.86583E-08	200062
63	1	94239	2.73412E-05	200063
64	1	94240	3.82999E-06	200064
65	1	94241	1.67189E-06	200065
66	1	94242	1.12810E-07	200066
67	1	95241	3.19625E-08	200067
68	1	95243	6.10845E-09	200068
69	1	96244	3.46025E-10	200069
70	1	999	3.30753E-21	200070

0geometry and material description

0zone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.23052E+01	0
3	3	8.14000E-01	6.07600E+02	3.54852E+00	0
4	1	2.96100E+00	9.75000E+02	2.32883E-01	0

8067 locations of 200000 available are required to make a new master containing the self-shielded values

0no nuclides in your problem have bondarenko factor data**bonxsl will copy from logical 12 to logical 1

```
0copy     999  1/v cross sectio from log 12 to log  1   bondarenko trigger 0
0copy    1001  hydrogen         from log 12 to log 18   bondarenko trigger 0
0copy    1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy    1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy    5010  b-10 1273 218grp from log 12 to log 18   bondarenko trigger 0
0copy    5010  b-10 1273 218grp from log 18 to log  1   bondarenko trigger 0
0copy    5010  b-10 1273 218grp from log 18 to log  1   bondarenko trigger 0
0copy    5011  boron-11         from log 12 to log 18   bondarenko trigger 0
0copy    5011  boron-11         from log 18 to log  1   bondarenko trigger 0
```

Copy	5011	boron-11	from log	18	to log	1	bondarenko trigger 0
Copy	8016	oxygen-16	from log	12	to log	18	bondarenko trigger 0
Copy	8016	oxygen-16	from log	18	to log	1	bondarenko trigger 0
Copy	8016	oxygen-16	from log	18	to log	1	bondarenko trigger 0
Copy	8016	oxygen-16	from log	18	to log	1	bondarenko trigger 0
Copy	36083	kr-83	from log	12	to log	1	bondarenko trigger 0
Copy	36085	kr-85	from log	12	to log	1	bondarenko trigger 0
Copy	38090	sr-90	from log	12	to log	1	bondarenko trigger 0
Copy	39089	y-89	from log	12	to log	1	bondarenko trigger 0
Copy	40093	zr-93	from log	12	to log	1	bondarenko trigger 0
Copy	40094	zr-94	from log	12	to log	1	bondarenko trigger 0
Copy	40095	zr-95	from log	12	to log	1	bondarenko trigger 0
Copy	40302	zircalloy	from log	12	to log	18	bondarenko trigger 0
Copy	40302	zircalloy	from log	18	to log	1	bondarenko trigger 0
Copy	40302	zircalloy	from log	18	to log	1	bondarenko trigger 0
Copy	41094	nb-94	from log	12	to log	1	bondarenko trigger 0
Copy	42095	mo-95	from log	12	to log	1	bondarenko trigger 0
Copy	43099	tc-99	from log	12	to log	1	bondarenko trigger 0
Copy	44101	ru-101	from log	12	to log	1	bondarenko trigger 0
Copy	44106	ru-106	from log	12	to log	1	bondarenko trigger 0
Copy	45103	rh-103	from log	12	to log	1	bondarenko trigger 0
Copy	45105	rh-105	from log	12	to log	1	bondarenko trigger 0
Copy	46105	pd-105	from log	12	to log	1	bondarenko trigger 0
Copy	46108	pd-108	from log	12	to log	1	bondarenko trigger 0
Copy	47109	silver-109	from log	12	to log	1	bondarenko trigger 0
Copy	51124	sb-124	from log	12	to log	1	bondarenko trigger 0
Copy	54131	xe-131	from log	12	to log	1	bondarenko trigger 0
Copy	54132	xe-132	from log	12	to log	1	bondarenko trigger 0
Copy	54135	xenon-135	from log	12	to log	1	bondarenko trigger 0
Copy	54136	xe-136	from log	12	to log	1	bondarenko trigger 0
Copy	55133	cesium-133	from log	12	to log	1	bondarenko trigger 0
Copy	55134	cs-134	from log	12	to log	1	bondarenko trigger 0
Copy	55135	cs-135	from log	12	to log	1	bondarenko trigger 0
Copy	55137	cs-137	from log	12	to log	1	bondarenko trigger 0
Copy	56136	ba-136	from log	12	to log	1	bondarenko trigger 0
Copy	57139	la-139	from log	12	to log	1	bondarenko trigger 0
Copy	58144	ce-144	from log	12	to log	1	bondarenko trigger 0
Copy	59141	pr-141	from log	12	to log	1	bondarenko trigger 0
Copy	59143	pr-143	from log	12	to log	1	bondarenko trigger 0
Copy	60143	nd-143	from log	12	to log	1	bondarenko trigger 0
Copy	60145	nd-145	from log	12	to log	1	bondarenko trigger 0
Copy	60147	nd-147	from log	12	to log	1	bondarenko trigger 0
Copy	61147	pm-147	from log	12	to log	1	bondarenko trigger 0
Copy	61148	pm-148	from log	12	to log	1	bondarenko trigger 0
Copy	62147	sm-147	from log	12	to log	1	bondarenko trigger 0
Copy	62149	sm-149	from log	12	to log	1	bondarenko trigger 0
Copy	62150	sm-150	from log	12	to log	1	bondarenko trigger 0
Copy	62151	sm-151	from log	12	to log	1	bondarenko trigger 0
Copy	62152	sm-152	from log	12	to log	1	bondarenko trigger 0
Copy	63153	eu-153	from log	12	to log	1	bondarenko trigger 0
Copy	63154	eu-154	from log	12	to log	1	bondarenko trigger 0
Copy	63155	eu-155	from log	12	to log	1	bondarenko trigger 0
Copy	64155	gd-155	from log	12	to log	1	bondarenko trigger 0
Copy	92234	u-234 1043 sigo=	from log	12	to log	1	bondarenko trigger 0
Copy	92235	uranium-235	from log	12	to log	1	bondarenko trigger 0
Copy	92236	u-236 1163 sigo=	from log	12	to log	1	bondarenko trigger 0
Copy	92238	uranium-238	from log	12	to log	1	bondarenko trigger 0
Copy	93237	neptunium-237	from log	12	to log	1	bondarenko trigger 0
Copy	94238	pu-238 1050 sigo	from log	12	to log	1	bondarenko trigger 0
Copy	94239	plutonium-239	from log	12	to log	1	bondarenko trigger 0

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```
0copy   94240  plutonium-240   from lag 12 to lag  1   bondarenko trigger 0
0copy   94241  plutonium-241   from lag 12 to lag  1   bondarenko trigger 0
0copy   94242  plutonium-242   from lag 12 to lag  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigp from lag 12 to lag  1   bondarenko trigger 0
0copy   95243  am-243 1057 218  from lag 12 to lag  1   bondarenko trigger 0
0copy   96244  curium-244      from lag 12 to lag  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated        9/16/93
              l.m.petrie  -  ornl
        tape id                          4321        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     1
                                  table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                          id   200070
        hydrogen        endf/b-iv mat 1269/thml002   updated 10/13/89            id      202
        hydrogen        endf/b-iv mat 1269/thml002   updated 10/13/89            id   200057
      b-10 1273 218grp 042375 p-3 293k                                           id      203
      b-10 1273 218grp 042375 p-3 293k                                           id   200058
        boron-11        endf/b-iv mat 1160           updated 10/13/89            id      204
        boron-11        endf/b-iv mat 1160           updated 10/13/89            id   200059
        oxygen-16       endf/b-iv mat 1276           updated 10/13/89            id      201
        oxygen-16       endf/b-iv mat 1276           updated 10/13/89            id   200010
        oxygen-16       endf/b-iv mat 1276           updated 10/13/89            id   200011
        kr-83           mt=102,103,103,105,106,107   updated 10/13/89            id   200012
        kr-85             mt=  102                                               id   200013
        sr-90           mt=102                       updated 10/13/89            id   200014
         y-89           mt=102                       updated 10/13/89            id   200015
        zr-93             mt=  102                                               id   200017
        zr-94           mt=102                       updated 10/13/89            id   200018
        zr-95           mt=102                       updated 10/13/89            id   200019
        zircalloy       endf/b-iv mat 1284           updated 10/13/89            id      205
        zircalloy       endf/b-iv mat 1284           updated 10/13/89            id   200056
        nb-94           mt=102                       updated 10/13/89            id   200020
        mo-95           mt=102                       updated 10/13/89            id   200016
        tc-99           mt=102                       updated 10/13/89            id   200021
        ru-101          mt=102                       updated 10/13/89            id   200024
        ru-106          mt=102                       updated 10/13/89            id   200025
        rh-103          mt=102                       updated 10/13/89            id   200022
        rh-105            mt=  102                                               id   200023
        pd-105          mt=102                       updated 10/13/89            id   200026
        pd-108          mt=102                       updated 10/13/89            id   200027
        silver-109      endf/b-iv mat 1139           updated 10/13/89            id   200028
        sb-124          mt=102                       updated 10/13/89            id   200029
        xe-131          mt=102,103,104,105,106       updated 10/13/89            id   200030
        xe-132          mt=102,103,104,105,106       updated 10/13/89            id   200031
        xenon-135       endf/b-iv mat 1254           updated 10/13/89            id   200032
        xe-136            mt=  102, 103, 104, 105, 107                           id   200033
        cesium-133      endf/b-iv mat 1141           updated 10/13/89            id   200060
        cs-134          mt=102                       updated 10/13/89            id   200034
        cs-135            mt=  102                                               id   200035
        cs-137          mt=102                       updated 10/13/89            id   200036
        ba-136          mt=102                       updated 10/13/89            id   200037
        la-139          mt=102                       updated 10/13/89            id   200038
        ce-144            mt=  102                                               id   200041
        pr-141          mt=102,103,104,105,106,107   updated 10/13/89            id   200039
        pr-143          mt=102                       updated 10/13/89            id   200040
        nd-143          mt=102                       updated 10/13/89            id   200042
        nd-145          mt=102                       updated 10/13/89            id   200043
```

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```
     nd-147        mt=102                      updated 10/13/89          id   200046
     pm-147        mt=102                      updated 10/13/89          id   200044
     pm-148          mt=  102                                            id   200045
     sm-147        endf/b-v fission product    updated 10/13/89          id   200047
     sm-149        mt=102,103,107              updated 10/13/89          id   200048
     sm-150        mt=102                      updated 10/13/89          id   200049
     sm-151        mt=102,103,104,105,106,107  updated 10/13/89          id   200050
     sm-152        mt=102,103,104,105,106,107  updated 10/13/89          id   200051
     eu-153        mt=102,103,104,105,106,107  updated 10/13/89          id   200053
     eu-154        mt=102,103,104,105,106,107  updated 10/13/89          id   200054
     eu-155        mt=102,103,104,105,106,107  updated 10/13/89          id   200055
     gd-155        mt=102                      updated 10/13/89          id   200052
    u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   200007
     uranium-235   endf/b-iv mat 1261          updated 10/13/89          id   200006
    u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   200008
     uranium-238   endf/b-iv mat 1262          updated 10/13/89          id   200009
     neptunium-237 endf/b-iv mat 1263          updated 10/13/89          id   200061
    pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   200062
     plutonium-239 endf/b-iv mat 1264          updated 10/13/89          id   200063
     plutonium-240 endf/b-iv mat 1265          updated 10/13/89          id   200064
     plutonium-241 endf/b-iv mat 1266          updated 10/13/89          id   200065
     plutonium-242 endf/b-iv mat 1161          updated 10/13/89          id   200066
    am-241 1056 sigo=5+4 nsxlacs 218ngp p-3 293k                         id   200067
    am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                         id   200068
     curium-244    endf/b-iv mat 1162          updated 10/13/89          id   200069
0      tape copy used      0 i/o's, and took     .00 seconds
1
```

```
m       m iiiiiiiiiiii  tttttttttttt   aaaaaaaa   ww       ww  ll
mm      m iiiiiiiiiiii  tttttttttttt   aaaaaaaaaa ww       ww  ll
mm      m     ii            tt       aa      aa ww       ww  ll
mm      m     ii            tt       aa      aa ww       ww  ll
m  m    m     ii            tt       aa      aa ww       ww  ll
m   m   m     ii            tt       aaaaaaaaaaaa ww   w   ww  ll
m    m  m     ii            tt       aaaaaaaaaaaa ww  www  ww  ll
m     m m     ii            tt       aa      aa ww  ww ww ww  ll
m      mm     ii            tt       aa      aa wwwwwwwwwwwwll
m       m iiiiiiiiiiii      tt       aa      aa wwwwwwwwwwwwll
m       m iiiiiiiiiiii      tt       aa      aa ww       ww  llllllllllll
```

0

```
dddddddddd    aaaaaaaa   w       w  iiiiiiiiiii   ssssssssss
dddddddddddd  aaaaaaaaaa w       w  iiiiiiiiiii   ssssssssssss
dd      dd    aa      aa w       w     ii        ss      ss
dd      dd    aa      aa w       w     ii        ss
dd      dd    aa      aa w       w     ii        ss
dd      dd    aaaaaaaaaaaa w       w     ii        ssssssssss
dd      dd    aaaaaaaaaaaa  w     w      ii         ssssssssss
dd      dd    aa      aa     w   w       ii                ss
dd      dd    aa      aa      w w        ii                ss
dd      dd    aa      aa      w w        ii        ss      ss
dddddddddddd aa      aa       ww     iiiiiiiiiii  ssssssssssss
dddddddddddd aa      aa       v      iiiiiiiiiii   ssssssssss
```

0

```
  oooooo     zzzzzzzzzz        //     11     &&&&&&&&&&        //  ??????????   &&&&&&&&&&
 oooooooo    zzzzzzzzzzzz      //     111    &&&&&&&&&&&&      //  ??????????   &&&&&&&&&&&&
oo      oo   zz      zz        //    1111    &&      &&        //  ??      ??   &&      &&
oo      oo           zz        //      11    &&      &&        //  ??      ??   &&      &&
oo      oo           zz        //      11    &&      &&        //  ??      ??   &&      &&
oo      oo         zz          //      11    &&&&&&&&&&        //  ??????????   &&&&&&&&&&
```

INFORMATION ONLY

```
program verification information
code system:   scale  version:   4.2

program:  c0c002
creation date:  04/27/95
library:  /neutronics/scale/exe

this is not a  scale  configuration controlled code
jobname:  davis
```

INFORMATION ONLY

```
                    *****                                                    *****
                    *****   date of execution:  02/16/96                     *****
                    *****                                                    *****
                    *****   time of execution:  10:00:49                     *****
                    *****                                                    *****
                    *****                                                    *****
                    ************************************************************
                    ************************************************************
                    ************************************************************

1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
         0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     70 entries.
0        3q array has     15 entries.
0        4q array has      5 entries.
0 general information concerning cross section library
    tape identification number                 4349
    number of nuclides on tape                   65
    number of neutron energy groups              27
    first thermal neutron energy group           15
    number of gamma energy groups                 0
0  direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                           based on endf-b version 4 data with endf-b version 5 fission products
                              compiled for nrc      1/27/89
                                 last updated       9/16/93
                                    l.m.petrie  -   ornl
- work tape   4349

 xsdrn weighted tape--parent case entitled--  560 d, sas2h: babcock wilcox 15x15,
  3.00wt%, 20gwd/mtu burn high temp


0 nuclides from xsdrn tape
    1    hydrogen       endf/b-iv mat 1269/thm1002    updated 10/13/89          202
    2   b-10 1273 218ngp 04375 p-3 293k                                          203
    3    boron-11       endf/b-iv mat 1160            updated 10/13/89          204
    4    oxygen-16      endf/b-iv mat 1276            updated 10/13/89          201
    5    zircalloy      endf/b-iv mat 1284            updated 10/13/89          205
0 nuclides from  work tape
    6   1/v cross sections normalized to 1.0 at 0.0253 ev                       999
    7    hydrogen       endf/b-iv mat 1269/thm1002    updated 10/13/89         1001
    8   b-10 1273 218ngp 04375 p-3 293k                                         5010
    9    boron-11       endf/b-iv mat 1160            updated 10/13/89         5011
   10    oxygen-16      endf/b-iv mat 1276            updated 10/13/89         8016
   11    oxygen-16      endf/b-iv mat 1276            updated 10/13/89            6
   12    kr-83          mt=102,103,103,105,106,107    updated 10/13/89        36083
   13    kr-85            mt=  102                                            36085
   14    sr-90          mt=102                        updated 10/13/89        38090
```

INFORMATION ONLY

```
 15    y-89          mt=102                          updated 10/13/89          39089
 16    zr-93           mt=  102                                                40093
 17    zr-94         mt=102                          updated 10/13/89          40094
 18    zr-95         mt=102                          updated 10/13/89          40095
 19    zircalloy     endf/b-iv mat 1284              updated 10/13/89          40302
 20    rb-94         mt=102                          updated 10/13/89          41094
 21    mo-95         mt=102                          updated 10/13/89          42095
 22    tc-99         mt=102                          updated 10/13/89          43099
 23    ru-101        mt=102                          updated 10/13/89          44101
 24    ru-106        mt=102                          updated 10/13/89          44106
 25    rh-103        mt=102                          updated 10/13/89          45103
 26    rh-105          mt=  102                                                45105
 27    pd-105        mt=102                          updated 10/13/89          46105
 28    pd-108        mt=102                          updated 10/13/89          46108
 29    silver-109    endf/b-iv mat 1139              updated 10/13/89          47109
 30    sb-124        mt=102                          updated 10/13/89          51124
 31    xe-131        mt=102,103,104,105,106          updated 10/13/89          54131
 32    xe-132        mt=102,103,104,105,106          updated 10/13/89          54132
 33    xenon-135     endf/b-iv mat 1294              updated 10/13/89          54135
 34    xe-136          mt=  102, 103, 104, 105, 107                            54136
 35    cesium-133    endf/b-iv mat 1141              updated 10/13/89          55133
 36    cs-134        mt=102                          updated 10/13/89          55134
 37    cs-135          mt=  102                                                55135
 38    cs-137        mt=102                          updated 10/13/89          55137
 39    ba-136        mt=102                          updated 10/13/89          56136
 40    la-139        mt=102                          updated 10/13/89          57139
 41    ce-144          mt=  102                                                58144
 42    pr-141        mt=102,103,104,105,106,107      updated 10/13/89          59141
 43    pr-143        mt=102                          updated 10/13/89          59143
 44    nd-143        mt=102                          updated 10/13/89          60143
 45    nd-145        mt=102                          updated 10/13/89          60145
 46    nd-147        mt=102                          updated 10/13/89          60147
 47    pm-147        mt=102                          updated 10/13/89          61147
 48    pm-148          mt=  102                                                61148
 49    sm-147        endf/b-v fission product        updated 10/13/89          62147
 50    sm-149        mt=102,103,107                  updated 10/13/89          62149
 51    sm-150        mt=102                          updated 10/13/89          62150
 52    sm-151        mt=102,103,104,105,106,107      updated 10/13/89          62151
 53    sm-152        mt=102,103,104,105,106,107      updated 10/13/89          62152
 54    eu-153        mt=102,103,104,105,106,107      updated 10/13/89          63153
 55    eu-154        mt=102,103,104,105,106,107      updated 10/13/89          63154
 56    eu-155        mt=102,103,104,105,106,107      updated 10/13/89          63155
 57    gd-155        mt=102                          updated 10/13/89          64155
 58    u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                      92234
 59    uranium-235   endf/b-iv mat 1261              updated 10/13/89          92235
 60    u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                      92236
 61    uranium-238   endf/b-iv mat 1262              updated 10/13/89          92238
 62    neptunium-237 endf/b-iv mat 1263              updated 10/13/89          93237
 63    pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                     94238
 64    plutonium-239 endf/b-iv mat 1264              updated 10/13/89          94239
 65    plutonium-240 endf/b-iv mat 1265              updated 10/13/89          94240
 66    plutonium-241 endf/b-iv mat 1266              updated 10/13/89          94241
 67    plutonium-242 endf/b-iv mat 1161              updated 10/13/89          94242
 68    am-241 1066 sigo=5+4 nsxlacs 218grp p-3 293k                            95241
 69    am-243 1067 218 gp wt f-1/e-m 090376 p3 293k                            95243
 70    curium-244    endf/b-iv mat 1162              updated 10/13/89          96244
0 hydrogen      endf/b-iv mat 1269/thm1002    updated 10/13/89          202    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218grp 042575 p-3 293k                                       203    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
```

INFORMATION ONLY

```
0 boron-11      endf/b-iv mat 1160          updated 10/13/89          204    temperature=  607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276          updated 10/13/89          201    temperature=  607.60
0 zircalloy     endf/b-iv mat 1284          updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436          temperature(kelvin)      =  650.000
0potential scatter sigma  =    6.385          lumped nuclear density  = 4.251602E-02
0spin factor (g)          =    1.079          lump dimension (a-bar)  = 6.730999E-01
0inner radius             = 6.324600E-01      dancoff correction (c)  = 1.680690E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  8      -1.156752E-03   .000000E+00   -7.806033E-01
  9      -4.625978E-02   .000000E+00   -2.073270E+00
 10      -5.962230E-02   .000000E+00   -1.351994E+00
 11      -1.761672E-01   .000000E+00   -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption      2.92403E-01
 fission          .00000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:00:49
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled--  560 cl, sas2h: babcock wilcox 15x15,
       3.00w%, 20gwd/mtu burn high temp

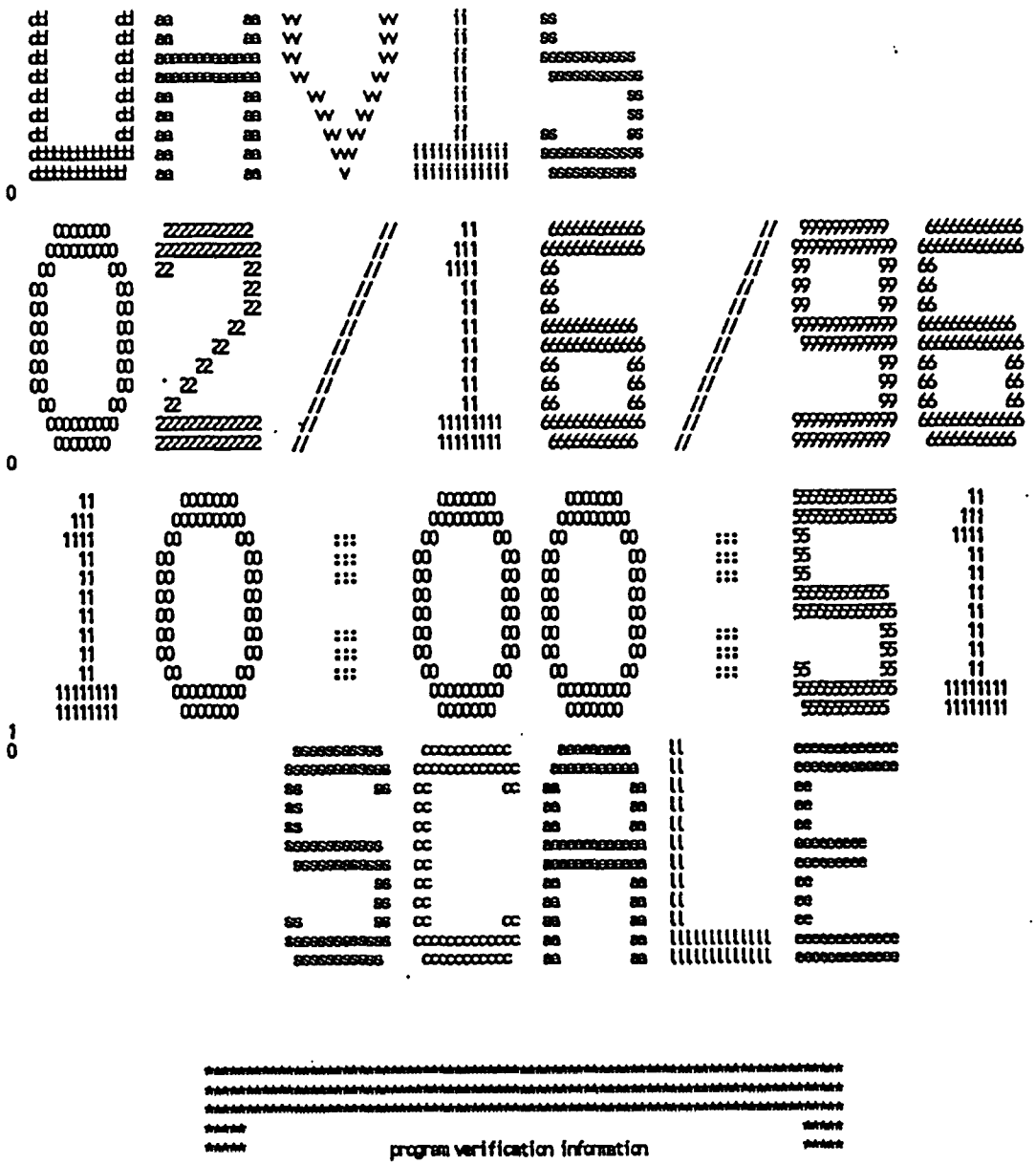
        tape id                          8670        number of nuclides                70
        number of neutron groups           27        number of gamma groups             0
        first thermal group                15        logical unit                       4
                                  table of contents
       hydrogen       endf/b-iv mat 1269/thrmal002   updated 10/13/89          id     202
      b-10 1273 218ngp 042375 p-3 295k                                          id     203
       boron-11       endf/b-iv mat 1160             updated 10/13/89          id     204
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id     201
       zircalloy      endf/b-iv mat 1284             updated 10/13/89          id     205
       1/v cross sections normalized to 1.0 at 0.0253 ev                        id     999
       hydrogen       endf/b-iv mat 1269/thrmal002   updated 10/13/89          id    1001
      b-10 1273 218ngp 042375 p-3 295k                                          id    5010
       boron-11       endf/b-iv mat 1160             updated 10/13/89          id    5011
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id    8016
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id       6
       kr-83          mt=102,103,103,105,106,107     updated 10/13/89          id   36083
       kr-85            mt=  102                                                id   36085
       sr-90          mt=102                         updated 10/13/89          id   38090
        y-89          mt=102                         updated 10/13/89          id   39089
       zr-93            mt=  102                                                id   40093
       zr-94          mt=102                         updated 10/13/89          id   40094
       zr-95          mt=102                         updated 10/13/89          id   40095
       zircalloy      endf/b-iv mat 1284             updated 10/13/89          id   40302
       nb-94          mt=102                         updated 10/13/89          id   41094
       mo-95          mt=102                         updated 10/13/89          id   42095
       tc-99          mt=102                         updated 10/13/89          id   43099
       ru-101         mt=102                         updated 10/13/89          id   44101
       ru-106         mt=102                         updated 10/13/89          id   44106
       rh-103         mt=102                         updated 10/13/89          id   45103
       rh-105           mt=  102                                                id   45105
       pd-105         mt=102                         updated 10/13/89          id   46105
       pd-108         mt=102                         updated 10/13/89          id   46108
```

INFORMATION ONLY

```
 . silver-109     endf/b-iv mat 1139          updated 10/13/89          id   47109
   sb-124         mt=102                      updated 10/13/89          id   51124
   xe-131         mt=102,103,104,105,106      updated 10/13/89          id   54131
   xe-132         mt=102,103,104,105,106      updated 10/13/89          id   54132
   xenon-135      endf/b-iv mat 1294          updated 10/13/89          id   54135
   xe-136           mt=  102, 103, 104, 105, 107                       id   54136
   cesium-133     endf/b-iv mat 1141          updated 10/13/89          id   55133
   cs-134         mt=102                      updated 10/13/89          id   55134
   cs-135           mt=  102                                            id   55135
   cs-137         mt=102                      updated 10/13/89          id   55137
   ba-136         mt=102                      updated 10/13/89          id   56136
   la-139         mt=102                      updated 10/13/89          id   57139
   ce-144           mt=  102                                            id   58144
   pr-141         mt=102,103,104,105,106,107  updated 10/13/89          id   59141
   pr-143         mt=102                      updated 10/13/89          id   59143
   nd-143         mt=102                      updated 10/13/89          id   60143
   nd-145         mt=102                      updated 10/13/89          id   60145
   nd-147         mt=102                      updated 10/13/89          id   60147
   pm-147         mt=102                      updated 10/13/89          id   61147
   pm-148           mt=  102                                            id   61148
   sm-147         endf/b-v fission product    updated 10/13/89          id   62147
   sm-149         mt=102,103,107              updated 10/13/89          id   62149
   sm-150         mt=102                      updated 10/13/89          id   62150
   sm-151         mt=102,103,104,105,106,107  updated 10/13/89          id   62151
   sm-152         mt=102,103,104,105,106,107  updated 10/13/89          id   62152
   eu-153         mt=102,103,104,105,106,107  updated 10/13/89          id   63153
   eu-154         mt=102,103,104,105,106,107  updated 10/13/89          id   63154
   eu-155         mt=102,103,104,105,106,107  updated 10/13/89          id   63155
   gd-155         mt=102                      updated 10/13/89          id   64155
  u-234 1043 sigo>5+4 newlacs p-3 295k f-1/e-m(1.+5)                    id   92234
   uranium-235    endf/b-iv mat 1261          updated 10/13/89          id   92235
  u-236 1163 sigo>5+4 newlacs p-3 295k f-1/e-m(1.+5)                    id   92236
   uranium-238    endf/b-iv mat 1262          updated 10/13/89          id   92238
   neptunium-237  endf/b-iv mat 1263          updated 10/13/89          id   93237
  pu-238 1050 sigo>5+4 newlacs p-3 295k f-1/e-m(1.+5)                   id   94238
   plutonium-239  endf/b-iv mat 1264          updated 10/13/89          id   94239
   plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id   94240
   plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id   94241
   plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   94242
  am-241 1056 sigo>5+4 newlacs 218ngp p-3 295k                          id   95241
  am-243 1057 218 gp wt f-1/e-m 090576 p3 295k                          id   95243
   curium-244     endf/b-iv mat 1162          updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx        xx  ssssssssss  ddddddddddd  rrrrrrrrrr  m       m  ppppppppp  mm        mm
  xx        xx  ssssssssssss ddddddddddd rrrrrrrrrr mm      m  pppppppppp mmm       mmm
   xx     xx   ss        ss  dd       dd  rr      rr mmm     m  pp      pp  mmmm     mmmm
    xx   xx    ss            dd       dd  rr      rr m m     m  pp      pp  mm mm   mm mm
     xx xx     ss            dd       dd  rr      rr m  m    m  pp      pp  mm  mmm  mm
      xxx      ssssssssss    dd       dd  rrrrrrrrrr m   m   m  ppppppppp   mm   m   mm
      xxx       ssssssssss   dd       dd  rrrrrrrrrr m    m  m  ppppppppp   mm       mm
     xx xx              ss   dd       dd  rr     rr  m     m m  pp          mm       mm
    xx   xx             ss   dd       dd  rr     rr  m      mm  pp          mm       mm
   xx     xx   ss        ss  dd       dd  rr      rr m       m  pp          mm       mm
  xx        xx  ssssssssssss dddddddddddd rr      rr m       m  pp          mm       mm
 xx         xx  ssssssssss  ddddddddddd  rr      rr m       m  pp          mm       mm
0

 dddddddddd     aaaaaaaa   w        w  iiiiiiiiiii   ssssssssss
 dddddddddddd   aaaaaaaaa  w        w  iiiiiiiiiii   ssssssssssss
 dd       dd    aa      aa w        w     ii        ss        ss
```

INFORMATION ONLY



INFORMATION ONLY

```
*****                                                                  *****
*****              code system:    scale  version:    4.2              *****
*****                                                                  *****
**********************************************************************
**********************************************************************
*****                                                                  *****
*****                                                                  *****
*****              program:  c0c001                                    *****
*****                                                                  *****
*****        creation date:  04/27/95                                  *****
*****                                                                  *****
*****              library:  /nautronics/scale/exe                     *****
*****                                                                  *****
*****                                                                  *****
*****    this is not a   scale  configuration controlled code          *****
*****                                                                  *****
*****              jobname:  davis                                     *****
*****                                                                  *****
*****    date of execution:  02/16/96                                  *****
*****                                                                  *****
*****    time of execution:  10:00:51                                  *****
*****                                                                  *****
*****                                                                  *****
**********************************************************************
**********************************************************************
**********************************************************************
1
                    560 d, second part of sas2h pass to make library
0       -1q array has     1 entries.
0        0q array has    11 entries.
0        1q array has    15 entries.
0        2q array has    10 entries.
0        3q array has    12 entries.
0        4q array has     9 entries.
0        5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                   560 d, second part of sas2h pass to make library
0general problem description data block
0                              general problem data

 igeo  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                  8
 izm   number of zones                    4      isct order of scattering               3
 im    number of spacial intervals       28      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          20
 ibr   right boundary condition           3      iom  outer iteration maximum          25
 mxx   number of mixtures                 3      iclc -1/0/n--flat res/sn/cpt           0
 ms    mixing table length               70      ith  0/1 = forward/adjoint             0
 ign   number of energy groups           27      iflu not used(always wgtd)             0
 nng   number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print     -2
 ngg   number of gamma groups             0      idl  0/1/2/3=no/prt rd/pch n/both      14
 iftg  number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt      0
0                              special options

 ifg   0/1 = none/weighting calculation   1      ipn  0/1/2 diff. coef. parms            0
 iqn   volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 38*     0
 ipn   boundary sources (0/n=no/yes)      0      isz  0/n = none/n activities by zone    0
 ifn   0/1/2 = input 33*/34*/use last    14      iai  0/1=none/activities by interval    0
 itmx  maximum time (minutes)            10      ifct 0/1=no/yes upscatter scaling       0
 idt1  0/1/2/3=no/xsect/srce/flux--out    0      ipvt 0/1/2=no/k/alpha parametric srch   0
 isx   broad group fluxes                 0      isen outer iteration acceleration       0
```

INFORMATION ONLY

```
 ibln activity data unit                0        rbnd band rebaln parameter          0
 jtkl 0/1/2 buckling geometry           0
0                                weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight   -1        ihtf total xsect pan in brd gp tables  3
 ignf number of broad groups            3        rdsf pan g-g or file number            4
 itp  0/10/20/30/40 0/c/e/ac/a          0        rusf table length or max order         6
 ipp  -2/-1/0/m=gated xsect print      -2        nscm extra 1-d x-sect positions        0
 isp  -1/n anisn xsect print           -1
0                                floating point parameters

 eps  overall convergence        1.00000E-04     dy   cyl/pla ht for buckling    .00000E+00
 ptc  point convergence          1.00000E-04     dz   plane depth for buckling  2.00000E+02
 xnf  normalization factor       1.00000E+00     vac  void streaming correction  .00000E+00
 ev   eigenvalue guess            .00000E+00     pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00     eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00     xrpm max param mod for search   7.50000E-01
      this case will require      2611 locations for mixing
      this case has been allocated 200000 locations
1                          560 d, second part of sas2h pass to make library
0       13q array has      70 entries.
0       14q array has      70 entries.
0       15q array has      70 entries.
0                                data block 2 (mixing table, etc.)
0     nuclides        cccc                          mixing table                          extra
       on tape     identification              mixture  component     atom density      xsect id's
    1     202                                     3        201        2.09710E-02
    2     203                                     3        202        4.19420E-02
    3     204                                     3        203        3.81515E-06
    4     201                                     3        204        1.54884E-05
    5     205                                     2        205        4.25156E-02
    6     999                                     1      92235        1.62152E-04
    7    1001                                     1      92234        1.60895E-06
    8    5010                                     1      92236        1.31718E-05
    9    5011                                     1      92238        7.24962E-03
   10    8016                                     1       8016        1.50611E-02
   11       6                                     1          6        1.15315E-02
   12   36083                                     1      36083        3.23159E-07
   13   36085                                     1      36085        1.55770E-07
   14   38090                                     1      38090        3.51225E-06
   15   39089                                     1      39089        2.61349E-06
   16   40093                                     1      42095        3.20178E-06
   17   40094                                     1      40093        2.71690E-06
   18   40095                                     1      40094        4.22845E-06
   19   40302                                     1      40095        6.86629E-07
   20   41094                                     1      41094        1.81576E-12
   21   42095                                     1      43099        4.11687E-06
   22   43099                                     1      45103        2.14179E-06
   23   44101                                     1      45105        6.24106E-09
   24   44106                                     1      44101        3.66029E-06
   25   45103                                     1      44106        5.45766E-07
   26   45105                                     1      46105        1.26197E-06
   27   46105                                     1      46108        3.07708E-07
   28   46108                                     1      47109        2.21053E-07
   29   47109                                     1      51124        5.35940E-11
   30   51124                                     1      54131        1.90984E-06
   31   54131                                     1      54132        3.32758E-06
   32   54132                                     1      54135        2.20090E-09
   33   54135                                     1      54136        6.98021E-06
   34   54136                                     1      55134        1.39893E-07
```

INFORMATION ONLY

35	55133	1	55135	2.19558E-06
36	55134	1	55137	4.36275E-06
37	55135	1	56136	2.69801E-08
38	55137	1	57139	4.33528E-06
39	56136	1	59141	3.63399E-06
40	57139	1	59143	1.27348E-07
41	58144	1	58144	1.94158E-06
42	59141	1	60143	3.52685E-06
43	59143	1	60145	2.55990E-06
44	60143	1	61147	1.03903E-06
45	60145	1	61148	2.92578E-09
46	60147	1	60147	4.35262E-08
47	61147	1	62147	2.20883E-07
48	61148	1	62149	2.65272E-08
49	62147	1	62150	8.41498E-07
50	62149	1	62151	1.09812E-07
51	62150	1	62152	4.11655E-07
52	62151	1	64155	3.91515E-10
53	62152	1	63153	2.08635E-07
54	63153	1	63154	3.15201E-08
55	63154	1	63155	2.41894E-08
56	63155	1	40302	4.42681E-03
57	64155	1	1001	2.30630E-02
58	92234	1	5010	2.09787E-06
59	92235	1	5011	8.51673E-06
60	92236	1	55133	4.50801E-06
61	92238	1	95237	6.54722E-07
62	95237	1	94238	5.86583E-08
63	94238	1	94239	2.73412E-05
64	94239	1	94240	3.82999E-06
65	94240	1	94241	1.67189E-06
66	94241	1	94242	1.12810E-07
67	94242	1	95241	3.19625E-08
68	95241	1	95243	6.10845E-09
69	95243	1	98244	3.46025E-10
70	98244	1	999	3.30753E-21

- elapsed time .00 min.
0 24259 locations will be used
0 35q array has 29 entries.
0 36q array has 28 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 560 d, second part of ses2h pass to make library

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	1	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	1	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	1	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	1	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	2	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	2	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	2	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	2	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	2	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	2	0	12	1.00000E+00	

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13	3.00000E+01	1.27169E+01	5.69595E+06	2	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00
15	3.04995E+00	1.50030E+01	2.10601E+06	2	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	2	0	16	1.00000E+00
17	1.29999E+00	1.58557E+01	1.52545E+06	2	0	17	1.00000E+00
18	1.12999E+00	1.59999E+01	1.42867E+06	2	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.0589E+05	2	0	20	1.00000E+00
21	4.00000E-01	1.70844E+01	8.17974E+05	3	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86933E+05	3	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	3	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 560 d, second part of ses2h pass to make library

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	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	3	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28578E-02
7					5.55953E-02	2.31301E-01	6	1.28578E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	16	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53365E-02	-9.64143E-01	24	-4.37099E-02
18					4.53365E-02	-8.17361E-01	23	-3.70665E-02
19					4.53365E-02	-5.46143E-01	22	-2.47597E-02
20					4.53365E-02	-1.91780E-01	21	-8.69444E-03
21					4.53365E-02	1.91780E-01	20	8.69444E-03
22					4.53365E-02	5.46143E-01	19	2.47597E-02
23					4.53365E-02	8.17361E-01	18	3.70665E-02
24					4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86933E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01

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16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

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int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02			
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60386E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10677E+00	4	6.34088E+00	1.35731E+00			
19	1.20434E+00	1.30195E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00			
21	1.59473E+00	1.69252E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			
29	2.96100E+00			1.86045E+01				

- elapsed time .00 min.

1

outer itar	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	197	1.88423E-05	1.07849E+00	-8.68900E-02	1.00000E+00	-2.64515E-02	.00000E+00	.0000
2	255	-3.96240E-06	1.08746E+00	-1.52593E-03	-1.09213E-02	-3.49812E-03	.00000E+00	.0000
3	371	-1.38464E-06	1.08855E+00	-2.11256E-04	-1.36124E-03	-7.65847E-04	.00000E+00	.0167
4	428	-3.55400E-06	1.08881E+00	-4.25534E-05	-3.02777E-04	-1.65471E-04	.00000E+00	.0167
5	463	2.75520E-06	1.08879E+00	-9.24425E-06	-6.60568E-05	-3.53059E-05	.00000E+00	.0167

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	1.52991E-06	28	1.00000E+00	1
2	2	1	17	1.85022E-06	28	1.00000E+00	1
3	3	1	17	1.70944E-06	28	1.00000E+00	1
4	4	1	17	1.66246E-06	28	1.00000E+00	1
5	5	1	17	1.71501E-06	28	1.00000E+00	1
6	6	1	17	1.15781E-06	28	1.00000E+00	1
7	7	1	17	7.13494E-07	28	9.99999E-01	2
8	8	1	15	1.38885E-07	28	1.00000E+00	2
9	9	1	27	6.91892E-06	28	1.00001E+00	3
10	10	1	26	1.58965E-06	28	9.99999E-01	3
11	11	1	26	2.98429E-06	28	9.99997E-01	3

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                                                                12   12   1   26  1.2872E-06   28  1.00000E+00   3
                                                                13   13   1   26  1.7334E-06   28  9.99998E-01   3
                                                                14   14   1   25  5.9717E-07   28  9.99999E-01   3
                                                                15   15   1    2  3.5057E-05   28  9.99961E-01   2
                                                                16   16   1    2  4.3086E-05   28  9.99964E-01   2
                                                                17   17   1    2  4.9270E-05   28  9.99966E-01   3
                                                                18   18   1    2  5.7420E-05   28  9.99952E-01   3
                                                                19   19   1    2  4.9302E-05   28  9.99900E-01   3
                                                                20   20   1    2  3.8740E-05   28  9.99925E-01   3
                                                                21   21   1    2  5.9331E-05   28  9.99944E-01   3
                                                                22   22   1   23  2.7017E-05   28  9.99971E-01   3
                                                                23   23   1    1  1.8289E-05   14  1.00001E+00   4
                                                                24   24   1    1  2.6080E-05    9  1.00000E+00   4
                                                                25   25   1    1  2.9187E-05    8  1.00001E+00   5
                                                                26   26   1    1  2.1845E-05    6  1.00000E+00   6
                                                                27   27   1    1  2.0259E-05    5  1.00001E+00   8
     6  460 -2.8583E-06  1.0888E+00 -1.8861E-06 -1.4194E-05 -7.8710E-06   .00000E+00      .0167
          final monitor
                 lambda  1.0888E+00          production/absorption  1.1031E+00          angular flux on  16
- elapsed time   .02 min.
1                 560 d, second part of sas2h pass to make library
0 int. zone number    radius   int. midpoint    area       volume    prod density
    1      1        .00000E+00  1.9764E-02  .00000E+00  4.9088E-03  .00000E+00
    2      1        3.9287E-02  5.9281E-02  2.4836E-01  1.4726E-02  .00000E+00
    3      1        7.9575E-02  1.1886E-01  4.9573E-01  5.8957E-02  .00000E+00
    4      1        1.5815E-01  1.9764E-01  9.9366E-01  9.8176E-02  .00000E+00
    5      1        2.3717E-01  2.7670E-01  1.4902E+00  1.3744E-01  .00000E+00
    6      1        3.1620E-01  3.5579E-01  1.9869E+00  1.7671E-01  .00000E+00
    7      1        3.9528E-01  4.3486E-01  2.4836E+00  2.1598E-01  .00000E+00
    8      1        4.7435E-01  5.1387E-01  2.9804E+00  2.5525E-01  .00000E+00
    9      1        5.5340E-01  5.7316E-01  3.4771E+00  1.4235E-01  .00000E+00
   10      1        5.9293E-01  6.1269E-01  3.7250E+00  1.5217E-01  .00000E+00
   11      2        6.3246E-01  6.4262E-01  3.9738E+00  8.2046E-02  .00000E+00
   12      2        6.5278E-01  6.6294E-01  4.1015E+00  8.4405E-02  .00000E+00
   13      3        6.7310E-01  6.9683E-01  4.2392E+00  2.0556E-01  .00000E+00
   14      3        7.2056E-01  7.4355E-01  4.5243E+00  2.1942E-01  .00000E+00
   15      3        7.6703E-01  7.9051E-01  4.8194E+00  2.3328E-01  .00000E+00
   16      4        8.1400E-01  8.6279E-01  5.1145E+00  5.2905E-01  2.4810E-02
   17      4        9.1159E-01  9.6038E-01  5.7276E+00  5.8889E-01  2.7010E-02
   18      4        1.0918E+00  1.1067E+00  6.3408E+00  1.3573E+00  6.0990E-02
   19      4        1.2036E+00  1.3019E+00  7.5672E+00  1.5966E+00  7.0289E-02
   20      4        1.3995E+00  1.4971E+00  8.7936E+00  1.8360E+00  7.9676E-02
   21      4        1.5947E+00  1.6925E+00  1.0020E+01  2.0754E+00  8.9114E-02
   22      4        1.7899E+00  1.8875E+00  1.1246E+01  2.3147E+00  9.8608E-02
   23      4        1.9850E+00  2.0826E+00  1.2472E+01  2.5541E+00  1.0816E-01
   24      4        2.1802E+00  2.2778E+00  1.3699E+01  2.7934E+00  1.1780E-01
   25      4        2.3754E+00  2.4730E+00  1.4925E+01  3.0328E+00  1.2753E-01
   26      4        2.5706E+00  2.6682E+00  1.6151E+01  3.2722E+00  1.3739E-01
   27      4        2.7658E+00  2.8146E+00  1.7378E+01  1.7258E+00  7.2436E-02
   28      4        2.8634E+00  2.9122E+00  1.7991E+01  1.7857E+00  7.4991E-02
   29               2.9610E+00              1.8604E+01
1                 560 d, second part of sas2h pass to make library
0 total flux
0 int.   grp. 1     grp. 2     grp. 3     grp. 4     grp. 5     grp. 6     grp. 7     grp. 8
    1  1.2680E-02  9.0049E-02  1.1211E-01  6.8861E-02  1.0261E-01  1.9269E-01  1.9302E-01  1.4694E-01
    2  1.2675E-02  8.9994E-02  1.1204E-01  6.8823E-02  1.0256E-01  1.9260E-01  1.9298E-01  1.4693E-01
    3  1.2676E-02  9.0006E-02  1.1207E-01  6.8845E-02  1.0259E-01  1.9267E-01  1.9305E-01  1.4695E-01
    4  1.2682E-02  9.0086E-02  1.1218E-01  6.8919E-02  1.0272E-01  1.9291E-01  1.9319E-01  1.4697E-01
    5  1.2694E-02  9.0227E-02  1.1237E-01  6.9052E-02  1.0294E-01  1.9331E-01  1.9343E-01  1.4702E-01
    6  1.2711E-02  9.0421E-02  1.1264E-01  6.9235E-02  1.0324E-01  1.9386E-01  1.9378E-01  1.4707E-01
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7	1.27319E-02	9.06691E-02	1.12991E-01	6.94738E-02	1.03628E-01	1.94582E-01	1.94220E-01	1.47148E-01
8	1.27569E-02	9.09786E-02	1.13430E-01	6.97810E-02	1.04134E-01	1.95519E-01	1.94798E-01	1.47231E-01
9	1.27780E-02	9.12509E-02	1.13825E-01	7.00627E-02	1.04602E-01	1.96387E-01	1.95334E-01	1.47300E-01
10	1.27923E-02	9.14643E-02	1.14151E-01	7.03107E-02	1.05023E-01	1.97174E-01	1.95821E-01	1.47349E-01
11	1.28043E-02	9.16412E-02	1.14426E-01	7.05189E-02	1.05377E-01	1.97850E-01	1.96239E-01	1.47378E-01
12	1.28174E-02	9.17728E-02	1.14599E-01	7.06272E-02	1.05546E-01	1.98187E-01	1.96442E-01	1.47437E-01
13	1.28448E-02	9.20127E-02	1.14869E-01	7.07648E-02	1.05736E-01	1.98527E-01	1.96634E-01	1.47505E-01
14	1.28851E-02	9.23947E-02	1.15321E-01	7.10199E-02	1.06111E-01	1.99187E-01	1.97014E-01	1.47597E-01
15	1.29325E-02	9.28863E-02	1.15945E-01	7.14063E-02	1.06708E-01	2.00261E-01	1.97643E-01	1.47698E-01
16	1.30062E-02	9.36736E-02	1.16959E-01	7.20511E-02	1.07723E-01	2.02103E-01	1.98737E-01	1.47868E-01
17	1.30789E-02	9.44577E-02	1.17973E-01	7.26992E-02	1.08755E-01	2.03999E-01	1.99881E-01	1.48064E-01
18	1.31368E-02	9.50788E-02	1.18805E-01	7.32352E-02	1.09622E-01	2.05637E-01	2.00859E-01	1.48268E-01
19	1.31873E-02	9.56592E-02	1.19554E-01	7.37204E-02	1.10415E-01	2.07167E-01	2.01868E-01	1.48480E-01
20	1.32170E-02	9.59994E-02	1.20012E-01	7.40200E-02	1.10910E-01	2.08153E-01	2.02508E-01	1.48636E-01
21	1.32356E-02	9.62184E-02	1.20311E-01	7.42173E-02	1.11241E-01	2.08826E-01	2.02954E-01	1.48751E-01
22	1.32478E-02	9.63616E-02	1.20511E-01	7.43492E-02	1.11464E-01	2.09258E-01	2.03269E-01	1.48838E-01
23	1.32551E-02	9.64539E-02	1.20641E-01	7.44340E-02	1.11612E-01	2.09610E-01	2.03487E-01	1.48901E-01
24	1.32594E-02	9.65090E-02	1.20720E-01	7.44891E-02	1.11704E-01	2.09813E-01	2.03625E-01	1.48942E-01
25	1.32614E-02	9.65344E-02	1.20758E-01	7.45144E-02	1.11749E-01	2.09917E-01	2.03703E-01	1.48964E-01
26	1.32610E-02	9.65315E-02	1.20756E-01	7.45134E-02	1.11749E-01	2.09925E-01	2.03709E-01	1.48964E-01
27	1.32593E-02	9.65114E-02	1.20730E-01	7.44959E-02	1.11720E-01	2.09870E-01	2.03672E-01	1.48951E-01
28	1.32568E-02	9.64818E-02	1.20690E-01	7.44698E-02	1.11675E-01	2.09779E-01	2.03609E-01	1.48930E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15896E-01	1.07080E-01	1.00822E-01	6.53777E-02	5.58727E-02	5.33752E-02	2.91124E-02	1.61508E-02
2	1.15887E-01	1.07081E-01	1.00826E-01	6.53827E-02	5.58776E-02	5.33821E-02	2.91147E-02	1.61514E-02
3	1.15885E-01	1.07072E-01	1.00806E-01	6.53588E-02	5.58553E-02	5.33496E-02	2.91083E-02	1.61479E-02
4	1.15880E-01	1.07051E-01	1.00756E-01	6.53013E-02	5.58016E-02	5.32715E-02	2.90928E-02	1.61397E-02
5	1.15873E-01	1.07018E-01	1.00680E-01	6.52137E-02	5.57200E-02	5.31525E-02	2.90696E-02	1.61274E-02
6	1.15864E-01	1.06972E-01	1.00577E-01	6.50947E-02	5.56097E-02	5.29913E-02	2.90390E-02	1.61110E-02
7	1.15851E-01	1.06913E-01	1.00441E-01	6.49386E-02	5.54659E-02	5.27804E-02	2.90004E-02	1.60900E-02
8	1.15837E-01	1.06833E-01	1.00261E-01	6.47330E-02	5.52778E-02	5.25032E-02	2.89519E-02	1.60633E-02
9	1.15827E-01	1.06758E-01	1.00092E-01	6.45410E-02	5.51027E-02	5.22450E-02	2.89083E-02	1.60389E-02
10	1.15827E-01	1.06687E-01	9.99369E-02	6.43664E-02	5.49445E-02	5.20103E-02	2.88703E-02	1.60171E-02
11	1.15833E-01	1.06632E-01	9.98123E-02	6.42294E-02	5.48188E-02	5.18254E-02	2.88369E-02	1.59988E-02
12	1.15828E-01	1.06611E-01	9.97660E-02	6.41758E-02	5.47672E-02	5.17511E-02	2.88184E-02	1.59898E-02
13	1.15783E-01	1.06584E-01	9.97025E-02	6.40387E-02	5.46253E-02	5.16408E-02	2.88031E-02	1.59808E-02
14	1.15712E-01	1.06521E-01	9.95590E-02	6.39158E-02	5.45372E-02	5.14046E-02	2.87780E-02	1.59639E-02
15	1.15636E-01	1.06415E-01	9.93234E-02	6.36268E-02	5.42981E-02	5.10339E-02	2.87402E-02	1.59376E-02
16	1.15530E-01	1.06240E-01	9.89329E-02	6.31748E-02	5.38900E-02	5.04191E-02	2.86707E-02	1.58922E-02
17	1.15435E-01	1.06067E-01	9.85427E-02	6.27140E-02	5.34816E-02	4.98016E-02	2.85873E-02	1.58422E-02
18	1.15367E-01	1.05921E-01	9.82090E-02	6.23204E-02	5.31241E-02	4.92724E-02	2.84969E-02	1.57925E-02
19	1.15313E-01	1.05789E-01	9.78978E-02	6.19538E-02	5.27856E-02	4.87783E-02	2.84008E-02	1.57416E-02
20	1.15288E-01	1.05701E-01	9.76953E-02	6.17171E-02	5.25623E-02	4.85580E-02	2.83284E-02	1.57045E-02
21	1.15275E-01	1.05643E-01	9.75564E-02	6.15526E-02	5.24047E-02	4.82546E-02	2.82731E-02	1.56766E-02
22	1.15269E-01	1.05602E-01	9.74567E-02	6.14354E-02	5.22912E-02	4.80751E-02	2.82310E-02	1.56555E-02
23	1.15266E-01	1.05573E-01	9.73859E-02	6.13521E-02	5.22100E-02	4.79615E-02	2.81999E-02	1.56400E-02
24	1.15263E-01	1.05554E-01	9.73397E-02	6.12955E-02	5.21546E-02	4.78842E-02	2.81788E-02	1.56295E-02
25	1.15261E-01	1.05542E-01	9.73090E-02	6.12617E-02	5.21219E-02	4.78384E-02	2.81666E-02	1.56234E-02
26	1.15258E-01	1.05538E-01	9.72997E-02	6.12508E-02	5.21124E-02	4.78244E-02	2.81648E-02	1.56226E-02
27	1.15256E-01	1.05540E-01	9.73052E-02	6.12576E-02	5.21202E-02	4.78346E-02	2.81701E-02	1.56252E-02
28	1.15255E-01	1.05546E-01	9.73208E-02	6.12761E-02	5.21397E-02	4.78609E-02	2.81795E-02	1.56300E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.12314E-03	5.56300E-03	1.00272E-02	3.61667E-02	1.13884E-02	2.36178E-02	7.95371E-02	6.50857E-02
2	7.12397E-03	5.56425E-03	1.00283E-02	3.61712E-02	1.13894E-02	2.36195E-02	7.95321E-02	6.50707E-02
3	7.12109E-03	5.55769E-03	1.00252E-02	3.61577E-02	1.13791E-02	2.35861E-02	7.94143E-02	6.49410E-02
4	7.11461E-03	5.54180E-03	1.00111E-02	3.61261E-02	1.13554E-02	2.35105E-02	7.91554E-02	6.46618E-02
5	7.10477E-03	5.51740E-03	1.00928E-02	3.60786E-02	1.13195E-02	2.33972E-02	7.87713E-02	6.42485E-02
6	7.09146E-03	5.48396E-03	1.00681E-02	3.60151E-02	1.12710E-02	2.32440E-02	7.82597E-02	6.36979E-02
7	7.07410E-03	5.43967E-03	1.00361E-02	3.59331E-02	1.12078E-02	2.30446E-02	7.76078E-02	6.29978E-02
8	7.05134E-03	5.38069E-03	1.00945E-02	3.58273E-02	1.11263E-02	2.27865E-02	7.67841E-02	6.21178E-02

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9	7.03017E-03	5.32492E-03	1.07560E-02	3.57302E-02	1.10466E-02	2.25437E-02	7.60435E-02	6.13319E-02
10	7.01090E-03	5.27375E-03	1.07212E-02	3.56432E-02	1.09755E-02	2.23263E-02	7.53998E-02	6.06554E-02
11	6.99551E-03	5.23448E-03	1.06953E-02	3.55735E-02	1.09210E-02	2.21626E-02	7.49314E-02	6.01845E-02
12	6.98921E-03	5.22042E-03	1.06816E-02	3.55442E-02	1.09021E-02	2.21078E-02	7.47870E-02	6.00649E-02
13	6.98044E-03	5.19491E-03	1.06664E-02	3.55059E-02	1.08710E-02	2.20179E-02	7.45084E-02	5.97669E-02
14	6.96177E-03	5.13787E-03	1.06346E-02	3.54271E-02	1.08002E-02	2.17815E-02	7.38859E-02	5.90864E-02
15	6.93221E-03	5.04700E-03	1.05847E-02	3.53052E-02	1.06875E-02	2.14297E-02	7.29852E-02	5.81122E-02
16	6.88347E-03	4.89307E-03	1.05019E-02	3.51042E-02	1.05058E-02	2.08548E-02	7.15960E-02	5.66645E-02
17	6.83435E-03	4.74214E-03	1.04163E-02	3.48948E-02	1.03224E-02	2.02858E-02	7.01838E-02	5.52211E-02
18	6.79141E-03	4.62511E-03	1.03377E-02	3.46988E-02	1.01685E-02	1.98079E-02	6.88343E-02	5.38336E-02
19	6.75059E-03	4.52304E-03	1.02614E-02	3.45044E-02	1.00261E-02	1.93647E-02	6.74769E-02	5.24585E-02
20	6.72335E-03	4.46267E-03	1.02095E-02	3.43687E-02	9.9334E-03	1.90784E-02	6.65098E-02	5.14726E-02
21	6.70404E-03	4.42307E-03	1.01725E-02	3.42690E-02	9.86850E-03	1.88774E-02	6.57838E-02	5.07360E-02
22	6.69010E-03	4.39611E-03	1.01451E-02	3.41948E-02	9.82172E-03	1.87325E-02	6.52342E-02	5.01800E-02
23	6.68008E-03	4.37752E-03	1.01255E-02	3.41405E-02	9.78806E-03	1.86278E-02	6.48220E-02	4.97637E-02
24	6.67328E-03	4.36505E-03	1.01120E-02	3.41029E-02	9.76454E-03	1.85546E-02	6.45241E-02	4.94620E-02
25	6.66857E-03	4.35738E-03	1.01041E-02	3.40806E-02	9.75008E-03	1.85081E-02	6.43276E-02	4.92591E-02
26	6.66843E-03	4.35445E-03	1.01019E-02	3.40734E-02	9.74444E-03	1.84873E-02	6.42516E-02	4.91510E-02
27	6.66967E-03	4.35517E-03	1.01034E-02	3.40789E-02	9.74583E-03	1.84880E-02	6.42222E-02	4.91267E-02
28	6.67172E-03	4.35847E-03	1.01082E-02	3.40921E-02	9.75208E-03	1.85039E-02	6.42730E-02	4.91610E-02

0 int.	grp. 25	grp. 26	grp. 27
1	2.94143E-02	2.12121E-02	4.02897E-03
2	2.94031E-02	2.11996E-02	4.02596E-03
3	2.93332E-02	2.11382E-02	4.01336E-03
4	2.91844E-02	2.10082E-02	3.98664E-03
5	2.89639E-02	2.08145E-02	3.94622E-03
6	2.86697E-02	2.05539E-02	3.89084E-03
7	2.82957E-02	2.02195E-02	3.81835E-03
8	2.78276E-02	1.97978E-02	3.72474E-03
9	2.74122E-02	1.94217E-02	3.64001E-03
10	2.70597E-02	1.91008E-02	3.56709E-03
11	2.68258E-02	1.88883E-02	3.52295E-03
12	2.67734E-02	1.88620E-02	3.52003E-03
13	2.66057E-02	1.87072E-02	3.47849E-03
14	2.62228E-02	1.83592E-02	3.37816E-03
15	2.56884E-02	1.78182E-02	3.22861E-03
16	2.49135E-02	1.70725E-02	3.00962E-03
17	2.41537E-02	1.63692E-02	2.82145E-03
18	2.34346E-02	1.57391E-02	2.68058E-03
19	2.27163E-02	1.51300E-02	2.55410E-03
20	2.22110E-02	1.47207E-02	2.47773E-03
21	2.18377E-02	1.44292E-02	2.42659E-03
22	2.15592E-02	1.42185E-02	2.39132E-03
23	2.13524E-02	1.40661E-02	2.36638E-03
24	2.12034E-02	1.39581E-02	2.34908E-03
25	2.11028E-02	1.38866E-02	2.33762E-03
26	2.10466E-02	1.38439E-02	2.33103E-03
27	2.10259E-02	1.38291E-02	2.32865E-03
28	2.10409E-02	1.38352E-02	2.32834E-03

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	4.93909E-04	6.53730E-04	5.44336E-05	-7.08129E-04	9.99952E-01
2	.00000E+00	.00000E+00	3.75097E-04	6.11278E-03	8.05413E-03	1.74681E-04	-7.83340E-03	9.99952E-01
3	.00000E+00	.00000E+00	3.81462E-03	5.44565E-03	1.41885E-02	9.24568E-05	-1.04460E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.56442E-03	3.59530E-03	1.23462E-02	4.19336E-05	-6.82359E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02332E-02	1.15158E-02	2.08631E-02	4.96263E-05	-1.06795E-02	9.99991E-01
6	.00000E+00	.00000E+00	2.14641E-02	3.44857E-02	4.09897E-02	8.42651E-05	-1.98078E-02	9.99999E-01
7	.00000E+00	.00000E+00	4.22069E-02	6.09580E-02	5.41262E-02	6.12098E-05	-1.19759E-02	9.99989E-01
8	.00000E+00	.00000E+00	5.63437E-02	7.83312E-02	5.87342E-02	3.63958E-05	-2.42175E-03	9.99912E-01

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9	.00000E+00	.00000E+00	5.77742E-02	7.25955E-02	5.74889E-02	2.92692E-05	2.62572E-04	9.99887E-01
10	.00000E+00	.00000E+00	5.70686E-02	6.91447E-02	5.55680E-02	3.60489E-05	1.47054E-03	9.99892E-01
11	.00000E+00	.00000E+00	5.58517E-02	6.55604E-02	5.23408E-02	5.51286E-05	3.45910E-03	9.99940E-01
12	.00000E+00	.00000E+00	4.53861E-02	3.50795E-02	4.12754E-02	6.04213E-05	4.05131E-03	9.99978E-01
13	.00000E+00	.00000E+00	4.05438E-02	2.85727E-02	3.66426E-02	8.44415E-05	3.81776E-03	9.99969E-01
14	.00000E+00	.00000E+00	3.94615E-02	2.82648E-02	3.37644E-02	1.36406E-04	5.56112E-03	9.99988E-01
15	.00000E+00	.00000E+00	2.17084E-02	1.08877E-02	2.03970E-02	1.12968E-04	1.19245E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.42544E-02	4.59900E-03	1.35491E-02	7.66962E-05	6.28674E-04	9.99999E-01
17	.00000E+00	.00000E+00	7.32923E-03	1.31047E-03	6.81831E-03	3.75137E-05	4.73347E-04	1.00001E+00
18	.00000E+00	.00000E+00	6.50694E-03	9.80409E-04	5.35716E-03	3.05774E-05	1.11910E-03	1.00000E+00
19	.00000E+00	.00000E+00	1.03108E-02	2.97767E-03	9.88262E-03	6.66909E-05	8.61393E-04	1.00001E+00
20	.00000E+00	.00000E+00	2.65444E-02	2.12755E-02	2.40548E-02	2.77477E-04	2.21191E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.28049E-02	4.28748E-03	1.11537E-02	1.07523E-04	1.54372E-03	9.99999E-01
22	.00000E+00	.00000E+00	2.54533E-02	1.32585E-02	2.06331E-02	2.54660E-04	4.56535E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.63183E-02	8.05025E-02	5.28638E-02	1.16862E-03	1.22859E-02	1.00008E+00
24	.00000E+00	.00000E+00	7.10189E-02	7.58669E-02	5.85639E-02	1.39128E-03	1.10728E-02	1.00008E+00
25	.00000E+00	.00000E+00	4.72941E-02	3.21591E-02	4.13727E-02	8.17348E-04	5.10337E-03	1.00001E+00
26	.00000E+00	.00000E+00	3.77734E-02	3.59319E-02	3.31879E-02	8.30984E-04	3.75412E-03	1.00001E+00
27	.00000E+00	.00000E+00	1.28009E-02	7.79891E-03	1.18808E-02	2.98857E-04	6.32156E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.96709E-01	7.91928E-01	7.96709E-01	6.45521E-03	-6.43520E-03	9.99975E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r0n rate	fiss rate	flux*cb**2	total flux
1	1.27992E-02	-7.08125E-04	1.26846E-02	.00000E+00	3.61531E-11	.00000E+00	1.95927E-05	1.60188E-02
2	9.15771E-02	-7.83340E-03	9.00880E-02	.00000E+00	.00000E+00	.00000E+00	8.86016E-05	1.14009E-01
3	1.14330E-01	-1.04460E-02	1.12169E-01	.00000E+00	.00000E+00	.00000E+00	9.20288E-05	1.42101E-01
4	7.04507E-02	-6.82559E-03	6.88958E-02	.00000E+00	.00000E+00	.00000E+00	4.16804E-05	8.73901E-02
5	1.05263E-01	-1.06928E-02	1.02664E-01	.00000E+00	.00000E+00	.00000E+00	4.95336E-05	1.30572E-01
6	1.97624E-01	-1.96078E-02	1.92774E-01	.00000E+00	.00000E+00	.00000E+00	8.33957E-05	2.44798E-01
7	1.96101E-01	-1.97759E-02	1.95064E-01	.00000E+00	.00000E+00	.00000E+00	5.92658E-05	2.44237E-01
8	1.47373E-01	-2.42175E-03	1.46951E-01	.00000E+00	.00000E+00	.00000E+00	3.27167E-05	1.84726E-01
9	1.15830E-01	2.62572E-04	1.15886E-01	.00000E+00	.00000E+00	.00000E+00	2.16688E-05	1.45585E-01
10	1.06646E-01	1.47054E-03	1.07077E-01	.00000E+00	.00000E+00	.00000E+00	1.91537E-05	1.34327E-01
11	9.98656E-02	3.45910E-03	1.00814E-01	.00000E+00	.00000E+00	.00000E+00	1.78988E-05	1.26164E-01
12	6.42663E-02	4.05131E-03	6.53688E-02	.00000E+00	.00000E+00	.00000E+00	1.05072E-05	8.15437E-02
13	5.48539E-02	3.81776E-03	5.58641E-02	.00000E+00	.00000E+00	.00000E+00	8.74591E-06	6.96466E-02
14	5.18761E-02	5.56112E-03	5.33628E-02	.00000E+00	.00000E+00	.00000E+00	8.48780E-06	6.62446E-02
15	2.88493E-02	1.19245E-03	2.91097E-02	.00000E+00	.00000E+00	.00000E+00	4.48547E-06	3.66322E-02
16	1.60049E-02	6.28674E-04	1.61490E-02	.00000E+00	.00000E+00	.00000E+00	2.25061E-06	2.02127E-02
17	6.99993E-03	4.73347E-04	7.12217E-03	.00000E+00	.00000E+00	.00000E+00	9.09197E-07	8.88302E-03
18	5.24432E-03	1.11910E-03	5.56075E-03	.00000E+00	.00000E+00	.00000E+00	6.80682E-07	6.81709E-03
19	1.09014E-02	8.61398E-04	1.09254E-02	.00000E+00	.00000E+00	.00000E+00	1.42360E-06	1.36055E-02
20	3.55944E-02	2.21191E-03	3.61450E-02	.00000E+00	.00000E+00	.00000E+00	5.28925E-06	4.51288E-02
21	1.09348E-02	1.54372E-03	1.13856E-02	.00000E+00	.00000E+00	.00000E+00	1.28912E-06	1.40594E-02
22	2.22018E-02	4.56535E-03	2.34009E-02	.00000E+00	.00000E+00	.00000E+00	2.64054E-06	2.88847E-02
23	7.50345E-02	1.22859E-02	7.95166E-02	.00000E+00	.00000E+00	.00000E+00	8.02763E-06	9.73286E-02
24	6.02731E-02	1.10728E-02	6.50713E-02	.00000E+00	.00000E+00	.00000E+00	4.84007E-06	7.89625E-02
25	2.68618E-02	5.10337E-03	2.94089E-02	.00000E+00	.00000E+00	.00000E+00	1.67882E-06	3.54527E-02
26	1.89193E-02	3.75412E-03	2.12109E-02	.00000E+00	.00000E+00	.00000E+00	8.85084E-07	2.53091E-02
27	3.52607E-03	6.32156E-04	4.02919E-03	.00000E+00	.00000E+00	.00000E+00	1.04289E-07	4.77332E-03
28	1.74998E+00	-6.43513E-03	1.75693E+00	.00000E+00	3.61531E-11	.00000E+00	5.87582E-04	2.20319E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.18399E-04	1.63718E-04	2.45602E-06	-1.60335E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.85780E-05	1.44859E-03	1.03943E-03	1.39529E-05	-1.02481E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.48991E-04	2.76130E-03	8.73095E-04	2.02061E-05	-7.44257E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.85430E-04	2.30088E-03	2.99288E-04	1.30957E-05	-2.55494E-05	9.99997E-01
5	.00000E+00	.00000E+00	6.14061E-04	4.41319E-03	2.79101E-04	1.68510E-05	3.18081E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.01902E-03	1.24017E-02	1.69442E-04	2.70606E-05	8.22512E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.70758E-04	1.25928E-02	6.32978E-05	2.68118E-05	5.80656E-04	9.99999E-01
8	.00000E+00	.00000E+00	1.17251E-04	9.20699E-03	4.43283E-04	2.21074E-05	-3.48166E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45118E-04	6.35797E-03	5.30007E-05	7.66898E-05	3.15442E-04	9.99980E-01

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10	.00000E+00	.00000E+00	5.30655E-05	4.98617E-05	4.94715E-05	5.93184E-05	-5.57248E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.94749E-05	4.45287E-05	5.02886E-05	8.99811E-05	-9.07890E-05	9.99998E-01
12	.00000E+00	.00000E+00	5.02889E-05	2.76055E-05	5.13591E-05	5.67154E-06	-6.74790E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13592E-05	2.35700E-05	4.80811E-05	6.31551E-06	-3.03565E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80811E-05	2.23332E-05	4.20872E-05	8.52895E-06	-2.53599E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.46912E-05	1.21745E-05	4.98264E-05	6.30490E-06	-1.14019E-06	9.99969E-01
16	.00000E+00	.00000E+00	5.59083E-05	6.46727E-04	5.60269E-05	3.83305E-06	-3.98204E-06	9.99964E-01
17	.00000E+00	.00000E+00	6.13731E-05	2.46542E-04	6.06868E-05	1.83266E-06	-1.13642E-06	9.99981E-01
18	.00000E+00	.00000E+00	6.38667E-05	1.73619E-04	5.60608E-05	1.44544E-06	6.36990E-06	9.99992E-01
19	.00000E+00	.00000E+00	5.75836E-05	4.09206E-04	6.05747E-05	3.17534E-06	-5.94876E-06	9.99981E-01
20	.00000E+00	.00000E+00	7.38647E-05	1.49866E-05	6.37135E-05	1.28845E-05	-2.67895E-06	9.99978E-01
21	.00000E+00	.00000E+00	8.47763E-05	3.86987E-04	9.24372E-05	4.79701E-06	-1.24370E-05	9.99987E-01
22	.00000E+00	.00000E+00	1.22131E-04	8.57902E-04	1.14656E-04	1.10771E-05	-3.58606E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.75714E-04	3.06399E-03	2.24948E-04	5.00445E-05	-9.92985E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.89152E-04	2.32317E-03	3.18820E-04	5.70254E-05	-8.67415E-05	1.00000E+00
25	.00000E+00	.00000E+00	2.95007E-04	9.36405E-04	2.41018E-04	3.31381E-05	2.08272E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.25413E-04	7.32592E-04	9.68139E-05	3.28876E-05	-4.29805E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.80723E-05	1.54644E-04	7.95795E-06	1.14734E-05	1.65162E-05	1.00000E+00
28	.00000E+00	.00000E+00	5.05904E-03	8.11387E-02	5.05904E-03	6.18946E-04	-6.13004E-04	9.99996E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.28253E-02	-8.68464E-04	1.27992E-02	-7.08125E-04	5.84947E-06	.00000E+00	1.61703E-06	2.13541E-03
2	9.18404E-02	-8.85821E-03	9.15777E-02	-7.83340E-03	.00000E+00	.00000E+00	1.10744E-05	1.52865E-02
3	1.14677E-01	-1.11903E-02	1.14330E-01	-1.04460E-02	.00000E+00	.00000E+00	1.26538E-05	1.90879E-02
4	7.06673E-02	-6.84913E-03	7.04507E-02	-6.82359E-03	.00000E+00	.00000E+00	7.42710E-06	1.17637E-02
5	1.05602E-01	-1.03612E-02	1.05263E-01	-1.06792E-02	.00000E+00	.00000E+00	8.62585E-06	1.75792E-02
6	1.98298E-01	-1.87853E-02	1.97624E-01	-1.96078E-02	.00000E+00	.00000E+00	1.01730E-05	3.30075E-02
7	1.98507E-01	-1.13978E-02	1.96101E-01	-1.19799E-02	.00000E+00	.00000E+00	8.35251E-06	3.27276E-02
8	1.47460E-01	-2.76991E-03	1.47373E-01	-2.42175E-03	.00000E+00	.00000E+00	5.27354E-06	2.45722E-02
9	1.15820E-01	5.78015E-04	1.15830E-01	2.62572E-04	.00000E+00	.00000E+00	4.58260E-06	1.93073E-02
10	1.06609E-01	1.41481E-03	1.06646E-01	1.47054E-03	.00000E+00	.00000E+00	4.90854E-06	1.77725E-02
11	9.97532E-02	3.36831E-03	9.98456E-02	3.45910E-03	.00000E+00	.00000E+00	4.76239E-06	1.66334E-02
12	6.41991E-02	4.04457E-03	6.42663E-02	4.05131E-03	.00000E+00	.00000E+00	3.21374E-06	1.07016E-02
13	5.47507E-02	3.81473E-03	5.48539E-02	3.81778E-03	.00000E+00	.00000E+00	2.73691E-06	9.13320E-03
14	5.17277E-02	5.55868E-03	5.18761E-02	5.56112E-03	.00000E+00	.00000E+00	2.58041E-06	8.63231E-03
15	2.88123E-02	1.18105E-03	2.88483E-02	1.19245E-03	.00000E+00	.00000E+00	1.41575E-06	4.80516E-03
16	1.59870E-02	6.24742E-04	1.60049E-02	6.28674E-04	.00000E+00	.00000E+00	7.85528E-07	2.66603E-03
17	6.98732E-03	4.72211E-04	6.99998E-03	4.73347E-04	.00000E+00	.00000E+00	3.43249E-07	1.16652E-03
18	5.21621E-03	1.12547E-03	5.24432E-03	1.11910E-03	.00000E+00	.00000E+00	2.56527E-07	8.71328E-04
19	1.05781E-02	8.55444E-04	1.07014E-02	8.61398E-04	.00000E+00	.00000E+00	5.24242E-07	1.78144E-03
20	3.55369E-02	2.20925E-03	3.55946E-02	2.21191E-03	.00000E+00	.00000E+00	1.74180E-06	5.92714E-03
21	1.08969E-02	1.53129E-03	1.08348E-02	1.54372E-03	.00000E+00	.00000E+00	5.33699E-07	1.81878E-03
22	2.20984E-02	4.56176E-03	2.22018E-02	4.56536E-03	.00000E+00	.00000E+00	1.08105E-06	3.68957E-03
23	7.47458E-02	1.21846E-02	7.50345E-02	1.22839E-02	.00000E+00	.00000E+00	3.66311E-06	1.24778E-02
24	6.00340E-02	1.09861E-02	6.02731E-02	1.10728E-02	.00000E+00	.00000E+00	2.90827E-06	1.00218E-02
25	2.67609E-02	5.12420E-03	2.68618E-02	5.10337E-03	.00000E+00	.00000E+00	1.28857E-06	4.46690E-03
26	1.88568E-02	3.74982E-03	1.89195E-02	3.75412E-03	.00000E+00	.00000E+00	8.98146E-07	3.14661E-03
27	3.52022E-03	6.48572E-04	3.52607E-03	6.32156E-04	.00000E+00	.00000E+00	1.62411E-07	5.86981E-04
28	1.75082E+00	-7.04818E-03	1.74998E+00	-6.43513E-03	5.84947E-06	.00000E+00	1.08568E-04	2.91765E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.61850E-04	3.46581E-04	2.88585E-05	-3.75421E-04	9.99985E-01
2	.00000E+00	.00000E+00	1.98861E-04	3.26292E-03	4.28851E-03	9.33422E-05	-4.18273E-03	9.99988E-01
3	.00000E+00	.00000E+00	2.08583E-03	2.91114E-03	7.57422E-03	4.94257E-05	-5.58765E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.97362E-03	1.92381E-03	6.61003E-03	2.24508E-05	-3.65880E-03	9.99995E-01
5	.00000E+00	.00000E+00	5.47381E-03	6.17528E-03	1.11877E-02	2.66119E-05	-5.74043E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.14978E-02	1.84879E-02	2.19730E-02	4.51734E-05	-1.05203E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26210E-02	2.23853E-02	2.87558E-02	3.25188E-05	-6.16695E-03	9.99992E-01
8	.00000E+00	.00000E+00	2.98859E-02	4.11564E-02	3.08599E-02	1.91225E-05	-8.90883E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04181E-02	3.79799E-02	3.00765E-02	1.53128E-05	3.29658E-04	9.99889E-01
10	.00000E+00	.00000E+00	2.98859E-02	3.60876E-02	2.90018E-02	1.88145E-05	8.72389E-04	9.99900E-01

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11	.00000E+00	.00000E+00	2.91688E-02	3.40329E-02	2.71781E-02	2.86256E-05	1.95391E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.35926E-02	1.80874E-02	2.12820E-02	3.11538E-05	2.27999E-03	9.99981E-01
13	.00000E+00	.00000E+00	2.09589E-02	1.47179E-02	1.88347E-02	4.35990E-05	2.04124E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.03525E-02	1.44215E-02	1.72276E-02	6.95982E-05	3.05559E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.11134E-02	5.66013E-03	1.06057E-02	5.87281E-05	4.50913E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.34978E-03	2.39039E-03	7.04231E-03	3.98639E-05	2.67583E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.78543E-03	6.75611E-04	3.51517E-03	1.93402E-05	2.50871E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.36007E-03	4.85033E-04	2.65032E-03	1.51769E-05	6.94574E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.55062E-03	1.53097E-03	5.08117E-03	3.42878E-05	4.35114E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.36278E-02	1.09869E-02	1.24244E-02	1.43318E-04	1.05996E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.55219E-03	2.16447E-03	5.68079E-03	5.42814E-05	8.67080E-04	9.99999E-01
22	.00000E+00	.00000E+00	1.29094E-02	6.56504E-03	1.02166E-02	1.26097E-04	2.56663E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.28926E-02	4.01610E-02	2.63726E-02	5.82997E-04	5.93616E-03	1.00002E+00
24	.00000E+00	.00000E+00	3.49421E-02	3.72868E-02	2.87820E-02	6.78359E-04	5.48083E-03	1.00002E+00
25	.00000E+00	.00000E+00	2.31007E-02	1.56163E-02	2.00904E-02	3.98899E-04	2.61320E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.83681E-02	1.70739E-02	1.57700E-02	3.94860E-04	2.20319E-03	1.00000E+00
27	.00000E+00	.00000E+00	6.19530E-03	3.60994E-03	5.49987E-03	1.37408E-04	5.58514E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.08915E-01	4.06110E-01	4.08915E-01	3.20613E-03	-3.19520E-03	9.99974E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r&n rate	fiss rate	flux*db**2	total flux
1	1.29591E-02	-1.24388E-03	1.28253E-02	-8.68464E-04	1.91669E-11	.00000E+00	1.03872E-05	8.48457E-03
2	9.31481E-02	-1.30409E-02	9.18404E-02	-8.85821E-03	.00000E+00	.00000E+00	4.72943E-05	6.08564E-02
3	1.16307E-01	-1.67779E-02	1.14677E-01	-1.11903E-02	.00000E+00	.00000E+00	4.91969E-05	7.59644E-02
4	7.16350E-02	-1.05079E-02	7.06673E-02	-6.84913E-03	.00000E+00	.00000E+00	2.23152E-05	4.67876E-02
5	1.07065E-01	-1.61017E-02	1.05603E-01	-1.03612E-02	.00000E+00	.00000E+00	2.64549E-05	6.99114E-02
6	2.00904E-01	-2.93056E-02	1.98298E-01	-1.87853E-02	.00000E+00	.00000E+00	4.47074E-05	1.31233E-01
7	1.98020E-01	-1.75662E-02	1.96507E-01	-1.13998E-02	.00000E+00	.00000E+00	3.14863E-05	1.29756E-01
8	1.47752E-01	-3.66029E-03	1.47460E-01	-2.78991E-03	.00000E+00	.00000E+00	1.71898E-05	9.71628E-02
9	1.15593E-01	9.07712E-04	1.15820E-01	5.78015E-04	.00000E+00	.00000E+00	1.13365E-05	7.61660E-02
10	1.06351E-01	2.28720E-03	1.06609E-01	1.41481E-03	.00000E+00	.00000E+00	9.99663E-06	7.01072E-02
11	9.91815E-02	5.33222E-03	9.97532E-02	3.36831E-03	.00000E+00	.00000E+00	9.29589E-06	6.55109E-02
12	6.34683E-02	6.32456E-03	6.41591E-02	4.00457E-03	.00000E+00	.00000E+00	5.41763E-06	4.20448E-02
13	5.41477E-02	5.85596E-03	5.47507E-02	3.81473E-03	.00000E+00	.00000E+00	4.50603E-06	3.58751E-02
14	5.08119E-02	8.61418E-03	5.17277E-02	5.55858E-03	.00000E+00	.00000E+00	4.33072E-06	3.37999E-02
15	2.87193E-02	1.63196E-03	2.88123E-02	1.18105E-03	.00000E+00	.00000E+00	2.33184E-06	1.82899E-02
16	1.59224E-02	8.92525E-04	1.59870E-02	6.24742E-04	.00000E+00	.00000E+00	1.16975E-06	1.05058E-02
17	6.91462E-03	7.23082E-04	6.98752E-03	4.72211E-04	.00000E+00	.00000E+00	4.68736E-07	4.57964E-03
18	4.99230E-03	1.88004E-03	5.21621E-03	1.12547E-03	.00000E+00	.00000E+00	3.36750E-07	3.37257E-03
19	1.05553E-02	1.29066E-03	1.06781E-02	8.55444E-04	.00000E+00	.00000E+00	7.31945E-07	6.99529E-03
20	3.52344E-02	3.26920E-03	3.55369E-02	2.20925E-03	.00000E+00	.00000E+00	2.73192E-06	2.33082E-02
21	1.06201E-02	2.39837E-03	1.08969E-02	1.53129E-03	.00000E+00	.00000E+00	6.50794E-07	7.09766E-03
22	2.12198E-02	7.12838E-03	2.20924E-02	4.56176E-03	.00000E+00	.00000E+00	1.30748E-06	1.43025E-02
23	7.24599E-02	1.81208E-02	7.47458E-02	1.21846E-02	.00000E+00	.00000E+00	4.00482E-06	4.85552E-02
24	5.75483E-02	1.64669E-02	6.00340E-02	1.09861E-02	.00000E+00	.00000E+00	2.37873E-06	3.88071E-02
25	2.53804E-02	7.73739E-03	2.67609E-02	5.12420E-03	.00000E+00	.00000E+00	8.15224E-07	1.72156E-02
26	1.75147E-02	5.95300E-03	1.88568E-02	3.74982E-03	.00000E+00	.00000E+00	4.20567E-07	1.20962E-02
27	3.13751E-03	1.20779E-03	3.52022E-03	6.48672E-04	.00000E+00	.00000E+00	4.82731E-08	2.20946E-03
28	1.74758E+00	-1.08434E-02	1.75082E+00	-7.04818E-03	1.91669E-11	.00000E+00	3.11309E-04	1.15158E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.28114E-02	.00000E+00	2.11662E-02	2.00886E-02	3.73332E-03	1.24388E-03	9.98901E-01
2	.00000E+00	1.93451E-01	6.95103E-03	2.49902E-01	1.72098E-01	1.52778E-02	1.30409E-02	1.00000E+00
3	.00000E+00	2.15779E-01	7.10660E-02	2.57202E-01	2.53828E-01	1.62432E-02	1.67778E-02	9.99988E-01
4	.00000E+00	1.23886E-01	1.05270E-01	1.76577E-01	2.10887E-01	7.76092E-03	1.05079E-02	1.00000E+00
5	.00000E+00	1.64335E-01	1.91693E-01	4.44291E-01	3.34737E-01	5.19278E-03	1.61016E-02	9.99991E-01
6	.00000E+00	1.77430E-01	3.90580E-01	1.19102E+00	5.30475E-01	8.22250E-03	2.95054E-02	1.00001E+00
7	.00000E+00	8.77290E-02	5.95168E-01	1.56426E+00	6.55129E-01	8.20879E-03	1.75656E-02	9.99991E-01
8	.00000E+00	1.35181E-02	6.88342E-01	1.57544E+00	6.86009E-01	1.32535E-02	3.66022E-03	9.99921E-01
9	.00000E+00	9.81112E-04	6.78112E-01	1.37170E+00	6.58225E-01	2.18491E-02	-9.05390E-04	9.99887E-01
10	.00000E+00	7.28723E-05	6.55269E-01	1.24725E+00	6.24712E-01	3.29826E-02	-2.28817E-03	9.99902E-01
11	.00000E+00	5.73310E-06	6.28783E-01	1.16117E+00	5.81357E-01	5.38009E-02	-5.33400E-03	9.99945E-01

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12	.00000E+00	4.02740E-07	5.05519E-01	6.34508E-01	4.53522E-01	5.83351E-02	-6.32414E-03	9.99973E-01
13	.00000E+00	6.39515E-03	4.48175E-01	5.03635E-01	3.99449E-01	5.45948E-02	-5.85654E-03	9.99973E-01
14	.00000E+00	1.26735E-03	4.31066E-01	4.70113E-01	3.62302E-01	7.73835E-02	-8.61438E-03	9.99989E-01
15	.00000E+00	1.43224E-09	2.37505E-01	2.15883E-01	2.31499E-01	7.59882E-03	-1.63653E-03	1.00018E+00
16	.00000E+00	4.20556E-10	1.62281E-01	9.98110E-02	1.57667E-01	5.47975E-03	-8.95428E-04	1.00018E+00
17	.00000E+00	1.35440E-10	8.70766E-02	3.14683E-02	8.11538E-02	6.63470E-03	-7.27074E-04	1.00018E+00
18	.00000E+00	9.69708E-11	7.77200E-02	2.08377E-02	5.88871E-02	2.12485E-02	-1.82174E-03	1.00008E+00
19	.00000E+00	1.37098E-10	1.22542E-01	6.07375E-02	1.14678E-01	9.14271E-03	-1.29525E-03	1.00013E+00
20	.00000E+00	2.22952E-10	2.95208E-01	3.48657E-01	2.69031E-01	2.74015E-02	-3.27833E-03	1.00018E+00
21	.00000E+00	3.26301E-11	1.44954E-01	7.03752E-02	1.25743E-01	2.35772E-02	-2.40192E-03	1.00010E+00
22	.00000E+00	3.78584E-11	2.75593E-01	1.84239E-01	2.12917E-01	6.97813E-02	-7.13160E-03	1.00009E+00
23	.00000E+00	3.61968E-11	6.61892E-01	1.00662E+00	5.40511E-01	1.39414E-01	-1.81174E-02	1.00012E+00
24	.00000E+00	9.85229E-12	7.01257E-01	8.67952E-01	5.78984E-01	1.38722E-01	-1.64675E-02	1.00010E+00
25	.00000E+00	2.88411E-12	4.64370E-01	3.51868E-01	3.95410E-01	7.66698E-02	-7.73850E-03	1.00006E+00
26	.00000E+00	2.02235E-12	3.59944E-01	3.53346E-01	2.96283E-01	6.99957E-02	-5.95318E-03	1.00005E+00
27	.00000E+00	4.81937E-13	1.18737E-01	7.14249E-02	1.00129E-01	1.98126E-02	-1.20721E-03	1.00002E+00
28	.00000E+00	1.00000E+00	9.10206E+00	1.45514E+01	9.10206E+00	9.91916E-01	1.02111E-02	1.00001E+00
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.32552E-02	-6.95225E-09	1.29591E-02	-1.26388E-03	2.22678E-03	2.48146E-03	2.92653E-04	3.36935E-01
2	9.64634E-02	-6.52760E-03	9.31681E-02	-1.30409E-02	1.59615E-05	1.10063E-02	1.58569E-03	2.44945E+00
3	1.20666E-01	-9.26605E-03	1.16307E-01	-1.67779E-02	.00000E+00	1.33450E-02	1.82658E-03	3.06311E+00
4	7.44527E-02	-7.14484E-03	7.16350E-02	-1.05079E-02	.00000E+00	5.73193E-03	8.83625E-04	1.88964E+00
5	1.11647E-01	-9.81703E-03	1.07065E-01	-1.61017E-02	.00000E+00	1.66429E-03	1.05172E-03	2.83257E+00
6	2.09722E-01	-1.33088E-07	2.00904E-01	-2.93056E-02	.00000E+00	1.40339E-03	1.73132E-03	5.31884E+00
7	2.03569E-01	-5.84223E-07	1.98020E-01	-1.75662E-02	.00000E+00	1.37209E-03	1.22622E-03	5.16943E+00
8	1.48917E-01	-7.29270E-03	1.47752E-01	-3.66025E-03	.00000E+00	1.39834E-03	6.97876E-04	3.78851E+00
9	1.15253E-01	4.33258E-06	1.15593E-01	9.07712E-04	.00000E+00	1.87880E-03	4.71088E-04	2.98538E+00
10	1.05550E-01	-9.69711E-07	1.06351E-01	2.28720E-03	.00000E+00	4.01284E-03	4.28496E-04	2.68968E+00
11	9.73314E-02	-1.77639E-06	9.91815E-02	5.33222E-03	.00000E+00	8.54482E-03	3.85770E-04	2.48329E+00
12	6.12884E-02	4.14981E-07	6.34683E-02	6.32656E-03	.00000E+00	1.12827E-02	2.27619E-04	1.56643E+00
13	5.21527E-02	-5.72705E-07	5.41477E-02	5.85596E-03	.00000E+00	1.21320E-02	1.95190E-04	1.33341E+00
14	4.78785E-02	-1.98471E-07	5.08119E-02	8.61418E-03	.00000E+00	7.80568E-03	1.75561E-04	1.22697E+00
15	2.81867E-02	-4.57024E-06	2.87193E-02	1.63196E-03	.00000E+00	1.92742E-03	1.11247E-04	7.19535E-01
16	1.56334E-02	-3.10508E-06	1.59224E-02	8.92525E-04	.00000E+00	1.33047E-03	5.78601E-05	3.98904E-01
17	6.67428E-03	-3.99228E-06	6.91462E-03	7.23082E-04	.00000E+00	1.69296E-03	2.22116E-05	1.70683E-01
18	4.36092E-03	-1.69247E-06	4.99230E-03	1.82004E-03	.00000E+00	1.50862E-03	1.12376E-05	1.12568E-01
19	1.01122E-02	-4.68952E-06	1.05653E-02	1.29056E-03	.00000E+00	2.70100E-03	3.43897E-05	2.58742E-01
20	3.41050E-02	-9.13532E-06	3.52354E-02	3.26920E-03	.00000E+00	1.50121E-02	1.29758E-04	8.71703E-01
21	9.75682E-03	-3.55369E-06	1.06201E-02	2.39837E-03	.00000E+00	1.39644E-02	2.76321E-05	2.50869E-01
22	1.85156E-02	-3.21688E-06	2.12198E-02	7.12838E-03	.00000E+00	4.12870E-02	4.88053E-05	4.79539E-01
23	6.43097E-02	3.40352E-06	7.26599E-02	1.81208E-02	.00000E+00	8.03394E-02	1.72789E-04	1.66672E+00
24	4.91885E-02	-5.81248E-07	5.75483E-02	1.66658E-02	.00000E+00	7.92781E-02	1.03698E-04	1.28337E+00
25	2.10510E-02	-1.10419E-06	2.53804E-02	7.73739E-03	.00000E+00	4.56524E-02	3.54042E-05	5.51996E-01
26	1.38363E-02	-1.79258E-07	1.75147E-02	5.95300E-03	.00000E+00	4.20342E-02	1.74251E-05	3.64978E-01
27	2.32861E-03	-1.97389E-03	3.13751E-03	1.20719E-03	.00000E+00	1.17908E-02	1.78722E-06	6.15910E-02
28	1.73620E+00	-3.23578E-05	1.74758E+00	-1.02434E-02	2.24272E-03	4.22563E-01	1.19306E-02	4.42743E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.28114E-02	.00000E+00	2.21404E-02	2.12526E-02	3.81906E-03	-6.95225E-09	9.98900E-01
2	.00000E+00	1.93451E-01	7.55369E-03	2.60726E-01	1.85458E-01	1.55975E-02	-6.52760E-08	1.00002E+00
3	.00000E+00	2.15779E-01	7.70654E-02	2.68320E-01	2.76444E-01	1.64053E-02	-9.26605E-08	9.99987E-01
4	.00000E+00	1.23886E-01	1.14093E-01	1.84395E-01	2.30141E-01	7.83839E-03	-7.14484E-08	9.99999E-01
5	.00000E+00	1.64335E-01	2.08014E-01	4.66396E-01	3.67067E-01	5.28587E-03	-9.81703E-08	9.99991E-01
6	.00000E+00	1.77430E-01	4.24561E-01	1.25640E+00	5.95605E-01	8.37900E-03	-1.33088E-07	1.00001E+00
7	.00000E+00	8.77290E-02	6.58667E-01	1.67020E+00	7.38074E-01	8.32953E-03	-5.84223E-07	9.99991E-01
8	.00000E+00	1.35181E-02	7.75798E-01	1.70414E+00	7.76047E-01	1.33311E-02	-7.29270E-08	9.99919E-01
9	.00000E+00	9.81112E-04	7.66750E-01	1.48864E+00	7.45863E-01	2.19704E-02	4.32258E-06	9.99887E-01
10	.00000E+00	7.28723E-05	7.42281E-01	1.35746E+00	7.09332E-01	3.30968E-02	-9.69711E-07	9.99901E-01
11	.00000E+00	5.73310E-06	7.13853E-01	1.26522E+00	6.97928E-01	5.39747E-02	-1.77639E-06	9.99944E-01
12	.00000E+00	4.02740E-07	5.74548E-01	6.90431E-01	5.16131E-01	5.84324E-02	4.14981E-07	9.99974E-01

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13	.00000E+00	6.39515E-03	5.09725E-01	5.49283E-01	4.55014E-01	5.47285E-02	-5.72706E-07	9.99973E-01
14	.00000E+00	1.26735E-03	4.90928E-01	5.15033E-01	4.13336E-01	7.75980E-02	-1.98471E-07	9.99989E-01
15	.00000E+00	1.43224E-09	2.70365E-01	2.33648E-01	2.62549E-01	7.77682E-03	-4.57024E-06	1.00016E+00
16	.00000E+00	4.20564E-10	1.83941E-01	1.07447E-01	1.78314E-01	5.60015E-03	-3.10303E-06	1.00016E+00
17	.00000E+00	1.35440E-10	9.82526E-02	3.37009E-02	9.15477E-02	6.69539E-03	-3.99226E-06	1.00016E+00
18	.00000E+00	9.69708E-11	8.76509E-02	2.24768E-02	6.63507E-02	2.12958E-02	-1.69247E-06	1.00007E+00
19	.00000E+00	1.37092E-10	1.38961E-01	6.56654E-02	1.29702E-01	9.24689E-03	-4.68952E-06	1.00012E+00
20	.00000E+00	2.22952E-10	3.33454E-01	3.82420E-01	3.05574E-01	2.78352E-02	-9.13532E-06	1.00016E+00
21	.00000E+00	3.26301E-11	1.66375E-01	7.72122E-02	1.40620E-01	2.37438E-02	-3.55369E-06	1.00009E+00
22	.00000E+00	3.78584E-11	3.14078E-01	2.04921E-01	2.43881E-01	7.01732E-02	-3.21685E-06	1.00008E+00
23	.00000E+00	3.61968E-11	7.61279E-01	1.13035E+00	6.19973E-01	1.41215E-01	3.40332E-06	1.00011E+00
24	.00000E+00	9.85229E-12	8.07507E-01	9.83431E-01	6.66599E-01	1.40539E-01	-5.81248E-07	1.00009E+00
25	.00000E+00	2.88411E-12	5.35060E-01	4.00580E-01	4.57114E-01	7.79167E-02	-1.10419E-06	1.00006E+00
26	.00000E+00	2.02235E-12	4.16211E-01	4.07085E-01	3.45337E-01	7.05544E-02	-1.79258E-07	1.00006E+00
27	.00000E+00	4.81937E-13	1.37770E-01	8.29884E-02	1.17509E-01	2.02583E-02	-1.97389E-08	1.00002E+00
28	.00000E+00	1.00000E+00	1.03127E+01	1.58307E+01	1.03127E+01	1.00220E+00	-3.25389E-05	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dr**2	total flux
1	1.32552E-02	-6.95225E-09	1.26849E-02	.00000E+00	2.25261E-03	2.48146E-03	3.24050E-04	3.63558E-01
2	9.64634E-02	-6.52760E-08	9.00880E-02	.00000E+00	1.59615E-05	1.10063E-02	1.75266E-03	2.63960E+00
3	1.20666E-01	-9.26605E-08	1.12169E-01	.00000E+00	.00000E+00	1.33450E-02	1.98046E-03	3.30027E+00
4	7.44527E-02	-7.14484E-08	6.88958E-02	.00000E+00	.00000E+00	5.73192E-03	9.55047E-04	2.03559E+00
5	1.11647E-01	-9.81708E-08	1.02664E-01	.00000E+00	.00000E+00	1.65429E-03	1.11614E-03	3.05043E+00
6	2.09722E-01	-1.33088E-07	1.92774E-01	.00000E+00	.00000E+00	1.40339E-03	1.86959E-03	5.72788E+00
7	2.08569E-01	-5.84223E-07	1.93064E-01	.00000E+00	.00000E+00	1.37205E-03	1.32532E-03	5.57615E+00
8	1.48917E-01	-7.29270E-08	1.46951E-01	.00000E+00	.00000E+00	1.39834E-03	7.53056E-04	4.09517E+00
9	1.15253E-01	4.32258E-06	1.15886E-01	.00000E+00	.00000E+00	1.87880E-03	5.08675E-04	3.17644E+00
10	1.05550E-01	-9.69711E-07	1.09097E-01	.00000E+00	.00000E+00	4.01284E-03	4.62555E-04	2.91188E+00
11	9.73316E-02	-1.77639E-06	1.00814E-01	.00000E+00	.00000E+00	8.54482E-03	4.18725E-04	2.69160E+00
12	6.12884E-02	4.14981E-07	6.53688E-02	.00000E+00	.00000E+00	1.12827E-02	2.46758E-04	1.70072E+00
13	5.21527E-02	-5.72706E-07	5.58641E-02	.00000E+00	.00000E+00	1.21320E-02	2.11178E-04	1.44809E+00
14	4.78785E-02	-1.98471E-07	5.33628E-02	.00000E+00	.00000E+00	7.80568E-03	1.90960E-04	1.33566E+00
15	2.81857E-02	-4.57024E-06	2.91097E-02	.00000E+00	.00000E+00	1.92742E-03	1.19480E-04	7.79512E-01
16	1.56334E-02	-3.10303E-06	1.61490E-02	.00000E+00	.00000E+00	1.33047E-03	6.20660E-05	4.32289E-01
17	6.67428E-03	-3.99226E-06	7.12217E-03	.00000E+00	.00000E+00	1.69256E-03	2.30328E-05	1.85211E-01
18	4.36092E-03	-1.69247E-06	5.56095E-03	.00000E+00	.00000E+00	1.50362E-03	1.25116E-05	1.23629E-01
19	1.01122E-02	-4.68952E-06	1.09254E-02	.00000E+00	.00000E+00	2.70100E-03	3.70675E-05	2.81125E-01
20	3.41090E-02	-9.13532E-06	3.61650E-02	.00000E+00	.00000E+00	1.50121E-02	1.35721E-04	9.46065E-01
21	9.75683E-03	-3.55369E-06	1.13856E-02	.00000E+00	.00000E+00	1.39646E-02	3.01056E-05	2.73844E-01
22	1.85154E-02	-3.21685E-06	2.36098E-02	.00000E+00	.00000E+00	4.12870E-02	5.38324E-05	5.26215E-01
23	6.43097E-02	3.40332E-06	7.95166E-02	.00000E+00	.00000E+00	8.03394E-02	1.88464E-04	1.82508E+00
24	4.91885E-02	-5.81248E-07	6.50713E-02	.00000E+00	.00000E+00	7.92781E-02	1.13825E-04	1.41116E+00
25	2.10510E-02	-1.10419E-06	2.94098E-02	.00000E+00	.00000E+00	4.56524E-02	3.91868E-05	6.09131E-01
26	1.38363E-02	-1.79258E-07	2.12108E-02	.00000E+00	.00000E+00	4.20342E-02	1.96269E-05	4.05460E-01
27	2.32861E-03	-1.97389E-08	4.02919E-03	.00000E+00	.00000E+00	1.17908E-02	2.10219E-06	6.91608E-02
28	1.73620E+00	-3.25376E-05	1.75693E+00	.00000E+00	2.24857E-03	4.22563E-01	1.29331E-02	4.79809E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.13510E-03	5.03136E-03	5.28543E-03	2.50764E-03	3.18324E-03	5.52617E-03	3.71774E-03	1.74328E-03
2	6.91531E-04	4.96888E-03	5.78279E-03	3.44171E-03	4.29308E-03	6.15591E-03	4.33455E-03	2.14811E-03
3	1.16375E-03	5.45359E-03	5.86882E-03	2.91415E-03	3.86310E-03	6.78281E-03	4.37954E-03	1.82567E-03
4	7.93575E-04	4.28258E-03	4.98001E-03	2.38791E-03	2.82864E-03	4.80131E-03	3.32670E-03	1.79768E-03
5	8.22747E-04	4.34888E-03	4.97383E-03	2.41233E-03	2.87840E-03	4.88992E-03	3.37580E-03	1.79794E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11285E-03	1.01465E-03	1.09481E-03	8.73901E-04	7.91769E-04	1.03259E-03	3.16366E-04	1.61275E-04
2	1.79064E-03	1.95368E-03	2.04364E-03	1.60151E-03	1.42107E-03	1.69218E-03	6.26149E-04	3.43905E-04
3	1.12172E-03	1.03509E-03	1.29677E-03	1.22117E-03	1.11805E-03	1.56259E-03	3.78139E-04	1.98357E-04
4	1.19309E-03	1.09481E-03	1.03154E-03	6.77942E-04	6.01865E-04	6.41390E-04	3.11253E-04	1.61329E-04
5	1.19319E-03	1.09540E-03	1.04597E-03	7.05454E-04	6.27823E-04	6.87639E-04	3.14990E-04	1.63316E-04

INFORMATION ONLY

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.32159E-05	1.84645E-04	1.64559E-04	4.71573E-04	2.64740E-04	7.68200E-04	2.13928E-03	1.88539E-03
2	1.77285E-04	2.91583E-04	2.95430E-04	8.70172E-04	4.29408E-04	1.19092E-03	3.30816E-03	2.92166E-03
3	1.34967E-04	3.13059E-04	2.39291E-04	6.41944E-04	4.21508E-04	1.24608E-03	3.25212E-03	2.93205E-03
4	7.07468E-05	7.53990E-05	1.17095E-04	3.84825E-04	1.35908E-04	3.40228E-04	1.07862E-03	8.60599E-04
5	7.39512E-05	8.73712E-05	1.25248E-04	3.97865E-04	1.50383E-04	3.86550E-04	1.19840E-03	9.69697E-04

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.61494E-04	6.10558E-04	9.30382E-05	4.20715E-02
2	1.34549E-03	9.80382E-04	1.68602E-04	5.52724E-02
3	1.37027E-03	1.02844E-03	1.92210E-04	5.19737E-02
4	3.60308E-04	2.18504E-04	2.71435E-05	3.45382E-02
5	4.13273E-04	2.60728E-04	3.49507E-05	3.54241E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6512E+06	1.9575E+09	7.2025E-01
2	9.0000E+05	1.5116E+05	9.8844E+06	2.7974E-01
3	4.0000E-01	1.2602E-01	3.6640E+05	1.2198E-10
4	1.0000E-05			

1 560 d, second part of sas2h pass to make library

0cell averaged fluxes

Ozone	grp. 1	grp. 2	grp. 3
1	3.85825E-01	1.13679E+00	2.26610E-01
2	3.95069E-01	1.13809E+00	2.17225E-01
3	3.98022E-01	1.13838E+00	2.13005E-01
4	4.15189E-01	1.14066E+00	1.82970E-01
5	4.13500E-01	1.14041E+00	1.85886E-01

0flux disadventage factors (zone average/cell average-flux)

Ozone	grp. 1	grp. 2	grp. 3
1	9.42745E-01	9.96824E-01	1.21908E+00
2	9.55428E-01	9.97966E-01	1.16859E+00
3	9.62569E-01	9.98225E-01	1.14589E+00
4	1.00409E+00	1.00022E+00	9.84313E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

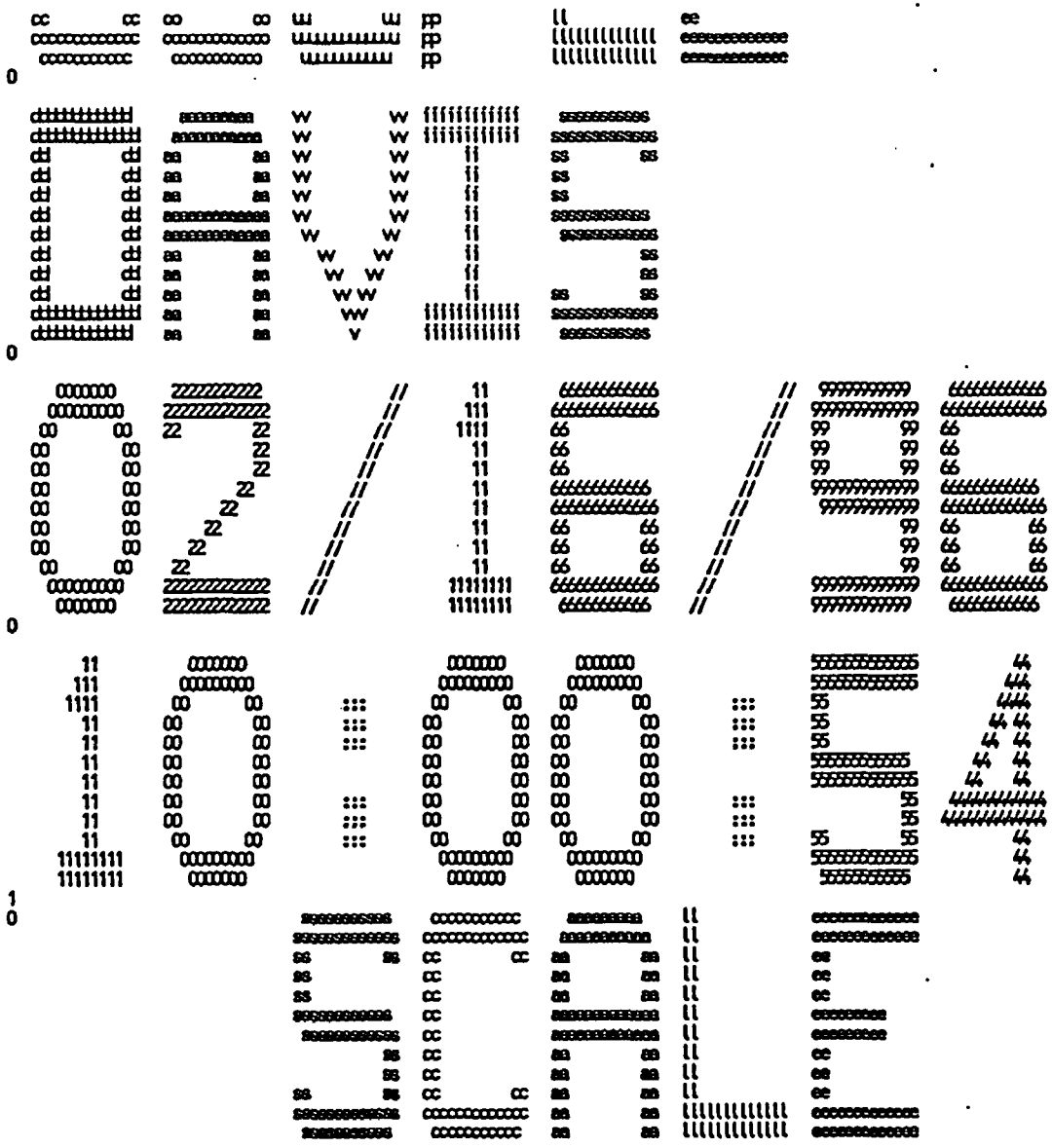
Ozone	grp. 1	grp. 2	grp. 3
1	1.71420E-02	1.82998E-02	6.62971E-03
2	1.91840E-02	2.57438E-02	1.03446E-02
3	1.92654E-02	2.22676E-02	1.04427E-02
4	1.52285E-02	1.62880E-02	3.02171E-03
5	1.54362E-02	1.65799E-02	3.40798E-03

Ozone	volume	vol. fraction
1	1.25665E+00	4.56256E-02
2	1.66687E-01	6.05165E-03
3	6.58265E-01	2.38987E-02
4	2.54624E+01	9.24428E-01
5	2.75440E+01	1.00000E+00

- elapsed time .03 min.

```
1  cccccccccc    cccccccccc   ee        ee  pppppppppp   ll          eeeeeeeeeeee
   cccccccccccc  cccccccccccc ee        ee  pppppppppppp  ll          eeeeeeeeeeee
   cc        cc  cc        cc ee        ee  pp        pp  ll          ee
   cc            cc        cc ee        ee  pp        pp  ll          ee
   cc            cc        cc ee        ee  pp        pp  ll          ee
   cc            cc        cc ee        ee  pppppppppp    ll          eeeeeeee
   cc            cc        cc ee        ee  pppppppppp    ll          eeeeeeee
   cc            cc        cc ee        ee  pp            ll          ee
   cc            cc        cc ee        ee  pp            ll          ee
```

INFORMATION ONLY



INFORMATION ONLY

```
program verification information
code system:  scale  version:  4.2

program:  c0c005
creation date:  04/27/95
library:  /neutronics/scale/exe

this is not a  scale  configuration controlled code
jobname:  davis
date of execution:  02/16/96
time of execution:  10:00:54
```

```
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       2q array has      1 entries.
0        * core allocated to array-data (by -1$$ or default) was   200000 words. *
1         * broad 3-group flux weighting factors *
0
0              therm =    .5102
0              res   =    .4194
0              fast  =   3.2255
0 user requested (see jacti) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from xnpx (normalized to thermal flux), barns

                 10010 to  10020  2.81074E-01
                 10010 tot-cap    2.81074E-01
                 50100 to  40100  2.30587E-02
                 50100 to  10010  2.30587E-02
                 50100 to  40090  3.49785E-03
                 50100 to  10020  3.49785E-03
```

INFORMATION ONLY

50100	to 30070	3.23223E+03
50100	to 20040	3.23240E+03
50100	to 10030	8.63863E-02
50100	tot-cap	3.23234E+03
50110	to 50100	1.00841E-05
50110	to 50120	4.27805E-03
50110	to 40110	1.28045E-06
50110	to 10010	1.28045E-06
50110	to 40090	1.14267E-05
50110	to 10030	1.14267E-05
50110	to 30080	1.49170E-04
50110	to 20040	1.49170E-04
50110	tot-cap	4.44997E-03
80160	to 80170	1.50153E-04
80160	to 70160	8.77965E-05
80160	to 10010	8.77965E-05
80160	to 70150	1.65583E-05
80160	to 10020	1.65583E-05
80160	to 60130	2.46487E-02
80160	to 20040	2.46487E-02
80160	to 80161	3.85045E-03
80160	tot-cap	2.49082E-02
360830	to 360820	1.99535E-02
360830	to 360810	2.10453E-09
360830	to 360840	1.52183E+02
360830	to 350830	8.20860E-04
360830	to 10010	8.20860E-04
360830	to 350820	6.58364E-06
360830	to 10020	6.58364E-06
360830	to 350810	2.30111E-06
360830	to 10030	2.30111E-06
360830	to 340810	3.72415E-08
360830	to 20030	3.72415E-08
360830	to 340800	4.37485E-05
360830	to 20040	4.37485E-05
360830	tot-cap	1.52204E+02
360850	to 360860	1.37560E+00
360850	tot-cap	1.37560E+00
380900	to 380910	6.23767E-01
380900	tot-cap	6.23767E-01
390850	to 390900	9.75890E-01
390850	tot-cap	9.75890E-01
400980	to 400940	1.28827E+01
400980	tot-cap	1.28827E+01
400940	to 400950	1.79801E-01
400940	tot-cap	1.79801E-01
400950	to 400960	2.13947E+00
400950	tot-cap	2.13947E+00
410940	to 410950	3.72018E+01
410940	tot-cap	3.72018E+01
420950	to 420960	3.72416E+01
420950	tot-cap	3.72416E+01
430990	to 430980	6.04825E-03
430990	to 431000	8.67995E+01
430990	tot-cap	8.68054E+01
441010	to 441020	2.71307E+01
441010	tot-cap	2.71307E+01
441060	to 441070	8.32121E-01
441060	tot-cap	8.32121E-01
451080	to 451020	2.19045E-03

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451030 to 451040	3.49009E+02
451030 tot-cap	3.49011E+02
451050 to 451060	8.09421E+03
451050 tot-cap	8.09421E+03
461050 to 461060	3.27097E+01
461050 tot-cap	3.27097E+01
461080 to 461090	6.58977E+01
461080 tot-cap	6.58977E+01
471090 to 471080	5.09875E-03
471090 to 471100	3.58892E+02
471090 to 461090	2.89243E-04
471090 to 10010	2.89243E-04
471090 to 451060	2.38972E-04
471090 to 20040	2.38972E-04
471090 to 471091	6.08942E-01
471090 tot-cap	3.58897E+02
511240 to 511250	1.16768E+01
511240 tot-cap	1.16768E+01
541310 to 541300	6.17635E-02
541310 to 541290	1.29149E-05
541310 to 541320	2.51254E+02
541310 to 531310	3.72501E-05
541310 to 10010	3.72501E-05
541310 to 531300	5.17946E-07
541310 to 10020	5.17946E-07
541310 to 531290	5.31105E-07
541310 to 10030	5.31105E-07
541310 to 521280	1.74336E-05
541310 to 20040	1.74336E-05
541310 tot-cap	2.51316E+02
541320 to 541310	9.97762E-03
541320 to 541300	2.11618E-05
541320 to 541330	8.96878E-01
541320 to 531320	7.62170E-05
541320 to 10010	7.62170E-05
541320 to 531310	3.21580E-07
541320 to 10020	3.21580E-07
541320 to 531300	4.33008E-03
541320 to 10030	4.33008E-03
541320 to 521290	9.37725E-07
541320 to 20040	9.37725E-07
541320 tot-cap	9.06888E-01
541350 to 541360	1.45935E+05
541350 tot-cap	1.45935E+05
541360 to 541350	1.70674E-02
541360 to 541340	5.21275E-05
541360 to 541370	1.21825E-01
541360 to 531360	3.15184E-07
541360 to 10010	3.15184E-07
541360 to 531350	1.17333E-07
541360 to 10020	1.17333E-07
541360 to 531340	2.65078E-03
541360 to 10030	2.65078E-03
541360 to 521330	2.64371E-07
541360 to 20040	2.64371E-07
541360 tot-cap	1.38945E-01
551330 to 551320	7.99233E-03
551330 to 551340	9.87234E+01
551330 to 541330	8.68658E-04
551330 to 10010	8.68658E-04

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551330	to 531300	1.3659E-05
551330	to 20040	1.3659E-05
551330	tot-cap	9.8732E+01
551340	to 551350	1.2658E+02
551340	tot-cap	1.2658E+02
551350	to 551360	2.0698E+01
551350	tot-cap	2.0698E+01
551370	to 551380	2.2226E-01
551370	tot-cap	2.2226E-01
561360	to 561370	8.7165E-01
561360	tot-cap	8.7165E-01
571390	to 571400	7.8225E+00
571390	tot-cap	7.8225E+00
581440	to 581450	1.2075E+00
581440	tot-cap	1.2075E+00
591410	to 591400	5.7271E-03
591410	to 591390	1.6455E-06
591410	to 571370	2.4639E-06
591410	to 20040	5.0891E-05
591410	to 581400	1.7467E-05
591410	to 10010	4.9766E-05
591410	to 591420	1.1612E+01
591410	to 581410	4.6890E-05
591410	to 10020	1.4591E-05
591410	to 581390	1.5302E-06
591410	to 10030	1.5302E-06
591410	to 571390	1.4778E-08
591410	to 20030	1.4778E-08
591410	to 571380	4.8427E-05
591410	tot-cap	1.1618E+01
591430	to 591440	9.5831E+01
591430	tot-cap	9.5831E+01
601430	to 601420	8.7641E-02
601430	to 601410	8.9435E-06
601430	to 581390	1.9449E-05
601430	to 20040	5.4394E-04
601430	to 591420	3.7437E-06
601430	to 10010	3.8549E-05
601430	to 601440	1.9769E+02
601430	to 591430	3.7138E-05
601430	to 10020	2.3333E-06
601430	to 591410	3.3622E-06
601430	to 10030	3.3622E-06
601430	to 581410	1.6154E-08
601430	to 20030	1.6154E-08
601430	to 581400	5.2449E-04
601430	tot-cap	1.9778E+02
601450	to 601440	1.1246E-01
601450	to 601430	1.1418E-04
601450	to 581410	8.0958E-06
601450	to 20040	2.0383E-04
601450	to 591440	2.1449E-06
601450	to 10010	1.3953E-05
601450	to 601460	7.6332E+01
601450	to 591450	1.3098E-05
601450	to 10020	1.2893E-06
601450	to 591430	2.0327E-06
601450	to 10030	2.0327E-06
601450	to 581430	4.1386E-09
601450	to 20030	4.1386E-09

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601450 to 581420	1.94735E-04
601450 tot-cap	7.64450E+01
601470 to 601480	1.82057E+02
601470 tot-cap	1.82057E+02
611470 to 611460	3.07682E-02
611470 to 611450	9.60014E-05
611470 to 591430	8.52691E-06
611470 to 20040	7.90909E-05
611470 to 601460	1.17661E-05
611470 to 10010	2.68168E-05
611470 to 611480	5.65792E+02
611470 to 601470	2.39051E-05
611470 to 10020	8.85435E-06
611470 to 601450	3.34307E-06
611470 to 10030	3.34307E-06
611470 to 591450	5.02640E-09
611470 to 20030	5.02640E-09
611470 to 591440	7.05638E-05
611470 tot-cap	5.65829E+02
611480 to 611490	1.19845E+04
611480 tot-cap	1.19845E+04
621470 to 621460	8.02674E-02
621470 to 621450	7.22730E-03
621470 to 601430	6.27083E-05
621470 to 20040	1.20681E-03
621470 to 611460	1.45664E-04
621470 to 10010	2.08288E-04
621470 to 621480	2.26598E+02
621470 to 611470	1.83730E-04
621470 to 10020	1.21108E-04
621470 to 611450	1.30043E-04
621470 to 10030	1.30043E-04
621470 to 601450	5.98351E-06
621470 to 20030	5.98351E-06
621470 to 601440	1.14410E-03
621470 to 621471	1.59214E+00
621470 tot-cap	2.26682E+02
621490 to 621480	4.53697E-02
621490 to 621470	3.60249E-05
621490 to 621500	4.49604E+04
621490 to 611490	4.64906E-04
621490 to 10010	4.64906E-04
621490 to 601460	4.64906E-04
621490 to 20040	4.64906E-04
621490 tot-cap	4.49604E+04
621500 to 621510	1.31000E+02
621500 tot-cap	1.31000E+02
621510 to 621500	1.51533E-01
621510 to 621490	1.35559E-04
621510 to 601470	1.52300E-05
621510 to 20040	1.18783E-04
621510 to 611500	1.85620E-06
621510 to 10010	1.44460E-05
621510 to 621520	4.90133E+03
621510 to 611510	1.33119E-05
621510 to 10020	7.22131E-07
621510 to 611490	1.31243E-06
621510 to 10030	1.31243E-06
621510 to 601490	1.35205E-09
621510 to 20030	1.35205E-09

INFORMATION ONLY

621510 to 601480	1.03653E-04
621510 tot-cap	4.90148E+03
621520 to 621510	1.81528E-02
621520 to 621500	1.22659E-04
621520 to 601480	2.74143E-06
621520 to 20040	1.13869E-05
621520 to 611510	7.86272E-07
621520 to 10010	2.32027E-06
621520 to 621530	7.15683E+02
621520 to 611520	2.06111E-06
621520 to 10020	5.27119E-07
621520 to 611500	1.37091E-07
621520 to 10030	1.37091E-07
621520 to 601500	4.15464E-10
621520 to 20030	4.15464E-10
621520 to 601490	8.66549E-06
621520 tot-cap	7.15702E+02
631530 to 631520	1.76307E-02
631530 to 631510	2.63281E-05
631530 to 611490	4.21162E-05
631530 to 20040	6.08376E-04
631530 to 621520	7.37617E-06
631530 to 10010	6.22533E-05
631530 to 631540	6.01907E+02
631530 to 621530	5.97147E-05
631530 to 10020	4.85759E-06
631530 to 621510	1.08846E-06
631530 to 10030	1.08846E-06
631530 to 611510	2.48821E-08
631530 to 20030	2.48821E-08
631530 to 611500	5.66260E-04
631530 tot-cap	6.01925E+02
631540 to 631530	2.81847E-02
631540 to 631520	1.01265E-05
631540 to 611500	9.84430E-11
631540 to 20040	7.29194E-04
631540 to 621530	2.21619E-06
631540 to 10010	1.18422E-03
631540 to 631550	1.05700E+03
631540 to 621540	1.18422E-03
631540 to 10020	2.21498E-06
631540 to 621520	3.75205E-06
631540 to 10030	3.75205E-06
631540 to 611520	1.59074E-08
631540 to 20030	1.59074E-08
631540 to 611510	7.29194E-04
631540 tot-cap	1.05703E+03
631550 to 631540	2.31407E-02
631550 to 631530	6.47992E-05
631550 to 611510	1.74437E-06
631550 to 20040	8.58506E-06
631550 to 621540	3.53338E-06
631550 to 10010	7.42022E-06
631550 to 631560	2.53912E+03
631550 to 621550	5.70059E-06
631550 to 10020	1.81415E-06
631550 to 621530	6.00547E-07
631550 to 10030	6.00547E-07
631550 to 611530	1.36117E-10
631550 to 20030	1.36117E-10

631550	to 611520	6.84069E-06
631550	tot-cap	2.53915E+03
641550	to 641560	1.68507E+04
641550	tot-cap	1.68507E+04
922340	to 922330	6.06255E-03
922340	fission	4.24957E+00
922340	nu-sigf	1.11695E+01
922340	to 922320	8.79035E-05
922340	to 922350	1.80808E+02
922340	to 922341	2.85447E+00
922340	tot-cap	1.84563E+02
922350	to 922340	2.77011E-02
922350	fission	3.58046E+02
922350	nu-sigf	8.67034E+02
922350	to 922330	2.64795E-05
922350	to 922360	8.43002E+01
922350	to 922351	8.11872E-02
922350	tot-cap	4.42574E+02
922360	to 922350	3.08839E-02
922360	fission	1.82111E+00
922360	nu-sigf	4.99822E+00
922360	to 922340	4.11580E-04
922360	to 922370	7.15549E+01
922360	to 922361	3.12284E+00
922360	tot-cap	7.34073E+01
922380	to 922370	6.16837E-02
922380	fission	9.12398E-01
922380	nu-sigf	2.56852E+00
922380	to 922360	3.98626E-04
922380	to 922390	8.18410E+00
922380	tot-cap	9.15858E+00
932370	to 932360	1.40615E-02
932370	fission	4.92771E+00
932370	nu-sigf	1.48387E+01
932370	to 932350	5.37949E-05
932370	to 932380	2.92721E+02
932370	to 932371	7.31983E-01
932370	tot-cap	2.97663E+02
942380	to 942370	2.26019E-03
942380	fission	2.15714E+01
942380	nu-sigf	6.11385E+01
942380	to 942360	1.26498E-05
942380	to 942390	2.62479E+02
942380	to 942381	2.86197E+00
942380	tot-cap	2.84053E+02
942390	to 942380	1.19732E-02
942390	fission	8.43174E+02
942390	nu-sigf	2.42426E+03
942390	to 942370	2.03645E-05
942390	to 942360	2.01876E-03
942390	to 942400	4.73873E+02
942390	tot-cap	1.31706E+03
942400	to 942390	5.62889E-03
942400	fission	5.63826E+00
942400	nu-sigf	1.76464E+01
942400	to 942380	5.49290E-05
942400	to 942410	1.61630E+03
942400	tot-cap	1.62194E+03
942410	to 942400	7.11470E-02
942410	fission	8.93907E+02

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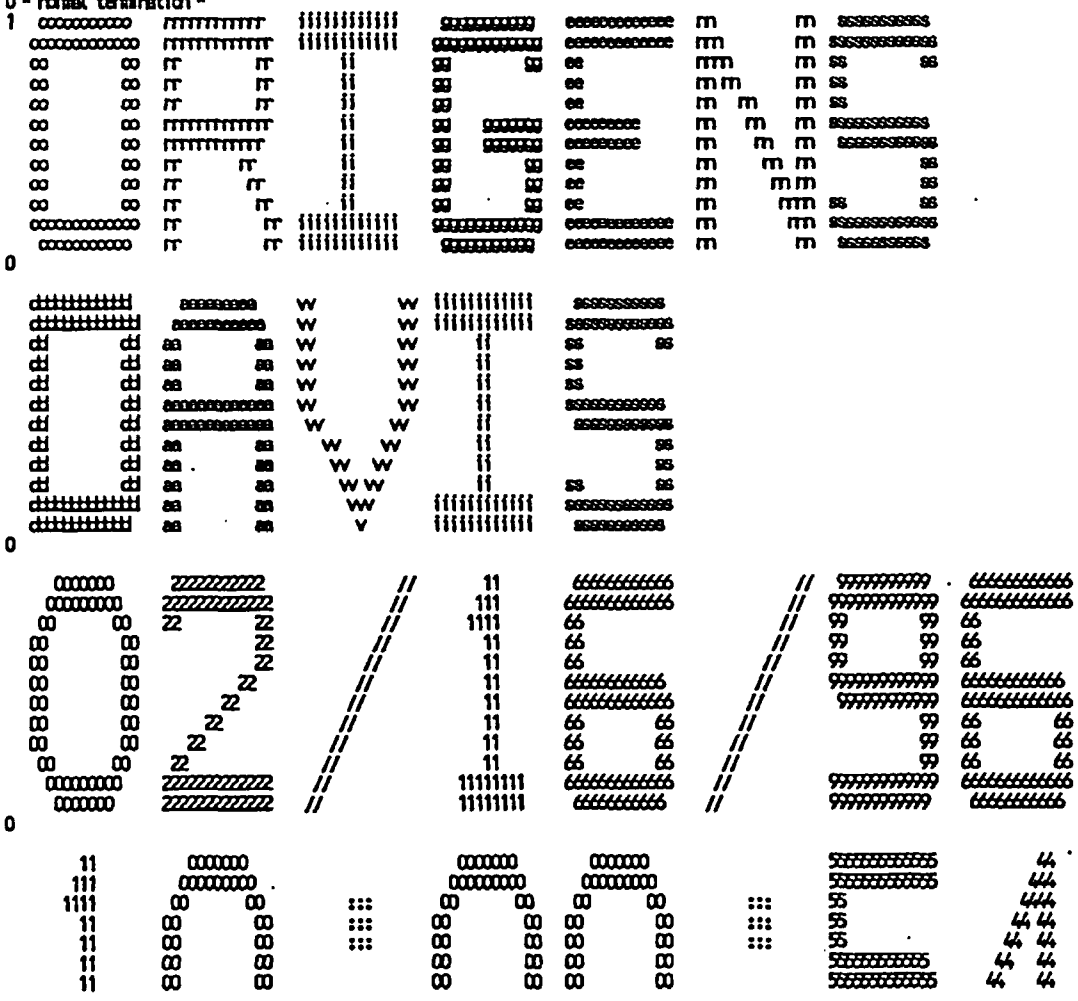
```
                    942410 nu-sigf    2.62283E+03
                    942410 to 942390  1.17533E-04
                    942410 to 942420  2.93295E+02
                    942410 tot-cap    1.18727E+03
                    942420 to 942410  2.29460E-02
                    942420 fission    4.27076E+00
                    942420 nu-sigf    1.33775E+01
                    942420 to 942400  2.78960E-04
                    942420 to 942430  3.21212E+02
                    942420 tot-cap    3.25606E+02
                    952410 fission    1.21625E+01
                    952410 nu-sigf    3.92645E+01
                    952410 to 952420  1.01112E+03
                    952410 tot-cap    1.02528E+03
                    952430 fission    3.29622E+00
                    952430 nu-sigf    1.10803E+01
                    952430 to 952440  4.07930E+02
                    952430 tot-cap    4.11227E+02
                    962440 to 962430  5.51456E-03
                    962440 fission    1.47615E+01
                    962440 nu-sigf    4.95557E+01
                    962440 to 962420  5.49934E-05
                    962440 to 962450  1.36322E+02
                    962440 to 962441  3.65043E+00
                    962440 tot-cap    1.51089E+02
Othe reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                  in the search of library number 3
Othe reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
Othe reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
Othe fission product transitions for  922340 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922340 to 922341 was not used, because  922341 is not in library., (in subr pool)
Othe reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
Othe fission product transitions for  922360 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
Othe fission product transitions for  952370 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  952370 to 952371 was not used, because  952371 is not in library., (in subr pool)
Othe fission product transitions for  942380 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
Othe fission product transitions for  942400 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  942420 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  952410 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
```

INFORMATION ONLY

```
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  962440 to 962441 was not used, because  962441 is not in library., (in subr pool)
1
0                    case completed.  date,   2/16/1996
0 * normal termination *
```



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```
 11      00      00      :::     00      00  00      00      :::             55  ////////////
 11      00      00      :::     00      00  00      00      :::             55  ////////////
 11      00      00      :::     00      00  00      00      :::     55      55      44
11111111  00000000                00000000    00000000                55555555555     44
11111111  000000                  000000      000000                  5555555555      44
1
0                    SSSSSSSSSS   CCCCCCCCCC   AAAAAAAA   LL          EEEEEEEEEEE
                    SSSSSSSSSSS  CCCCCCCCCCC  AAAAAAAAA  LL          EEEEEEEEEEE
                    SS       SS  CC       CC  AA     AA  LL          EE
                    SS           CC           AA     AA  LL          EE
                    SS           CC           AA     AA  LL          EE
                    SSSSSSSSSSS  CC           AAAAAAAAAAA LL          EEEEEEEEE
                     SSSSSSSSSSS CC           AAAAAAAAAAA LL          EEEEEEEEE
                            SS   CC           AA     AA  LL          EE
                            SS   CC           AA     AA  LL          EE
                    SS      SS   CC       CC  AA     AA  LL          EE
                    SSSSSSSSSSS  CCCCCCCCCCC  AA     AA  LLLLLLLLLLLL EEEEEEEEEEE
                     SSSSSSSSSS   CCCCCCCCCC  AA     AA  LLLLLLLLLLLL EEEEEEEEEEE
```

program verification information

code system: scale version: 4.2

program: c0c004

creation date: 04/27/95

library: /nautronics/scale/exe

this is not a scale configuration controlled code

jobname: davis

date of execution: 02/16/96

time of execution: 10:00:54

```
1
0     -1q array has    1 entries.
0      0q array has    1 entries.
0      0q array has    1 entries.
0      0q array has    1 entries.
0      0q array has    1 entries.
```

INFORMATION ONLY

```
0        dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0            short-lived split test fraction, qn =    9.1188E-04
0            half-norm of matrix used, an =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0       5q array has     12 entries.
1library information...

         cross-section data taken from position number  1 of library on unit 15.

         pass  4
         pass  1
         pass  0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass  1
         pass  0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrun, for each of the above passes
           pass 0 applies start-up fuel densities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ************************************************************************
         *                                                                      *
         *          prelim lwr origen-s binary working library--id = 1143       *
         *        made from modified card-image origen-s libraries of scale 4.2 *
         *      data from the light element, actinide, and fission product libraries *
         *        decay data, including gamma and total energy, are from endf/b-vi *
         *                                                                      *
         *      neutron flux spectrum factors and cross sections were produced from *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                      *
         *                fission product yields are from endf/b-v              *
         *                                                                      *
         *              photon libraries use an 18-energy-group structure       *
         *             the photon data are from the master photon data base,    *
         *              produced to include bremsstrahlung from u2 matrix       *
         *                                                                      *
         *       see information above this box (if present) for later updates  *
         *                                                                      *
         ************************************************************************
         *                                                                      *
0        ************************************************************************
0                .other identification and sizes of library.
0                 data set name:  ft15f001
0              2/16/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7985    number of nonzero off-diagonal matrix elements
0        ************************************************************************
1
```

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sas2h: babcock wilcox 15x15, 3.00w%, 20g-u/mtu burn high temp actinides page 1
power= 8.466E-06mw, burnup=2.0318E-03mwd, flux= 1.61E+13n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = converted to atoms/(barn-cm)

	charge	520.0 d	560.0 d	600.0 d	640.0 d	640.1 d	680.1 d	720.1 d
he 4	4.44E-09	5.87E-09	7.66E-09	9.90E-09	1.27E-08	1.27E-08	1.60E-08	2.00E-08
u230	2.18E-21	2.67E-21	3.19E-21	3.75E-21	4.39E-21	4.38E-21	5.10E-21	5.89E-21
u231	4.75E-20	5.79E-20	6.77E-20	7.88E-20	9.08E-20	9.04E-20	1.04E-19	1.19E-19
u232	6.36E-13	7.56E-13	8.91E-13	1.04E-12	1.21E-12	1.21E-12	1.40E-12	1.61E-12
u233	2.43E-11	2.60E-11	2.78E-11	2.92E-11	3.07E-11	3.07E-11	3.21E-11	3.34E-11
u234	4.95E-06	4.90E-06	4.88E-06	4.80E-06	4.75E-06	4.75E-06	4.70E-06	4.66E-06
u235	5.15E-04	5.00E-04	4.90E-04	4.78E-04	4.67E-04	4.67E-04	4.56E-04	4.44E-04
u236	3.55E-05	3.77E-05	3.99E-05	4.20E-05	4.40E-05	4.40E-05	4.60E-05	4.79E-05
u237	5.10E-08	5.41E-08	5.63E-08	5.83E-08	6.03E-08	6.02E-08	6.23E-08	6.43E-08
u238	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02
u239	2.52E-09	5.85E-09	5.84E-09	5.85E-09	5.85E-09	1.97E-09	5.85E-09	5.89E-09
u240	.00E+00	7.72E-35	1.71E-34	3.54E-34	7.03E-34	7.03E-34	1.34E-33	2.43E-33
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	1.80E-14	2.17E-14	2.57E-14	2.99E-14	3.45E-14	3.45E-14	3.94E-14	4.46E-14
np236m	2.94E-14	3.49E-14	3.87E-14	4.27E-14	4.67E-14	4.59E-14	5.09E-14	5.52E-14
np236	1.54E-12	1.88E-12	2.27E-12	2.66E-12	3.15E-12	3.15E-12	3.66E-12	4.21E-12
np237	1.60E-06	1.79E-06	1.98E-06	2.19E-06	2.39E-06	2.39E-06	2.60E-06	2.82E-06
np238	1.94E-09	2.21E-09	2.45E-09	2.70E-09	2.98E-09	2.94E-09	3.23E-09	3.50E-09
np239	8.23E-07	8.44E-07	8.44E-07	8.44E-07	8.44E-07	8.42E-07	8.45E-07	8.46E-07
np240m	.00E+00	6.59E-37	1.46E-36	3.04E-36	6.02E-36	6.02E-36	1.14E-35	2.08E-35
np240	1.04E-11	1.48E-11	1.48E-11	1.49E-11	1.49E-11	9.84E-12	1.49E-11	1.49E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.89E-12	2.29E-12	2.74E-12	3.22E-12	3.75E-12	3.75E-12	4.31E-12	4.92E-12
pu237	1.37E-13	1.52E-13	1.67E-13	1.81E-13	1.95E-13	1.95E-13	2.09E-13	2.23E-13
pu238	1.23E-07	1.49E-07	1.78E-07	2.10E-07	2.46E-07	2.46E-07	2.84E-07	3.26E-07
pu239	7.50E-05	7.98E-05	8.32E-05	8.69E-05	9.04E-05	9.04E-05	9.36E-05	9.65E-05
pu240	9.39E-06	1.05E-05	1.17E-05	1.29E-05	1.40E-05	1.40E-05	1.51E-05	1.62E-05
pu241	3.61E-06	4.22E-06	4.90E-06	5.62E-06	6.40E-06	6.40E-06	7.22E-06	8.09E-06
pu242	2.08E-07	2.68E-07	3.37E-07	4.17E-07	5.07E-07	5.07E-07	6.09E-07	7.24E-07
pu243	2.52E-11	3.55E-11	4.47E-11	5.53E-11	6.74E-11	6.18E-11	8.10E-11	9.64E-11
pu244	1.64E-24	3.84E-24	8.49E-24	1.77E-23	3.51E-23	3.51E-23	6.65E-23	1.21E-22
pu245	1.14E-30	2.74E-30	6.06E-30	1.27E-29	2.51E-29	2.41E-29	4.78E-29	8.69E-29
pu246	.00E+00	9.00E-33	2.10E-32	4.44E-32	8.99E-32	8.98E-32	1.73E-31	3.20E-31
am239	8.99E-19	1.23E-18	1.53E-18	1.88E-18	2.27E-18	2.19E-18	2.71E-18	3.20E-18
am240	3.98E-16	5.29E-16	6.62E-16	8.13E-16	9.83E-16	9.75E-16	1.17E-15	1.38E-15
am241	5.98E-08	7.67E-08	9.59E-08	1.18E-07	1.42E-07	1.42E-07	1.69E-07	1.99E-07
am242m	9.19E-10	1.24E-09	1.62E-09	2.08E-09	2.61E-09	2.61E-09	3.21E-09	3.90E-09
am242	6.66E-11	8.66E-11	1.08E-10	1.33E-10	1.61E-10	1.56E-10	1.92E-10	2.26E-10
am243	9.57E-09	1.36E-08	1.88E-08	2.49E-08	3.28E-08	3.28E-08	4.18E-08	5.28E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.12E-12	4.66E-12	6.39E-12	8.55E-12	1.12E-11	1.07E-11	1.44E-11	1.82E-11
am245	1.05E-28	2.48E-28	5.45E-28	1.13E-27	2.21E-27	2.21E-27	4.14E-27	7.47E-27
am246	.00E+00	2.25E-35	5.24E-35	1.11E-34	2.25E-34	2.25E-34	4.33E-34	8.00E-34
cm241	2.56E-19	4.04E-19	6.01E-19	8.61E-19	1.20E-18	1.19E-18	1.62E-18	2.14E-18
cm242	4.63E-09	6.30E-09	8.35E-09	1.08E-08	1.37E-08	1.37E-08	1.70E-08	2.09E-08
cm243	3.84E-11	5.72E-11	8.22E-11	1.14E-10	1.55E-10	1.55E-10	2.05E-10	2.65E-10
cm244	4.58E-10	7.10E-10	1.06E-09	1.54E-09	2.16E-09	2.16E-09	2.97E-09	3.99E-09
cm245	5.42E-12	9.12E-12	1.47E-11	2.27E-11	3.39E-11	3.39E-11	4.94E-11	7.01E-11
cm246	1.18E-13	2.15E-13	3.73E-13	6.23E-13	1.00E-12	1.00E-12	1.56E-12	2.37E-12
cm247	4.34E-16	8.72E-16	1.64E-15	2.94E-15	5.06E-15	5.06E-15	8.40E-15	1.35E-14

1

sas2h: babcock wilcox 15x15, 3.00w%, 20g-u/mtu burn high temp actinides page 2
power= 8.466E-06mw, burnup=2.0318E-03mwd, flux= 1.61E+13n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = converted to atoms/(barn-cm)

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```
            change  520.0 d  560.0 d  600.0 d  640.0 d  640.1 d  680.1 d  720.1 d
    cm248  7.07E-18 1.55E-17 3.16E-17 6.13E-17 1.13E-16 1.13E-16 2.01E-16 3.44E-16
    cm249  3.31E-23 1.01E-22 2.06E-22 3.99E-22 7.39E-22 4.98E-22 1.31E-21 2.25E-21
    cm250  4.02E-27 9.57E-27 2.13E-26 4.45E-26 8.84E-26 8.84E-26 1.68E-25 3.07E-25
    cm251   .00E+00 2.28E-34 5.06E-34 1.06E-33 2.11E-33 4.61E-34 4.01E-33 7.33E-33
  totals   2.26E-02 2.26E-02 2.26E-02 2.25E-02 2.25E-02 2.25E-02 2.25E-02 2.25E-02
0   flux            1.60E+13 1.60E+13 1.60E+13 1.61E+13   .00E+00 1.61E+13 1.61E+13
0 .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0    .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *
0                                  table of contents for material tables
0                                    case or subcase printed      page

                                          1                1
0rdset          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7935          0          5         99          2         16         96         18         18
          18          0         71
0      56q array has      2 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      57q array has      3 entries.
0       1q array has     20 entries.
0       1q array has     10 entries.
    l90  97376
    l116  60826
    l32  33663 nudata (library) storage size
    l44  33734
    l103  75953
0      58q array has      4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
    l140  66991
    used  101044 in size  200000
0jqpt           12
           0          0          0          0          0          0          0          0          0          0
           0          0
0thems          4
  5.10350E-01 4.19440E-01 3.22549E+00 1.000000E-31
0rcn            5
        7935         20          6         18       1697
0nam            19
           7          7          0          0          1          1          0          0          0          0
          21        100       1697          4          3         74          4          1          0
0tconst         5
  8.640000E+04 4.800385E+02  .000000E+00  .000000E+00 1.000000E-08
```

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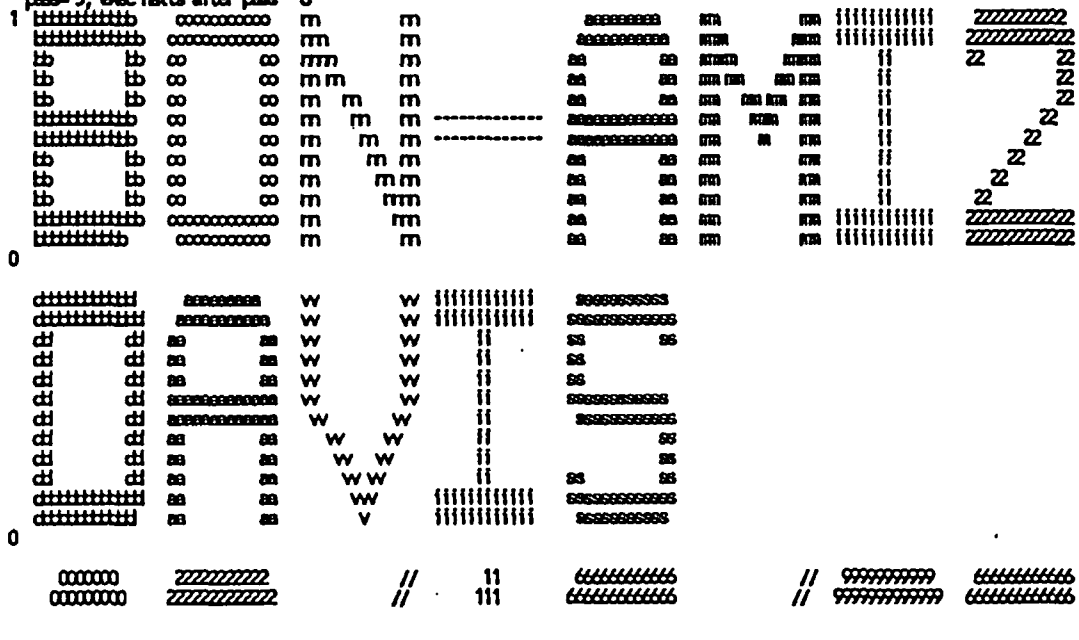
```
0nzero          4
          0       689       129       879
0pow            3
  .000000E+00 .000000E+00 .000000E+00
0 lirp          9
          6         0        51        26         2      3000      1000      1697        94
 n-gamma, fission and total nev/fission =          6.1975E+00    1.9583E+02    2.0203E+02
 start of interval flux =        1.60283E+13
 n-gamma, fission and total nev/fission =          6.2896E+00    1.9593E+02    2.0222E+02
 start of interval flux =        1.60309E+13
 n-gamma, fission and total nev/fission =          6.3902E+00    1.9602E+02    2.0241E+02
 start of interval flux =        1.60378E+13
 n-gamma, fission and total nev/fission =          6.4906E+00    1.9612E+02    2.0261E+02
 start of interval flux =        1.60502E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total nev/fission =          6.6029E+00    1.9621E+02    2.0281E+02
 start of interval flux =        1.60661E+13
 n-gamma, fission and total nev/fission =          6.6859E+00    1.9629E+02    2.0298E+02
 start of interval flux =        1.60897E+13
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has     20 entries.
0requested parm=halt8,skipcellwt,skipshipdata
  pass= 5, exec halts after pass   8
```



INFORMATION ONLY

```
  00     00  22      22        //      1111   66              //  99     99  66
 00      00         22        //       11    66              //  99     99  66
00       00        22        //        11    66              //  99     99  66
00       00      22         //         11    66666666666     //  9999999999  66666666666
00       00    22           //         11    66666666666     //   99999999   66666666666
00       00  22             //         11    66     66       //        99    66     66
 00     00  22              //         11    66     66       //        99    66     66
  00000000   2222222222222  //         11    66     66       //        99    66     66
   000000    2222222222222  //      11111111 66666666666     //  9999999999  66666666666
0
     11      000000                   000000   000000                 5555555555  99999999
    111     00000000                 00000000 00000000                5555555555  9999999999
   1111     00     00      :::      00     00 00     00      :::     55          99     99
    11      00     00      :::      00     00 00     00      :::     55          99     99
    11      00     00      :::      00     00 00     00      :::     55          99     99
    11      00     00               00     00 00     00              5555555555  9999999999
    11      00     00               00     00 00     00              5555555555  99999999
    11      00     00      :::      00     00 00     00      :::             55        99
    11      00     00      :::      00     00 00     00      :::             55        99
    11      00     00      :::      00     00 00     00      :::     55      55        99
 11111111  00000000                00000000 00000000                5555555555  9999999999
 11111111   000000                  000000   000000                 5555555555  9999999999
1
0
                      ssssssssss  cccccccccc  aaaaaaaa  ll          eeeeeeeeeeee
                     ssssssssssss cccccccccccc aaaaaaaaaa ll        eeeeeeeeeeee
                     ss      ss   cc      cc   aa      aa ll        ee
                     ss           cc           aa      aa ll        ee
                     ss           cc           aa      aa ll        ee
                     ssssssssss   cc           aaaaaaaaaaaa ll      eeeeeeeeee
                      ssssssssss  cc           aaaaaaaaaaaa ll      eeeeeeeeee
                             ss   cc           aa      aa ll        ee
                             ss   cc           aa      aa ll        ee
                     ss      ss   cc      cc   aa      aa ll        ee
                     ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                      ssssssssss  cccccccccc   aa      aa llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
*****                                                       *****
```

program verification information

code system: scale version: 4.2

program: c0c008

creation date: 04/27/95

library: /neutronics/scale/exe

INFORMATION ONLY

```
*****                                                                  *****
*****   this is not a   scale   configuration controlled code          *****
*****                                                                  *****
*****            jobname:  davis                                       *****
*****                                                                  *****
*****   date of execution:  02/16/96                                   *****
*****                                                                  *****
*****   time of execution:  10:00:59                                   *****
*****                                                                  *****
*****                                                                  *****
************************************************************************
************************************************************************
************************************************************************
```

```
1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has      6 entries.
0       2q array has      2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 raw library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0iam--number of zones or material regions                       4
0ms--mixing table length                                       66
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.0000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     66 entries.
0       4q array has     66 entries.
0       5q array has     66 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     66 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  raw identifier
   1       1      92235    4.44498E-04        92235
   2       1      92234    4.65638E-06        92234
   3       1      92236    4.78943E-05        92236
   4       1      92238    2.18734E-02        92238
   5       1       8016    4.55359E-02         8016
   6       3       8016    2.09710E-02            6
   7       1      36083    1.21060E-06        36083
   8       1      36085    5.82772E-07        36085
   9       1      38090    1.32013E-05        38090
  10       1      39089    1.02004E-05        39089
  11       1      42095    1.31680E-05        42095
  12       1      40093    1.03725E-05        40093
  13       1      40094    1.62229E-05        40094
  14       1      40095    2.03583E-06        40095
  15       1      41094    7.53797E-12        41094
  16       1      43099    1.58444E-05        43099
  17       1      45103    8.51543E-06        45103
```

INFORMATION ONLY

18	1	45105	2.07139E-08	45105
19	1	44101	1.42308E-05	44101
20	1	44106	2.14911E-06	44106
21	1	46105	5.27789E-06	46105
22	1	46108	1.39834E-06	46108
23	1	47109	9.89759E-07	47109
24	1	51124	2.30439E-10	51124
25	1	54131	7.31080E-06	54131
26	1	54132	1.32259E-05	54132
27	1	54135	6.67573E-09	54135
28	1	54136	2.70588E-05	54136
29	1	55134	6.68995E-07	55134
30	1	55135	8.57012E-06	55135
31	1	55137	1.68957E-05	55137
32	1	56136	1.31478E-07	56136
33	1	57139	1.67362E-05	57139
34	1	59141	1.43133E-05	59141
35	1	59143	3.77677E-07	59143
36	1	58144	6.39792E-06	58144
37	1	60143	1.33774E-05	60143
38	1	60145	9.77101E-06	60145
39	1	61147	3.64313E-06	61147
40	1	61148	1.04656E-08	61148
41	1	60147	1.30684E-07	60147
42	1	62147	1.01929E-06	62147
43	1	62149	8.40498E-08	62149
44	1	62150	3.35633E-06	62150
45	1	62151	3.68860E-07	62151
46	1	62152	1.63140E-06	62152
47	1	64155	1.63702E-09	64155
48	1	63153	9.03257E-07	63153
49	1	63154	1.63879E-07	63154
50	1	63155	9.91552E-08	63155
51	2	40302	4.25156E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	1.73735E-05	55133
56	1	95237	2.81758E-06	95237
57	1	94238	3.26250E-07	94238
58	1	94239	9.65273E-05	94239
59	1	94240	1.62385E-05	94240
60	1	94241	8.08957E-06	94241
61	1	94242	7.23719E-07	94242
62	1	95241	1.99179E-07	95241
63	1	95243	5.27834E-08	95243
64	1	96244	3.99487E-09	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05844E-01	0
2	4	4.78790E-01	2.93000E+02	5.49010E-01	0
3	2	5.46100E-01	6.50000E+02	.00000E+00	0
4	3	8.13968E-01	6.07600E+02	.00000E+00	0

7711 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonsai will copy from logical 12 to logical 1

Ocopy 999 1/v cross sectio from log 12 to log 18 bondarenko trigger 0

Ocopy 999 1/v cross sectio from log 18 to log 1 bondarenko trigger 0

Ocopy 999 1/v cross sectio from log 18 to log 1 bondarenko trigger 0

INFORMATION ONLY

Copy	1001	hydrogen	from	log	12	to	log	1	bondarenko trigger 0
Copy	5010	b-10 1273 219rgp	from	log	12	to	log	1	bondarenko trigger 0
Copy	5011	boron-11	from	log	12	to	log	1	bondarenko trigger 0
Copy	8016	oxygen-16	from	log	12	to	log	18	bondarenko trigger 0
Copy	8016	oxygen-16	from	log	18	to	log	1	bondarenko trigger 0
Copy	8016	oxygen-16	from	log	18	to	log	1	bondarenko trigger 0
Copy	36083	kr-83	from	log	12	to	log	1	bondarenko trigger 0
Copy	36085	kr-85	from	log	12	to	log	1	bondarenko trigger 0
Copy	38090	sr-90	from	log	12	to	log	1	bondarenko trigger 0
Copy	39089	y-89	from	log	12	to	log	1	bondarenko trigger 0
Copy	40093	zr-93	from	log	12	to	log	1	bondarenko trigger 0
Copy	40094	zr-94	from	log	12	to	log	1	bondarenko trigger 0
Copy	40095	zr-95	from	log	12	to	log	1	bondarenko trigger 0
Copy	40302	zircalloy	from	log	12	to	log	1	bondarenko trigger 0
Copy	41094	nb-94	from	log	12	to	log	1	bondarenko trigger 0
Copy	42095	mo-95	from	log	12	to	log	1	bondarenko trigger 0
Copy	43099	tc-99	from	log	12	to	log	1	bondarenko trigger 0
Copy	44101	ru-101	from	log	12	to	log	1	bondarenko trigger 0
Copy	44106	ru-106	from	log	12	to	log	1	bondarenko trigger 0
Copy	45103	rh-103	from	log	12	to	log	1	bondarenko trigger 0
Copy	45105	rh-105	from	log	12	to	log	1	bondarenko trigger 0
Copy	46105	pd-105	from	log	12	to	log	1	bondarenko trigger 0
Copy	46108	pd-108	from	log	12	to	log	1	bondarenko trigger 0
Copy	47109	silver-109	from	log	12	to	log	1	bondarenko trigger 0
Copy	51124	sb-124	from	log	12	to	log	1	bondarenko trigger 0
Copy	54131	xe-131	from	log	12	to	log	1	bondarenko trigger 0
Copy	54132	xe-132	from	log	12	to	log	1	bondarenko trigger 0
Copy	54135	xenon-135	from	log	12	to	log	1	bondarenko trigger 0
Copy	54136	xe-136	from	log	12	to	log	1	bondarenko trigger 0
Copy	55133	cesium-133	from	log	12	to	log	1	bondarenko trigger 0
Copy	55134	cs-134	from	log	12	to	log	1	bondarenko trigger 0
Copy	55135	cs-135	from	log	12	to	log	1	bondarenko trigger 0
Copy	55137	cs-137	from	log	12	to	log	1	bondarenko trigger 0
Copy	56136	ba-136	from	log	12	to	log	1	bondarenko trigger 0
Copy	57139	la-139	from	log	12	to	log	1	bondarenko trigger 0
Copy	58144	ce-144	from	log	12	to	log	1	bondarenko trigger 0
Copy	59141	pr-141	from	log	12	to	log	1	bondarenko trigger 0
Copy	59143	pr-143	from	log	12	to	log	1	bondarenko trigger 0
Copy	60143	nd-143	from	log	12	to	log	1	bondarenko trigger 0
Copy	60145	nd-145	from	log	12	to	log	1	bondarenko trigger 0
Copy	60147	nd-147	from	log	12	to	log	1	bondarenko trigger 0
Copy	61147	pm-147	from	log	12	to	log	1	bondarenko trigger 0
Copy	61148	pm-148	from	log	12	to	log	1	bondarenko trigger 0
Copy	62147	sm-147	from	log	12	to	log	1	bondarenko trigger 0
Copy	62149	sm-149	from	log	12	to	log	1	bondarenko trigger 0
Copy	62150	sm-150	from	log	12	to	log	1	bondarenko trigger 0
Copy	62151	sm-151	from	log	12	to	log	1	bondarenko trigger 0
Copy	62152	sm-152	from	log	12	to	log	1	bondarenko trigger 0
Copy	63153	eu-153	from	log	12	to	log	1	bondarenko trigger 0
Copy	63154	eu-154	from	log	12	to	log	1	bondarenko trigger 0
Copy	63155	eu-155	from	log	12	to	log	1	bondarenko trigger 0
Copy	64155	gd-155	from	log	12	to	log	1	bondarenko trigger 0
Copy	92234	u-234 1043 sigo=	from	log	12	to	log	1	bondarenko trigger 0
Copy	92235	uranium-235	from	log	12	to	log	1	bondarenko trigger 0
Copy	92236	u-236 1163 sigo=	from	log	12	to	log	1	bondarenko trigger 0
Copy	92238	uranium-238	from	log	12	to	log	1	bondarenko trigger 0
Copy	93237	neptunium-237	from	log	12	to	log	1	bondarenko trigger 0
Copy	94238	pu-238 1050 sigo	from	log	12	to	log	1	bondarenko trigger 0
Copy	94239	plutonium-239	from	log	12	to	log	1	bondarenko trigger 0
Copy	94240	plutonium-240	from	log	12	to	log	1	bondarenko trigger 0

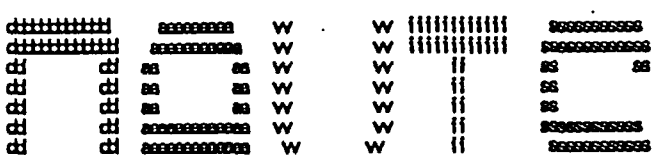
INFORMATION ONLY

```
0copy    94241  plutonium-241   from log 12 to log  1   bondarenko trigger 0
0copy    94242  plutonium-242   from log 12 to log  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigp from log 12 to log  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1   bondarenko trigger 0
0copy    96244  curium-244      from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron bump library
        based on endf-b version 4 data with endf-b version 5 fission products
           compiled for nrc      1/27/89
              last updated       9/16/93
                l.m.petrie  -  ornl
        tape id                          4321        number of nuclides          66
        number of neutron groups           27        number of gamma groups       0
        first thermal group                15        logical unit                 1
                              table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id   999
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id    66
        hydrogen      endf/b-iv mat 1269/thrml002   updated 10/13/89        id  1001
       b-10 1273 218rgp 042375 p-3 293k                                     id  5010
        boron-11      endf/b-iv mat 1160            updated 10/13/89        id  5011
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id  8016
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id     6
        kr-83         mt=102,103,103,105,106,107    updated 10/13/89        id 36083
        kr-85           mt=  102                                            id 36085
        sr-90         mt=102                        updated 10/13/89        id 38090
         y-89         mt=102                        updated 10/13/89        id 39089
        zr-93           mt=  102                                            id 40093
        zr-94         mt=102                        updated 10/13/89        id 40094
        zr-95         mt=102                        updated 10/13/89        id 40095
        zircalloy     endf/b-iv mat 1284            updated 10/13/89        id 40302
        nb-94         mt=102                        updated 10/13/89        id 41094
        mo-95         mt=102                        updated 10/13/89        id 42095
        tc-99         mt=102                        updated 10/13/89        id 43099
        ru-101        mt=102                        updated 10/13/89        id 44101
        ru-106        mt=102                        updated 10/13/89        id 44106
        rh-103        mt=102                        updated 10/13/89        id 45103
        rh-105          mt=  102                                            id 45105
        pd-105        mt=102                        updated 10/13/89        id 46105
        pd-108        mt=102                        updated 10/13/89        id 46108
        silver-109    endf/b-iv mat 1139            updated 10/13/89        id 47109
        sb-124        mt=102                        updated 10/13/89        id 51124
        xe-131        mt=102,103,104,105,106        updated 10/13/89        id 54131
        xe-132        mt=102,103,104,105,106        updated 10/13/89        id 54132
        xenon-135     endf/b-iv mat 1294            updated 10/13/89        id 54135
        xe-136          mt=  102, 103, 104, 105, 107                        id 54136
        cesium-133    endf/b-iv mat 1141            updated 10/13/89        id 55133
        cs-134        mt=102                        updated 10/13/89        id 55134
        cs-135          mt=  102                                            id 55135
        cs-137        mt=102                        updated 10/13/89        id 55137
        ba-136        mt=102                        updated 10/13/89        id 56136
        la-139        mt=102                        updated 10/13/89        id 57139
        ce-144          mt=  102                                            id 58144
        pr-141        mt=102,103,104,105,106,107    updated 10/13/89        id 59141
        pr-143        mt=102                        updated 10/13/89        id 59143
        nd-143        mt=102                        updated 10/13/89        id 60143
        nd-145        mt=102                        updated 10/13/89        id 60145
        nd-147        mt=102                        updated 10/13/89        id 60147
        pm-147        mt=102                        updated 10/13/89        id 61147
        pm-148          mt=  102                                            id 61148
        sm-147        endf/b-v fission product      updated 10/13/89        id 62147
        sm-149        mt=102,103,107                updated 10/13/89        id 62149
```

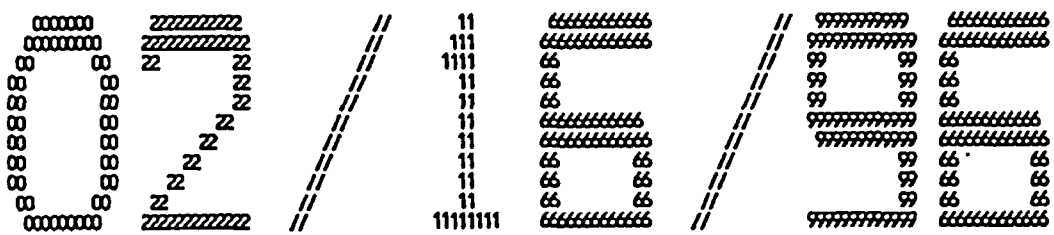
INFORMATION ONLY

```
sm-150        mt=102                          updated 10/13/89          id   62150
sm-151        mt=102,103,104,105,106,107      updated 10/13/89          id   62151
sm-152        mt=102,103,104,105,106,107      updated 10/13/89          id   62152
eu-153        mt=102,103,104,105,106,107      updated 10/13/89          id   63153
eu-154        mt=102,103,104,105,106,107      updated 10/13/89          id   63154
eu-155        mt=102,103,104,105,106,107      updated 10/13/89          id   63155
gd-155        mt=102                          updated 10/13/89          id   64155
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                      id   92234
uranium-235   endf/b-iv mat 1261              updated 10/13/89          id   92235
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                      id   92236
uranium-238   endf/b-iv mat 1262              updated 10/13/89          id   92238
neptunium-237 endf/b-iv mat 1263              updated 10/13/89          id   93237
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                     id   94238
plutonium-239 endf/b-iv mat 1264              updated 10/13/89          id   94239
plutonium-240 endf/b-iv mat 1265              updated 10/13/89          id   94240
plutonium-241 endf/b-iv mat 1266              updated 10/13/89          id   94241
plutonium-242 endf/b-iv mat 1161              updated 10/13/89          id   94242
am-241 1066 sigo=5+4 nsxlacs 218rgp p-3 293k                            id   95241
am-243 1067 218 gp wt f-1/e-m 09036 p3 293k                             id   95243
curium-244    endf/b-iv mat 1162              updated 10/13/89          id   96244
0     tape copy used     0 i/o's, and took     .00 seconds
1
```

```
0
```



```
0
```



INFORMATION ONLY

```
    0000000    2222222222222  //        11111111    666666666666  //        999999999999    666666666666
0
      11        000000                    000000        11                    000000        000000
     111       00000000                  00000000      111                   00000000      00000000
    1111      00      00      :::       00      00    1111          :::     00      00    00      00
      11      00      00      :::       00      00      11          :::     00      00    00      00
      11      00      00      :::       00      00      11          :::     00      00    00      00
      11      00      00                00      00      11                  00      00    00      00
      11      00      00                00      00      11                  00      00    00      00
      11      00      00      :::       00      00      11          :::     00      00    00      00
      11      00      00      :::       00      00      11          :::     00      00    00      00
      11      00      00      :::       00      00      11          :::     00      00    00      00
  11111111    00000000                  00000000  11111111                  00000000      00000000
  11111111     000000                    000000   11111111                   000000        000000
1
0
                          ssssssssss    cccccccccc    aaaaaaaa    ll          eeeeeeeeeeee
                         ssssssssssss  cccccccccccc  aaaaaaaaaa  ll          eeeeeeeeeeee
                         ss        ss  cc        cc  aa      aa  ll          ee
                         ss            cc            aa      aa  ll          ee
                         ss            cc            aa      aa  ll          ee
                         ssssssssssss  cc            aaaaaaaaaaaa  ll        eeeeeeeee
                          ssssssssssss cc            aaaaaaaaaaaa  ll        eeeeeeeee
                                    ss  cc            aa      aa  ll          ee
                                    ss  cc            aa      aa  ll          ee
                         ss        ss  cc        cc  aa      aa  ll          ee
                         ssssssssssss  cccccccccccc  aa      aa  llllllllllll  eeeeeeeeeeee
                          ssssssssss    cccccccccc    aa      aa  llllllllllll  eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0c002

creation date: 04/27/95

library: /neutronics/scale/exe

this is not a scale configuration controlled code

jobname: davis

date of execution: 02/16/96

time of execution: 10:01:00

INFORMATION ONLY

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                    *****                                                    *****
                    ****************************************************************
                    ****************************************************************
                    ****************************************************************
1
0      -1q array has      1 entries.
0       0q array has      9 entries.
0       1q array has     12 entries.
0select 65 nuclides from the master  library on logical  1
        0 nuclides from the working library on logical  2
        0 nuclides from the working library on logical  3
          to create the new working library on logical  4

       61 resonance calculations have been requested
        0 output option for aapx formatted cross section data
0the storage allocated for this case is 200000 words
0       2q array has     65 entries.
0       3q array has    915 entries.
0       4q array has     65 entries.
0 general information concerning cross section library
    tape identification number              4321
    number of nuclides on tape                66
    number of neutron energy groups           27
    first thermal neutron energy group        15
    number of gamma energy groups              0
0  direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                        compiled for nrc      1/27/89
                          last updated       9/16/93
                            l.m.petrie  -   ornl
0 nuclides from xsdrn tape
    1    1/v cross sections normalized to 1.0 at 0.0253 ev                          999
    2    hydrogen        endf/b-iv mat 1269/thrmal002   updated 10/13/89            1001
    3    b-10 1273 218ngp 042575 p-3 293k                                            5010
    4    boron-11        endf/b-iv mat 1160             updated 10/13/89            5011
    5    oxygen-16       endf/b-iv mat 1276             updated 10/13/89            8016
    6    oxygen-16       endf/b-iv mat 1276             updated 10/13/89               6
    7    kr-83           mt=102,103,103,105,106,107     updated 10/13/89           36083
    8    kr-85             mt=  102                                                 36085
    9    sr-90           mt=102                         updated 10/13/89           38090
   10     y-89           mt=102                         updated 10/13/89           39089
   11    zr-93             mt=  102                                                 40093
   12    zr-94           mt=102                         updated 10/13/89           40094
   13    zr-95           mt=102                         updated 10/13/89           40095
   14    zircalloy       endf/b-iv mat 1284             updated 10/13/89           40002
   15    nb-94           mt=102                         updated 10/13/89           41094
   16    mo-95           mt=102                         updated 10/13/89           42095
   17    tc-99           mt=102                         updated 10/13/89           43099
   18    ru-101          mt=102                         updated 10/13/89           44101
   19    ru-106          mt=102                         updated 10/13/89           44106
   20    rh-103          mt=102                         updated 10/13/89           45103
   21    rh-105            mt=  102                                                 45105
   22    pd-105          mt=102                         updated 10/13/89           46105
   23    pd-108          mt=102                         updated 10/13/89           46108
   24    silver-109      endf/b-iv mat 1139             updated 10/13/89           47109
   25    sb-124          mt=102                         updated 10/13/89           51124
   26    xe-131          mt=102,103,104,105,106         updated 10/13/89           54131
   27    xe-132          mt=102,103,104,105,106         updated 10/13/89           54132
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INFORMATION ONLY

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 28   xenon-135      endf/b-iv mat 1294              updated 10/13/89          54135
 29   xe-136           mt=  102, 103, 104, 105, 107                            54136
 30   cesium-133     endf/b-iv mat 1141              updated 10/13/89          55133
 31   cs-134         mt=102                          updated 10/13/89          55134
 32   cs-135           mt=  102                                                55135
 33   cs-137         mt=102                          updated 10/13/89          55137
 34   ba-136         mt=102                          updated 10/13/89          56136
 35   la-139         mt=102                          updated 10/13/89          57139
 36   ce-144           mt=  102                                                58144
 37   pr-141         mt=102,103,104,105,106,107      updated 10/13/89          59141
 38   pr-143         mt=102                          updated 10/13/89          59143
 39   nd-143         mt=102                          updated 10/13/89          60143
 40   nd-145         mt=102                          updated 10/13/89          60145
 41   nd-147         mt=102                          updated 10/13/89          60147
 42   pm-147         mt=102                          updated 10/13/89          61147
 43   pm-148           mt=  102                                                61148
 44   sm-147         endf/b-v fission product        updated 10/13/89          62147
 45   sm-149         mt=102,103,107                  updated 10/13/89          62149
 46   sm-150         mt=102                          updated 10/13/89          62150
 47   sm-151         mt=102,103,104,105,106,107      updated 10/13/89          62151
 48   sm-152         mt=102,103,104,105,106,107      updated 10/13/89          62152
 49   eu-153         mt=102,103,104,105,106,107      updated 10/13/89          63153
 50   eu-154         mt=102,103,104,105,106,107      updated 10/13/89          63154
 51   eu-155         mt=102,103,104,105,106,107      updated 10/13/89          63155
 52   gd-155         mt=102                          updated 10/13/89          64155
 53   u-234 1043 sigo=5+4 nsw=lacs p-3 293k f-1/e-m(1.+5)                      92234
 54   uranium-235    endf/b-iv mat 1261              updated 10/13/89          92235
 55   u-236 1163 sigo=5+4 nsw=lacs p-3 293k f-1/e-m(1.+5)                      92236
 56   uranium-238    endf/b-iv mat 1262              updated 10/13/89          92238
 57   neptunium-237  endf/b-iv mat 1263              updated 10/13/89          93237
 58   pu-238 1050 sigo=5+4 nsw=lacs p-3 293k f-1/e-m(1.+5)                      94238
 59   plutonium-239  endf/b-iv mat 1264              updated 10/13/89          94239
 60   plutonium-240  endf/b-iv mat 1265              updated 10/13/89          94240
 61   plutonium-241  endf/b-iv mat 1266              updated 10/13/89          94241
 62   plutonium-242  endf/b-iv mat 1161              updated 10/13/89          94242
 63   am-241 1056 sigo=5+4 nsw=lacs 218grp p-3 293k                            95241
 64   am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                             95243
 65   curium-244     endf/b-iv mat 1162              updated 10/13/89          96244
01/v cross sections normalized to 1.0 at 0.0253 ev                   999    temperature=  975.00
0 hydrogen      endf/b-iv mat 1269/thm1002   updated 10/13/89       1001    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218grp 042375 p-3 293k                                   5010    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11      endf/b-iv mat 1160           updated 10/13/89       5011    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276           updated 10/13/89       8016    temperature=  975.00
0 oxygen-16     endf/b-iv mat 1276           updated 10/13/89          6    temperature=  607.60
0 kr-83         mt=102,103,105,106,107       updated 10/13/89      36083    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202          temperature(kelvin)      =  975.000
0potential scatter sigma  =    7.004          lumped nuclear density   = 1.2106000E-06
0spin factor (g)          =  4988.190          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 1.4105377E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  257.953          sigma(per absorber atom)= 1.5737203E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
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INFORMATION ONLY

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0group        res abs        res fiss       res scat
  11      -1.760477E-03    .000000E+00   -2.230056E-03
  12       2.166095E-02    .000000E+00    9.896840E-03
  13      -3.971375E-01    .000000E+00   -1.204416E-01
  14       4.782771E-05    .000000E+00   -1.729045E-05
0excess resonance integrals
0                  resolved
0absorption      1.44817E+02
 fission          .00000E+00
- elapsed time    .00 min.
0 kr-85            mt=  102                                    36085    temperature=  975.00
0 sr-90          mt=102              updated 10/13/89          38090    temperature=  975.00
0 y-89           mt=102              updated 10/13/89          39089    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.644        lumped nuclear density   = 1.020441E-05
0spin factor (g)          =   78.664        lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.673714E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953          sigma(per absorber atom)= 1.867343E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9      -2.549801E-06    .000000E+00   -1.696828E-04
  10      -6.170661E-05    .000000E+00   -1.739975E-04
0excess resonance integrals
0                  resolved
0absorption      1.46419E-01
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-93            mt=  102                                    40093    temperature=  975.00
0 zr-94          mt=102              updated 10/13/89          40094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.100        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.779        lumped nuclear density   = 1.622863E-05
0spin factor (g)          =  180.853        lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.052867E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953          sigma(per absorber atom)= 1.174385E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   8      -9.432010E-07    .000000E+00   -8.957890E-04
   9      -3.135693E-05    .000000E+00   -2.775020E-03
0excess resonance integrals
0                  resolved
0absorption      3.43817E-02
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-95          mt=102              updated 10/13/89          40095    temperature=  975.00
0 zircalloy      endf/b-iv mat 1284  updated 10/13/89          40302    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436        temperature(kelvin)      =  650.000
0potential scatter sigma  =    6.385        lumped nuclear density   = 4.251560E-02
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0spin factor (g)          =    1.079          lump dimension (a-bar)   = 5.461002E-01
0inner radius             = 4.787899E-01      dancoff correction (c)   = 5.036463E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  8      -1.780592E-03   .000000E+00   -1.285907E+00
  9      -5.858373E-02   .000000E+00   -2.695297E+00
 10      -6.959985E-02   .000000E+00   -1.601321E+00
 11      -1.883937E-01   .000000E+00   -7.920912E-01
0excess resonance integrals
0                 resolved
0absorption      2.28539E-01
 fission          .00000E+00
- elapsed time    .02 min.
0 rb-94        mt=102                    updated 10/13/89          41094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.101          temperature(kelvin)      =   975.000
0potential scatter sigma  =    3.779          lumped nuclear density   = 7.5379746E-12
0spin factor (g)          = 43808.801          lump dimension (a-bar)   = 4.681220 1E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 2.265358E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 2.527397 3E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 13       1.043223E-02   .000000E+00   9.253080E-04
 14       9.836712E-03   .000000E+00   -4.064865E-04
0excess resonance integrals
0                 resolved
0absorption      9.15001E+01
 fission          .00000E+00
- elapsed time    .02 min.
0 mo-95        mt=102                    updated 10/13/89          42095     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   94.091          temperature(kelvin)      =   975.000
0potential scatter sigma  =    3.806          lumped nuclear density   = 1.3167981E-05
0spin factor (g)          =  607.724          lump dimension (a-bar)   = 4.681220 1E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.296779E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 1.446801 7E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 10      -2.827058E-03   .000000E+00   -1.666167E-02
 11      -5.154489E-03   .000000E+00   -8.604290E-03
 12      -3.707084E+00   .000000E+00   -4.266654E+00
 13       1.583315E-04   .000000E+00   -2.254974E-05
0excess resonance integrals
0                 resolved
0absorption      9.85300E+01
 fission          .00000E+00
- elapsed time    .02 min.
0 tc-99        mt=102                    updated 10/13/89          43099     temperature=  975.00
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0resonance data for this nuclide
0mass number (a)          =   98.150          temperature(kelvin)       =  975.000
0potential scatter sigma  =    6.000          lumped nuclear density    = 1.584425E-05
0spin factor (g)          = 4527.940          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 1.077727E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953             sigma(per absorber atom)= 1.202407E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -2.039773E-02   .000000E+00   -9.611921E-03
  12     -5.333800E-03   .000000E+00   -1.853597E-04
  13     -3.317793E-01   .000000E+00   -1.747611E-02
  14     -7.128074E+00   .000000E+00   -2.274756E-01
  15      1.070480E-02   .000000E+00   -5.392398E-04
  16      4.836007E-03   .000000E+00   -2.802095E-04
  17      2.079985E-04   .000000E+00   -1.191064E-05
0excess resonance integrals
0                 resolved
0absorption      3.25462E+02
 fission          .00000E+00
-  elapsed time    .03 min.
0 ru-101        mt=102                    updated 10/13/89          44101     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  100.039          temperature(kelvin)       =  975.000
0potential scatter sigma  =    3.965          lumped nuclear density    = 1.423077E-05
0spin factor (g)          = 8765.290          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 1.199329E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953             sigma(per absorber atom)= 1.338751E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -3.624243E-02   .000000E+00   -3.672971E-03
  12     -1.064926E-01   .000000E+00   -2.812458E-02
  13     -3.819752E-01   .000000E+00   -1.028591E-02
  14      2.372863E-04   .000000E+00   -4.161137E-05
0excess resonance integrals
0                 resolved
0absorption      7.95820E+01
 fission          .00000E+00
-  elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89          44106     temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89          45103     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  102.021          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.408          lumped nuclear density    = 8.515431E-06
0spin factor (g)          =     .500          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 2.005297E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953             sigma(per absorber atom)= 2.237286E+04
0moderator-2 will be treated by the nordheim integral method.
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0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  9      1.253997E-03    .000000E+00    1.942356E-03
 10     -3.509026E-03    .000000E+00   -4.880561E-03
 11     -1.699512E-02    .000000E+00   -1.499881E-02
 12     -2.625307E-04    .000000E+00   -2.159846E-05
 13      .000000E+00     .000000E+00    .000000E+00
 14      .000000E+00     .000000E+00    .000000E+00
 15      2.281068E-01    .000000E+00    3.284026E-03
 16      3.326970E+01    .000000E+00   -6.208614E-02
 17     -1.852185E+02    .000000E+00   -1.574388E-01
 18      8.714719E+01    .000000E+00    2.610259E-01
 19      1.148543E+01    .000000E+00   -1.472395E-03
 20      1.089088E+00    .000000E+00   -2.470568E-03
 21      2.165863E-01    .000000E+00    1.925008E-03
 22      2.583985E-01    .000000E+00    2.928524E-03
 23     -9.879865E-02    .000000E+00    1.798960E-03
0excess resonance integrals
0                 resolved
0absorption      1.14672E+03
 fission          .00000E+00
- elapsed time    .07 min.
0 rh-105          mt=  102                                          45105    temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89          46105    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density     = 5.277889E-06
0spin factor (g)          = 15210.000          lump dimension (a-bar)     = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 3.235399E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2  . =   237.953          sigma(per absorber atom)= 3.609675E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 12     -5.613977E-02    .000000E+00   -1.339439E-03
 13     -1.381487E-02    .000000E+00   -6.985314E-04
 14      7.769155E-04    .000000E+00   -8.145498E-05
0excess resonance integrals
0                 resolved
0absorption      6.12433E+01
 fission          .00000E+00
- elapsed time    .07 min.
0 pd-108        mt=102                    updated 10/13/89          46108    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density     = 1.393357E-06
0spin factor (g)          = 21175.100          lump dimension (a-bar)     = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)     = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.225627E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.367306E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
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  11     1.170302E-04     .000000E+00    3.532026E-04
  12    -1.263694E+00     .000000E+00   -9.304958E-01
  13     6.869444E-03     .000000E+00    1.844850E-03
  14     8.561260E-02     .000000E+00   -3.207809E-05
  15    -1.840706E-01     .000000E+00    8.083708E-05
  16     2.946590E-04     .000000E+00   -9.255679E-06
0excess resonance integrals
0                 resolved
0absorption      2.12560E+02
 fission          .00000E+00
- elapsed time    .07 min.
0 silver-109    endf/b-iv mat 1139          updated 10/13/89          47109    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density    = 9.897589E-07
0spin factor (g)          =  1441.870          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.725265E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953          sigma(per absorber atom)= 1.984583E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10      -9.785545E-05     .000000E+00   -9.223403E-05
  11      -4.345954E-03     .000000E+00   -3.223391E-03
  12      -7.193846E-01     .000000E+00   -3.343606E-02
  13       7.670446E-01     .000000E+00    3.380743E-02
  14      -9.331539E+00     .000000E+00   -8.741142E-01
0excess resonance integrals
0                 resolved
0absorption      1.39101E+03
 fission          .00000E+00
- elapsed time    .07 min.
0 sb-124        mt=102                      updated 10/13/89          51124    temperature=  975.00
0 xe-131        mt=102,103,104,105,106      updated 10/13/89          54131    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   129.781          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.301          lumped nuclear density    = 7.310802E-06
0spin factor (g)          =   246.825          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 2.335717E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953          sigma(per absorber atom)= 2.605952E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9      -2.310630E-06     .000000E+00   -2.154477E-05
  10      -1.586759E-04     .000000E+00   -1.347479E-04
  11      -1.953774E-03     .000000E+00   -1.464922E-03
  12      -3.751450E-02     .000000E+00   -3.496011E-03
  13      -6.002438E+01     .000000E+00   -1.407475E+02
  14       1.073748E-02     .000000E+00    1.503469E-02
0excess resonance integrals
0                 resolved
0absorption      7.70438E+02
 fission          .00000E+00
```

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- elapsed time    .08 min.
0 xe-132        mt=102,103,104,105,106        updated 10/13/89        54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  130.771          temperature(kelvin)       =  975.000
0potential scatter sigma  =    4.301          lumped nuclear density   = 1.3225269E-05
0spin factor (g)          =  675.899          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.2910969E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953            sigma(per absorber atom)= 1.4404615E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9      -2.052215E-05    .000000E+00   -9.309781E-05
  10      -6.258887E-03    .000000E+00   -7.967591E-02
  11       3.345203E-03    .000000E+00   -9.291076E-07
0excess resonance integrals
0                 resolved
0absorption      9.73725E-01
 fission          .00000E+00
- elapsed time    .08 min.
0 xenon-135     endf/b-iv mat 1294            updated 10/13/89        54135    temperature=  975.00
0 xe-136          mt=  102, 103, 104, 105, 107                        54136    temperature=  975.00
0 cesium-133    endf/b-iv mat 1141            updated 10/13/89        55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  131.764          temperature(kelvin)       =  975.000
0potential scatter sigma  =    7.100          lumped nuclear density   = 1.7373461E-05
0spin factor (g)          =  374.437          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 9.8287666E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  258.051            sigma(per absorber atom)= 1.0542641E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9      -4.871697E-05    .000000E+00   -3.15250E-04
  10      -2.382956E-03    .000000E+00   -4.567832E-03
  11      -8.948965E-02    .000000E+00   -1.566151E-01
  12      -1.386060E-01    .000000E+00   -1.929259E-02
  13      -2.304727E-01    .000000E+00   -1.254356E-02
  14      -1.013023E+01    .000000E+00   -4.436112E-01
  15       5.625127E-03    .000000E+00   -4.050744E-04
  16       2.777900E-03    .000000E+00   -2.215253E-04
  17       2.352204E-03    .000000E+00   -1.830751E-04
  18       2.215089E-03    .000000E+00   -1.679543E-04
  19       1.317312E-03    .000000E+00   -9.676463E-05
0excess resonance integrals
0                 resolved
0absorption      3.53364E+02
 fission          .00000E+00
- elapsed time    .10 min.
0 cs-134        mt=102                        updated 10/13/89        55134    temperature=  975.00
0 cs-135          mt=  102                                            55135    temperature=  975.00
0 cs-137        mt=102                        updated 10/13/89        55137    temperature=  975.00
0 ba-136        mt=102                        updated 10/13/89        56136    temperature=  975.00
0resonance data for this nuclide
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Omass number (a)          =  134.737          temperature(kelvin)      =  975.000
Opotential scatter sigma  =    4.835          lumped nuclear density   = 1.3147822E-07
Ospin factor (g)          =  1247.690          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1    =   15.995          sigma(per absorber atom)= 1.2987680E+06
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  257.953          sigma(per absorber atom)= 1.4490201E+06
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup      res abs        res fiss       res scat
  10     1.195235E-06    .000000E+00    5.099283E-07
  11     4.140539E-07    .000000E+00    7.002787E-07
Oexcess resonance integrals
0                 resolved
Oabsorption      1.39473E+00
 fission          .00000E+00
- elapsed time    .10 min.
0 la-139        mt=102                    updated 10/13/89          57139    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  137.713          temperature(kelvin)      =  975.000
Opotential scatter sigma  =    4.906          lumped nuclear density   = 1.6736218E-05
Ospin factor (g)          =  145.855          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1    =   15.995          sigma(per absorber atom)= 1.0208004E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  257.953          sigma(per absorber atom)= 1.1383371E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup      res abs        res fiss       res scat
   9    -1.465711E-07    .000000E+00    1.238383E-03
  10    -3.355732E-04    .000000E+00   -1.989544E-02
  11     .000000E+00     .000000E+00    .000000E+00
  12    -5.739985E-02    .000000E+00   -3.466246E-02
Oexcess resonance integrals
0                 resolved
Oabsorption      8.08078E+00
 fission          .00000E+00
- elapsed time    .12 min.
0 ce-144          mt=  102                                          58144    temperature=  975.00
0 pr-141        mt=102,103,104,105,106,107  updated 10/13/89         59141    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  139.697          temperature(kelvin)      =  975.000
Opotential scatter sigma  =    4.953          lumped nuclear density   = 1.4313312E-05
Ospin factor (g)          =  1026.500          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1    =   15.995          sigma(per absorber atom)= 1.1930131E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  257.953          sigma(per absorber atom)= 1.3310307E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup      res abs        res fiss       res scat
  10    -5.609108E-03    .000000E+00   -1.904915E-01
  11    -9.225772E-02    .000000E+00   -1.226486E+00
  12    -2.091378E-03    .000000E+00   -2.041713E-04
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0excess resonance integrals
0                resolved
0absorption      1.21355E+01
 fission         .00000E+00
- elapsed time   .12 min.
0 pr-143        mt=102                    updated 10/13/89          59143    temperature=  975.00
0 nd-143        mt=102                    updated 10/13/89          60143    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   141.682        temperature(kelvin)       =  975.000
0potential scatter sigma  =     5.000        lumped nuclear density    = 1.3377378E-05
0spin factor (g)          =  1964.850        lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00    dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995           sigma(per absorber atom)= 1.2764813E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953           sigma(per absorber atom)= 1.4241551E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  10      -1.33265E-04    .000000E+00   -6.817683E-05
  11      -3.12534E-01    .000000E+00   -3.629994E+00
  12      -2.059421E-01   .000000E+00   -1.013043E-01
0excess resonance integrals
0                resolved
0absorption      5.09093E+01
 fission         .00000E+00
- elapsed time   .12 min.
0 nd-145        mt=102                    updated 10/13/89          60145    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   143.668        temperature(kelvin)       =  975.000
0potential scatter sigma  =     5.047        lumped nuclear density    = 9.7710117E-06
0spin factor (g)          =  1007.250        lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00    dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995           sigma(per absorber atom)= 1.7476152E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953           sigma(per absorber atom)= 1.949988E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  10      -3.969052E-03   .000000E+00   -6.238695E-02
  11      -6.007325E-02   .000000E+00   -1.817612E-01
  12      -1.459763E+00   .000000E+00   -9.188078E+00
  13       9.598655E-05   .000000E+00    2.042568E-04
  14      -1.322985E+00   .000000E+00   -3.678257E-02
  15       5.901525E-03   .000000E+00   -4.614201E-04
  16       1.326675E-03   .000000E+00   -1.451290E-04
  17       9.642597E-04   .000000E+00   -1.063946E-04
  18       8.539732E-04   .000000E+00   -9.314383E-05
  19       7.634159E-04   .000000E+00   -8.070004E-05
  20       2.839149E-05   .000000E+00   -2.919852E-06
0excess resonance integrals
0                resolved
0absorption      2.06675E+02
 fission         .00000E+00
- elapsed time   .13 min.
0 nd-147        mt=102                    updated 10/13/89          60147    temperature=  975.00
0 pm-147        mt=102                    updated 10/13/89          61147    temperature=  975.00
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0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)      =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density   = 3.643130E-06
0spin factor (g)          = 21589.500          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 4.687169E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 5.229419E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  12     -1.825680E-01   .000000E+00   -5.851357E-02
  13     -4.676957E-02   .000000E+00   -2.688727E-03
  14     -8.253029E+01   .000000E+00   -3.548271E+01
  15      4.128564E-02   .000000E+00    6.978664E-03
  16      1.697942E-02   .000000E+00    1.746660E-03
  17      1.369772E-02   .000000E+00    1.150461E-03
  18      1.253757E-02   .000000E+00    9.649097E-04
  19      6.998888E-04   .000000E+00    5.070170E-05
0excess resonance integrals
0                 resolved
0absorption      2.015274E+03
 fission          .00000E+00
- elapsed time    .13 min.
0 pm-148          mt=  102                                          61148    temperature=  975.00
0 sm-147        endf/b-v fission product      updated 10/13/89        62147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)      =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density   = 1.019287E-06
0spin factor (g)          =     .000          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.675284E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 1.869094E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      2.767026E-01   .000000E+00    1.095160E+00
  12      9.978251E-01   .000000E+00   -1.498843E+00
  13     -3.338574E+00   .000000E+00   -1.778746E+00
  14     -3.342486E-01   .000000E+00   -3.189418E-03
  15      3.115590E-01   .000000E+00   -1.911954E-03
  16      7.287758E-03   .000000E+00   -3.738602E-04
  17      4.281449E-03   .000000E+00   -2.401556E-04
  18      3.510413E-03   .000000E+00   -1.997200E-04
  19      2.910596E-03   .000000E+00   -1.649500E-04
  20      8.434589E-04   .000000E+00   -4.626394E-05
0excess resonance integrals
0                 resolved
0absorption      7.22673E+02
 fission          .00000E+00
- elapsed time    .15 min.
                          thermal scattering matrix number  3 at a temperature of   900.03 was selected.
0 sm-149          mt=102,103,107          updated 10/13/89          62149    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  147.638          temperature(kelvin)      =  975.000
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Qpotential scatter sigm  =     3.260          lumped nuclear density   = 8.406925E-03
Qspin factor (g)         = 10407.900          lump dimension (a-bar)   = 4.681220E-01
Qinner radius            =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
Qthe absorber will be treated by the nordheim integral method.
Qmass of moderator-1     =    15.995          sigma(per absorber atom)= 2.031662E+06
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2     =   237.933          sigma(per absorber atom)= 2.266701E+06
Qmoderator-2 will be treated by the nordheim integral method.
Qthis resonance material will be treated as a 2-dimensional object.
Qvolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Qgroup        res abs        res fiss       res scat
  11       8.546605E-03   .000000E+00   3.071165E-02
  12      -5.476413E-02   .000000E+00  -1.810656E-01
  13       2.318253E-02   .000000E+00   2.840699E-03
  14       5.777774E-03   .000000E+00  -7.572224E-03
Qexcess resonance integrals
0                  resolved
Qabsorption       8.04337E+02
 fission           .00000E+00
- elapsed time     .15 min.
0 sm-150        nt=102                    updated 10/13/89          62150     temperature=  975.00
Qresonance data for this nuclide
Qmass number (a)         =   148.629          temperature(kelvin)      =   975.000
Qpotential scatter sigm  =     5.162          lumped nuclear density   = 3.356328E-06
Qspin factor (g)         = 4376.420           lump dimension (a-bar)   = 4.681220E-01
Qinner radius            =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
Qthe absorber will be treated by the nordheim integral method.
Qmass of moderator-1     =    15.995          sigma(per absorber atom)= 5.087630E+04
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2     =   237.933          sigma(per absorber atom)= 5.676278E+04
Qmoderator-2 will be treated by the nordheim integral method.
Qthis resonance material will be treated as a 2-dimensional object.
Qvolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Qgroup        res abs        res fiss       res scat
  10      -1.140486E-03   .000000E+00  -1.081808E-02
  11      -2.526795E-02   .000000E+00  -2.865482E-01
  12      -8.222108E-02   .000000E+00  -2.484979E-02
  13      -5.859059E+00   .000000E+00  -4.613210E+00
  14       1.065669E-04   .000000E+00  -6.400712E-05
Qexcess resonance integrals
0                  resolved
Qabsorption       2.88255E+02
 fission           .00000E+00
- elapsed time     .15 min.
0 sm-151        nt=102,103,104,105,106,107  updated 10/13/89          62151     temperature=  975.00
Qresonance data for this nuclide
Qmass number (a)         =   149.623          temperature(kelvin)      =   975.000
Qpotential scatter sigm  =     5.185          lumped nuclear density   = 3.688600E-07
Qspin factor (g)         = 7557.703           lump dimension (a-bar)   = 4.681220E-01
Qinner radius            =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
Qthe absorber will be treated by the nordheim integral method.
Qmass of moderator-1     =    15.995          sigma(per absorber atom)= 4.629389E+05
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2     =   237.933          sigma(per absorber atom)= 5.164850E+05
Qmoderator-2 will be treated by the nordheim integral method.
Qthis resonance material will be treated as a 2-dimensional object.
Qvolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Qgroup        res abs        res fiss       res scat
  14      -2.119385E-01   .000000E+00  -2.082594E-02
  15       1.487428E+01   .000000E+00   7.527953E-02
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  16     -2.180708E+01     .000000E+00   -6.198250E-02
  17      1.736728E+02     .000000E+00    8.278137E-01
  18     -3.205240E+02     .000000E+00   -1.783263E+00
  19      6.254583E+01     .000000E+00    3.867906E-01
  20      1.141286E+00     .000000E+00   -1.400558E-04
  21     -7.117704E-02     .000000E+00    1.244100E-02
  22      6.952549E-02     .000000E+00    3.838918E-03
  23     -1.091917E-02     .000000E+00    3.374044E-04
0excess resonance integrals
0                 resolved
0absorption      2.056346E+03
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-152        nt=102,103,104,105,106,107     updated 10/13/89              62152     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   150.615          temperature(kelvin)       =  975.000
0potential scatter sigma  =     5.208          lumped nuclear density    = 1.631402E-06
0spin factor (g)          =   863.594          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .000000E+00        dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.046704E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 1.167796E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9      2.402817E-06     .000000E+00    1.158716E-04
  10     -1.295784E-03     .000000E+00   -2.036388E-02
  11     -1.885441E-02     .000000E+00   -7.182702E-02
  12     -1.270621E-01     .000000E+00   -4.032254E-01
  13      4.204180E-02     .000000E+00    1.022422E-01
  14     -1.129931E+02     .000000E+00   -2.182685E+02
0excess resonance integrals
0                 resolved
0absorption      2.764971E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 sm-153        nt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   151.607          temperature(kelvin)       =  975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 9.032567E-07
0spin factor (g)          = 12265.900          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .000000E+00        dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.890489E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953            sigma(per absorber atom)= 2.109196E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12     -2.856052E-01     .000000E+00   -5.575924E-02
  13     -1.361445E-01     .000000E+00   -4.143751E-03
  14     -7.920873E-01     .000000E+00   -1.004343E-06
  15      1.863243E+00     .000000E+00   -3.434145E-02
  16     -3.297554E+00     .000000E+00    8.156992E-03
  17      1.505598E-01     .000000E+00   -3.437752E-03
  18      7.726870E-02     .000000E+00   -2.231252E-03
  19      5.055447E-02     .000000E+00   -1.541113E-03
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  20      -1.253804E-01     .000000E+00   -1.275023E-03
0excess resonance integrals
0                 resolved
0absorption       1.35457E+03
 fission           .00000E+00
-  elapsed time    .17 min.
0 eu-154          mt=102,103,104,105,106,107     updated 10/13/89              63154     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   152.601              temperature(kelvin)        =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density     = 1.6387885E-07
0spin factor (g)          = 19135.801              lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995                sigma(per absorber atom)= 1.0419873E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933                sigma(per absorber atom)= 1.1625330E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12      -3.904129E-01     .000000E+00   -6.094527E-02
  13      -3.135098E-01     .000000E+00   -2.495868E-02
  14       3.300923E-01     .000000E+00    1.465073E-02
  15       1.597103E-01     .000000E+00    2.097988E-02
  16       7.214694E+00     .000000E+00    9.233953E-02
  17      -1.440717E+02     .000000E+00   -1.896719E+00
  18       1.135982E+02     .000000E+00    1.858201E+00
  19      -1.014681E+02     .000000E+00    1.187304E+00
0excess resonance integrals
0                 resolved
0absorption       2.13664E+03
 fission           .00000E+00
-  elapsed time    .18 min.
0 eu-155          mt=102,103,104,105,106,107     updated 10/13/89              63155     temperature=   975.00
0 gd-155          mt=102                         updated 10/13/89              64155     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   153.592              temperature(kelvin)        =   975.000
0potential scatter sigma  =     5.277              lumped nuclear density.    = 1.6370191E-09
0spin factor (g)          = 12700.100              lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995                sigma(per absorber atom)= 1.0431136E+08
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933                sigma(per absorber atom)= 1.1637895E+08
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12      -1.439806E+00     .000000E+00   -1.839472E-01
  13       1.541165E+00     .000000E+00    1.985090E-01
  14       2.190007E-01     .000000E+00    9.806014E-03
  15      -3.336652E-01     .000000E+00   -7.197123E-05
  16       1.477358E+00     .000000E+00   -4.148861E-03
  17       1.568658E-01     .000000E+00   -1.479142E-03
  18       9.605140E-02     .000000E+00   -1.078062E-03
  19       6.295324E-02     .000000E+00   -8.026497E-04
  20       1.670480E-02     .000000E+00    1.626478E-04
  21        .000000E+00     .000000E+00     .000000E+00
  22        .000000E+00     .000000E+00     .000000E+00
  23        .000000E+00     .000000E+00     .000000E+00
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  24      .000000E+00    .000000E+00    .000000E+00
  25     -2.127812E+03   .000000E+00   -1.622019E+00
  26     -5.205697E+03   .000000E+00    1.961483E+00
  27     -1.659984E+03   .000000E+00    7.392656E-01
0excess resonance integrals
0                 resolved
0absorption      3.9704E+04
 fission          .0000E+00
- elapsed time    .18 min.
0u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-sx(1.+5)                    92234    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  232.029          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.021          lumped nuclear density   = 4.656384E-06
0spin factor (g)          = 6948.450          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 3.667216E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.955            sigma(per absorber atom)= 4.090217E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -2.226859E-02    .000000E+00   -6.494590E-02
  12      -1.815901E-01    .000000E+00   -7.606152E-02
  13       7.759999E-04    .000000E+00   -6.471838E-04
  14      -1.782052E+01    .000000E+00   -2.918325E+00
0excess resonance integrals
0                 resolved
0absorption      5.8276E+02
 fission          .0000E+00
- elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89          92235    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  233.025          temperature(kelvin)      =  975.000
0potential scatter sigma  =   11.500          lumped nuclear density   = 4.444834E-04
0spin factor (g)          = 15171.100         lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 3.841669E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.049            sigma(per absorber atom)= 4.122754E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -1.865952E+00   -1.162127E+00   -4.369178E-02
  13      -6.545614E+00   -3.259067E+00   -1.416050E-01
  14      -5.261562E+00   -3.231865E+00   -3.592915E-02
0excess resonance integrals
0                 resolved
0absorption      2.1211E+02
 fission          1.2629E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-sx(1.+5)                    92236    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  234.017          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.995          lumped nuclear density   = 4.789430E-05
0spin factor (g)          = 6328.490          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.565347E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.934              sigma(per absorber atom)= 3.977189E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11      -2.32460E-01      .000000E+00    -5.832797E-01
  12      -1.251467E+00     .000000E+00    -8.535315E-01
  13      -6.528463E-02     .000000E+00    -3.466214E-03
  14      -4.155770E+01     .000000E+00    -3.635741E+00
0excess resonance integrals
0                 resolved
0absorption       2.8000E+02
 fission          .0000E+00
- elapsed time    .22 min.
0 uranium-238    endf/b-iv mat 1262          updated 10/13/89          92238    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.006          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density    = 2.187343E-02
0spin factor (g)          =   656.527          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.806769E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   235.041              sigma(per absorber atom)= 3.361351E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
   9      -3.935817E-02     .000000E+00    -4.043145E-01
  10      -1.025260E+00    -1.747810E-05   -6.478466E+00
  11      -9.706235E+00     .000000E+00    -2.689441E+01
  12      -4.304482E+01     .000000E+00    -4.998357E+01
  13      -5.401085E+01     .000000E+00    -1.769053E+01
  14      -1.044943E+02     .000000E+00    -6.059432E+00
0excess resonance integrals
0                 resolved
0absorption       1.8027E+01
 fission          5.0401E-04
- elapsed time    .23 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   235.012          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.500          lumped nuclear density    = 2.817581E-06
0spin factor (g)          = 10100.800          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.060503E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 6.500685E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11      -6.356906E-02    -2.086214E-06   -7.414002E-03
  12       2.491776E-02    -1.071069E-04    7.235728E-03
  13      -2.751440E-02     8.779010E-05   -1.433366E-03
  14      -7.346514E-02    -9.089304E-06   -1.443095E-03
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0excess resonance integrals
0                 resolved
0absorption       2.98033E+02
 fission          1.39557E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 nsw=lacs p-3 293k f-1/e-m(1.+5)                    9238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.167          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.890          lumped nuclear density   = 3.2625022E-07
0spin factor (g)          = 13130.600          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 5.2340097E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051          sigma(per absorber atom)= 5.6141619E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -1.838366E-03  -2.820870E-04  -1.799045E-03
  12      -1.235117E-03  -1.392654E-04  -6.016181E-04
  13       4.025275E-01   7.519357E-02  -1.026164E-02
  14      -3.825064E-01  -6.992719E-02   8.539043E-03
0excess resonance integrals
0                 resolved
0absorption       8.25335E+01
 fission          9.08421E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89         9239     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.999          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.200          lumped nuclear density   = 9.6627298E-05
0spin factor (g)          =  6435.710          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.7690800E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051          sigma(per absorber atom)= 1.8975167E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -2.017084E-01  -8.120036E-02  -6.177880E-02
  12      -1.791471E+00  -6.728600E-01  -2.357042E-01
  13      -5.869739E+00  -3.453878E+00  -8.968405E-02
  14      -1.871555E+00  -9.958552E-01  -1.665454E-02
0excess resonance integrals
0                 resolved
0absorption       3.08014E+02
 fission          1.73024E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89         9240     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   237.992          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density   = 1.6238499E-05
0spin factor (g)          =   669.244          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.0515730E+04
0moderator-1 will be treated by the nordheim integral method.
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0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.127950E+04
0moderator-2 will be treated by the nordheim integral method.
.0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  9      -4.579711E-05  -1.264809E-06  -1.838715E-04
 10      -3.865992E-03  -2.392602E-04  -1.766385E-02
 11      -1.237893E-01  -7.198896E-04  -1.646513E-01
 12      -1.718637E+00  -9.389978E-03  -1.649603E+00
 13      -2.116805E-01  -1.297953E-03  -1.542849E-02
 14       .000000E+00    .000000E+00    .000000E+00
 15       1.738746E-02   3.318474E-06   3.429983E-03
 16       2.951208E+00   5.632511E-04   3.697441E-01
 17       4.605201E+02   8.785412E-02   4.117713E+01
 18      -7.401259E+03  -1.412571E+00  -5.844975E+02
 19       6.729597E+02   1.284373E-01   5.275318E+01
 20      -9.357052E+01  -1.785839E-02   1.798074E+00
0excess resonance integrals
0                  resolved
0absorption       4.9604E+03
 fission          1.9598E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9241     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   238.978          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.939          lumped nuclear density    = 8.085651E-06
0spin factor (g)          = 16402.100          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 2.110976E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 2.264233E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 12       1.322123E-03   8.439866E-04   6.005169E-04
 13      -5.462229E-01  -4.209879E-01  -1.635962E-02
 14      -5.012358E-01  -3.475752E-01  -8.718608E-04
 15       1.790424E-02   1.604463E-02  -4.657629E-04
0excess resonance integrals
0                  resolved
0absorption       5.0804E+02
 fission          4.2598E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          9242     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   240.145          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.694          lumped nuclear density    = 7.257187E-07
0spin factor (g)          =  6606.710          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 2.359475E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 2.530847E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
 11      -1.854130E-03   .000000E+00   -5.150098E-03
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  12     -4.052668E-02     .000000E+00   -7.886208E-02
  13     -1.853779E-05     .000000E+00    3.537524E-06
  14      8.138350E-02     .000000E+00    1.528547E-02
  15     -1.424625E+01     .000000E+00   -1.174394E+00
  16      4.031559E-02     .000000E+00   -3.454563E-03
  17      1.550382E-02     .000000E+00   -1.848172E-03
  18      1.112574E-02     .000000E+00   -1.430661E-03
0excess resonance integrals
0                 resolved
0absorption      1.10278E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 rs=klacs 218rgp p-3 295k                    95241    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.950          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density  = 1.9917580E-07
0spin factor (g)          = 82058.203          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 8.5731644E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 9.1958431E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  13      4.891248E-01    1.210977E-02    4.768714E-03
  14     -4.461041E-01   -1.120480E-02   -4.801333E-03
0excess resonance integrals
0                 resolved
0absorption      1.98451E+02
 fission         1.07595E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090576 p3 295k                     95243    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.940          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density  = 5.2783381E-08
0spin factor (g)          = 82052.602          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.2351083E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 3.4700725E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  13     -7.188834E-03     .000000E+00    4.218795E-04
  14      1.949712E-02     .000000E+00    1.945697E-04
0excess resonance integrals
0                 resolved
0absorption      1.60148E+02
 fission          .00000E+00
- elapsed time    .32 min.
0 curium-244     endf/b-iv mat 1162          updated 10/13/89      95244    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  242.133          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.320          lumped nuclear density  = 3.9948742E-09
0spin factor (g)          = 5251.150          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)  = 3.4269261E-01
```

INFORMATION ONLY

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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.274469E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 4.584925E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11        2.461100E-04    6.736609E-06    2.869803E-04
  12        6.544668E-04    3.101118E-05    1.239800E-04
  13        2.654965E-03    1.309495E-04    7.104585E-04
  14        6.526409E-02    3.904689E-03    1.058714E-02
0excess resonance integrals
0              resolved
0absorption     6.13880E+02
 fission        3.54207E+01
- elapsed time    .33 min.
- elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:01:00
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron bump library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
         tape id                    4321        number of nuclides              65
         number of neutron groups     27        number of gamma groups           0
         first thermal group          15        logical unit                     4
                                table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id     999
        hydrogen      endf/b-iv mat 1269/thml1002   updated 10/13/89        id    1001
       b-10 1273 218ngp 042375 p-3 293k                                      id    5010
        boron-11      endf/b-iv mat 1160            updated 10/13/89        id    5011
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id    8016
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id       6
        kr-83         mt=102,103,103,105,106,107    updated 10/13/89        id   36083
        kr-85            mt=  102                                           id   36085
        sr-90         mt=102                        updated 10/13/89        id   38090
         y-89         mt=102                        updated 10/13/89        id   39089
        zr-93            mt=  102                                           id   40093
        zr-94         mt=102                        updated 10/13/89        id   40094
        zr-95         mt=102                        updated 10/13/89        id   40095
        zircalloy     endf/b-iv mat 1284            updated 10/13/89        id   40302
        nb-94         mt=102                        updated 10/13/89        id   41094
        mo-95         mt=102                        updated 10/13/89        id   42095
        tc-99         mt=102                        updated 10/13/89        id   43099
        ru-101        mt=102                        updated 10/13/89        id   44101
        ru-106        mt=102                        updated 10/13/89        id   44106
        rh-103        mt=102                        updated 10/13/89        id   45103
        rh-105           mt=  102                                           id   45105
        pd-105        mt=102                        updated 10/13/89        id   46105
        pd-108        mt=102                        updated 10/13/89        id   46108
        silver-109    endf/b-iv mat 1139            updated 10/13/89        id   47109
        sb-124        mt=102                        updated 10/13/89        id   51124
        xe-131        mt=102,103,104,105,106        updated 10/13/89        id   54131
        xe-132        mt=102,103,104,105,106        updated 10/13/89        id   54132
        xenon-135     endf/b-iv mat 1294            updated 10/13/89        id   54135
        xe-136           mt=  102, 103, 104, 105, 107                       id   54136
        cesium-133    endf/b-iv mat 1141            updated 10/13/89        id   55133
        cs-134        mt=102                        updated 10/13/89        id   55134
        cs-135           mt=  102                                           id   55135
        cs-137        mt=102                        updated 10/13/89        id   55137
```

INFORMATION ONLY

```
      ba-136        mt=102                      updated 10/13/89          id   56136
      la-139        mt=102                      updated 10/13/89          id   57139
      ce-144          mt=  102                                            id   58144
      pr-141        mt=102,103,104,105,106,107  updated 10/13/89          id   59141
      pr-143        mt=102                      updated 10/13/89          id   59143
      nd-143        mt=102                      updated 10/13/89          id   60143
      nd-145        mt=102                      updated 10/13/89          id   60145
      nd-147        mt=102                      updated 10/13/89          id   60147
      pm-147        mt=102                      updated 10/13/89          id   61147
      pm-148          mt=  102                                            id   61148
      sm-147        endf/b-v fission product    updated 10/13/89          id   62147
      sm-149        mt=102,103,107              updated 10/13/89          id   62149
      sm-150        mt=102                      updated 10/13/89          id   62150
      sm-151        mt=102,103,104,105,106,107  updated 10/13/89          id   62151
      sm-152        mt=102,103,104,105,106,107  updated 10/13/89          id   62152
      eu-153        mt=102,103,104,105,106,107  updated 10/13/89          id   63153
      eu-154        mt=102,103,104,105,106,107  updated 10/13/89          id   63154
      eu-155        mt=102,103,104,105,106,107  updated 10/13/89          id   63155
      gd-155        mt=102                      updated 10/13/89          id   64155
     u-234 1043 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92234
      uranium-235   endf/b-iv mat 1261          updated 10/13/89          id   92235
     u-236 1163 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92236
      uranium-238   endf/b-iv mat 1262          updated 10/13/89          id   92238
      neptunium-237 endf/b-iv mat 1263          updated 10/13/89          id   93237
     pu-238 1050 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   94238
      plutonium-239 endf/b-iv mat 1264          updated 10/13/89          id   94239
      plutonium-240 endf/b-iv mat 1265          updated 10/13/89          id   94240
      plutonium-241 endf/b-iv mat 1266          updated 10/13/89          id   94241
      plutonium-242 endf/b-iv mat 1161          updated 10/13/89          id   94242
     am-241 1056 sigp=5+4 nsxlacs 218ngp p-3 293k                         id   95241
     am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                         id   95243
      curium-244    endf/b-iv mat 1162          updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx        xx  sssssssss   ddddddddd   rrrrrrrrr  m       m  ppppppppp  mm       mm
  xx      xx  sssssssssss  dddddddddd  rrrrrrrrrr mm      m  pppppppppp mmm     mmm
   xx    xx  ss       ss  dd       dd  rr       rr mmm     m  pp      pp mmmm   mmmm
    xx  xx  ss           dd       dd  rr       rr mmm     m  pp      pp mm mm mm mm
     xx xx  ss           dd       dd  rr       rr m  m    m  pp      pp mm  mm  mm
      xxx   sssssssssss  dd       dd  rrrrrrrrrr m   m   m  pppppppppp mm   m   mm
      xxx    sssssssssss dd       dd  rrrrrrrrr  m    m  m  ppppppppp  mm       mm
     xx xx            ss  dd       dd  rr     rr  m     mm  pp          mm       mm
    xx  xx            ss  dd       dd  rr      rr m      m  pp          mm       mm
   xx    xx  ss       ss  dd       dd  rr       rr m      m  pp          mm       mm
  xx      xx  sssssssssss  ddddddddd  rr       rr m      m  pp          mm       mm
 xx        xx  sssssssss   ddddddddd   rr       rr m      m  pp          mm       mm
0

  ddddddddd    aaaaaaaa    w       w  iiiiiiiiiii   sssssssss
  ddddddddddd  aaaaaaaaa   w       w  iiiiiiiiiii   ssssssssss
  dd       dd  aa      aa  w       w      ii       ss      ss
  dd       dd  aa      aa  w       w      ii       ss
  dd       dd  aa      aa  w       w      ii       ss
  dd       dd  aaaaaaaaaa  w       w      ii       ssssssssss
  dd       dd  aaaaaaaaaa   w     w       ii        ssssssssss
  dd       dd  aa      aa    w   w        ii                ss
  dd       dd  aa      aa     w w         ii                ss
  dd       dd  aa      aa      w w        ii       ss      ss
  ddddddddddd  aa      aa       w         iiiiiiiiiii  ssssssssss
  ddddddddd    aa      aa       v         iiiiiiiiiii   sssssssss
0
```

INFORMATION ONLY

```
0
1
0
```

```
program verification information
code system:  scale  version:  4.2

program:  c0c001
creation date:  04/27/95
```

INFORMATION ONLY

```
*****                                                                  *****
*****            library:  /nautronics/scale/exe                       *****
*****                                                                  *****
*****                                                                  *****
*****   this is not a   scale  configuration controlled code           *****
*****                                                                  *****
*****            jdname:  davis                                        *****
*****                                                                  *****
*****   date of execution:  02/16/96                                   *****
*****                                                                  *****
*****   time of execution:  10:02:03                                   *****
*****                                                                  *****
*****                                                                  *****
************************************************************************
************************************************************************
************************************************************************
1
                    720 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      -1q array has     1 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                   720 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                          general problem data

 igs  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                  8
 izs  number of zones                    4      isct order of scattering               3
 in   number of special intervals       24      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          20
 ibr  right boundary condition           3      iom  outer iteration maximum          25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sn/cpt           0
 ms   mixing table length               65      ith  0/1 = forward/adjoint             0
 igm  number of energy groups           27      iflu not used(always wgtd)             0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0      idt  0/1/2/3=no/prt nd/pch n/both      53
 iftg number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt     0
0                          special options

 ifg  0/1 = none/weighting calculation   1      ipn  0/1/2 diff. coef. param           0
 iqs  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 39*    1
 ips  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    53      iai  0/1=none/activities by interval   0
 itmx maximum time (minutes)            10      ifct 0/1=no/yes upscatter scaling      0
 idt1 0/1/2/3=no/xsect/srcs/flux--out    0      ipvt 0/1/2=no/k/alpha parametric srch  0
 isx  broad group fluxes                 0      isen outer iteration acceleration      0
 ibln activity data unit                 0      nbnd band rebain parameter             0
 jbkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1      ihtf total xsect pan in brd gp tables  3
 igmf number of broad groups            27      ndsf pan g-g or file number            4
 itp  0/10/20/30/40 0/c/e/ac/a           0      nusf table length or max order         4
 ipp  -2/-1/0/n=wgted xsect print       -2      mxcm extra 1-d x-sect positions        0
 iap  -1/n anisn xsect print            -1
0                          floating point parameters
```

INFORMATION ONLY

```
eps  overall convergence        1.00000E-04     dy  cyl/pla ht for buckling     .00000E+00
ptc  point convergence          1.00000E-04     dz  plane depth for buckling    .00000E+00
xnf  normalization factor       1.00000E+00     vsc void streaming correction   .00000E+00
ev   eigenvalue guess            .00000E+00     pv  ipvt=1/2--k/alpha          1.00000E+00
evm  eigenvalue modifier         .00000E+00     eql ev change eps for search   1.00000E-03
bf   buckling factor=1.420892 1.42089E+00       xrpm new param mod for search  7.50000E-01
     this case will require      2535 locations for mixing
     this case has been allocated 200000 locations
1                 720 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0       13q array has     65 entries.
0       14q array has     65 entries.
0       15q array has     65 entries.
0                          data block 2 (mixing table, etc.)
0
```

	nuclides on tape	cccc identification	mixture	mixing table component	atom density	extra xsect id's
1	999		1	92235	4.44492E-04	
2	1001		1	92234	4.66639E-06	
3	5010		1	92236	4.78943E-05	
4	5011		1	92238	2.18734E-02	
5	8016		1	8016	4.55359E-02	
6	6		3	6	2.09710E-02	
7	36083		1	36083	1.21060E-06	
8	36085		1	36085	5.82772E-07	
9	38090		1	38090	1.32013E-05	
10	39089		1	39089	1.02024E-05	
11	40093		1	42095	1.31680E-05	
12	40094		1	40093	1.03725E-05	
13	40095		1	40094	1.62229E-05	
14	40902		1	40095	2.03583E-06	
15	41094		1	41094	7.53597E-12	
16	42095		1	43099	1.58444E-05	
17	43099		1	45103	8.51543E-06	
18	44101		1	45105	2.07139E-08	
19	44106		1	44101	1.42308E-05	
20	45103		1	44106	2.14911E-06	
21	45105		1	46105	5.27789E-06	
22	46105		1	46108	1.39836E-06	
23	46108		1	47109	9.89759E-07	
24	47109		1	51124	2.30439E-10	
25	51124		1	54131	7.31080E-06	
26	54131		1	54132	1.32259E-05	
27	54132		1	54135	6.67573E-09	
28	54135		1	54136	2.70588E-05	
29	54136		1	55134	6.68975E-07	
30	55133		1	55135	8.57012E-06	
31	55134		1	55137	1.68757E-05	
32	55135		1	56136	1.31478E-07	
33	55137		1	57139	1.67362E-05	
34	56136		1	59141	1.43133E-05	
35	57139		1	59143	3.77677E-07	
36	58144		1	58144	6.39792E-06	
37	59141		1	60143	1.33774E-05	
38	59143		1	60145	9.77101E-06	
39	60143		1	61147	3.64313E-06	
40	60145		1	61148	1.04656E-08	
41	60147		1	60147	1.30684E-07	
42	61147		1	62147	1.01929E-06	
43	61148		1	62149	8.40498E-08	
44	62147		1	62150	3.35633E-06	
45	62149		1	62151	3.68860E-07	

46	62150	1	62152	1.63140E-06
47	62151	1	64155	1.63702E-09
48	62152	1	63153	9.03257E-07
49	63153	1	63154	1.63879E-07
50	63154	1	63155	9.91552E-08
51	63155	2	40302	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	1.73735E-05
56	92238	1	93237	2.81758E-06
57	93237	1	94238	3.26250E-07
58	94238	1	94239	9.65273E-05
59	94239	1	94240	1.62388E-05
60	94240	1	94241	8.08987E-06
61	94241	1	94242	7.23719E-07
62	94242	1	95241	1.99179E-07
63	95241	1	95243	5.27834E-08
64	95243	1	96244	3.99487E-09
65	96244	1	999	1.00000E-20

```
r elapsed time    .00 min.
0  21649 locations will be used
0      35q array has     25 entries.
0      36q array has     24 entries.
0      38q array has     24 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                    720 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/atu burn high temp
                          neutron group parameters
```

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72615E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69995E+06	13	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00	
17	1.29999E+00	1.58657E+01	1.52545E+06	17	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00	
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.85953E+05	23	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00	
26	3.00000E-02	1.95247E+01	1.87283E+05	26	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00	

INFORMATION ONLY

28 1.00000E-05 2.76310E+01

1 720 d, sas2h: babcock wilcox 15x15, 3.00w/o, 20gd/atu burn high temp

0

	mixture by zone	order p(l) by zone	activity table mtl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28598E-02
7					5.55953E-02	2.31301E-01	6	1.28598E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	16	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70555E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98356E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36885E-01	5.00705E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16520E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78178E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78178E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16520E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49518E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94065E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		

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6	3.53873E-01	3.80612E-01	1	2.22346E+00	1.27890E-01	1.00000E+00
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30426E-02	1.00000E+00
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0
12	4.77405E-01	4.78098E-01	2	2.99952E+00	4.16023E-03	0
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00
14	4.87528E-01	4.99987E-01	3	3.06325E+00	7.82768E-02	1.00000E+00
15	5.12445E-01	5.24903E-01	3	3.21979E+00	8.21777E-02	1.00000E+00
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00
22	7.48592E-01	7.63828E-01	4	4.70354E+00	1.46875E-01	1.00000E+00
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89114E-02	1.00000E+00
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00
25	8.13968E-01			5.11431E+00		

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	129	2.30684E-06	1.05050E+00	-5.54241E-02	1.00000E+00	-1.89484E-02	.00000E+00	.0000
2	201	-3.31959E-06	1.05598E+00	-1.19188E-03	-5.77070E-03	-2.77019E-03	.00000E+00	.0000
3	259	-3.35895E-06	1.05675E+00	-1.88910E-04	-7.85543E-04	-6.33710E-04	.00000E+00	.0000
4	302	1.09928E-05	1.05676E+00	-4.10437E-05	-1.82566E-04	-1.42894E-04	.00000E+00	.0000

grp	to grp	inner iters	wfd int.	max. flux difference	wsf int.	max. scale factor	coarse mesh
1	1	1	1	1.60256E-07	24	1.00000E+00	1
2	2	1	1	1.82710E-07	24	1.00000E+00	1
3	3	1	1	1.66012E-07	24	1.00000E+00	1
4	4	1	1	1.57203E-07	24	1.00000E+00	1
5	5	1	1	1.47925E-07	24	1.00000E+00	1
6	6	1	1	8.90491E-08	24	1.00000E+00	1
7	7	1	1	5.57681E-08	24	1.00000E+00	1
8	8	1	1	1.21885E-08	24	1.00000E+00	1
9	9	1	2	7.34707E-09	24	1.00000E+00	1
10	10	1	2	7.04445E-09	24	1.00000E+00	1
11	11	1	2	7.28211E-09	24	1.00000E+00	1
12	12	1	24	1.75957E-08	24	1.00000E+00	1
13	13	1	24	2.20915E-08	24	1.00000E+00	1
14	14	1	24	2.13140E-08	24	1.00000E+00	1
15	15	1	20	4.85868E-05	24	9.99838E-01	1
16	16	1	20	5.97910E-05	24	9.99844E-01	1
17	17	1	19	7.68363E-05	24	9.99850E-01	1
18	18	2	24	4.75161E-05	24	1.00008E+00	1
19	19	1	20	7.57303E-05	24	9.99834E-01	1
20	20	1	20	5.73101E-05	24	9.99794E-01	1
21	21	2	24	5.05713E-05	24	1.00002E+00	1
22	22	1	19	5.68041E-05	24	9.99885E-01	1
23	23	1	24	1.09517E-05	24	1.00000E+00	1
24	24	1	24	4.63568E-05	24	1.00008E+00	1
25	25	1	24	5.66416E-05	24	1.00002E+00	1
26	26	1	2	2.57303E-05	24	1.00002E+00	2
27	27	1	24	3.24004E-05	19	1.00001E+00	2

5	331	-1.38628E-05	1.05708E+00	-9.66132E-06	-4.09050E-05	-2.89992E-05	.00000E+00	.0167

final monitor

lambda 1.05694E+00 production/absorption 1.05693E+00 angular flux on 16

- elapsed time .02 min.

1 720 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 int.	zone	number	radius	int. midpoint	area	volume	prod density
1		1	.00000E+00	1.29551E-02	.00000E+00	2.10906E-03	3.09003E-03
2		1	2.59100E-02	4.33406E-02	1.62798E-01	9.48318E-03	1.39024E-02
3		1	6.07710E-02	8.75100E-02	3.81836E-01	2.94045E-02	4.31432E-02
4		1	1.14249E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.94239E-01
5		1	2.34061E-01	2.95967E-01	1.47065E+00	2.21259E-01	3.35787E-01
6		1	3.53873E-01	3.80612E-01	2.22346E+00	1.27890E-01	1.99196E-01
7		1	4.07351E-01	4.24781E-01	2.55946E+00	9.30429E-02	1.47765E-01
8		1	4.42212E-01	4.55167E-01	2.77850E+00	7.41004E-02	1.19812E-01
9		2	4.68122E-01	4.68814E-01	2.94130E+00	4.07946E-03	.00000E+00
10		2	4.69507E-01	4.71481E-01	2.95000E+00	1.16988E-02	.00000E+00
11		2	4.73456E-01	4.75431E-01	2.97481E+00	1.17968E-02	.00000E+00
12		2	4.77405E-01	4.78098E-01	2.99962E+00	4.16023E-03	.00000E+00
13		3	4.78790E-01	4.83159E-01	3.00833E+00	2.65268E-02	.00000E+00
14		3	4.87528E-01	4.99987E-01	3.06325E+00	7.82768E-02	.00000E+00
15		3	5.12445E-01	5.24903E-01	3.21979E+00	8.21777E-02	.00000E+00
16		3	5.37362E-01	5.41731E-01	3.37634E+00	2.97427E-02	.00000E+00
17		4	5.46100E-01	5.53513E-01	3.43125E+00	5.15631E-02	.00000E+00
18		4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19		4	5.80874E-01	5.96175E-01	3.64974E+00	1.14628E-01	.00000E+00
20		4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21		4	6.80034E-01	7.14313E-01	4.27278E+00	3.07702E-01	.00000E+00
22		4	7.48592E-01	7.63895E-01	4.70854E+00	1.46875E-01	.00000E+00
23		4	7.79198E-01	7.89167E-01	4.85582E+00	9.89114E-02	.00000E+00
24		4	7.99141E-01	8.06654E-01	5.02115E+00	7.51357E-02	.00000E+00
25			8.13968E-01		5.11431E+00		

1 720 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.79147E-01	1.33355E+00	1.68345E+00	1.04266E+00	1.57657E+00	3.03138E+00	2.90668E+00	2.08120E+00
2	1.79212E-01	1.33418E+00	1.68429E+00	1.04316E+00	1.57727E+00	3.03269E+00	2.90685E+00	2.08126E+00
3	1.79155E-01	1.33356E+00	1.68351E+00	1.04259E+00	1.57649E+00	3.03100E+00	2.90533E+00	2.08107E+00
4	1.78754E-01	1.32930E+00	1.67807E+00	1.03938E+00	1.57122E+00	3.02061E+00	2.89908E+00	2.08001E+00
5	1.77714E-01	1.31833E+00	1.66424E+00	1.03101E+00	1.55797E+00	2.99465E+00	2.88349E+00	2.07740E+00
6	1.76514E-01	1.30588E+00	1.64865E+00	1.02164E+00	1.54325E+00	2.96621E+00	2.86656E+00	2.07451E+00
7	1.75557E-01	1.29601E+00	1.63662E+00	1.01450E+00	1.53217E+00	2.94522E+00	2.85417E+00	2.07234E+00
8	1.74605E-01	1.28644E+00	1.62507E+00	1.00774E+00	1.52184E+00	2.92605E+00	2.84295E+00	2.07029E+00
9	1.74084E-01	1.28126E+00	1.61887E+00	1.00415E+00	1.51641E+00	2.91606E+00	2.83715E+00	2.06920E+00
10	1.73978E-01	1.28022E+00	1.61763E+00	1.00346E+00	1.51541E+00	2.91427E+00	2.83617E+00	2.06901E+00
11	1.73817E-01	1.27870E+00	1.61584E+00	1.00247E+00	1.51399E+00	2.91174E+00	2.83477E+00	2.06872E+00
12	1.73712E-01	1.27770E+00	1.61466E+00	1.00183E+00	1.51308E+00	2.91011E+00	2.83388E+00	2.06853E+00
13	1.73517E-01	1.27585E+00	1.61244E+00	1.00057E+00	1.51127E+00	2.90667E+00	2.83195E+00	2.06815E+00
14	1.72587E-01	1.27058E+00	1.60592E+00	9.96753E-01	1.50546E+00	2.89541E+00	2.82553E+00	2.06711E+00
15	1.72392E-01	1.26419E+00	1.59752E+00	9.91434E-01	1.49706E+00	2.87877E+00	2.81595E+00	2.06597E+00
16	1.72101E-01	1.26066E+00	1.59250E+00	9.87963E-01	1.49134E+00	2.86725E+00	2.80926E+00	2.06545E+00
17	1.71961E-01	1.25863E+00	1.58988E+00	9.85632E-01	1.48736E+00	2.85927E+00	2.80457E+00	2.06531E+00
18	1.71778E-01	1.25601E+00	1.58639E+00	9.82660E-01	1.48250E+00	2.84980E+00	2.79871E+00	2.06517E+00
19	1.71548E-01	1.25259E+00	1.58076E+00	9.79294E-01	1.47662E+00	2.83816E+00	2.79214E+00	2.06495E+00
20	1.71243E-01	1.24885E+00	1.57488E+00	9.75078E-01	1.46955E+00	2.82431E+00	2.78400E+00	2.06460E+00
21	1.71031E-01	1.24605E+00	1.57074E+00	9.72092E-01	1.46452E+00	2.81449E+00	2.77831E+00	2.06450E+00
22	1.71032E-01	1.24592E+00	1.57044E+00	9.71810E-01	1.46400E+00	2.81348E+00	2.77787E+00	2.06473E+00
23	1.71110E-01	1.24678E+00	1.57167E+00	9.72538E-01	1.46518E+00	2.81577E+00	2.77985E+00	2.06501E+00
24	1.71199E-01	1.24780E+00	1.57288E+00	9.73436E-01	1.46663E+00	2.81862E+00	2.78114E+00	2.06528E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58978E+00	1.44719E+00	1.30657E+00	7.98177E-01	6.70742E-01	5.84450E-01	3.68940E-01	2.02984E-01
2	1.58771E+00	1.44705E+00	1.30636E+00	7.95968E-01	6.70531E-01	5.84161E-01	3.68900E-01	2.02960E-01
3	1.58789E+00	1.44731E+00	1.30683E+00	7.96495E-01	6.70994E-01	5.84871E-01	3.68987E-01	2.03008E-01
4	1.58892E+00	1.44852E+00	1.30946E+00	7.99580E-01	6.73628E-01	5.88824E-01	3.69420E-01	2.03284E-01
5	1.59150E+00	1.45150E+00	1.31594E+00	8.07199E-01	6.80131E-01	5.98634E-01	3.70464E-01	2.03963E-01

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6	1.59437E+00	1.45475E+00	1.32302E+00	8.15587E-01	6.87282E-01	6.09498E-01	3.71589E-01	2.04702E-01
7	1.59654E+00	1.45713E+00	1.32824E+00	8.21806E-01	6.92576E-01	6.17609E-01	3.72398E-01	2.05243E-01
8	1.59860E+00	1.45929E+00	1.33299E+00	8.27516E-01	6.97431E-01	6.25087E-01	3.73120E-01	2.05735E-01
9	1.59970E+00	1.46041E+00	1.33545E+00	8.30482E-01	6.99953E-01	6.28977E-01	3.73490E-01	2.05990E-01
10	1.59989E+00	1.46059E+00	1.33585E+00	8.30959E-01	7.00366E-01	6.29596E-01	3.73552E-01	2.06034E-01
11	1.60018E+00	1.46085E+00	1.33641E+00	8.31640E-01	7.00954E-01	6.30483E-01	3.73642E-01	2.06096E-01
12	1.60036E+00	1.46102E+00	1.33677E+00	8.32081E-01	7.01334E-01	6.31055E-01	3.73699E-01	2.06137E-01
13	1.60074E+00	1.46136E+00	1.33752E+00	8.32980E-01	7.02112E-01	6.32226E-01	3.73818E-01	2.06219E-01
14	1.60178E+00	1.46246E+00	1.33990E+00	8.35795E-01	7.04547E-01	6.35890E-01	3.74199E-01	2.06478E-01
15	1.60289E+00	1.46403E+00	1.34326E+00	8.39675E-01	7.07905E-01	6.40938E-01	3.74735E-01	2.06837E-01
16	1.60342E+00	1.46507E+00	1.34547E+00	8.42177E-01	7.10069E-01	6.44186E-01	3.75096E-01	2.07068E-01
17	1.60371E+00	1.46585E+00	1.34713E+00	8.44017E-01	7.11628E-01	6.46654E-01	3.75290E-01	2.07218E-01
18	1.60414E+00	1.46691E+00	1.34958E+00	8.46533E-01	7.13740E-01	6.49781E-01	3.75504E-01	2.07410E-01
19	1.60468E+00	1.46812E+00	1.35193E+00	8.49429E-01	7.16177E-01	6.53501E-01	3.75756E-01	2.07635E-01
20	1.60544E+00	1.46964E+00	1.35522E+00	8.53118E-01	7.19281E-01	6.58240E-01	3.76064E-01	2.07918E-01
21	1.60600E+00	1.47073E+00	1.35755E+00	8.55748E-01	7.21446E-01	6.61598E-01	3.76217E-01	2.08096E-01
22	1.60606E+00	1.47084E+00	1.35777E+00	8.55980E-01	7.21611E-01	6.61858E-01	3.76127E-01	2.08076E-01
23	1.60591E+00	1.47056E+00	1.35719E+00	8.55296E-01	7.20995E-01	6.60953E-01	3.75978E-01	2.07995E-01
24	1.60572E+00	1.47023E+00	1.35646E+00	8.54453E-01	7.20250E-01	6.59847E-01	3.75828E-01	2.07903E-01
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.22947E-02	3.69456E-02	1.21623E-01	4.23065E-01	1.06336E-01	1.76019E-01	6.67073E-01	4.91611E-01
2	8.22659E-02	3.68958E-02	1.21575E-01	4.22940E-01	1.06268E-01	1.75875E-01	6.66661E-01	4.91274E-01
3	8.23232E-02	3.71640E-02	1.21680E-01	4.23148E-01	1.06467E-01	1.76520E-01	6.67697E-01	4.92220E-01
4	8.26555E-02	3.82301E-02	1.22275E-01	4.24354E-01	1.07545E-01	1.79682E-01	6.73457E-01	4.97589E-01
5	8.34796E-02	4.09748E-02	1.23732E-01	4.27316E-01	1.10240E-01	1.87644E-01	6.87741E-01	5.10237E-01
6	8.43891E-02	4.41961E-02	1.25318E-01	4.30551E-01	1.13253E-01	1.96684E-01	7.03548E-01	5.24521E-01
7	8.50657E-02	4.67821E-02	1.26475E-01	4.32986E-01	1.15530E-01	2.03633E-01	7.15343E-01	5.35237E-01
8	8.56892E-02	4.93228E-02	1.27520E-01	4.35089E-01	1.17651E-01	2.10209E-01	7.26220E-01	5.45180E-01
9	8.60140E-02	5.06765E-02	1.28058E-01	4.36211E-01	1.18758E-01	2.13661E-01	7.31869E-01	5.50858E-01
10	8.60674E-02	5.08487E-02	1.28145E-01	4.36397E-01	1.18927E-01	2.14150E-01	7.32740E-01	5.51135E-01
11	8.61437E-02	5.10954E-02	1.28270E-01	4.36663E-01	1.19168E-01	2.14849E-01	7.33980E-01	5.52240E-01
12	8.61981E-02	5.12564E-02	1.28350E-01	4.36835E-01	1.19324E-01	2.15302E-01	7.34780E-01	5.52952E-01
13	8.62942E-02	5.15809E-02	1.28516E-01	4.37185E-01	1.19642E-01	2.16224E-01	7.36416E-01	5.54406E-01
14	8.66099E-02	5.25832E-02	1.29041E-01	4.38286E-01	1.20636E-01	2.19085E-01	7.41507E-01	5.58897E-01
15	8.70440E-02	5.39857E-02	1.29775E-01	4.39759E-01	1.22000E-01	2.22966E-01	7.48419E-01	5.64887E-01
16	8.73227E-02	5.47874E-02	1.30256E-01	4.40764E-01	1.22872E-01	2.25420E-01	7.52778E-01	5.68598E-01
17	8.75266E-02	5.54283E-02	1.30602E-01	4.41442E-01	1.23544E-01	2.27332E-01	7.56369E-01	5.71998E-01
18	8.78066E-02	5.63208E-02	1.31068E-01	4.42357E-01	1.24491E-01	2.30062E-01	7.61717E-01	5.77345E-01
19	8.81290E-02	5.73463E-02	1.31606E-01	4.43427E-01	1.25587E-01	2.33237E-01	7.68101E-01	5.83806E-01
20	8.85401E-02	5.86489E-02	1.32291E-01	4.44797E-01	1.26995E-01	2.37327E-01	7.76886E-01	5.92525E-01
21	8.88320E-02	5.95812E-02	1.32772E-01	4.45743E-01	1.28008E-01	2.40294E-01	7.82598E-01	5.99528E-01
22	8.88662E-02	5.96760E-02	1.32803E-01	4.45771E-01	1.28115E-01	2.40621E-01	7.83948E-01	6.00620E-01
23	8.87795E-02	5.96501E-02	1.32666E-01	4.45466E-01	1.27871E-01	2.39919E-01	7.82657E-01	5.99540E-01
24	8.86855E-02	5.91669E-02	1.32501E-01	4.45109E-01	1.27564E-01	2.39031E-01	7.80756E-01	5.98002E-01
0 int.	grp. 25	grp. 26	grp. 27					
1	2.04150E-01	1.23962E-01	1.62609E-02					
2	2.04009E-01	1.23874E-01	1.62612E-02					
3	2.04507E-01	1.24353E-01	1.64089E-02					
4	2.07134E-01	1.26761E-01	1.70793E-02					
5	2.13672E-01	1.32775E-01	1.87817E-02					
6	2.20974E-01	1.39573E-01	2.07691E-02					
7	2.26487E-01	1.44775E-01	2.23667E-02					
8	2.31638E-01	1.49702E-01	2.39516E-02					
9	2.34329E-01	1.52250E-01	2.47990E-02					
10	2.34719E-01	1.52640E-01	2.48969E-02					
11	2.35275E-01	1.53138E-01	2.50362E-02					
12	2.35634E-01	1.53459E-01	2.51259E-02					
13	2.36363E-01	1.54110E-01	2.53081E-02					
14	2.38578E-01	1.56072E-01	2.58465E-02					
15	2.41467E-01	1.58587E-01	2.65125E-02					

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16	2.43181E-01	1.60059E-01	2.68841E-02
17	2.44910E-01	1.61817E-01	2.74610E-02
18	2.47773E-01	1.64887E-01	2.85150E-02
19	2.51269E-01	1.68519E-01	2.97503E-02
20	2.56042E-01	1.73708E-01	3.13762E-02
21	2.59863E-01	1.77863E-01	3.27133E-02
22	2.60684E-01	1.78927E-01	3.31109E-02
23	2.60187E-01	1.78562E-01	3.30648E-02
24	2.59424E-01	1.77890E-01	3.29159E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.27834E-02	.00000E+00	1.27835E-02	1.05397E-02	3.23724E-03	1.12142E-02	9.98836E-01
2	.00000E+00	1.93360E-01	2.35212E-03	1.67378E-01	6.66508E-02	1.36418E-02	1.15429E-01	1.00004E+00
3	.00000E+00	2.15763E-01	2.68562E-02	1.61228E-01	8.13114E-02	1.55438E-02	1.45263E-01	1.00000E+00
4	.00000E+00	1.23897E-01	3.90464E-02	1.05435E-01	6.78865E-02	7.40609E-03	8.76483E-02	1.00001E+00
5	.00000E+00	1.64367E-01	6.80627E-02	2.59700E-01	9.47832E-02	4.41163E-03	1.33256E-01	9.99992E-01
6	.00000E+00	1.77483E-01	1.34837E-01	6.53829E-01	5.43823E-02	6.94352E-03	2.50988E-01	1.00003E+00
7	.00000E+00	8.77826E-02	9.84879E-02	7.44822E-01	3.63351E-02	7.47750E-03	1.42637E-01	1.00001E+00
8	.00000E+00	1.35239E-02	4.25805E-02	6.30786E-01	2.15051E-02	1.38255E-02	2.07712E-02	1.00005E+00
9	.00000E+00	9.81536E-04	2.17281E-02	5.35545E-01	2.06897E-02	2.29364E-02	-2.09042E-02	9.99991E-01
10	.00000E+00	7.25039E-05	2.07114E-02	4.61417E-01	1.07058E-02	3.55839E-02	-2.55057E-02	1.00001E+00
11	.00000E+00	5.73558E-06	1.07067E-02	4.23345E-01	8.15330E-03	5.80203E-02	-5.54615E-02	1.00001E+00
12	.00000E+00	4.02975E-07	8.15335E-03	2.39571E-01	9.37688E-03	6.40570E-02	-6.52571E-02	9.99960E-01
13	.00000E+00	6.39798E-08	9.37689E-03	1.78995E-01	6.15287E-03	5.94453E-02	-5.62217E-02	1.00001E+00
14	.00000E+00	1.26790E-08	6.15287E-03	1.52008E-01	7.39336E-03	8.35490E-02	-8.47806E-02	1.00000E+00
15	.00000E+00	1.43286E-09	7.47109E-03	8.44814E-02	8.86820E-03	6.94069E-03	-8.39745E-03	1.00377E+00
16	.00000E+00	4.20738E-10	9.08061E-03	4.25418E-02	9.55262E-03	5.38954E-03	-5.95372E-03	1.00282E+00
17	.00000E+00	1.35498E-10	7.65731E-03	1.44202E-02	7.36023E-03	7.62079E-03	-7.34180E-03	1.00121E+00
18	.00000E+00	9.70128E-11	7.05739E-03	8.59951E-03	4.25206E-03	2.56773E-02	-2.28560E-02	1.00013E+00
19	.00000E+00	1.37155E-10	6.48623E-03	2.36319E-02	8.66922E-03	1.01044E-02	-1.23063E-02	1.00101E+00
20	.00000E+00	2.23023E-10	9.86478E-03	1.01120E-01	9.56416E-03	2.60108E-02	-2.57754E-02	1.00185E+00
21	.00000E+00	3.26442E-11	8.97754E-03	2.08265E-02	8.09340E-03	2.43936E-02	-2.35258E-02	1.00044E+00
22	.00000E+00	3.78747E-11	1.17446E-02	4.05430E-02	9.13392E-03	7.02846E-02	-6.77078E-02	1.00043E+00
23	.00000E+00	3.62124E-11	1.41527E-02	1.63453E-01	1.78592E-02	1.21836E-01	-1.25645E-01	1.00073E+00
24	.00000E+00	9.85656E-12	2.17814E-02	1.12898E-01	2.18441E-02	1.13778E-01	-1.13917E-01	1.00056E+00
25	.00000E+00	2.88535E-12	1.86897E-02	4.27495E-02	1.41086E-02	6.19250E-02	-5.75766E-02	1.00042E+00
26	.00000E+00	2.02325E-12	9.19215E-03	2.97282E-02	6.33813E-03	5.56420E-02	-5.28068E-02	1.00030E+00
27	.00000E+00	4.82146E-13	1.98517E-03	4.44033E-03	1.08145E-03	1.55400E-02	-1.46339E-02	1.00016E+00
28	.00000E+00	1.00000E+00	6.22643E-01	5.41485E+00	6.22643E-01	9.41190E-01	6.05264E-02	1.00030E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.74113E-01	1.12142E-02	1.79086E-01	.00000E+00	2.27852E-03	2.65102E-03	.00000E+00	1.21957E-01
2	1.28154E+00	1.15429E-01	1.33293E+00	.00000E+00	1.70654E-05	1.18697E-02	.00000E+00	9.03624E-01
3	1.61919E+00	1.45263E-01	1.68264E+00	.00000E+00	.00000E+00	1.45190E-02	.00000E+00	1.14088E+00
4	1.00434E+00	8.76483E-02	1.04218E+00	.00000E+00	.00000E+00	6.25975E-03	.00000E+00	7.06913E-01
5	1.51667E+00	1.33256E-01	1.57586E+00	.00000E+00	.00000E+00	1.80747E-03	.00000E+00	1.06812E+00
6	2.91654E+00	2.50988E-01	3.03003E+00	.00000E+00	.00000E+00	1.54159E-03	.00000E+00	2.05324E+00
7	2.85742E+00	1.42637E-01	2.90495E+00	.00000E+00	.00000E+00	1.49123E-03	.00000E+00	1.98016E+00
8	2.06925E+00	2.07712E-02	2.08110E+00	.00000E+00	.00000E+00	1.50630E-03	.00000E+00	1.42580E+00
9	1.59965E+00	-2.09042E-02	1.58988E+00	.00000E+00	.00000E+00	2.00510E-03	.00000E+00	1.09653E+00
10	1.46036E+00	-2.55057E-02	1.44731E+00	.00000E+00	.00000E+00	4.27114E-03	.00000E+00	1.00023E+00
11	1.33535E+00	-5.54615E-02	1.30683E+00	.00000E+00	.00000E+00	9.09949E-03	.00000E+00	9.08034E-01
12	8.30856E-01	-6.52571E-02	7.96471E-01	.00000E+00	.00000E+00	1.19534E-02	.00000E+00	5.58204E-01
13	6.99845E-01	-5.62217E-02	6.71002E-01	.00000E+00	.00000E+00	1.31836E-02	.00000E+00	4.70854E-01
14	6.28813E-01	-8.47806E-02	5.84819E-01	.00000E+00	.00000E+00	8.23099E-03	.00000E+00	4.15382E-01
15	3.73518E-01	-8.39745E-03	3.69028E-01	.00000E+00	.00000E+00	1.98407E-03	.00000E+00	2.55366E-01
16	2.06002E-01	-5.95372E-03	2.08057E-01	.00000E+00	.00000E+00	1.38092E-03	.00000E+00	1.40633E-01
17	8.60092E-02	-7.34180E-03	8.25378E-02	.00000E+00	.00000E+00	1.66006E-03	.00000E+00	5.77425E-02
18	5.06276E-02	-2.28560E-02	3.69961E-02	.00000E+00	.00000E+00	1.28585E-03	.00000E+00	2.93610E-02
19	1.28051E-01	-1.23063E-02	1.21697E-01	.00000E+00	.00000E+00	2.62594E-03	.00000E+00	8.56450E-02

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20	4.36253E-01	-2.57754E-02	4.23240E-01	.00000E+00	.00000E+00	1.55009E-02	.00000E+00	2.95133E-01
21	1.18705E-01	-2.35238E-02	1.06422E-01	.00000E+00	.00000E+00	1.49508E-02	.00000E+00	7.68105E-02
22	2.13547E-01	-6.77078E-02	1.76253E-01	.00000E+00	.00000E+00	4.27190E-02	.00000E+00	1.31991E-01
23	7.31605E-01	-1.25645E-01	6.69757E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	4.78204E-01
24	5.50114E-01	-1.13917E-01	4.98030E-01	.00000E+00	.00000E+00	7.05000E-02	.00000E+00	3.55578E-01
25	2.34210E-01	-5.73766E-02	2.04347E-01	.00000E+00	.00000E+00	4.01535E-02	.00000E+00	1.49520E-01
26	1.52187E-01	-5.28068E-02	1.24118E-01	.00000E+00	.00000E+00	3.68822E-02	.00000E+00	9.35099E-02
27	2.47718E-02	-1.46388E-02	1.62895E-02	.00000E+00	.00000E+00	1.04356E-02	.00000E+00	1.35787E-02
28	2.32790E+01	6.06264E-02	2.32485E+01	.00000E+00	2.29558E-03	4.05807E-01	.00000E+00	1.60157E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.47035E-08	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.38419E-07	9.99999E-01
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-08	9.99998E-01
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.96046E-08	9.99997E-01
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.79397E-08	1.00000E+00
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-08	9.99999E-01
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-08	9.99999E-01
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.47035E-08	9.99999E-01
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-08	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-6.05360E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.21541E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.62050E-07	9.99995E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.73686E-01	1.12142E-02	1.74113E-01	1.12142E-02	.00000E+00	.00000E+00	.00000E+00	5.51864E-03
2	1.27745E+00	1.15425E-01	1.28154E+00	1.15425E-01	.00000E+00	.00000E+00	.00000E+00	4.06040E-02
3	1.61437E+00	1.45263E-01	1.61919E+00	1.45263E-01	.00000E+00	.00000E+00	.00000E+00	5.13074E-02
4	1.00167E+00	8.76483E-02	1.00634E+00	8.76483E-02	.00000E+00	.00000E+00	.00000E+00	3.18294E-02
5	1.51285E+00	1.33256E-01	1.51667E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	4.80696E-02
6	2.90970E+00	2.50985E-01	2.91654E+00	2.50985E-01	.00000E+00	.00000E+00	.00000E+00	9.24452E-02
7	2.83366E+00	1.42637E-01	2.83742E+00	1.42637E-01	.00000E+00	.00000E+00	.00000E+00	8.99845E-02
8	2.06849E+00	2.07712E-02	2.06925E+00	2.07712E-02	.00000E+00	.00000E+00	.00000E+00	6.56659E-02
9	1.60041E+00	-2.09041E-02	1.59985E+00	-2.09042E-02	.00000E+00	.00000E+00	.00000E+00	5.07775E-02
10	1.46109E+00	-2.55057E-02	1.46036E+00	-2.55057E-02	.00000E+00	.00000E+00	.00000E+00	4.63563E-02
11	1.33687E+00	-5.54615E-02	1.33635E+00	-5.54615E-02	.00000E+00	.00000E+00	.00000E+00	4.24029E-02
12	8.32192E-01	-6.52571E-02	8.30856E-01	-6.52571E-02	.00000E+00	.00000E+00	.00000E+00	2.63815E-02
13	7.01430E-01	-5.62217E-02	6.99845E-01	-5.62217E-02	.00000E+00	.00000E+00	.00000E+00	2.22356E-02
14	6.31199E-01	-8.47806E-02	6.28813E-01	-8.47806E-02	.00000E+00	.00000E+00	.00000E+00	1.99944E-02
15	3.73759E-01	-8.39745E-03	3.73518E-01	-8.39745E-03	.00000E+00	.00000E+00	.00000E+00	1.18562E-02
16	2.06170E-01	-5.95373E-03	2.06002E-01	-5.95372E-03	.00000E+00	.00000E+00	.00000E+00	6.53952E-03
17	8.62149E-02	-7.34180E-03	8.60092E-02	-7.34180E-03	.00000E+00	.00000E+00	.00000E+00	2.73258E-03
18	5.12922E-02	-2.28560E-02	5.06278E-02	-2.28560E-02	.00000E+00	.00000E+00	.00000E+00	1.61760E-03
19	1.28389E-01	-1.23063E-02	1.28051E-01	-1.23063E-02	.00000E+00	.00000E+00	.00000E+00	4.06868E-03
20	4.36949E-01	-2.57754E-02	4.36253E-01	-2.57754E-02	.00000E+00	.00000E+00	.00000E+00	1.38534E-02

21	1.19355E-01	-2.35238E-02	1.18705E-01	-2.35238E-02	.00000E+00	.00000E+00	.00000E+00	3.77798E-03
22	2.15431E-01	-6.77078E-02	2.13547E-01	-6.77078E-02	.00000E+00	.00000E+00	.00000E+00	6.80715E-03
23	7.34946E-01	-1.25645E-01	7.31605E-01	-1.25645E-01	.00000E+00	.00000E+00	.00000E+00	2.32732E-02
24	5.53091E-01	-1.13917E-01	5.50114E-01	-1.13917E-01	.00000E+00	.00000E+00	.00000E+00	1.75078E-02
25	2.35709E-01	-5.73766E-02	2.34210E-01	-5.73766E-02	.00000E+00	.00000E+00	.00000E+00	7.45765E-03
26	1.53530E-01	-5.28068E-02	1.52187E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	4.85195E-03
27	2.51471E-02	-1.46389E-02	2.47718E-02	-1.46389E-02	.00000E+00	.00000E+00	.00000E+00	7.92306E-04
28	2.32750E+01	6.06267E-02	2.32790E+01	6.06264E-02	.00000E+00	.00000E+00	.00000E+00	7.38698E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.82801E-03	2.86963E-03	1.47067E-05	-2.78198E-03	1.00000E+00
2	.00000E+00	.00000E+00	5.01174E-04	2.60298E-02	1.86776E-02	5.17123E-05	-1.82283E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.66108E-03	5.02160E-02	1.58777E-02	1.37344E-04	-1.33530E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.14870E-03	4.21368E-02	5.45581E-03	1.03441E-04	-4.10140E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.10940E-02	8.16685E-02	5.16491E-03	1.52147E-04	5.77670E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85185E-02	2.35052E-01	3.21147E-03	3.20074E-04	1.49868E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.25186E-02	2.35197E-01	1.18222E-03	3.44767E-04	1.07918E-02	9.99999E-01
8	.00000E+00	.00000E+00	2.16269E-03	1.58600E-01	7.63682E-03	2.94651E-04	-5.76968E-03	1.00003E+00
9	.00000E+00	.00000E+00	7.67018E-03	1.05245E-01	8.77325E-04	1.10978E-03	5.68321E-03	9.99994E-01
10	.00000E+00	.00000E+00	8.78509E-04	8.56440E-02	8.49737E-04	8.36365E-04	-8.07460E-04	9.99995E-01
11	.00000E+00	.00000E+00	8.49798E-04	7.71430E-02	8.71214E-04	1.33865E-03	-1.36004E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.71222E-04	4.68372E-02	8.71390E-04	4.17006E-05	-4.19284E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.71392E-04	3.95021E-02	8.05815E-04	5.99755E-05	5.65872E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.05814E-04	3.58004E-02	6.74663E-04	9.53558E-05	3.57777E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.18410E-04	2.05627E-02	8.41566E-04	8.25774E-05	-2.04980E-04	9.99919E-01
16	.00000E+00	.00000E+00	9.39685E-04	1.08649E-02	9.41247E-04	5.11980E-05	-5.25125E-05	9.99936E-01
17	.00000E+00	.00000E+00	1.00274E-03	3.98074E-03	9.79870E-04	2.40485E-05	-1.02259E-06	9.99981E-01
18	.00000E+00	.00000E+00	1.02744E-03	2.30066E-03	7.42873E-04	1.57548E-05	2.68604E-04	9.99996E-01
19	.00000E+00	.00000E+00	7.89713E-04	6.44297E-03	9.50602E-04	4.17416E-05	-2.02259E-04	9.99975E-01
20	.00000E+00	.00000E+00	1.13347E-03	2.40599E-02	1.02287E-03	1.78897E-04	-6.71484E-05	9.99958E-01
21	.00000E+00	.00000E+00	1.26780E-03	5.59527E-03	1.33651E-03	6.16428E-05	-1.30136E-04	9.99997E-01
22	.00000E+00	.00000E+00	1.68609E-03	1.11409E-02	1.48897E-03	1.29808E-04	6.77556E-05	9.99995E-01
23	.00000E+00	.00000E+00	2.20558E-03	3.98459E-02	2.91098E-03	6.00461E-04	-1.30688E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.59082E-03	2.82317E-02	3.87437E-03	6.57647E-04	-9.42275E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.49494E-03	1.09051E-02	2.80882E-03	3.70910E-04	3.16922E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.46077E-03	7.93862E-03	1.04911E-03	3.46645E-04	6.48983E-05	1.00000E+00
27	.00000E+00	.00000E+00	3.04208E-04	1.49458E-03	7.70061E-07	1.08815E-04	1.94094E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.39728E-02	1.39607E+00	8.39729E-02	7.57151E-03	-7.46604E-03	9.99974E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.72044E-01	8.43215E-03	1.73688E-01	1.12142E-02	1.02529E-04	.00000E+00	.00000E+00	3.74298E-02
2	1.25985E+00	9.72008E-02	1.27745E+00	1.15429E-01	.00000E+00	.00000E+00	.00000E+00	2.74684E-01
3	1.59127E+00	1.31910E-01	1.61437E+00	1.45263E-01	.00000E+00	.00000E+00	.00000E+00	3.47125E-01
4	9.87054E-01	8.72581E-02	1.00167E+00	8.76485E-02	.00000E+00	.00000E+00	.00000E+00	2.15425E-01
5	1.48980E+00	1.39033E-01	1.51285E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	3.25314E-01
6	2.85408E+00	2.68972E-01	2.90970E+00	2.50985E-01	.00000E+00	.00000E+00	.00000E+00	6.25598E-01
7	2.80740E+00	1.53229E-01	2.85366E+00	1.42637E-01	.00000E+00	.00000E+00	.00000E+00	6.11259E-01
8	2.06534E+00	1.50015E-02	2.08842E+00	2.07712E-02	.00000E+00	.00000E+00	.00000E+00	4.47897E-01
9	1.60352E+00	-1.52209E-02	1.60041E+00	-2.09041E-02	.00000E+00	.00000E+00	.00000E+00	3.47254E-01
10	1.46535E+00	-2.63132E-02	1.46109E+00	-2.55057E-02	.00000E+00	.00000E+00	.00000E+00	3.17128E-01
11	1.34605E+00	-5.68215E-02	1.33687E+00	-5.54615E-02	.00000E+00	.00000E+00	.00000E+00	2.90767E-01
12	8.42824E-01	-6.52990E-02	8.32192E-01	-6.52571E-02	.00000E+00	.00000E+00	.00000E+00	1.81571E-01
13	7.10628E-01	-5.62160E-02	7.01430E-01	-5.62217E-02	.00000E+00	.00000E+00	.00000E+00	1.53068E-01
14	6.45024E-01	-8.47449E-02	6.31199E-01	-8.47807E-02	.00000E+00	.00000E+00	.00000E+00	1.38377E-01
15	3.75235E-01	-8.60243E-03	3.73759E-01	-8.39745E-03	.00000E+00	.00000E+00	.00000E+00	8.11588E-02
16	2.07151E-01	-6.00604E-03	2.06170E-01	-5.95373E-03	.00000E+00	.00000E+00	.00000E+00	4.47889E-02
17	8.74088E-02	-7.34282E-03	8.62149E-02	-7.34180E-03	.00000E+00	.00000E+00	.00000E+00	1.88189E-02
18	5.50007E-02	-2.25871E-02	5.12582E-02	-2.28560E-02	.00000E+00	.00000E+00	.00000E+00	1.15461E-02
19	1.30398E-01	-1.25086E-02	1.28386E-01	-1.23063E-02	.00000E+00	.00000E+00	.00000E+00	2.80488E-02
20	4.41084E-01	-2.58426E-02	4.36945E-01	-2.57754E-02	.00000E+00	.00000E+00	.00000E+00	9.51558E-02
21	1.23088E-01	-2.36539E-02	1.19355E-01	-2.35238E-02	.00000E+00	.00000E+00	.00000E+00	2.62969E-02

INFORMATION ONLY

22	2.26061E-01	-6.76401E-02	2.15431E-01	-6.77078E-02	.00000E+00	.00000E+00	.00000E+00	4.79124E-02
23	7.53847E-01	-1.28951E-01	7.34924E-01	-1.25645E-01	.00000E+00	.00000E+00	.00000E+00	1.61471E-01
24	5.69481E-01	-1.14859E-01	5.53091E-01	-1.13917E-01	.00000E+00	.00000E+00	.00000E+00	1.21788E-01
25	2.43582E-01	-5.70596E-02	2.35709E-01	-5.73766E-02	.00000E+00	.00000E+00	.00000E+00	5.20310E-02
26	1.60397E-01	-5.27419E-02	1.53530E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	3.40977E-02
27	2.69670E-02	-1.44448E-02	2.51471E-02	-1.46385E-02	.00000E+00	.00000E+00	.00000E+00	5.67287E-03
28	2.32469E+01	5.31614E-02	2.32750E+01	6.06267E-02	1.02529E-04	.00000E+00	.00000E+00	5.04165E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.04869E-03	8.03978E-03	4.26681E-04	-8.43219E-03	9.99949E-01
2	.00000E+00	.00000E+00	4.59365E-03	7.66324E-02	1.00719E-01	1.07913E-03	-9.72008E-02	9.99962E-01
3	.00000E+00	.00000E+00	4.77980E-02	6.90679E-02	1.79701E-01	5.42865E-06	-1.31910E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.04018E-02	4.58799E-02	1.57639E-01	3.23281E-06	-8.72381E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.30068E-01	1.48635E-01	2.69100E-01	3.77807E-06	-1.39033E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.75159E-01	4.55294E-01	5.41121E-01	1.14771E-05	-2.65972E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.52875E-01	7.95209E-01	7.06087E-01	2.53526E-05	-1.53229E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35558E-01	1.00101E+00	7.50579E-01	4.70163E-05	-1.50015E-02	9.99911E-01
9	.00000E+00	.00000E+00	7.40850E-01	9.16288E-01	7.25615E-01	9.59807E-05	1.52209E-02	9.99850E-01
10	.00000E+00	.00000E+00	7.22315E-01	8.68882E-01	6.95865E-01	2.11574E-04	2.63131E-02	9.99896E-01
11	.00000E+00	.00000E+00	7.08104E-01	8.06109E-01	6.43566E-01	4.57768E-04	5.68214E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.60220E-01	4.20130E-01	4.94335E-01	5.97798E-04	6.52590E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.90284E-01	3.37784E-01	4.33185E-01	8.97230E-04	5.62160E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70291E-01	3.21534E-01	3.84098E-01	1.45517E-03	8.47449E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50802E-01	1.28604E-01	2.40928E-01	1.28139E-03	8.57047E-03	1.00009E+00
16	.00000E+00	.00000E+00	1.66381E-01	5.41407E-02	1.59508E-01	8.76394E-04	5.98415E-03	1.00010E+00
17	.00000E+00	.00000E+00	8.55556E-02	1.49526E-02	7.77979E-02	4.17663E-04	7.33098E-03	1.00011E+00
18	.00000E+00	.00000E+00	7.56921E-02	9.66449E-03	5.28088E-02	2.95696E-04	2.25897E-02	9.99973E-01
19	.00000E+00	.00000E+00	1.29250E-01	3.31428E-02	1.09998E-01	7.26455E-04	1.24912E-02	1.00011E+00
20	.00000E+00	.00000E+00	3.00285E-01	2.40029E-01	2.71379E-01	3.07074E-03	2.57972E-02	1.00013E+00
21	.00000E+00	.00000E+00	1.40132E-01	4.43519E-02	1.15380E-01	1.09894E-03	2.36594E-02	9.99954E-01
22	.00000E+00	.00000E+00	2.64259E-01	1.24809E-01	1.94230E-01	2.37240E-03	6.76174E-02	1.00007E+00
23	.00000E+00	.00000E+00	6.20838E-01	7.35921E-01	4.83259E-01	1.06098E-02	1.26946E-01	1.00008E+00
24	.00000E+00	.00000E+00	6.30609E-01	6.52794E-01	5.03897E-01	1.18346E-02	1.14856E-01	1.00008E+00
25	.00000E+00	.00000E+00	4.06751E-01	2.66556E-01	3.42925E-01	6.76082E-03	5.70585E-02	1.00002E+00
26	.00000E+00	.00000E+00	3.21333E-01	2.83699E-01	2.62034E-01	6.55401E-03	5.27431E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.06970E-01	5.92555E-02	9.02694E-02	2.25470E-03	1.44447E-02	1.00001E+00
28	.00000E+00	.00000E+00	8.99402E+00	8.91332E+00	8.99402E+00	5.34710E-02	-5.33086E-02	9.99982E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.71245E-01	3.02770E-09	1.72044E-01	8.43219E-03	4.42751E-10	.00000E+00	.00000E+00	1.99992E-01
2	1.24832E+00	-2.93830E-08	1.25985E+00	9.72008E-02	.00000E+00	.00000E+00	.00000E+00	1.42986E+00
3	1.57363E+00	3.10709E-09	1.59127E+00	1.31910E-01	.00000E+00	.00000E+00	.00000E+00	1.80228E+00
4	9.73905E-01	1.03098E-08	9.87054E-01	8.72381E-02	.00000E+00	.00000E+00	.00000E+00	1.11581E+00
5	1.46740E+00	-3.42538E-08	1.48980E+00	1.39033E-01	.00000E+00	.00000E+00	.00000E+00	1.68155E+00
6	2.82012E+00	1.26755E-07	2.86408E+00	2.65972E-01	.00000E+00	.00000E+00	.00000E+00	3.23183E+00
7	2.78208E+00	5.12217E-08	2.80740E+00	1.53229E-01	.00000E+00	.00000E+00	.00000E+00	3.18612E+00
8	2.06541E+00	3.82637E-08	2.06536E+00	1.50015E-02	.00000E+00	.00000E+00	.00000E+00	2.36521E+00
9	1.60561E+00	3.62845E-09	1.60852E+00	-1.52209E-02	.00000E+00	.00000E+00	.00000E+00	1.83755E+00
10	1.47005E+00	-6.61256E-08	1.46536E+00	-2.63132E-02	.00000E+00	.00000E+00	.00000E+00	1.68214E+00
11	1.35608E+00	3.56062E-08	1.34605E+00	-5.68215E-02	.00000E+00	.00000E+00	.00000E+00	1.55127E+00
12	8.54012E-01	5.04672E-08	8.42824E-01	-6.52990E-02	.00000E+00	.00000E+00	.00000E+00	9.76609E-01
13	7.19861E-01	2.93091E-09	7.10628E-01	-5.62160E-02	.00000E+00	.00000E+00	.00000E+00	8.23356E-01
14	6.59269E-01	3.15814E-08	6.45024E-01	-8.47449E-02	.00000E+00	.00000E+00	.00000E+00	7.53683E-01
15	3.75799E-01	-3.19654E-05	3.75236E-01	-8.60243E-03	.00000E+00	.00000E+00	.00000E+00	4.30535E-01
16	2.07880E-01	-2.18879E-05	2.07151E-01	-6.00604E-03	.00000E+00	.00000E+00	.00000E+00	2.37950E-01
17	8.86460E-02	-1.18536E-05	8.74088E-02	-7.34282E-03	.00000E+00	.00000E+00	.00000E+00	1.01357E-01
18	5.90139E-02	2.66675E-06	5.50007E-02	-2.25871E-02	.00000E+00	.00000E+00	.00000E+00	6.71999E-02
19	1.32432E-01	-1.74388E-05	1.30398E-01	-1.25086E-02	.00000E+00	.00000E+00	.00000E+00	1.51435E-01
20	4.44997E-01	-4.53686E-05	4.41084E-01	-2.58426E-02	.00000E+00	.00000E+00	.00000E+00	5.09107E-01
21	1.27394E-01	5.54601E-06	1.23088E-01	-2.36539E-02	.00000E+00	.00000E+00	.00000E+00	1.45437E-01
22	2.38580E-01	-2.27256E-05	2.26061E-01	-6.76401E-02	.00000E+00	.00000E+00	.00000E+00	2.71507E-01

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23	7.80014E-01	-1.69719E-06	7.53847E-01	-1.26951E-01	.00000E+00	.00000E+00	.00000E+00	8.89739E-01
24	5.97130E-01	-3.49528E-06	5.69481E-01	-1.14859E-01	.00000E+00	.00000E+00	.00000E+00	6.79411E-01
25	2.58988E-01	-1.14040E-06	2.43582E-01	-5.70596E-02	.00000E+00	.00000E+00	.00000E+00	2.98856E-01
26	1.77448E-01	1.18289E-06	1.60397E-01	-5.27419E-02	.00000E+00	.00000E+00	.00000E+00	1.99827E-01
27	3.28258E-02	-1.16965E-07	2.69670E-02	-1.44448E-02	.00000E+00	.00000E+00	.00000E+00	3.62673E-02
28	2.32882E+01	-1.47938E-04	2.32495E+01	5.31614E-02	4.42751E-10	.00000E+00	.00000E+00	2.66444E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.27834E-02	.00000E+00	2.26605E-02	2.15153E-02	3.67865E-03	3.02770E-09	9.98831E-01
2	.00000E+00	1.93360E-01	7.44695E-03	2.70040E-01	1.86048E-01	1.47727E-02	-2.98830E-08	1.00000E+00
3	.00000E+00	2.15763E-01	7.68103E-02	2.80511E-01	2.76890E-01	1.56866E-02	3.10709E-09	9.99986E-01
4	.00000E+00	1.23897E-01	1.14597E-01	1.93451E-01	2.30981E-01	7.51277E-03	1.03098E-08	1.00000E+00
5	.00000E+00	1.64367E-01	2.09224E-01	4.89909E-01	3.69028E-01	4.56755E-03	-3.42338E-08	9.99989E-01
6	.00000E+00	1.77483E-01	4.28515E-01	1.34418E+00	5.98714E-01	7.27509E-03	1.26755E-07	1.00001E+00
7	.00000E+00	8.77626E-02	6.63681E-01	1.77529E+00	7.43604E-01	7.84762E-03	5.12217E-08	9.99989E-01
8	.00000E+00	1.35239E-02	7.80301E-01	1.79088E+00	7.79721E-01	1.41675E-02	3.82657E-08	9.99920E-01
9	.00000E+00	9.81536E-04	7.70248E-01	1.55708E+00	7.47182E-01	2.41308E-02	3.62845E-09	9.99892E-01
10	.00000E+00	7.25039E-05	7.43905E-01	1.41294E+00	7.07420E-01	3.66317E-02	-6.61256E-08	9.99900E-01
11	.00000E+00	5.73558E-06	7.12360E-01	1.30660E+00	6.52591E-01	5.98166E-02	3.56062E-08	9.99942E-01
12	.00000E+00	4.02915E-07	5.69344E-01	7.06538E-01	5.04583E-01	6.46765E-02	5.04672E-08	9.99974E-01
13	.00000E+00	6.39792E-08	5.00532E-01	5.55881E-01	4.40144E-01	6.04025E-02	2.98091E-09	9.99971E-01
14	.00000E+00	1.26790E-08	4.77250E-01	5.09542E-01	3.92155E-01	8.50995E-02	3.15814E-08	9.99989E-01
15	.00000E+00	1.43286E-09	2.58992E-01	2.33648E-01	2.50638E-01	8.30466E-03	-3.19854E-05	1.00031E+00
16	.00000E+00	4.20738E-10	1.76351E-01	1.07547E-01	1.69997E-01	6.31713E-03	-2.18879E-05	1.00033E+00
17	.00000E+00	1.35498E-10	9.42157E-02	3.33535E-02	8.61380E-02	8.06250E-03	-1.18836E-05	1.00025E+00
18	.00000E+00	9.70128E-11	8.37770E-02	2.05647E-02	5.77857E-02	2.59888E-02	2.66675E-06	1.00002E+00
19	.00000E+00	1.37155E-10	1.30504E-01	6.32178E-02	1.19618E-01	1.08726E-02	-1.74388E-05	1.00025E+00
20	.00000E+00	2.23029E-10	3.11284E-01	3.65205E-01	2.81966E-01	2.92599E-02	-4.53686E-05	1.00033E+00
21	.00000E+00	3.26442E-11	1.50377E-01	7.07734E-02	1.24810E-01	2.55542E-02	5.54501E-06	1.00006E+00
22	.00000E+00	3.78747E-11	2.77670E-01	1.76428E-01	2.04853E-01	7.27868E-02	-2.27256E-05	1.00019E+00
23	.00000E+00	3.62124E-11	6.37198E-01	9.38025E-01	5.04029E-01	1.33046E-01	-1.69719E-06	1.00019E+00
24	.00000E+00	9.85656E-12	6.55978E-01	7.98984E-01	5.23616E-01	1.26271E-01	-3.49528E-06	1.00015E+00
25	.00000E+00	2.88535E-12	4.28984E-01	3.20211E-01	3.59841E-01	6.90597E-02	-1.14040E-06	1.00009E+00
26	.00000E+00	2.02529E-12	3.31988E-01	3.21366E-01	2.69421E-01	6.25427E-02	1.18289E-06	1.00006E+00
27	.00000E+00	4.82146E-13	1.09259E-01	6.51904E-02	9.13518E-02	1.79040E-02	-1.16965E-07	1.00008E+00
28	.00000E+00	1.00000E+00	9.70064E+00	1.57242E+01	9.70064E+00	1.00225E+00	-1.48078E-04	1.00008E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.71235E-01	3.02770E-09	1.79085E-01	.00000E+00	2.38105E-03	2.65102E-03	.00000E+00	3.60897E-01
2	1.24852E+00	-2.98830E-08	1.33295E+00	.00000E+00	1.70654E-05	1.18697E-02	.00000E+00	2.64818E+00
3	1.57363E+00	3.10709E-09	1.68264E+00	.00000E+00	.00000E+00	1.45190E-02	.00000E+00	3.34159E+00
4	9.73905E-01	1.03098E-08	1.04218E+00	.00000E+00	.00000E+00	6.25975E-03	.00000E+00	2.05938E+00
5	1.46740E+00	-3.42338E-08	1.57586E+00	.00000E+00	.00000E+00	1.80747E-03	.00000E+00	3.12809E+00
6	2.82012E+00	1.26755E-07	3.03008E+00	.00000E+00	.00000E+00	1.54159E-03	.00000E+00	6.00311E+00
7	2.78208E+00	5.12217E-08	2.90495E+00	.00000E+00	.00000E+00	1.69128E-03	.00000E+00	5.86752E+00
8	2.09541E+00	3.82637E-08	2.08110E+00	.00000E+00	.00000E+00	1.50530E-03	.00000E+00	4.30604E+00
9	1.60561E+00	3.62845E-09	1.58788E+00	.00000E+00	.00000E+00	2.00510E-03	.00000E+00	3.33211E+00
10	1.47005E+00	-6.61256E-08	1.44731E+00	.00000E+00	.00000E+00	4.27114E-03	.00000E+00	3.04586E+00
11	1.35608E+00	3.56062E-08	1.30683E+00	.00000E+00	.00000E+00	9.09949E-03	.00000E+00	2.79248E+00
12	8.54012E-01	5.04672E-08	7.96471E-01	.00000E+00	.00000E+00	1.19534E-02	.00000E+00	1.74276E+00
13	7.19861E-01	2.98091E-09	6.71002E-01	.00000E+00	.00000E+00	1.31836E-02	.00000E+00	1.46901E+00
14	6.59269E-01	3.15814E-08	5.86819E-01	.00000E+00	.00000E+00	8.23039E-03	.00000E+00	1.32734E+00
15	3.75799E-01	-3.19654E-05	3.69026E-01	.00000E+00	.00000E+00	1.98407E-03	.00000E+00	7.78715E-01
16	2.07880E-01	-2.18879E-05	2.08037E-01	.00000E+00	.00000E+00	1.38096E-03	.00000E+00	4.29911E-01
17	8.86460E-02	-1.18836E-05	8.23378E-02	.00000E+00	.00000E+00	1.66006E-03	.00000E+00	1.80651E-01
18	5.90139E-02	2.66675E-06	3.69361E-02	.00000E+00	.00000E+00	1.26588E-03	.00000E+00	1.09625E-01
19	1.32432E-01	-1.74388E-05	1.21697E-01	.00000E+00	.00000E+00	2.62594E-03	.00000E+00	2.69198E-01
20	4.44997E-01	-4.53686E-05	4.25340E-01	.00000E+00	.00000E+00	1.55009E-02	.00000E+00	9.13249E-01
21	1.27394E-01	5.54501E-06	1.06422E-01	.00000E+00	.00000E+00	1.69508E-02	.00000E+00	2.52525E-01
22	2.38680E-01	-2.27256E-05	1.76253E-01	.00000E+00	.00000E+00	4.27190E-02	.00000E+00	4.58618E-01
23	7.80014E-01	-1.69719E-06	6.69572E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	1.55269E+00

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24	5.97130E-01	-3.44928E-06	4.92080E-01	.00000E+00	.00000E+00	7.05000E-02	.00000E+00	1.17428E+00
25	2.58989E-01	-1.14040E-06	2.04347E-01	.00000E+00	.00000E+00	4.01535E-02	.00000E+00	5.02654E-01
26	1.77498E-01	1.18289E-06	1.24118E-01	.00000E+00	.00000E+00	3.68822E-02	.00000E+00	3.32287E-01
27	3.28258E-02	-1.16969E-07	1.62895E-02	.00000E+00	.00000E+00	1.04036E-02	.00000E+00	5.63112E-02
28	2.32882E+01	-1.47938E-04	2.32465E+01	.00000E+00	2.39811E-03	4.05807E-01	.00000E+00	4.84405E+01

- elapsed time .02 min.

0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.40137E-03	2.49138E-02	3.15261E-02	1.50644E-02	2.91232E-02	5.56679E-02	3.16998E-02	4.84092E-03
2	3.76978E-03	3.88027E-02	4.88315E-02	2.94639E-02	4.47955E-02	8.43712E-02	4.78814E-02	6.98245E-03
3	3.06314E-03	3.31037E-02	4.31123E-02	2.71720E-02	4.22810E-02	8.02579E-02	4.58942E-02	5.58177E-03
4	1.05736E-03	1.21810E-02	1.65256E-02	1.09243E-02	1.74049E-02	3.32996E-02	1.92586E-02	2.00508E-03
5	1.75210E-03	1.89768E-02	2.47479E-02	1.55911E-02	2.42899E-02	4.63660E-02	2.65833E-02	3.32516E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.67897E-03	5.71553E-03	1.23953E-02	1.45285E-02	1.25215E-02	1.87644E-02	1.89988E-03	1.33253E-03
2	7.02718E-03	8.57400E-03	1.85440E-02	2.19366E-02	1.88975E-02	2.84999E-02	2.82255E-03	2.00118E-03
3	5.63552E-03	8.04784E-03	1.74385E-02	2.03830E-02	1.74684E-02	2.63376E-02	2.64021E-03	1.85765E-03
4	1.87183E-03	3.27522E-03	7.08272E-03	8.14569E-03	7.05052E-03	1.06898E-02	1.15375E-03	7.76181E-04
5	3.27072E-03	4.66002E-03	1.00944E-02	1.17308E-02	1.01255E-02	1.52063E-02	1.58075E-03	1.09141E-03

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.62874E-03	4.75050E-03	2.77254E-03	5.76883E-03	5.15258E-03	1.46018E-02	2.77568E-02	2.50837E-02
2	2.46775E-03	7.68379E-03	4.13637E-03	8.66324E-03	7.90828E-03	2.27590E-02	4.22387E-02	3.82970E-02
3	2.28112E-03	7.06078E-03	3.85465E-03	8.01180E-03	7.32915E-03	2.10258E-02	3.92398E-02	3.55407E-02
4	9.17635E-04	2.78623E-03	1.57718E-03	3.28855E-03	2.94274E-03	8.42124E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68331E-03	4.20601E-03	1.19959E-02	2.27694E-02	2.05671E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.25471E-02	1.13865E-02	3.01250E-03	3.85284E-01
2	1.92889E-02	1.77526E-02	4.92127E-03	5.89421E-01
3	1.77815E-02	1.63991E-02	4.51963E-03	5.43224E-01
4	7.21140E-03	6.54625E-03	1.65665E-03	2.18613E-01
5	1.02609E-02	9.34362E-03	2.45286E-03	3.13195E-01

1 720 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.77150E-01	1.31256E+00	1.65719E+00	1.02683E+00	1.55150E+00	2.98044E+00	2.87629E+00	2.07613E+00
2	1.73898E-01	1.27946E+00	1.61673E+00	1.00297E+00	1.51471E+00	2.91301E+00	2.83548E+00	2.06887E+00
3	1.72705E-01	1.26744E+00	1.60169E+00	9.93999E-01	1.50105E+00	2.88661E+00	2.82045E+00	2.06658E+00
4	1.71261E-01	1.24877E+00	1.57468E+00	9.74900E-01	1.46923E+00	2.82369E+00	2.78578E+00	2.06477E+00
5	1.73388E-01	1.27228E+00	1.60542E+00	9.94492E-01	1.50044E+00	2.88411E+00	2.81897E+00	2.06878E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59277E+00	1.45288E+00	1.31897E+00	8.10821E-01	6.85214E-01	6.03364E-01	3.70952E-01	2.04277E-01
2	1.60004E+00	1.46072E+00	1.33613E+00	8.31298E-01	7.00658E-01	6.30137E-01	3.73597E-01	2.06065E-01
3	1.60229E+00	1.46328E+00	1.34165E+00	8.37796E-01	7.06280E-01	6.38494E-01	3.74480E-01	2.06665E-01
4	1.60549E+00	1.46971E+00	1.35537E+00	8.53277E-01	7.19597E-01	6.58417E-01	3.75990E-01	2.07900E-01
5	1.60037E+00	1.46334E+00	1.34161E+00	8.37288E-01	7.05767E-01	6.37701E-01	3.74123E-01	2.06545E-01

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.38740E-02	4.25031E-02	1.24404E-01	4.28697E-01	1.11571E-01	1.91724E-01	6.94619E-01	5.16495E-01
2	8.61054E-02	5.09716E-02	1.28207E-01	4.36529E-01	1.19047E-01	2.14498E-01	7.33356E-01	5.51684E-01
3	8.68337E-02	5.32758E-02	1.29422E-01	4.39064E-01	1.21339E-01	2.21076E-01	7.45052E-01	5.61948E-01
4	8.85567E-02	5.87135E-02	1.32311E-01	4.44814E-01	1.27071E-01	2.37569E-01	7.77376E-01	5.98611E-01
5	8.67911E-02	5.26676E-02	1.29332E-01	4.38795E-01	1.21225E-01	2.20537E-01	7.45967E-01	5.64169E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.16895E-01	1.35828E-01	1.97258E-02
2	2.34998E-01	1.52888E-01	2.49661E-02
3	2.40180E-01	1.57333E-01	2.61755E-02
4	2.56746E-01	1.74590E-01	3.14872E-02
5	2.41478E-01	1.59643E-01	2.70539E-02

0flux disadvantage factors (zone average/cell average flux)

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Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02169E+00	1.03166E+00	1.05224E+00	1.03252E+00	1.03403E+00	1.03409E+00	1.02053E+00	1.00355E+00
2	1.00293E+00	1.00564E+00	1.00704E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00585E+00	1.00004E+00
3	9.96059E-01	9.96195E-01	9.97675E-01	9.99504E-01	1.00040E+00	1.00087E+00	1.00052E+00	9.98936E-01
4	9.87616E-01	9.81520E-01	9.80651E-01	9.80300E-01	9.79194E-01	9.79051E-01	9.87507E-01	9.98062E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94941E-01	9.92855E-01	9.83125E-01	9.68390E-01	9.68004E-01	9.46155E-01	9.91471E-01	9.85019E-01
2	9.99480E-01	9.98210E-01	9.95915E-01	9.92847E-01	9.92761E-01	9.87982E-01	9.98593E-01	9.97676E-01
3	1.00089E+00	9.99959E-01	1.00003E+00	1.00061E+00	1.00073E+00	1.00124E+00	1.00095E+00	1.00057E+00
4	1.00289E+00	1.00436E+00	1.01029E+00	1.01910E+00	1.01928E+00	1.03249E+00	1.00499E+00	1.00656E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.66390E-01	8.07006E-01	9.61893E-01	9.77069E-01	9.20366E-01	8.70141E-01	9.51166E-01	9.15498E-01
2	9.92099E-01	9.67797E-01	9.91300E-01	9.94921E-01	9.82031E-01	9.73501E-01	9.83094E-01	9.77871E-01
3	1.00049E+00	1.01155E+00	1.00069E+00	1.00070E+00	1.00093E+00	1.00336E+00	9.98772E-01	9.98064E-01
4	1.02034E+00	1.11479E+00	1.02303E+00	1.01980E+00	1.04822E+00	1.07821E+00	1.04211E+00	1.05219E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 25	grp. 26	grp. 27
1	8.98143E-01	8.50826E-01	7.29057E-01
2	9.73095E-01	9.57688E-01	9.22825E-01
3	9.99940E-01	9.85530E-01	9.67532E-01
4	1.06316E+00	1.09364E+00	1.17126E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

Ocell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.40137E-03	2.49138E-02	3.15261E-02	1.90644E-02	2.91252E-02	5.56679E-02	3.16998E-02	4.64092E-03
2	3.76976E-03	3.88027E-02	4.88315E-02	2.94639E-02	4.47955E-02	8.43712E-02	4.78814E-02	6.98365E-03
3	3.06314E-03	3.31037E-02	4.31123E-02	2.71720E-02	4.22810E-02	8.02579E-02	4.58942E-02	5.58177E-03
4	1.05736E-03	1.21810E-02	1.65256E-02	1.09263E-02	1.74049E-02	3.32996E-02	1.92586E-02	2.00503E-03
5	1.75210E-03	1.89768E-02	2.47479E-02	1.55911E-02	2.42889E-02	4.63660E-02	2.65833E-02	3.32516E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.67897E-03	5.71553E-03	1.23953E-02	1.45285E-02	1.25219E-02	1.87644E-02	1.89986E-03	1.33233E-03
2	7.02718E-03	8.57400E-03	1.86440E-02	2.19366E-02	1.88995E-02	2.84999E-02	2.82255E-03	2.00118E-03
3	5.63552E-03	8.04724E-03	1.74385E-02	2.02830E-02	1.74684E-02	2.63376E-02	2.64021E-03	1.85765E-03
4	1.87183E-03	3.27522E-03	7.08272E-03	8.14569E-03	7.05062E-03	1.05898E-02	1.15375E-03	7.76181E-04
5	3.27072E-03	4.66003E-03	1.00944E-02	1.17308E-02	1.01256E-02	1.52063E-02	1.58075E-03	1.09141E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.62874E-03	4.75050E-03	2.77254E-03	5.76883E-03	5.15238E-03	1.46018E-02	2.77568E-02	2.50337E-02
2	2.46775E-03	7.68379E-03	4.13637E-03	8.65324E-03	7.90828E-03	2.27590E-02	4.22387E-02	3.82970E-02
3	2.28112E-03	7.06078E-03	3.85468E-03	8.01800E-03	7.32915E-03	2.10258E-02	3.92378E-02	3.55407E-02
4	9.17635E-04	2.78625E-03	1.57718E-03	3.28855E-03	2.94274E-03	8.42024E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68331E-03	4.20601E-03	1.19959E-02	2.27694E-02	2.05671E-02

Ozone	grp. 25	grp. 26	grp. 27
1	1.25471E-02	1.13855E-02	3.01250E-03
2	1.92859E-02	1.77526E-02	4.92127E-03
3	1.77815E-02	1.63991E-02	4.51963E-03
4	7.21140E-03	6.54629E-03	1.65655E-03
5	1.02609E-02	9.34362E-03	2.45284E-03

Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

- elapsed time .03 min.
Orequested pannhalt8,skipcellwt,skipshipdata

INFORMATION ONLY

pass= 5, exec halts after pass 8

INFORMATION ONLY

INFORMATION ONLY

```
ss          cc          aa      aa  ll          ee
sssssssssss cc          aaaaaaaaaaa ll          eeeeeeeee
 sssssssssss cc         aaaaaaaaaaa ll          eeeeeeeee
        ss   cc         aa      aa  ll          ee
        ss   cc         aa      aa  ll          ee
ss      ss   cc      cc aa      aa  ll          ee
sssssssssss cccccccccccc aa      aa  llllllllllll eeeeeeeeeeee
 sssssssss   cccccccccc  aa      aa  llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c008                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a   scale . configuration controlled code *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:02:06                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0problem  description
0ig--geometry (0/1/2/3--inf med/slab/cyl/sphere          2
0ize--number of zones or material regions                4
0ns--mixing table length                                70
0ibl--shielded cross section edit option (0/1--no/yes)   0
0ibr--bondarenko factor edit option (0/1--no/yes)        0
```

```
0issqpt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     70 entries.
0       4q array has     70 entries.
0       5q array has     70 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     70 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
```

0entry	mixture	isotope	number density	new identifier
1	3	8016	2.09710E-02	201
2	3	1001	4.19420E-02	202
3	3	5010	3.81515E-06	203
4	3	5011	1.54884E-05	204
5	2	40302	4.25156E-02	205
6	1	92235	1.47017E-04	200006
7	1	92234	1.54011E-06	200007
8	1	92236	1.58412E-05	200008
9	1	92238	7.23470E-03	200009
10	1	8016	1.50611E-02	200010
11	1	8016	1.15315E-02	200011
12	1	36083	4.00409E-07	200012
13	1	36085	1.92753E-07	200013
14	1	38090	4.36638E-06	200014
15	1	39089	3.37446E-06	200015
16	1	42095	4.35535E-06	200016
17	1	40093	3.43072E-06	200017
18	1	40094	5.36578E-06	200018
19	1	40095	6.73357E-07	200019
20	1	41094	2.46521E-12	200020
21	1	43099	5.24059E-06	200021
22	1	45103	2.81650E-06	200022
23	1	45105	6.85117E-09	200023
24	1	44101	4.70687E-06	200024
25	1	44106	7.10823E-07	200025
26	1	46105	1.74568E-06	200026
27	1	46108	4.60857E-07	200027
28	1	47109	3.27366E-07	200028
29	1	51124	7.62183E-11	200029
30	1	54131	2.41807E-06	200030
31	1	54132	4.37452E-06	200031
32	1	54135	2.20802E-09	200032
33	1	54136	8.94972E-06	200033
34	1	55134	2.21272E-07	200034
35	1	55135	2.83459E-06	200035
36	1	55137	5.58169E-06	200036
37	1	56136	4.34868E-08	200037
38	1	57139	5.53555E-06	200038
39	1	59141	4.73617E-06	200039
40	1	59143	1.24918E-07	200040
41	1	58144	2.11613E-06	200041
42	1	60143	4.42460E-06	200042
43	1	60145	3.23179E-06	200043
44	1	61147	1.20498E-06	200044
45	1	61148	3.46153E-09	200045
46	1	60147	4.32241E-08	200046

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47	1	62147	3.37132E-07	200047
48	1	62149	2.77995E-08	200048
49	1	62150	1.11012E-06	200049
50	1	62151	1.22001E-07	200050
51	1	62152	5.39591E-07	200051
52	1	64155	5.41449E-10	200052
53	1	63153	2.98755E-07	200053
54	1	63154	5.42034E-08	200054
55	1	63155	3.27959E-08	200055
56	1	40302	4.42681E-08	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	5.74632E-06	200060
61	1	93237	9.31923E-07	200061
62	1	94238	1.07908E-07	200062
63	1	94239	3.19267E-05	200063
64	1	94240	5.37095E-06	200064
65	1	94241	2.67558E-06	200065
66	1	94242	2.39872E-07	200066
67	1	95241	6.58791E-08	200067
68	1	95243	1.74582E-08	200068
69	1	96244	1.32132E-09	200069
70	1	999	3.30753E-21	200070

Ogeometry and material description

Ozone	mixture	outer diameter	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.29052E+01	0
3	3	8.14000E-01	6.07600E+02	3.54862E+00	0
4	1	2.96100E+00	9.75000E+02	2.32883E-01	0

8067 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonsai will copy from logical 12 to logical 1

Ocopy	999	1/v cross sectio	from log 12 to log 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 12 to log 18	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 18 to log 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from log 18 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 12 to log 18	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 18 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218ngp	from log 18 to log 1	bondarenko trigger	0
Ocopy	5011	boron-11	from log 12 to log 18	bondarenko trigger	0
Ocopy	5011	boron-11	from log 18 to log 1	bondarenko trigger	0
Ocopy	5011	boron-11	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 12 to log 18	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from log 18 to log 1	bondarenko trigger	0
Ocopy	36083	kr-83	from log 12 to log 1	bondarenko trigger	0
Ocopy	36085	kr-85	from log 12 to log 1	bondarenko trigger	0
Ocopy	38090	sr-90	from log 12 to log 1	bondarenko trigger	0
Ocopy	39089	y-89	from log 12 to log 1	bondarenko trigger	0
Ocopy	40093	zr-93	from log 12 to log 1	bondarenko trigger	0
Ocopy	40094	zr-94	from log 12 to log 1	bondarenko trigger	0
Ocopy	40095	zr-95	from log 12 to log 1	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 12 to log 18	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 18 to log 1	bondarenko trigger	0
Ocopy	40302	zircalloy	from log 18 to log 1	bondarenko trigger	0
Ocopy	41094	rb-94	from log 12 to log 1	bondarenko trigger	0
Ocopy	42095	mo-95	from log 12 to log 1	bondarenko trigger	0
Ocopy	43099	tc-99	from log 12 to log 1	bondarenko trigger	0
Ocopy	44101	ru-101	from log 12 to log 1	bondarenko trigger	0

INFORMATION ONLY

```
0copy   44106  ru-106          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   45103  rh-103          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   45105  rh-105          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   46105  pd-105          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   46108  pd-108          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   47109  silver-109      from lcg 12 to lcg  1   bondarenko trigger 0
0copy   51124  sb-124          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   54131  xe-131          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   54132  xe-132          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   54135  xenon-135       from lcg 12 to lcg  1   bondarenko trigger 0
0copy   54136  xe-136          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   55133  cesium-133      from lcg 12 to lcg  1   bondarenko trigger 0
0copy   55134  cs-134          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   55135  cs-135          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   55137  cs-137          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   56136  ba-136          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   57139  la-139          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   58144  ce-144          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   59141  pr-141          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   59143  pr-143          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   60143  nd-143          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   60145  nd-145          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   60147  nd-147          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   61147  pm-147          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   61148  pm-148          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   62147  sm-147          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   62149  sm-149          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   62150  sm-150          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   62151  sm-151          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   62152  sm-152          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63153  eu-153          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63154  eu-154          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   63155  eu-155          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   64155  gd-155          from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigp  from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92235  uranium-235     from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigp  from lcg 12 to lcg  1   bondarenko trigger 0
0copy   92238  uranium-238     from lcg 12 to lcg  1   bondarenko trigger 0
0copy   93237  neptunium-237   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigp from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94239  plutonium-239   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94240  plutonium-240   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94241  plutonium-241   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   94242  plutonium-242   from lcg 12 to lcg  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigp from lcg 12 to lcg  1   bondarenko trigger 0
0copy   95243  am-243 1057 218 from lcg 12 to lcg  1   bondarenko trigger 0
0copy   96244  curium-244      from lcg 12 to lcg  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron bump library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
            last updated       9/16/93
              l.w.petrie  -  ornl
        tape id                          4321        number of nuclides          70
        number of neutron groups           27        number of gamma groups       0
        first thermal group                15        logical unit                 1
                                   table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                  id   200070
        hydrogen      endf/b-iv aet 1269/thrmal002   updated 10/13/89     id      202
        hydrogen      endf/b-iv aet 1269/thrmal002   updated 10/13/89     id   200057
       b-10 1273 218ngp 042575 p-3 293k                                   id      203
```

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```
b-10 1273 21dngp 04235 p-3 293k                                   id  200058
 boron-11      endf/b-iv mat 1160          updated 10/13/89       id     204
 boron-11      endf/b-iv mat 1160          updated 10/13/89       id  200059
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89       id     201
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89       id  200010
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89       id  200011
 kr-83         mt=102,103,103,105,106,107  updated 10/13/89       id  200012
 kr-85           mt=  102                                         id  200013
 sr-90         mt=102                      updated 10/13/89       id  200014
  y-89         mt=102                      updated 10/13/89       id  200015
 zr-93           mt=  102                                         id  200017
 zr-94         mt=102                      updated 10/13/89       id  200018
 zr-95         mt=102                      updated 10/13/89       id  200019
 zircalloy     endf/b-iv mat 1284          updated 10/13/89       id     205
 zircalloy     endf/b-iv mat 1284          updated 10/13/89       id  200056
 rb-94         mt=102                      updated 10/13/89       id  200020
 mo-95         mt=102                      updated 10/13/89       id  200016
 tc-99         mt=102                      updated 10/13/89       id  200021
 ru-101        mt=102                      updated 10/13/89       id  200024
 ru-106        mt=102                      updated 10/13/89       id  200025
 rh-103        mt=102                      updated 10/13/89       id  200022
 rh-105          mt=  102                                         id  200023
 pd-105        mt=102                      updated 10/13/89       id  200026
 pd-108        mt=102                      updated 10/13/89       id  200027
 silver-109    endf/b-iv mat 1139          updated 10/13/89       id  200028
 sb-124        mt=102                      updated 10/13/89       id  200029
 xe-131        mt=102,103,104,105,106      updated 10/13/89       id  200030
 xe-132        mt=102,103,104,105,106      updated 10/13/89       id  200031
 xenon-135     endf/b-iv mat 1294          updated 10/13/89       id  200032
 xe-136          mt=  102, 103, 104, 105, 107                     id  200033
 cesium-133    endf/b-iv mat 1141          updated 10/13/89       id  200060
 cs-134        mt=102                      updated 10/13/89       id  200034
 cs-135          mt=  102                                         id  200035
 cs-137        mt=102                      updated 10/13/89       id  200036
 ba-136        mt=102                      updated 10/13/89       id  200037
 la-139        mt=102                      updated 10/13/89       id  200038
 ce-144          mt=  102                                         id  200041
 pr-141        mt=102,103,104,105,106,107  updated 10/13/89       id  200039
 pr-143        mt=102                      updated 10/13/89       id  200040
 nd-143        mt=102                      updated 10/13/89       id  200042
 nd-145        mt=102                      updated 10/13/89       id  200043
 nd-147        mt=102                      updated 10/13/89       id  200046
 pm-147        mt=102                      updated 10/13/89       id  200044
 pm-148          mt=  102                                         id  200045
 sm-147        endf/b-v fission product    updated 10/13/89       id  200047
 sm-149        mt=102,105,107              updated 10/13/89       id  200048
 sm-150        mt=102                      updated 10/13/89       id  200049
 sm-151        mt=102,103,104,105,106,107  updated 10/13/89       id  200050
 sm-152        mt=102,103,104,105,106,107  updated 10/13/89       id  200051
 eu-153        mt=102,103,104,105,106,107  updated 10/13/89       id  200053
 eu-154        mt=102,103,104,105,106,107  updated 10/13/89       id  200054
 eu-155        mt=102,103,104,105,106,107  updated 10/13/89       id  200055
 gd-155        mt=102                      updated 10/13/89       id  200052
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)                id  200007
 uranium-235   endf/b-iv mat 1261          updated 10/13/89       id  200006
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)                id  200008
 uranium-238   endf/b-iv mat 1262          updated 10/13/89       id  200009
 neptunium-237 endf/b-iv mat 1263          updated 10/13/89       id  200061
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)               id  200062
 plutonium-239 endf/b-iv mat 1264          updated 10/13/89       id  200063
```

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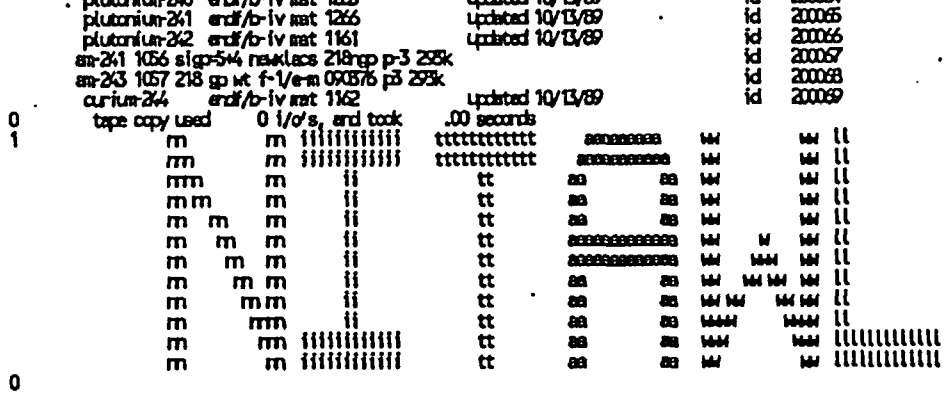
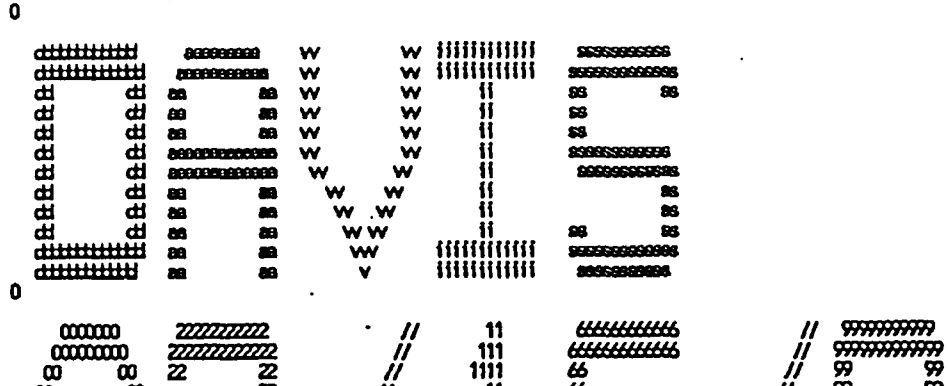
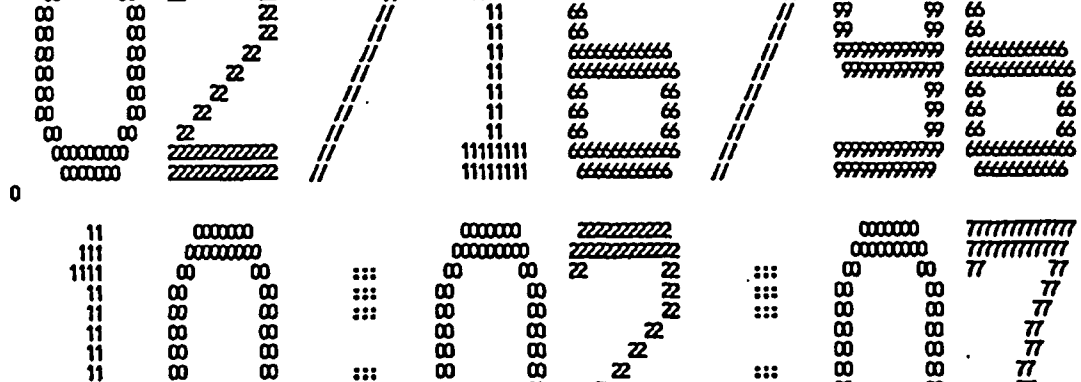
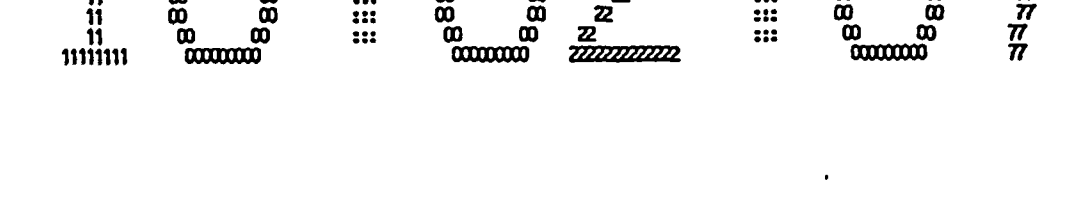
```
plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id  200064
plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id  200065
plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id  200066
am-241 1056 sigp-544 nsaklacs 218ngp p-3 295k                        id  200067
am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                         id  200068
curium-244     endf/b-iv mat 1162          updated 10/13/89          id  200069
0
  tape copy used    0 i/o's, and took    .00 seconds
1
```









INFORMATION ONLY

```
    11111111      0000000                0000000    2222222222222                0000000        77
1
0                          SSSSSSSSSS   CCCCCCCCCC    AAAAAAAA    LL           EEEEEEEEEEE
                          SSSSSSSSSSS  CCCCCCCCCCCC  AAAAAAAAAA   LL           EEEEEEEEEEE
                          SS       SS  CC        CC  AA      AA   LL           EE
                          SS           CC            AA      AA   LL           EE
                          SS           CC            AA      AA   LL           EE
                          SSSSSSSSSS   CC            AAAAAAAAAAAA LL           EEEEEEEE
                           SSSSSSSSSS  CC            AAAAAAAAAAAA LL           EEEEEEEE
                                   SS  CC            AA      AA   LL           EE
                                   SS  CC            AA      AA   LL           EE
                          SS       SS  CC        CC  AA      AA   LL           EE
                          SSSSSSSSSSS  CCCCCCCCCCCC  AA      AA   LLLLLLLLLLLL EEEEEEEEEEE
                           SSSSSSSSSS   CCCCCCCCCC   AA      AA   LLLLLLLLLLLL EEEEEEEEEEE
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c002                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nautronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:02:07                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
```

INFORMATION

INFORMATION

```
        0 output option for anpx formatted cross section data
0the storage allocated for this case is 200000 words
0       2q array has     70 entries.
0       3q array has     15 entries.
0       4q array has      5 entries.
0 general information concerning cross section library
    tape identification number              4349
    number of nuclides on tape                65
    number of neutron energy groups           27
    first thermal neutron energy group        15
    number of gamma energy groups              0
0  direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                          based on endf-b version 4 data with endf-b version 5 fission products
                            compiled for nrc      1/27/89
                              last updated        9/16/93
                                l.m.petrie   -   ornl
- work tape   4349

 xsdrn weighted tape--parent case entitled--  720 d, sas2h: babcock wilcox 15x15,
  3.00w%, 20gwd/mtu burn high temp


0 nuclides from xsdrn tape
    1    hydrogen       endf/b-iv mat 1269/thm1002    updated 10/13/89          202
    2   b-10 1273 218ngp 04375 p-3 293k                                           203
    3    boron-11       endf/b-iv mat 1160            updated 10/13/89          204
    4    oxygen-16      endf/b-iv mat 1276            updated 10/13/89          201
    5    zircalloy      endf/b-iv mat 1284            updated 10/13/89          205
0 nuclides from work tape
    6   1/v cross sections normalized to 1.0 at 0.0253 ev                        999
    7    hydrogen       endf/b-iv mat 1269/thm1002    updated 10/13/89         1001
    8   b-10 1273 218ngp 04375 p-3 293k                                         5010
    9    boron-11       endf/b-iv mat 1160            updated 10/13/89         5011
   10    oxygen-16      endf/b-iv mat 1276            updated 10/13/89         8016
   11    oxygen-16      endf/b-iv mat 1276            updated 10/13/89            6
   12    kr-83          mt=102,103,103,105,106,107    updated 10/13/89        36083
   13    kr-85            mt=  102                                            36085
   14    sr-90          mt=102                        updated 10/13/89        38090
   15     y-89          mt=102                        updated 10/13/89        39089
   16    zr-93            mt=  102                                            40093
   17    zr-94          mt=102                        updated 10/13/89        40094
   18    zr-95          mt=102                        updated 10/13/89        40095
   19    zircalloy      endf/b-iv mat 1284            updated 10/13/89        40302
   20    nb-94          mt=102                        updated 10/13/89        41094
   21    mo-95          mt=102                        updated 10/13/89        42095
   22    tc-99          mt=102                        updated 10/13/89        43099
   23    ru-101         mt=102                        updated 10/13/89        44101
   24    ru-106         mt=102                        updated 10/13/89        44106
   25    rh-103         mt=102                        updated 10/13/89        45103
   26    rh-105           mt=  102                                            45105
   27    pd-105         mt=102                        updated 10/13/89        46105
   28    pd-108         mt=102                        updated 10/13/89        46108
   29    silver-109     endf/b-iv mat 1139            updated 10/13/89        47109
   30    sb-124         mt=102                        updated 10/13/89        51124
   31    xe-131         mt=102,103,104,105,106        updated 10/13/89        54131
   32    xe-132         mt=102,103,104,105,106        updated 10/13/89        54132
   33    xenon-135      endf/b-iv mat 1254            updated 10/13/89        54135
```

```
   34    xe-136          mt=  102, 103, 104, 105, 107                          54136
   35    cesium-133    endf/b-iv mat 1141            updated 10/13/89          55133
   36    cs-134        mt=102                        updated 10/13/89          55134
   37    cs-135          mt=  102                                              55135
   38    cs-137        mt=102                        updated 10/13/89          55137
   39    ba-136        mt=102                        updated 10/13/89          56136
   40    la-139        mt=102                        updated 10/13/89          57139
   41    ce-144          mt=  102                                              58144
   42    pr-141        mt=102,103,104,105,106,107    updated 10/13/89          59141
   43    pr-143        mt=102                        updated 10/13/89          59143
   44    nd-143        mt=102                        updated 10/13/89          60143
   45    nd-145        mt=102                        updated 10/13/89          60145
   46    nd-147        mt=102                        updated 10/13/89          60147
   47    pm-147        mt=102                        updated 10/13/89          61147
   48    pm-148          mt=  102                                              61148
   49    sm-147        endf/b-v fission product      updated 10/13/89          62147
   50    sm-149        mt=102,103,107                updated 10/13/89          62149
   51    sm-150        mt=102                        updated 10/13/89          62150
   52    sm-151        mt=102,103,104,105,106,107    updated 10/13/89          62151
   53    sm-152        mt=102,103,104,105,106,107    updated 10/13/89          62152
   54    eu-153        mt=102,103,104,105,106,107    updated 10/13/89          63153
   55    eu-154        mt=102,103,104,105,106,107    updated 10/13/89          63154
   56    eu-155        mt=102,103,104,105,106,107    updated 10/13/89          63155
   57    gd-155        mt=102                        updated 10/13/89          64155
   58   u-234 1043 sigp=5+4 nsaxlacs p-3 293k f-1/e-a(1.+5)                    92234
   59    uranium-235   endf/b-iv mat 1261           updated 10/13/89          92235
   60   u-236 1163 sigp=5+4 nsaxlacs p-3 293k f-1/e-a(1.+5)                    92236
   61    uranium-238   endf/b-iv mat 1262           updated 10/13/89          92238
   62    neptunium-237 endf/b-iv mat 1263           updated 10/13/89          93237
   63   pu-238 1050 sigp=5+4 nsaxlacs p-3 293k f-1/e-a(1.+5)                    94238
   64    plutonium-239 endf/b-iv mat 1264           updated 10/13/89          94239
   65    plutonium-240 endf/b-iv mat 1265           updated 10/13/89          94240
   66    plutonium-241 endf/b-iv mat 1266           updated 10/13/89          94241
   67    plutonium-242 endf/b-iv mat 1161           updated 10/13/89          94242
   68   am-241 1056 sigp=5+4 nsaxlacs 218grp p-3 293k                          95241
   69   am-243 1057 218 gp wt f-1/e-a 0.03576 p3 293k                          95243
   70    curium-244    endf/b-iv mat 1162           updated 10/13/89          96244
0 hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89          202    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218grp 0.42575 p-3 293k                                         203    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11       endf/b-iv mat 1160            updated 10/13/89          204    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16      endf/b-iv mat 1276            updated 10/13/89          201    temperature=  607.60
0 zircalloy      endf/b-iv mat 1284            updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436          temperature(kelvin)      =  650.000
0potential scatter sigma  =    6.385          lumped nuclear density   = 4.251560E-02
0spin factor (g)          =    1.079          lump dimension (a-bar)   = 6.730999E-01
0inner radius             = 6.324600E-01      dancoff correction (c)   = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  8      -1.156752E-03   .000000E+00   -7.806053E-01
  9      -4.625978E-02   .000000E+00   -2.073270E+00
 10      -5.962230E-02   .000000E+00   -1.351984E+00
 11      -1.761672E-01   .000000E+00   -7.350731E-01
0excess resonance integrals
0                resolved
```

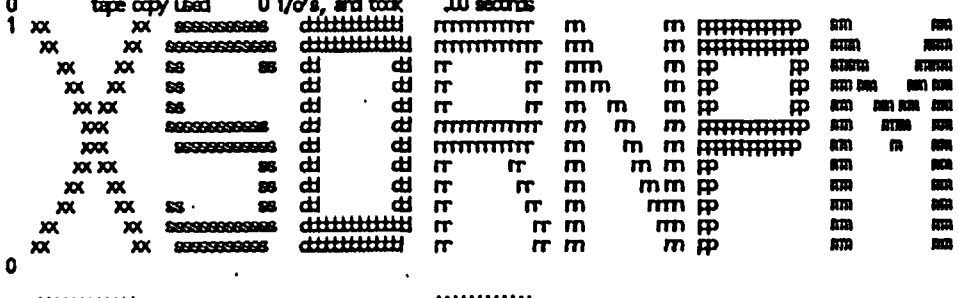
INFORMATION ONLY

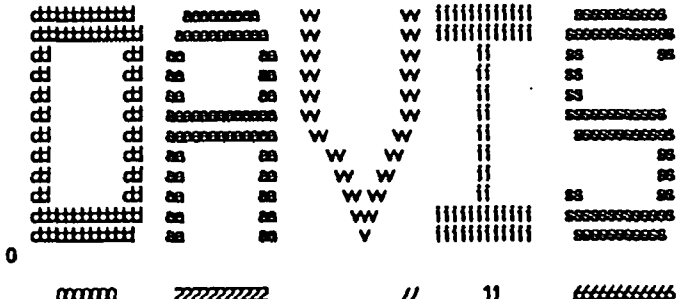
INFORMATION ONLY

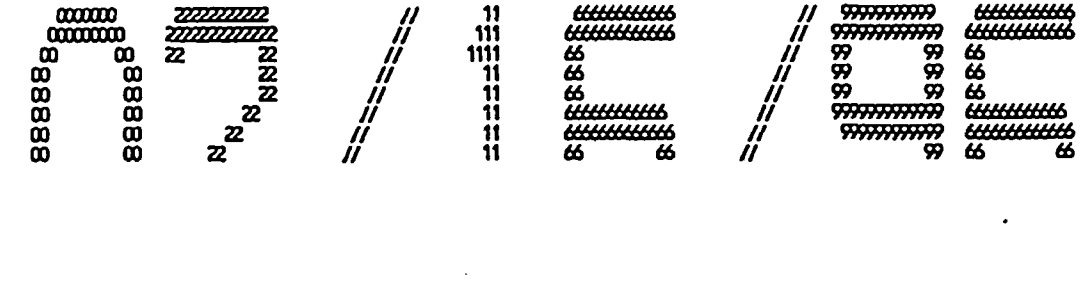
```
Absorption      2.9840E-01
 fission         .00000E+00
- elapsed time   .00 min.
- elapsed time   .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:02:07
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled-- 720 d, sea2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

        tape id                          8670        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     4
                                  table of contents
      hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89          id    202
     b-10 1273 218ngp 042375 p-3 293k                                         id    203
      boron-11       endf/b-iv mat 1160            updated 10/13/89          id    204
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id    201
      zircalloy      endf/b-iv mat 1284            updated 10/13/89          id    205
     1/v cross sections normalized to 1.0 at 0.0253 ev                        id    999
      hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89          id   1001
     b-10 1273 218ngp 042375 p-3 293k                                         id   5010
      boron-11       endf/b-iv mat 1160            updated 10/13/89          id   5011
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id   8016
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id      6
      kr-83          mt=102,103,103,105,106,107    updated 10/13/89          id  36083
      kr-85            mt=  102                                               id  36085
      sr-90          mt=102                        updated 10/13/89          id  38090
       y-89          mt=102                        updated 10/13/89          id  39089
      zr-93            mt=  102                                               id  40093
      zr-94          mt=102                        updated 10/13/89          id  40094
      zr-95          mt=102                        updated 10/13/89          id  40095
      zircalloy      endf/b-iv mat 1284            updated 10/13/89          id  40302
      nb-94          mt=102                        updated 10/13/89          id  41094
      mo-95          mt=102                        updated 10/13/89          id  42095
      tc-99          mt=102                        updated 10/13/89          id  43099
      ru-101         mt=102                        updated 10/13/89          id  44101
      ru-106         mt=102                        updated 10/13/89          id  44106
      rh-103         mt=102                        updated 10/13/89          id  45103
      rh-105           mt=  102                                               id  45105
      pd-105         mt=102                        updated 10/13/89          id  46105
      pd-108         mt=102                        updated 10/13/89          id  46108
      silver-109     endf/b-iv mat 1139            updated 10/13/89          id  47109
      sb-124         mt=102                        updated 10/13/89          id  51124
      xe-131         mt=102,103,104,105,106        updated 10/13/89          id  54131
      xe-132         mt=102,103,104,105,106        updated 10/13/89          id  54132
      xenon-135      endf/b-iv mat 1294            updated 10/13/89          id  54135
      xe-136           mt=  102, 103, 104, 105, 107                         id  54136
      cesium-133     endf/b-iv mat 1141            updated 10/13/89          id  55133
      cs-134         mt=102                        updated 10/13/89          id  55134
      cs-135           mt=  102                                               id  55135
      cs-137         mt=102                        updated 10/13/89          id  55137
      ba-136         mt=102                        updated 10/13/89          id  56136
      la-139         mt=102                        updated 10/13/89          id  57139
      ce-144           mt=  102                                               id  58144
      pr-141         mt=102,103,104,105,106,107    updated 10/13/89          id  59141
      pr-143         mt=102                        updated 10/13/89          id  59143
      nd-143         mt=102                        updated 10/13/89          id  60143
      nd-145         mt=102                        updated 10/13/89          id  60145
      nd-147         mt=102                        updated 10/13/89          id  60147
      pm-147         mt=102                        updated 10/13/89          id  61147
```

INFORMATION ONLY

```
      pm-148          mt= 102                                                  id    61148
      sm-147        endf/b-v fission product      updated 10/13/89             id    62147
      sm-149        mt=102,103,107                updated 10/13/89             id    62149
      sm-150        mt=102                        updated 10/13/89             id    62150
      sm-151        mt=102,103,104,105,106,107    updated 10/13/89             id    62151
      sm-152        mt=102,103,104,105,106,107    updated 10/13/89             id    62152
      eu-153        mt=102,103,104,105,106,107    updated 10/13/89             id    63153
      eu-154        mt=102,103,104,105,106,107    updated 10/13/89             id    63154
      eu-155        mt=102,103,104,105,106,107    updated 10/13/89             id    63155
      gd-155        mt=102                        updated 10/13/89             id    64155
     u-234 1043 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                       id    92234
      uranium-235   endf/b-iv mat 1261            updated 10/13/89             id    92235
     u-236 1163 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                       id    92236
      uranium-238   endf/b-iv mat 1262            updated 10/13/89             id    92238
      neptunium-237 endf/b-iv mat 1263            updated 10/13/89             id    93237
     pu-238 1050 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                      id    94238
      plutonium-239 endf/b-iv mat 1264            updated 10/13/89             id    94239
      plutonium-240 endf/b-iv mat 1265            updated 10/13/89             id    94240
      plutonium-241 endf/b-iv mat 1266            updated 10/13/89             id    94241
      plutonium-242 endf/b-iv mat 1161            updated 10/13/89             id    94242
     am-241 1056 sigo=5+4 nsaxlacs 218gp p-3 293k                              id    95241
     am-243 1057 218 gp wt f-1/e-m 093576 p3 293k                              id    95243
      curium-244    endf/b-iv mat 1162            updated 10/13/89             id    96244
0       tape copy used      0 i/o's, and took     .00 seconds
```







INFORMATION ONLY

```
program verification information
code system:   scale  version:   4.2

program:  c0c001
creation date:  04/27/95
library:  /neutronics/scale/exe

this is not a  scale  configuration controlled code
jobname:  davis
date of execution:  02/16/96
```

INFORMATION ONLY

```
                    *****                                                    *****
                    *****   time of execution:  10:02:08                     *****
                    *****                                                    *****
                    *****                                                    *****
                    ***********************************************************
                    ***********************************************************
                    ***********************************************************
1
                    720 d, second part of sas2h pass to make library
0       -1q array has     1 entries.
0        0q array has    11 entries.
0        1q array has    15 entries.
0        2q array has    10 entries.
0        3q array has    12 entries.
0        4q array has     9 entries.
0        5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                   720 d, second part of sas2h pass to make library
0general problem description data block
0                          general problem data

 ige  1/2/3 = plane/cylinder/sphere      2        isn  quadrature order                  8
 izm  number of zones                    4        isct order of scattering               3
 im   number of special intervals       28        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          20
 ibr  right boundary condition           3        iom  outer iteration maximum          25
 mxx  number of mixtures                 3        iclc -1/0/n--flat res/sry/qpt          0
 ms   mixing table length               70        ith  0/1 = forward/adjoint             0
 ifgs number of energy groups           27        iflu not used(always ugtd)             0
 nng  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0        idl  0/1/2/3=no/prt nd/pch n/both      14
 iftg number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt      0
0                          special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param           0
 iqn  volumetric sources (0/n=no/yes)    0        idfm 0/1 = none/density factors 39*    0
 ipn  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    14        iai  0/1=none/activities by interval   0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling      0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch  0
 isx  broad group fluxes                 0        isen outer iteration acceleration      0
 ibln activity data unit                 0        rbnd band rebaln parameter             0
 jbkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1        ihtf total xsect pan in brd gp tables  3
 ignf number of broad groups             3        ndsf pan g-g or file number            4
 itp  0/10/20/30/40 0/c/e/ac/a           0        nusf table length or max order         6
 ipp  -2/-1/0/n=gtod xsect print        -2        nxcm extra 1-d x-sect positions        0
 iap  -1/n anisn xsect print            -1
0                          floating point parameters

 eps  overall convergence        1.00000E-04      dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04      dz   plane depth for buckling   2.00000E+02
 xnf  normalization factor       1.00000E+00      vsc  void streaming correction   .00000E+00
 ev   eigenvalue guess            .00000E+00      pv   ipvt=1/2--k/alpha           1.00000E+00
 evm  eigenvalue modifier         .00000E+00      eql  ev change eps for search    1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00      xrpn new param mod for search    7.50000E-01
      this case will require      2611 locations for mixing
      this case has been allocated 200000 locations
```

INFORMATION ONLY

```
1                 720 d, second part of sas2h pass to make library
0      13q array has    70 entries.
0      14q array has    70 entries.
0      15q array has    70 entries.
0                        data block 2 (mixing table, etc.)
```

0	nuclides on tape	cccc identification	mixture	mixing table component	atom density	extra xsect id's
1	202		3	201	2.09710E-02	
2	203		3	202	4.19420E-02	
3	204		3	203	3.81515E-06	
4	201		3	204	1.54884E-05	
5	205		2	205	4.25156E-02	
6	999		1	92235	1.47017E-04	
7	1001		1	92234	1.54011E-06	
8	5010		1	92236	1.58412E-05	
9	5011		1	92238	7.23470E-03	
10	8016		1	8016	1.50611E-02	
11	6		1	6	1.15315E-02	
12	36083		1	36085	4.00409E-07	
13	36085		1	36085	1.92753E-07	
14	38090		1	38090	4.36638E-06	
15	39089		1	39089	3.37449E-06	
16	40093		1	42095	4.35535E-06	
17	40094		1	40093	3.43072E-06	
18	40095		1	40094	5.36576E-06	
19	40802		1	40095	6.73357E-07	
20	41094		1	41094	2.49521E-12	
21	42095		1	43099	5.24059E-06	
22	43099		1	45103	2.81650E-06	
23	44101		1	45105	6.85117E-09	
24	44106		1	44101	4.70687E-06	
25	45103		1	44106	7.10825E-07	
26	45105		1	46105	1.74568E-06	
27	46105		1	46108	4.60857E-07	
28	46108		1	47109	3.27366E-07	
29	47109		1	51124	7.62183E-11	
30	51124		1	54131	2.41807E-06	
31	54131		1	54132	4.37452E-06	
32	54132		1	54135	2.20802E-09	
33	54135		1	54136	8.94972E-06	
34	54136		1	55134	2.21272E-07	
35	55133		1	55135	2.83459E-06	
36	55134		1	55137	5.58169E-06	
37	55135		1	56136	4.34868E-08	
38	55137		1	57139	5.53555E-06	
39	56136		1	59141	4.73417E-06	
40	57139		1	59143	1.24918E-07	
41	58144		1	58144	2.11613E-06	
42	59141		1	60143	4.42460E-06	
43	59143		1	60145	3.23179E-06	
44	60143		1	61147	1.20498E-06	
45	60145		1	61148	3.46153E-09	
46	60147		1	60147	4.32241E-08	
47	61147		1	62147	3.37132E-07	
48	61148		1	62149	2.77995E-08	
49	62147		1	62150	1.11012E-06	
50	62149		1	62151	1.22001E-07	
51	62150		1	62152	5.39591E-07	
52	62151		1	64155	5.41449E-10	
53	62152		1	63153	2.98055E-07	

INFORMATION ONLY

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   54  63153                                  1      63154    5.42034E-08
   55  63154                                  1      63155    3.27999E-08
   56  63155                                  1      40802    4.42681E-03
   57  64155                                  1       1001    2.30630E-02
   58  92234                                  1       5010    2.09787E-06
   59  92235                                  1       5011    8.51673E-06
   60  92236                                  1      55133    5.74632E-06
   61  92238                                  1      93237    9.31923E-07
   62  93237                                  1      94238    1.07903E-07
   63  94238                                  1      94239    3.19267E-05
   64  94239                                  1      94240    5.37093E-06
   65  94240                                  1      94241    2.67558E-06
   66  94241                                  1      94242    2.39372E-07
   67  94242                                  1      95241    6.58791E-08
   68  95241                                  1      95243    1.74582E-08
   69  95243                                  1      96244    1.32132E-09
   70  96244                                  1        999    3.30753E-21
- elapsed time    .00 min.
0  24259 locations will be used
0      35q array has     29 entries.
0      36q array has     28 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                    720 d, second part of sas2h pass to make library
                          neutron group parameters
0  gp   energy      lethargy    weighted   broad gp    calc      group     right     left
       boundaries   boundaries  velocities  numbers    type      band      albedo    albedo
    1  2.00000E+07 -6.95147E-01 4.60581E+09   1         0         1      1.00000E+00
    2  6.43400E+06  4.40989E-01 2.88737E+09   1         0         2      1.00000E+00
    3  3.00000E+06  1.20397E+00 2.12201E+09   1         0         3      1.00000E+00
    4  1.85000E+06  1.68740E+00 1.75673E+09   1         0         4      1.00000E+00
    5  1.40000E+06  1.96611E+00 1.46535E+09   1         0         5      1.00000E+00
    6  9.00000E+05  2.40795E+00 1.06620E+09   2         0         6      1.00000E+00
    7  4.00000E+05  3.21888E+00 6.07557E+08   2         0         7      1.00000E+00
    8  1.00000E+05  4.60517E+00 2.72415E+08   2         0         8      1.00000E+00
    9  1.70000E+04  6.37713E+00 1.13526E+08   2         0         9      1.00000E+00
   10  3.00000E+03  8.11173E+00 4.82126E+07   2         0        10      1.00000E+00
   11  5.50000E+02  9.80818E+00 2.05946E+07   2         0        11      1.00000E+00
   12  1.00000E+02  1.15125E+01 1.01036E+07   2         0        12      1.00000E+00
   13  3.00000E+01  1.27169E+01 5.69595E+06   2         0        13      1.00000E+00
   14  1.00000E+01  1.38155E+01 3.20957E+06   2         0        14      1.00000E+00
   15  3.04999E+00  1.50080E+01 2.10601E+06   2         0        15      1.00000E+00
   16  1.77000E+00  1.55471E+01 1.70522E+06   2         0        16      1.00000E+00
   17  1.29999E+00  1.58557E+01 1.52543E+06   2         0        17      1.00000E+00
   18  1.12999E+00  1.59959E+01 1.42857E+06   2         0        18      1.00000E+00
   19  1.00000E+00  1.61181E+01 1.31002E+06   2         0        19      1.00000E+00
   20  8.00000E-01  1.63412E+01 9.05898E+05   2         0        20      1.00000E+00
   21  4.00000E-01  1.70344E+01 8.17974E+05   3         0        21      1.00000E+00
   22  3.25000E-01  1.72620E+01 6.90070E+05   3         0        22      1.00000E+00
   23  2.25000E-01  1.76098E+01 4.86953E+05   3         0        23      1.00000E+00
   24  9.99999E-02  1.84207E+01 3.57765E+05   3         0        24      1.00000E+00
   25  5.00000E-02  1.91138E+01 2.71895E+05   3         0        25      1.00000E+00
   26  3.00000E-02  1.96247E+01 1.87283E+05   3         0        26      1.00000E+00
   27  1.00000E-02  2.07233E+01 8.88201E+04   3         0        27      1.00000E+00
   28  1.00000E-05  2.76310E+01
1                    720 d, second part of sas2h pass to make library
0        mixture   order p(l)      activity table                  quadrature constants
         by zone   by zone      mat. no.   reaction     weights   directions  refl direc   wt x cos
```

INFORMATION ONLY

1	3	3	0	-2.79004E-01	3	0
2	2	3	5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3	5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3	0	-6.04419E-01	8	0
5			5.55953E-02	-5.58410E-01	8	-3.10450E-02
6			5.55953E-02	-2.31301E-01	7	-1.28578E-02
7			5.55953E-02	2.31301E-01	6	1.28578E-02
8			5.55953E-02	5.58410E-01	5	3.10450E-02
9			0	-8.50774E-01	16	0
10			5.22844E-02	-8.21784E-01	16	-4.29665E-02
11			5.22844E-02	-6.01588E-01	14	-3.14537E-02
12			5.22844E-02	-2.20196E-01	13	-1.15128E-02
13			5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83052E-01	24	0
17			4.53355E-02	-9.64143E-01	24	-4.37099E-02
18			4.53355E-02	-8.17361E-01	23	-3.70555E-02
19			4.53355E-02	-5.46143E-01	22	-2.47597E-02
20			4.53355E-02	-1.91780E-01	21	-8.69444E-03
21			4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86885E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40530E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40530E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20862E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20862E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17234E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17234E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20862E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48566E-01	1.47264E-02		0	
3	7.90575E-02	1.18584E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81763E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			

INFORMATION ONLY

10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46406E-02
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01
17	9.11591E-01	9.60386E-01	4	5.72769E+00	5.88891E-01
18	1.00918E+00	1.10677E+00	4	6.34088E+00	1.35731E+00
19	1.20436E+00	1.30195E+00	4	7.56724E+00	1.59667E+00
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00
28	2.85341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00
29	2.96100E+00			1.86045E+01	

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	186	2.48569E-05	1.05705E+00	-6.31734E-02	1.00000E+00	-1.95208E-02	.00000E+00	.0000
2	281	-1.32136E-05	1.06387E+00	-1.33080E-03	-7.88657E-03	-2.81310E-03	.00000E+00	.0000
3	354	1.01005E-05	1.06448E+00	-1.99820E-04	-1.05861E-03	-6.40909E-04	.00000E+00	.0167
4	409	-8.38361E-06	1.06460E+00	-4.26851E-05	-2.46785E-04	-1.43411E-04	.00000E+00	.0167
5	444	5.49109E-06	1.06478E+00	-9.70884E-06	-5.56824E-05	-3.16001E-05	.00000E+00	.0167

grp	to grp	inner iters	nfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	1.13149E-06	28	1.00000E+00	1
2	2	1	17	1.35454E-06	28	1.00000E+00	1
3	3	1	17	1.24475E-06	28	1.00000E+00	1
4	4	1	17	1.20728E-06	28	1.00000E+00	1
5	5	1	17	1.22270E-06	28	1.00000E+00	1
6	6	1	17	8.15168E-07	28	1.00000E+00	1
7	7	1	17	5.15490E-07	28	1.00000E+00	2
8	8	1	16	1.01462E-07	28	1.00000E+00	2
9	9	1	27	8.55716E-06	28	9.99992E-01	3
10	10	1	26	3.16370E-06	28	9.99997E-01	3
11	11	1	26	2.76400E-06	28	9.99997E-01	3
12	12	1	25	9.50851E-07	28	9.99999E-01	3
13	13	1	26	2.33163E-06	28	1.00000E+00	3
14	14	1	25	3.07860E-07	28	1.00000E+00	3
15	15	1	2	3.05769E-05	28	9.99966E-01	2
16	16	1	2	3.78252E-05	28	9.99969E-01	2
17	17	1	2	4.32990E-05	28	9.99989E-01	3
18	18	1	2	5.08065E-05	28	9.99962E-01	3
19	19	1	2	4.31020E-05	28	9.99916E-01	3
20	20	1	2	3.33729E-05	28	9.99956E-01	3
21	21	1	2	5.14854E-05	28	9.99954E-01	3
22	22	1	23	2.32014E-05	28	9.99978E-01	3
23	23	1	27	1.81769E-05	28	9.99978E-01	4
24	24	1	1	1.87144E-05	9	1.00001E+00	4
25	25	1	1	2.12591E-05	8	1.00001E+00	5
26	26	1	1	1.56697E-05	6	1.00001E+00	6
27	27	1	1	1.42699E-05	5	1.00001E+00	8

6	471	-4.26156E-06	1.06491E+00	-2.09436E-06	-1.22728E-05	-7.12417E-06	.00000E+00	.0167

final monitor

lambda 1.06486E+00 production/absorption 1.07880E+00 angular flux on 16

INFORMATION ONLY

- elapsed time .02 min.
1 720 d, second part of sas2h pass to make library
0 int. zone number

int.	zone	number	radius	int. midpoint	area	volume	prod density
1		1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2		1	3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3		1	7.90575E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4		1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5		1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6		1	3.16230E-01	3.55759E-01	1.98698E+00	1.76717E-01	.00000E+00
7		1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8		1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9		1	5.53403E-01	5.73167E-01	3.47713E+00	1.42355E-01	.00000E+00
10		1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11		2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12		2	6.52780E-01	6.62940E-01	4.10154E+00	8.46405E-02	.00000E+00
13		3	6.73100E-01	6.98583E-01	4.22921E+00	2.05562E-01	.00000E+00
14		3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15		3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16		4	8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.42890E-02
17		4	9.11591E-01	9.60386E-01	5.72769E+00	5.88897E-01	2.64366E-02
18		4	1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	5.98802E-02
19		4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.87644E-02
20		4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	7.78853E-02
21		4	1.59473E+00	1.69232E+00	1.00800E+01	2.07540E+00	8.71568E-02
22		4	1.78991E+00	1.88750E+00	1.12463E+01	2.31476E+00	9.64330E-02
23		4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.05772E-01
24		4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.15189E-01
25		4	2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.24702E-01
26		4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.34341E-01
27		4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	7.08334E-02
28		4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.33258E-02
29			2.96100E+00		1.86045E+01		

1 720 d, second part of sas2h pass to make library
0 total flux

int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.28271E-02	9.07508E-02	1.12336E-01	6.85895E-02	1.02675E-01	1.92730E-01	1.95048E-01	1.46974E-01
2	1.28219E-02	9.03997E-02	1.12271E-01	6.89013E-02	1.02623E-01	1.92643E-01	1.95009E-01	1.46948E-01
3	1.28225E-02	9.04126E-02	1.12259E-01	6.89192E-02	1.02657E-01	1.92713E-01	1.95052E-01	1.46979E-01
4	1.28298E-02	9.04930E-02	1.12403E-01	6.89976E-02	1.02787E-01	1.92956E-01	1.95218E-01	1.47008E-01
5	1.28414E-02	9.06344E-02	1.12601E-01	6.91305E-02	1.03003E-01	1.93355E-01	1.95466E-01	1.47052E-01
6	1.28580E-02	9.08289E-02	1.12869E-01	6.93138E-02	1.03301E-01	1.93903E-01	1.95805E-01	1.47108E-01
7	1.28788E-02	9.10778E-02	1.13215E-01	6.95517E-02	1.03689E-01	1.94620E-01	1.96246E-01	1.47178E-01
8	1.29042E-02	9.13887E-02	1.13654E-01	6.98589E-02	1.04194E-01	1.95556E-01	1.96823E-01	1.47261E-01
9	1.29255E-02	9.16622E-02	1.14048E-01	7.01408E-02	1.04662E-01	1.96424E-01	1.97359E-01	1.47330E-01
10	1.29400E-02	9.18766E-02	1.14377E-01	7.03889E-02	1.05083E-01	1.97210E-01	1.97846E-01	1.47379E-01
11	1.29522E-02	9.20543E-02	1.14652E-01	7.05972E-02	1.05437E-01	1.97889E-01	1.98264E-01	1.47423E-01
12	1.29654E-02	9.21865E-02	1.14825E-01	7.07055E-02	1.05606E-01	1.98225E-01	1.98466E-01	1.47467E-01
13	1.29781E-02	9.24275E-02	1.15095E-01	7.08630E-02	1.05794E-01	1.98563E-01	1.98658E-01	1.47534E-01
14	1.30339E-02	9.28113E-02	1.15548E-01	7.10982E-02	1.06170E-01	1.99222E-01	1.97088E-01	1.47627E-01
15	1.30819E-02	9.33052E-02	1.16173E-01	7.14847E-02	1.06767E-01	2.00295E-01	1.97666E-01	1.47728E-01
16	1.31568E-02	9.40962E-02	1.17188E-01	7.21295E-02	1.07782E-01	2.02136E-01	1.98758E-01	1.47898E-01
17	1.32300E-02	9.48836E-02	1.18204E-01	7.27777E-02	1.08812E-01	2.04025E-01	1.99901E-01	1.48095E-01
18	1.32885E-02	9.55219E-02	1.19036E-01	7.33133E-02	1.09678E-01	2.05666E-01	2.00918E-01	1.48259E-01
19	1.33395E-02	9.60887E-02	1.19784E-01	7.37979E-02	1.10470E-01	2.07194E-01	2.01885E-01	1.48511E-01
20	1.33694E-02	9.64294E-02	1.20142E-01	7.40969E-02	1.10964E-01	2.08177E-01	2.02523E-01	1.48666E-01
21	1.33882E-02	9.66485E-02	1.20541E-01	7.42936E-02	1.11293E-01	2.08849E-01	2.02969E-01	1.48782E-01
22	1.34002E-02	9.67916E-02	1.20739E-01	7.44250E-02	1.11516E-01	2.09314E-01	2.03283E-01	1.48869E-01
23	1.34077E-02	9.68836E-02	1.20869E-01	7.45114E-02	1.11663E-01	2.09631E-01	2.03501E-01	1.48931E-01
24	1.34121E-02	9.69388E-02	1.20948E-01	7.45642E-02	1.11755E-01	2.09833E-01	2.03642E-01	1.48973E-01
25	1.34140E-02	9.69637E-02	1.20986E-01	7.45895E-02	1.11799E-01	2.09937E-01	2.03716E-01	1.48994E-01

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26	1.34136E-02	9.69606E-02	1.20984E-01	7.45883E-02	1.11799E-01	2.09944E-01	2.05722E-01	1.48995E-01
27	1.34118E-02	9.69406E-02	1.20957E-01	7.45708E-02	1.11771E-01	2.09889E-01	2.05685E-01	1.48981E-01
28	1.34094E-02	9.69109E-02	1.20918E-01	7.45443E-02	1.11726E-01	2.09799E-01	2.05622E-01	1.48961E-01
0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15922E-01	1.07136E-01	1.00898E-01	6.54265E-02	5.58852E-02	5.32915E-02	2.90548E-02	1.60960E-02
2	1.15922E-01	1.07136E-01	1.00902E-01	6.54314E-02	5.58901E-02	5.32986E-02	2.90571E-02	1.60970E-02
3	1.15920E-01	1.07127E-01	1.00881E-01	6.54075E-02	5.58676E-02	5.32656E-02	2.90504E-02	1.60935E-02
4	1.15916E-01	1.07106E-01	1.00832E-01	6.53500E-02	5.58136E-02	5.31864E-02	2.90348E-02	1.60848E-02
5	1.15909E-01	1.07073E-01	1.00756E-01	6.52624E-02	5.57315E-02	5.30659E-02	2.90112E-02	1.60719E-02
6	1.15900E-01	1.07028E-01	1.00654E-01	6.51433E-02	5.56205E-02	5.29024E-02	2.89801E-02	1.60547E-02
7	1.15887E-01	1.06969E-01	1.00518E-01	6.49871E-02	5.54758E-02	5.26886E-02	2.89409E-02	1.60328E-02
8	1.15874E-01	1.06890E-01	1.00339E-01	6.47814E-02	5.52861E-02	5.24076E-02	2.88919E-02	1.60047E-02
9	1.15854E-01	1.06815E-01	1.00171E-01	6.45885E-02	5.51101E-02	5.21457E-02	2.88471E-02	1.59790E-02
10	1.15854E-01	1.06745E-01	1.00015E-01	6.44146E-02	5.49508E-02	5.19080E-02	2.88085E-02	1.59561E-02
11	1.15870E-01	1.06690E-01	9.98917E-02	6.42774E-02	5.48243E-02	5.17202E-02	2.87745E-02	1.59369E-02
12	1.15865E-01	1.06570E-01	9.98457E-02	6.42238E-02	5.47724E-02	5.16450E-02	2.87557E-02	1.59275E-02
13	1.15820E-01	1.06643E-01	9.97829E-02	6.41417E-02	5.46979E-02	5.15331E-02	2.87400E-02	1.59180E-02
14	1.15750E-01	1.06580E-01	9.96395E-02	6.39634E-02	5.45407E-02	5.12933E-02	2.87143E-02	1.58999E-02
15	1.15674E-01	1.06475E-01	9.94047E-02	6.36834E-02	5.42947E-02	5.09168E-02	2.86757E-02	1.58717E-02
16	1.15569E-01	1.06302E-01	9.90157E-02	6.32219E-02	5.38884E-02	5.02928E-02	2.86047E-02	1.58232E-02
17	1.15474E-01	1.06131E-01	9.86268E-02	6.27605E-02	5.34769E-02	4.96657E-02	2.85198E-02	1.57702E-02
18	1.15407E-01	1.05986E-01	9.82943E-02	6.23667E-02	5.31167E-02	4.91287E-02	2.84276E-02	1.57179E-02
19	1.15354E-01	1.05852E-01	9.79841E-02	6.19998E-02	5.27759E-02	4.86278E-02	2.83259E-02	1.56646E-02
20	1.15329E-01	1.05768E-01	9.77835E-02	6.17829E-02	5.25611E-02	4.83029E-02	2.82563E-02	1.56260E-02
21	1.15317E-01	1.05710E-01	9.76441E-02	6.15985E-02	5.23925E-02	4.80766E-02	2.82001E-02	1.55970E-02
22	1.15311E-01	1.05669E-01	9.75449E-02	6.14811E-02	5.22783E-02	4.79150E-02	2.81573E-02	1.55752E-02
23	1.15307E-01	1.05641E-01	9.74743E-02	6.13978E-02	5.21966E-02	4.78001E-02	2.81257E-02	1.55592E-02
24	1.15305E-01	1.05621E-01	9.74263E-02	6.13411E-02	5.21408E-02	4.77218E-02	2.81040E-02	1.55482E-02
25	1.15303E-01	1.05610E-01	9.73977E-02	6.13073E-02	5.21079E-02	4.76753E-02	2.80919E-02	1.55421E-02
26	1.15301E-01	1.05606E-01	9.73885E-02	6.12964E-02	5.20983E-02	4.76612E-02	2.80900E-02	1.55411E-02
27	1.15298E-01	1.05607E-01	9.73989E-02	6.13032E-02	5.21062E-02	4.76713E-02	2.80954E-02	1.55437E-02
28	1.15298E-01	1.05613E-01	9.74094E-02	6.13216E-02	5.21257E-02	4.76979E-02	2.81052E-02	1.55488E-02
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.06003E-03	5.39608E-03	1.07464E-02	3.56724E-02	1.11395E-02	2.25840E-02	7.73947E-02	6.34270E-02
2	7.06071E-03	5.39747E-03	1.07478E-02	3.56950E-02	1.11408E-02	2.25857E-02	7.73898E-02	6.34129E-02
3	7.05775E-03	5.38991E-03	1.07420E-02	3.56611E-02	1.11259E-02	2.25014E-02	7.72727E-02	6.32853E-02
4	7.05059E-03	5.37170E-03	1.07285E-02	3.56282E-02	1.11051E-02	2.28234E-02	7.70154E-02	6.30121E-02
5	7.03970E-03	5.34371E-03	1.07082E-02	3.55790E-02	1.10678E-02	2.27061E-02	7.66337E-02	6.26077E-02
6	7.02498E-03	5.30532E-03	1.06807E-02	3.55132E-02	1.10173E-02	2.25477E-02	7.61252E-02	6.20691E-02
7	7.00570E-03	5.25485E-03	1.06450E-02	3.54284E-02	1.09512E-02	2.23414E-02	7.54772E-02	6.13842E-02
8	6.98041E-03	5.18653E-03	1.05986E-02	3.53191E-02	1.08644E-02	2.20721E-02	7.46585E-02	6.05241E-02
9	6.95684E-03	5.12249E-03	1.05556E-02	3.52185E-02	1.07855E-02	2.18227E-02	7.39223E-02	5.97562E-02
10	6.93537E-03	5.06362E-03	1.05167E-02	3.51292E-02	1.07095E-02	2.15972E-02	7.32823E-02	5.90957E-02
11	6.91829E-03	5.01852E-03	1.04856E-02	3.50572E-02	1.06527E-02	2.14275E-02	7.28165E-02	5.86358E-02
12	6.91138E-03	5.00347E-03	1.04727E-02	3.50266E-02	1.06330E-02	2.13708E-02	7.26727E-02	5.85190E-02
13	6.90152E-03	4.97297E-03	1.04556E-02	3.49874E-02	1.06005E-02	2.12669E-02	7.25956E-02	5.82280E-02
14	6.88040E-03	4.90665E-03	1.04199E-02	3.49065E-02	1.05265E-02	2.10516E-02	7.17802E-02	5.75645E-02
15	6.84694E-03	4.80164E-03	1.03639E-02	3.47827E-02	1.04089E-02	2.06855E-02	7.08810E-02	5.66156E-02
16	6.79182E-03	4.62038E-03	1.02709E-02	3.45776E-02	1.02166E-02	2.00543E-02	6.94980E-02	5.52061E-02
17	6.73651E-03	4.44198E-03	1.01746E-02	3.43628E-02	1.00264E-02	1.94691E-02	6.80913E-02	5.37995E-02
18	6.68862E-03	4.30598E-03	1.00868E-02	3.41601E-02	9.86613E-03	1.89720E-02	6.67475E-02	5.24537E-02
19	6.66342E-03	4.18892E-03	1.00017E-02	3.39583E-02	9.71702E-03	1.85125E-02	6.53964E-02	5.10985E-02
20	6.61355E-03	4.12089E-03	9.94418E-03	3.38170E-02	9.62058E-03	1.82179E-02	6.44334E-02	5.01322E-02
21	6.59252E-03	4.07681E-03	9.90301E-03	3.37128E-02	9.55300E-03	1.80116E-02	6.37119E-02	4.94092E-02
22	6.57735E-03	4.04711E-03	9.87305E-03	3.36352E-02	9.50442E-03	1.78634E-02	6.31651E-02	4.88629E-02
23	6.56650E-03	4.02679E-03	9.85148E-03	3.35784E-02	9.46948E-03	1.77565E-02	6.27552E-02	4.84536E-02
24	6.55914E-03	4.01321E-03	9.83468E-03	3.35390E-02	9.44511E-03	1.76818E-02	6.24590E-02	4.81567E-02
25	6.55487E-03	4.00484E-03	9.82793E-03	3.35155E-02	9.43009E-03	1.76343E-02	6.22637E-02	4.79571E-02
26	6.55379E-03	4.00147E-03	9.82539E-03	3.35080E-02	9.42417E-03	1.76130E-02	6.21684E-02	4.78609E-02
27	6.55503E-03	4.00200E-03	9.82702E-03	3.35137E-02	9.42554E-03	1.76135E-02	6.21592E-02	4.78268E-02

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   28 6.55734E-03 4.00532E-03 9.85219E-03 3.35275E-02 9.43193E-03 1.76294E-02 6.22086E-02 4.78605E-02
0 int.  grp. 25     grp. 26     grp. 27
    1 2.86830E-02 2.06921E-02 3.95060E-03
    2 2.85721E-02 2.06800E-02 3.92767E-03
    3 2.85039E-02 2.06202E-02 3.91540E-03
    4 2.84588E-02 2.04957E-02 3.88259E-03
    5 2.80439E-02 2.03052E-02 3.85005E-03
    6 2.79572E-02 2.00516E-02 3.79617E-03
    7 2.75928E-02 1.97265E-02 3.72568E-03
    8 2.71372E-02 1.93167E-02 3.63471E-03
    9 2.67325E-02 1.89514E-02 3.55244E-03
   10 2.63901E-02 1.86394E-02 3.48169E-03
   11 2.61608E-02 1.84385E-02 3.43887E-03
   12 2.61117E-02 1.84081E-02 3.43602E-03
   13 2.59487E-02 1.82580E-02 3.39571E-03
   14 2.55769E-02 1.79012E-02 3.29847E-03
   15 2.50587E-02 1.73970E-02 3.15374E-03
   16 2.43080E-02 1.66761E-02 2.94211E-03
   17 2.35713E-02 1.59956E-02 2.76010E-03
   18 2.28718E-02 1.53838E-02 2.62326E-03
   19 2.21718E-02 1.47911E-02 2.50009E-03
   20 2.16783E-02 1.43917E-02 2.42542E-03
   21 2.13130E-02 1.41066E-02 2.37527E-03
   22 2.10401E-02 1.39002E-02 2.34061E-03
   23 2.08373E-02 1.37505E-02 2.31600E-03
   24 2.06909E-02 1.36443E-02 2.29900E-03
   25 2.05921E-02 1.35731E-02 2.28769E-03
   26 2.05368E-02 1.35320E-02 2.28118E-03
   27 2.05206E-02 1.35175E-02 2.27873E-03
   28 2.05312E-02 1.35206E-02 2.27852E-03
- elapsed time    .02 min.
1fine group summary for zone   1 by group including sum for all groups in line 28
0 grp.  fix source  fiss source  in scatter  slf scatter  out scatter  absorption   leakage     balance
    1  .00000E+00  .00000E+00  .00000E+00  4.99611E-04  6.61278E-04  5.50619E-05 -7.16304E-04  9.99952E-01
    2  .00000E+00  .00000E+00  3.79427E-04  6.14034E-03  8.07084E-03  1.75468E-04 -7.86608E-03  9.99963E-01
    3  .00000E+00  .00000E+00  3.83251E-03  5.45644E-03  1.41966E-02  9.26400E-05 -1.04564E-02  9.99978E-01
    4  .00000E+00  .00000E+00  5.57851E-03  3.59733E-03  1.25601E-02  4.19806E-05 -6.82338E-03  9.99988E-01
    5  .00000E+00  .00000E+00  1.02522E-02  1.15225E-02  2.08752E-02  4.96551E-05 -1.05725E-02  9.99991E-01
    6  .00000E+00  .00000E+00  2.14886E-02  3.44734E-02  4.09957E-02  8.42815E-05 -1.95913E-02  9.99992E-01
    7  .00000E+00  .00000E+00  4.22265E-02  6.09661E-02  5.41334E-02  6.12174E-05 -1.19675E-02  9.99988E-01
    8  .00000E+00  .00000E+00  5.63550E-02  7.83471E-02  5.87462E-02  3.64032E-05 -2.42234E-03  9.99912E-01
    9  .00000E+00  .00000E+00  5.77869E-02  7.26181E-02  5.75068E-02  2.92783E-05  2.56207E-04  9.99859E-01
   10  .00000E+00  .00000E+00  5.70853E-02  6.91811E-02  5.55973E-02  3.60679E-05  1.45792E-03  9.99895E-01
   11  .00000E+00  .00000E+00  5.58787E-02  6.56109E-02  5.25812E-02  5.51711E-05  3.44575E-03  9.99939E-01
   12  .00000E+00  .00000E+00  4.54188E-02  3.51057E-02  4.13062E-02  6.04664E-05  4.05294E-03  9.99978E-01
   13  .00000E+00  .00000E+00  4.05757E-02  2.85776E-02  3.66489E-02  8.46561E-05  3.84136E-03  9.99989E-01
   14  .00000E+00  .00000E+00  3.94761E-02  2.82151E-02  3.37050E-02  1.36166E-04  5.63539E-03  9.99988E-01
   15  .00000E+00  .00000E+00  2.16795E-02  1.08652E-02  2.08550E-02  1.12735E-04  1.21179E-03  9.99999E-01
   16  .00000E+00  .00000E+00  1.42523E-02  4.58254E-03  1.35006E-02  7.64217E-05  6.55321E-04  9.99998E-01
   17  .00000E+00  .00000E+00  7.30981E-03  1.29767E-03  6.75177E-03  3.71473E-05  5.20908E-04  1.00001E+00
   18  .00000E+00  .00000E+00  6.48214E-03  9.46521E-04  5.17198E-03  2.96170E-05  1.28057E-03  9.99999E-01
   19  .00000E+00  .00000E+00  1.07274E-02  2.92480E-03  9.70714E-03  6.55067E-05  9.54747E-04  1.00001E+00
   20  .00000E+00  .00000E+00  2.62842E-02  2.09761E-02  2.37163E-02  2.73573E-04  2.29415E-03  1.00001E+00
   21  .00000E+00  .00000E+00  1.26120E-02  4.18891E-03  1.08973E-02  1.05051E-04  1.60970E-03  9.99997E-01
   22  .00000E+00  .00000E+00  2.49792E-02  1.28515E-02  1.99998E-02  2.46844E-04  4.73257E-03  1.00001E+00
   23  .00000E+00  .00000E+00  6.47805E-02  7.82889E-02  5.14102E-02  1.13648E-03  1.22334E-02  1.00002E+00
   24  .00000E+00  .00000E+00  6.92269E-02  7.39258E-02  5.70640E-02  1.34478E-03  1.08166E-02  1.00002E+00
   25  .00000E+00  .00000E+00  4.61044E-02  3.13608E-02  4.08457E-02  7.97068E-04  4.96113E-03  1.00001E+00
   26  .00000E+00  .00000E+00  3.68318E-02  3.50569E-02  3.25797E-02  8.10747E-04  3.64108E-03  1.00001E+00
   27  .00000E+00  .00000E+00  1.24954E-02  7.60995E-03  1.15980E-02  2.89664E-04  6.12785E-04  1.00000E+00
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INFORMATION ONLY

28	.00000E+00	.00000E+00	7.90077E-01	7.85207E-01	7.90076E-01	6.32625E-05	-6.30270E-05	9.99973E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.29470E-02	-7.16304E-04	1.28313E-02	.00000E+00	3.65704E-11	.00000E+00	1.98189E-05	1.61889E-02
2	9.19869E-02	-7.86608E-03	9.04940E-02	.00000E+00	.00000E+00	.00000E+00	8.90010E-05	1.14529E-01
3	1.14556E-01	-1.04564E-02	1.12392E-01	.00000E+00	.00000E+00	.00000E+00	9.22112E-05	1.42382E-01
4	7.05289E-02	-6.82539E-03	6.89736E-02	.00000E+00	.00000E+00	.00000E+00	4.17277E-05	8.74880E-02
5	1.05325E-01	-1.06725E-02	1.02724E-01	.00000E+00	.00000E+00	.00000E+00	4.98622E-05	1.30448E-01
6	1.97660E-01	-1.95973E-02	1.92813E-01	.00000E+00	.00000E+00	.00000E+00	8.34119E-05	2.44845E-01
7	1.96125E-01	-1.19675E-02	1.98091E-01	.00000E+00	.00000E+00	.00000E+00	5.92757E-05	2.44269E-01
8	1.47403E-01	-2.42234E-03	1.46981E-01	.00000E+00	.00000E+00	.00000E+00	3.27253E-05	1.84963E-01
9	1.15857E-01	2.56209E-04	1.15921E-01	.00000E+00	.00000E+00	.00000E+00	2.16756E-05	1.45631E-01
10	1.05705E-01	1.45793E-03	1.07132E-01	.00000E+00	.00000E+00	.00000E+00	1.91638E-05	1.34398E-01
11	9.99250E-02	3.44575E-03	1.00890E-01	.00000E+00	.00000E+00	.00000E+00	1.79124E-05	1.26261E-01
12	6.43144E-02	4.05294E-03	6.54175E-02	.00000E+00	.00000E+00	.00000E+00	1.05151E-05	8.16046E-02
13	5.48598E-02	3.84136E-03	5.58766E-02	.00000E+00	.00000E+00	.00000E+00	8.74741E-06	6.96588E-02
14	5.17717E-02	5.63539E-03	5.32790E-02	.00000E+00	.00000E+00	.00000E+00	8.47287E-06	6.61280E-02
15	2.87870E-02	1.21179E-03	2.90520E-02	.00000E+00	.00000E+00	.00000E+00	4.47623E-06	3.63571E-02
16	1.59433E-02	6.55321E-04	1.60945E-02	.00000E+00	.00000E+00	.00000E+00	2.24256E-06	2.01404E-02
17	6.92311E-03	5.20908E-04	7.05892E-03	.00000E+00	.00000E+00	.00000E+00	9.03514E-07	8.79626E-03
18	5.02978E-03	1.28057E-03	5.39534E-03	.00000E+00	.00000E+00	.00000E+00	6.57154E-07	6.58142E-03
19	1.04946E-02	9.54747E-04	1.07443E-02	.00000E+00	.00000E+00	.00000E+00	1.39832E-06	1.33639E-02
20	3.50789E-02	2.29415E-03	3.56683E-02	.00000E+00	.00000E+00	.00000E+00	5.21483E-06	4.44918E-02
21	1.06570E-02	1.60970E-03	1.11366E-02	.00000E+00	.00000E+00	.00000E+00	1.25948E-06	1.37361E-02
22	2.14681E-02	4.75259E-03	2.29257E-02	.00000E+00	.00000E+00	.00000E+00	2.55950E-06	2.79982E-02
23	7.29195E-02	1.22534E-02	7.73747E-02	.00000E+00	.00000E+00	.00000E+00	7.80690E-06	9.46529E-02
24	5.87227E-02	1.08166E-02	6.34132E-02	.00000E+00	.00000E+00	.00000E+00	4.71613E-06	7.69401E-02
25	2.61979E-02	4.96113E-03	2.86785E-02	.00000E+00	.00000E+00	.00000E+00	1.63714E-06	3.45726E-02
26	1.84639E-02	3.64108E-03	2.06908E-02	.00000E+00	.00000E+00	.00000E+00	8.63529E-07	2.46928E-02
27	3.44191E-03	6.12785E-04	3.95083E-03	.00000E+00	.00000E+00	.00000E+00	1.01762E-07	4.65766E-03
28	1.74411E+00	-6.30297E-03	1.75098E+00	.00000E+00	3.65704E-11	.00000E+00	5.87850E-04	2.19577E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.20921E-04	1.65608E-04	2.48638E-06	-1.62188E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.89251E-05	1.45512E-03	1.04412E-03	1.40152E-05	-1.02922E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.49980E-04	2.78675E-03	8.74817E-04	2.02460E-05	-7.45098E-04	9.99998E-01
4	.00000E+00	.00000E+00	2.86528E-04	2.30853E-03	2.98258E-04	1.30902E-05	-2.47955E-05	9.99998E-01
5	.00000E+00	.00000E+00	6.16244E-04	4.41569E-03	2.79259E-04	1.68606E-05	3.20103E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02177E-03	1.24040E-02	1.69473E-04	2.70655E-05	8.25221E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.72146E-04	1.25943E-02	6.33066E-05	2.68151E-05	5.82034E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17359E-04	9.20787E-03	4.43373E-04	2.21119E-05	-3.48123E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45214E-04	6.36001E-03	5.30177E-05	7.67145E-05	3.15497E-04	9.99978E-01
10	.00000E+00	.00000E+00	5.30827E-05	4.98891E-03	4.94987E-05	5.93510E-05	-5.57626E-05	9.99997E-01
11	.00000E+00	.00000E+00	4.95020E-05	4.45642E-03	5.05387E-05	9.00528E-05	-9.08754E-05	9.99999E-01
12	.00000E+00	.00000E+00	5.03290E-05	2.76262E-03	5.13976E-05	5.67578E-06	-6.74604E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13977E-05	2.35729E-03	4.80858E-05	6.31612E-06	-3.00305E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80858E-05	2.28976E-03	4.20013E-05	8.51155E-06	-2.42610E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.45952E-05	1.21481E-03	4.97163E-05	6.29121E-06	-1.13825E-05	9.99975E-01
16	.00000E+00	.00000E+00	5.57278E-05	6.44216E-04	5.58094E-05	3.81817E-06	-3.87826E-06	9.99970E-01
17	.00000E+00	.00000E+00	6.03346E-05	2.43808E-04	6.00140E-05	1.81234E-06	-9.82553E-07	9.99986E-01
18	.00000E+00	.00000E+00	6.30798E-05	1.66413E-04	5.37339E-05	1.38547E-06	7.96770E-06	9.99994E-01
19	.00000E+00	.00000E+00	5.54506E-05	4.01230E-04	5.91975E-05	3.11345E-06	-6.84586E-06	9.99985E-01
20	.00000E+00	.00000E+00	7.23071E-05	1.47688E-03	6.27873E-05	1.25972E-05	-3.12803E-06	9.99979E-01
21	.00000E+00	.00000E+00	8.29752E-05	3.77457E-04	9.01609E-05	4.67888E-06	-1.18457E-05	9.99989E-01
22	.00000E+00	.00000E+00	1.18953E-04	8.29579E-04	1.10863E-04	1.07088E-05	-2.60305E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.70659E-04	2.97744E-03	2.18594E-04	4.86308E-05	-9.66787E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.81397E-04	2.26338E-03	3.10615E-04	5.55681E-05	-8.48109E-05	1.00000E+00
25	.00000E+00	.00000E+00	2.87525E-04	9.13261E-04	2.35061E-04	3.23191E-05	2.01325E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.22513E-04	7.14961E-04	9.44859E-05	3.20961E-05	-4.27384E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.73967E-05	1.50956E-04	7.77779E-08	1.11996E-05	1.61172E-05	1.00000E+00
28	.00000E+00	.00000E+00	5.03364E-03	8.08963E-02	5.05363E-03	6.13620E-04	-6.07608E-04	9.99999E-01

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0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dt**2	total flux
1	1.29734E-02	-8.78489E-04	1.29470E-02	-7.16304E-04	5.91701E-06	.00000E+00	1.63570E-06	2.16007E-03
2	9.22544E-02	-8.89530E-03	9.19859E-02	-7.86608E-03	.00000E+00	.00000E+00	1.11244E-05	1.53654E-02
3	1.14903E-01	-1.12015E-02	1.14556E-01	-1.04564E-02	.00000E+00	.00000E+00	1.26787E-05	1.91256E-02
4	7.07456E-02	-6.84818E-03	7.05289E-02	-6.82538E-03	.00000E+00	.00000E+00	7.43553E-06	1.17768E-02
5	1.05663E-01	-1.03524E-02	1.05329E-01	-1.06725E-02	.00000E+00	.00000E+00	8.63424E-06	1.75892E-02
6	1.98334E-01	-1.87661E-02	1.97660E-01	-1.95913E-02	.00000E+00	.00000E+00	1.01748E-05	3.30135E-02
7	1.98531E-01	-1.13854E-02	1.96125E-01	-1.19675E-02	.00000E+00	.00000E+00	8.35354E-06	3.27317E-02
8	1.47491E-01	-2.77046E-03	1.47403E-01	-2.42234E-03	.00000E+00	.00000E+00	5.27461E-06	2.45772E-02
9	1.15858E-01	5.71704E-04	1.15867E-01	2.56207E-04	.00000E+00	.00000E+00	4.58407E-06	1.93135E-02
10	1.06665E-01	1.40216E-03	1.06706E-01	1.45798E-03	.00000E+00	.00000E+00	4.91124E-06	1.77821E-02
11	9.98329E-02	3.35487E-03	9.99250E-02	3.44675E-03	.00000E+00	.00000E+00	4.76619E-06	1.66467E-02
12	6.42072E-02	4.04619E-03	6.43144E-02	4.05294E-03	.00000E+00	.00000E+00	3.21614E-06	1.07098E-02
13	5.47558E-02	3.83835E-03	5.48596E-02	3.84136E-03	.00000E+00	.00000E+00	2.75718E-06	9.13409E-03
14	5.16213E-02	5.63597E-03	5.17717E-02	5.63539E-03	.00000E+00	.00000E+00	2.57515E-06	8.61470E-03
15	2.87494E-02	1.20041E-03	2.87870E-02	1.21179E-03	.00000E+00	.00000E+00	1.41268E-06	4.79472E-03
16	1.59284E-02	6.51443E-04	1.59433E-02	6.55321E-04	.00000E+00	.00000E+00	7.82479E-07	2.65567E-03
17	6.90929E-03	5.19925E-04	6.92511E-03	5.20908E-04	.00000E+00	.00000E+00	3.39443E-07	1.15260E-03
18	4.97768E-03	1.28854E-03	5.02976E-03	1.28057E-03	.00000E+00	.00000E+00	2.45880E-07	8.35162E-04
19	1.04687E-02	9.47901E-04	1.04946E-02	9.54747E-04	.00000E+00	.00000E+00	5.14034E-07	1.74671E-03
20	3.50177E-02	2.29102E-03	3.50789E-02	2.29415E-03	.00000E+00	.00000E+00	1.71648E-06	5.84098E-03
21	1.06276E-02	1.59785E-03	1.06670E-02	1.60970E-03	.00000E+00	.00000E+00	5.20458E-07	1.77399E-03
22	2.13547E-02	4.72977E-03	2.14681E-02	4.73257E-03	.00000E+00	.00000E+00	1.05110E-06	3.56688E-03
23	7.26320E-02	1.21357E-02	7.29195E-02	1.22524E-02	.00000E+00	.00000E+00	3.54020E-06	1.21254E-02
24	5.84885E-02	1.07318E-02	5.87227E-02	1.08166E-02	.00000E+00	.00000E+00	2.85343E-06	9.76391E-03
25	2.60997E-02	4.98127E-03	2.61995E-02	4.96113E-03	.00000E+00	.00000E+00	1.25672E-06	4.35650E-03
26	1.84031E-02	3.63680E-03	1.84639E-02	3.64108E-03	.00000E+00	.00000E+00	8.78531E-07	3.07088E-03
27	3.43621E-03	6.28904E-04	3.44191E-03	6.12786E-04	.00000E+00	.00000E+00	1.58535E-07	5.72973E-04
28	1.74494E+00	-6.91036E-03	1.74411E+00	-6.30257E-03	5.91701E-06	.00000E+00	1.05343E-04	2.90787E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.64875E-04	3.50584E-04	2.91918E-05	-3.79756E-04	9.99985E-01
2	.00000E+00	.00000E+00	2.01158E-04	3.27763E-03	4.30784E-03	9.36627E-05	-4.20018E-03	9.99988E-01
3	.00000E+00	.00000E+00	2.04538E-03	2.91687E-03	7.58913E-03	4.95230E-05	-5.59510E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98111E-03	1.92598E-03	6.61731E-03	2.24755E-05	-3.65850E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.48386E-03	6.17872E-03	1.11940E-02	2.66267E-05	-5.73663E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.15107E-02	1.84911E-02	2.19768E-02	4.51813E-05	-1.05112E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26311E-02	3.23889E-02	2.87598E-02	3.25228E-05	-6.16025E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99914E-02	4.11648E-02	3.08662E-02	1.91268E-05	-8.91168E-04	9.99920E-01
9	.00000E+00	.00000E+00	3.04242E-02	3.79925E-02	3.00854E-02	1.53178E-05	3.25912E-04	9.99892E-01
10	.00000E+00	.00000E+00	2.98990E-02	3.61078E-02	2.90180E-02	1.88250E-05	8.65267E-04	9.99901E-01
11	.00000E+00	.00000E+00	2.91888E-02	3.40659E-02	2.72001E-02	2.86488E-05	1.95682E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36104E-02	1.81009E-02	2.12975E-02	3.11771E-05	2.28181E-03	9.99981E-01
13	.00000E+00	.00000E+00	2.09746E-02	1.47187E-02	1.88958E-02	4.36015E-05	2.05586E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.05586E-02	1.43900E-02	1.71859E-02	6.94463E-05	3.09950E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10983E-02	5.64759E-03	1.05801E-02	5.85980E-05	4.59477E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.33652E-03	2.38076E-03	7.01398E-03	3.97032E-05	2.82859E-04	9.99999E-01
17	.00000E+00	.00000E+00	3.77370E-03	6.67649E-04	3.47375E-03	1.91123E-05	2.80816E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.34508E-03	4.62949E-04	2.52968E-03	1.44859E-05	8.00941E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.49801E-03	1.49991E-03	4.97807E-03	3.35935E-05	4.86311E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.34706E-02	1.08274E-02	1.22418E-02	1.61211E-04	1.08756E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.44484E-03	2.10937E-03	5.48746E-03	5.28997E-05	9.04498E-04	9.99999E-01
22	.00000E+00	.00000E+00	1.26543E-02	6.33776E-03	9.86298E-03	1.21731E-04	2.66954E-03	1.00000E+00
23	.00000E+00	.00000E+00	3.20958E-02	3.90129E-02	2.56187E-02	5.66332E-04	5.91010E-03	1.00001E+00
24	.00000E+00	.00000E+00	3.40384E-02	3.63265E-02	2.80408E-02	6.60869E-04	5.33604E-03	1.00001E+00
25	.00000E+00	.00000E+00	2.25139E-02	1.52520E-02	1.99559E-02	3.87132E-04	2.53061E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.79080E-02	1.66668E-02	1.53940E-02	3.85446E-04	2.12847E-03	1.00000E+00
27	.00000E+00	.00000E+00	6.04364E-03	3.52504E-03	5.37008E-03	1.34177E-04	5.39428E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.05516E-01	4.02685E-01	4.05516E-01	3.14064E-03	-3.12508E-03	9.99972E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dt**2	total flux

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1	1.31088E-02	-1.25825E-03	1.29734E-02	-8.78438E-04	1.95883E-11	.00000E+00	1.05072E-05	8.58257E-03
2	9.35884E-02	-1.30955E-02	9.22544E-02	-8.89530E-03	.00000E+00	.00000E+00	4.75076E-05	6.11308E-02
3	1.16535E-01	-1.67946E-02	1.14903E-01	-1.12015E-02	.00000E+00	.00000E+00	4.92587E-05	7.61139E-02
4	7.17134E-02	-1.05068E-02	7.07456E-02	-6.84818E-03	.00000E+00	.00000E+00	2.23398E-05	4.68392E-02
5	1.07123E-01	-1.60891E-02	1.05662E-01	-1.03524E-02	.00000E+00	.00000E+00	2.66696E-05	6.99504E-02
6	2.00957E-01	-2.92773E-02	1.98334E-01	-1.87661E-02	.00000E+00	.00000E+00	4.47151E-05	1.31256E-01
7	1.98042E-01	-1.75457E-02	1.96531E-01	-1.13854E-02	.00000E+00	.00000E+00	3.14900E-05	1.29772E-01
8	1.47783E-01	-3.66163E-03	1.47491E-01	-2.77046E-03	.00000E+00	.00000E+00	1.71934E-05	9.71827E-02
9	1.15632E-01	8.97616E-04	1.15858E-01	5.71704E-04	.00000E+00	.00000E+00	1.13402E-05	7.61909E-02
10	1.06412E-01	2.25743E-03	1.06665E-01	1.40216E-03	.00000E+00	.00000E+00	1.00022E-05	7.01464E-02
11	9.92633E-02	5.31169E-03	9.98329E-02	3.35487E-03	.00000E+00	.00000E+00	9.30142E-06	6.55640E-02
12	6.35157E-02	6.32801E-03	6.42072E-02	4.04619E-03	.00000E+00	.00000E+00	5.42168E-06	4.20768E-02
13	5.41482E-02	5.89421E-03	5.47558E-02	3.83835E-03	.00000E+00	.00000E+00	4.50529E-06	3.58772E-02
14	5.06918E-02	8.73247E-03	5.16213E-02	5.63297E-03	.00000E+00	.00000E+00	4.32126E-06	3.37261E-02
15	2.86542E-02	1.65988E-03	2.87494E-02	1.20041E-03	.00000E+00	.00000E+00	2.32668E-06	1.88979E-02
16	1.58653E-02	9.34335E-04	1.59346E-02	6.51443E-04	.00000E+00	.00000E+00	1.16507E-06	1.04635E-02
17	6.82698E-03	8.00742E-04	6.90929E-03	5.19925E-04	.00000E+00	.00000E+00	4.63212E-07	4.52567E-03
18	4.75826E-03	2.08948E-03	4.97765E-03	1.28854E-03	.00000E+00	.00000E+00	3.21418E-07	3.21901E-03
19	1.03308E-02	1.43421E-03	1.04687E-02	9.47901E-04	.00000E+00	.00000E+00	7.17095E-07	6.85339E-03
20	3.47106E-02	3.37868E-03	3.50177E-02	2.29102E-03	.00000E+00	.00000E+00	2.69178E-06	2.29656E-02
21	1.03385E-02	2.50235E-03	1.05276E-02	1.59785E-03	.00000E+00	.00000E+00	6.34228E-07	6.91699E-03
22	2.04470E-02	7.39952E-03	2.13547E-02	4.72977E-03	.00000E+00	.00000E+00	1.26222E-06	1.38073E-02
23	7.03589E-02	1.80458E-02	7.26520E-02	1.21357E-02	.00000E+00	.00000E+00	3.80054E-06	4.71672E-02
24	5.60669E-02	1.60678E-02	5.84889E-02	1.07318E-02	.00000E+00	.00000E+00	2.31747E-06	3.78077E-02
25	2.47603E-02	7.51188E-03	2.60997E-02	4.98127E-03	.00000E+00	.00000E+00	7.95161E-07	1.67919E-02
26	1.71035E-02	5.76528E-03	1.84031E-02	3.63680E-03	.00000E+00	.00000E+00	4.10540E-07	1.17395E-02
27	3.06564E-03	1.14833E-03	3.43621E-03	6.28904E-04	.00000E+00	.00000E+00	4.71377E-08	2.15750E-03
28	1.74175E+00	-1.00928E-02	1.74494E+00	-6.91036E-03	1.95883E-11	.00000E+00	3.11451E-04	1.14772E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.30698E-02	.00000E+00	2.13994E-02	2.03181E-02	3.76974E-03	1.25824E-03	9.98904E-01
2	.00000E+00	1.94222E-01	7.05259E-03	2.50885E-01	1.72654E-01	1.53178E-02	1.30954E-02	1.00002E+00
3	.00000E+00	2.15976E-01	7.14098E-02	2.57622E-01	2.54297E-01	1.62366E-02	1.69245E-02	9.99988E-01
4	.00000E+00	1.23790E-01	1.05540E-01	1.76779E-01	2.11074E-01	7.74974E-03	1.05057E-02	1.00000E+00
5	.00000E+00	1.64063E-01	1.92055E-01	4.44539E-01	3.34856E-01	5.17673E-03	1.60890E-02	9.99990E-01
6	.00000E+00	1.76975E-01	3.91014E-01	1.19109E+00	5.30525E-01	8.17797E-03	2.92771E-02	1.00001E+00
7	.00000E+00	8.74405E-02	5.98420E-01	1.56413E+00	6.55180E-01	8.14086E-03	1.75452E-02	9.99991E-01
8	.00000E+00	1.34688E-02	6.89451E-01	1.57552E+00	6.86148E-01	1.31654E-02	3.66160E-03	9.99921E-01
9	.00000E+00	9.77432E-04	6.78365E-01	1.37218E+00	6.58657E-01	2.17362E-02	-9.02944E-04	9.99901E-01
10	.00000E+00	7.25977E-05	6.55483E-01	1.24851E+00	6.25092E-01	3.27972E-02	-2.26952E-03	9.99904E-01
11	.00000E+00	5.71148E-06	6.29133E-01	1.16298E+00	5.80859E-01	5.36285E-02	-5.31337E-03	9.99945E-01
12	.00000E+00	4.01221E-07	5.05927E-01	6.35521E-01	4.53865E-01	5.84032E-02	-6.32841E-03	9.99975E-01
13	.00000E+00	6.37102E-08	4.48520E-01	5.04448E-01	3.99419E-01	5.50084E-02	-5.88350E-03	9.99989E-01
14	.00000E+00	1.26257E-08	4.31160E-01	4.69287E-01	3.61316E-01	7.88815E-02	-8.73236E-03	9.99989E-01
15	.00000E+00	1.42684E-09	2.37079E-01	2.15271E-01	2.30984E-01	7.76238E-03	-1.66382E-03	1.00024E+00
16	.00000E+00	4.18970E-10	1.61984E-01	9.98324E-02	1.56853E-01	5.88970E-03	-9.37013E-04	1.00024E+00
17	.00000E+00	1.34929E-10	8.67034E-02	3.09699E-02	7.99813E-02	7.50783E-03	-8.05885E-04	1.00021E+00
18	.00000E+00	9.66050E-11	7.72340E-02	1.94685E-02	5.47047E-02	2.46136E-02	-2.09075E-03	1.00008E+00
19	.00000E+00	1.36579E-10	1.20703E-01	5.91474E-02	1.11914E-01	1.02057E-02	-1.43813E-03	1.00016E+00
20	.00000E+00	2.22091E-10	2.89027E-01	3.42904E-01	2.64750E-01	2.75970E-02	-3.38612E-03	1.00025E+00
21	.00000E+00	3.25070E-11	1.42243E-01	6.81095E-02	1.20112E-01	2.46187E-02	-2.50520E-03	1.00012E+00
22	.00000E+00	3.77155E-11	2.69524E-01	1.75990E-01	2.04269E-01	7.26250E-02	-7.40179E-03	1.00011E+00
23	.00000E+00	3.60602E-11	6.44472E-01	9.75073E-01	5.29588E-01	1.38468E-01	-1.80546E-02	1.00018E+00
24	.00000E+00	9.81512E-12	6.82119E-01	8.44858E-01	5.63620E-01	1.34479E-01	-1.60683E-02	1.00013E+00
25	.00000E+00	2.87322E-12	4.52194E-01	3.43159E-01	3.85623E-01	7.40404E-02	-7.51283E-03	1.00008E+00
26	.00000E+00	2.01472E-12	3.50698E-01	3.45044E-01	2.88272E-01	6.71679E-02	-5.78540E-03	1.00007E+00
27	.00000E+00	4.80119E-13	1.15788E-01	6.97818E-02	9.77859E-02	1.91668E-02	-1.16834E-03	1.00008E+00
28	.00000E+00	1.00000E+00	9.02810E+00	1.44640E+01	9.02810E+00	9.92031E-01	9.99158E-03	1.00008E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r&h rate	fiss rate	flux*cb**2	total flux
1	1.34078E-02	-5.92210E-09	1.31088E-02	-1.25825E-03	2.24856E-03	2.50851E-03	2.95798E-04	3.40816E-01

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2	9.68924E-02	-6.22403E-08	9.35884E-02	-1.30955E-02	1.58652E-05	1.10279E-02	1.59276E-03	2.46038E+00
3	1.20838E-01	-6.99422E-08	1.16535E-01	-1.67946E-02	.00000E+00	1.33342E-02	1.82999E-03	3.06835E+00
4	7.45277E-02	-6.03651E-08	7.17134E-02	-1.05088E-02	.00000E+00	5.72025E-03	8.84473E-04	1.89158E+00
5	1.11698E-01	-7.40120E-08	1.07123E-01	-1.60891E-02	.00000E+00	1.64010E-03	1.05213E-03	2.83390E+00
6	2.09742E-01	-1.39576E-07	2.00287E-01	-2.92773E-02	.00000E+00	1.36601E-03	1.73147E-03	5.31941E+00
7	2.03582E-01	-4.84922E-07	1.98042E-01	-1.75457E-02	.00000E+00	1.31390E-03	1.22643E-03	5.16980E+00
8	1.48948E-01	-3.07247E-08	1.47783E-01	-3.66163E-03	.00000E+00	1.32553E-03	6.98152E-04	3.78928E+00
9	1.15297E-01	-5.32790E-06	1.15632E-01	8.97616E-04	.00000E+00	1.76700E-03	4.71301E-04	2.93644E+00
10	1.05618E-01	-2.08661E-06	1.05412E-01	2.26743E-03	.00000E+00	3.77409E-03	4.28686E-04	2.69138E+00
11	9.74201E-02	-1.68307E-06	9.92633E-02	5.31169E-03	.00000E+00	8.09927E-03	3.86960E-04	2.48653E+00
12	6.13341E-02	-4.06185E-07	6.35157E-02	6.32801E-03	.00000E+00	1.07519E-02	2.27642E-04	1.56759E+00
13	5.21389E-02	7.11566E-07	5.41482E-02	5.89421E-03	.00000E+00	1.19638E-02	1.94784E-04	1.33309E+00
14	4.77156E-02	1.09731E-07	5.06918E-02	8.75247E-03	.00000E+00	7.58312E-03	1.74426E-04	1.22295E+00
15	2.81121E-02	-3.94108E-06	2.86542E-02	1.69988E-03	.00000E+00	1.82802E-03	1.10911E-04	7.17467E-01
16	1.55520E-02	-2.67725E-06	1.58653E-02	9.33336E-04	.00000E+00	1.27483E-03	5.74435E-05	3.96873E-01
17	6.55979E-03	-3.14314E-06	6.82698E-03	8.00742E-04	.00000E+00	1.54140E-03	2.16052E-05	1.67739E-01
18	4.00778E-03	-1.27534E-06	4.73826E-03	2.08948E-03	.00000E+00	1.21734E-03	9.67004E-06	1.03783E-01
19	9.83632E-03	-3.91489E-06	1.03308E-02	1.43421E-03	.00000E+00	2.45687E-03	3.31437E-05	2.51866E-01
20	3.35383E-02	-7.54179E-06	3.47106E-02	3.37858E-03	.00000E+00	1.45544E-02	1.25744E-04	8.57487E-01
21	9.43671E-03	-2.85095E-06	1.05385E-02	2.50236E-03	.00000E+00	1.43881E-02	2.64497E-05	2.42825E-01
22	1.76411E-02	-2.47474E-06	2.04470E-02	7.39932E-03	.00000E+00	4.25972E-02	4.57041E-05	4.57311E-01
23	6.22473E-02	-8.76875E-06	7.03589E-02	1.80459E-02	.00000E+00	7.83473E-02	1.66818E-04	1.61401E+00
24	4.78876E-02	-5.42101E-07	5.60669E-02	1.60678E-02	.00000E+00	7.50265E-02	1.01047E-04	1.24958E+00
25	2.05412E-02	-9.54369E-07	2.47603E-02	7.51188E-03	.00000E+00	4.30311E-02	3.46075E-05	5.38677E-01
26	1.35264E-02	-1.20504E-07	1.71085E-02	5.76528E-03	.00000E+00	3.95997E-02	1.70715E-05	3.56770E-01
27	2.27895E-03	-6.61264E-09	3.05664E-03	1.16833E-03	.00000E+00	1.11363E-02	1.75437E-06	6.02772E-02
28	1.73088E+00	-4.78184E-05	1.74175E+00	-1.03958E-02	2.26442E-03	4.09170E-01	1.19250E-02	4.41258E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.30698E-02	.00000E+00	2.23948E-02	2.14956E-02	3.85643E-03	-5.92210E-09	9.98902E-01
2	.00000E+00	1.94222E-01	7.64210E-03	2.61762E-01	1.86276E-01	1.56009E-02	-6.22403E-08	1.00002E+00
3	.00000E+00	2.15915E-01	7.74376E-02	2.68762E-01	2.76957E-01	1.63990E-02	-6.99422E-08	9.99987E-01
4	.00000E+00	1.23790E-01	1.14386E-01	1.84606E-01	2.30349E-01	7.82729E-03	-6.03651E-08	9.99999E-01
5	.00000E+00	1.64063E-01	2.08408E-01	4.66656E-01	3.67205E-01	5.26987E-03	-7.40120E-08	9.99990E-01
6	.00000E+00	1.76975E-01	4.25085E-01	1.25647E+00	5.95667E-01	8.33450E-03	-1.39576E-07	1.00001E+00
7	.00000E+00	8.74405E-02	6.58942E-01	1.67005E+00	7.38136E-01	8.26141E-03	-4.84922E-07	9.99990E-01
8	.00000E+00	1.34688E-02	7.75915E-01	1.70424E+00	7.76204E-01	1.32331E-02	-3.07247E-08	9.99920E-01
9	.00000E+00	9.77432E-04	7.66901E-01	1.48915E+00	7.46108E-01	2.18575E-02	-5.32790E-06	9.99900E-01
10	.00000E+00	7.25977E-05	7.42521E-01	1.35878E+00	7.09756E-01	3.29115E-02	-2.08661E-06	9.99902E-01
11	.00000E+00	5.71148E-06	7.14245E-01	1.26711E+00	6.60490E-01	5.38024E-02	-1.68307E-06	9.99944E-01
12	.00000E+00	4.01221E-07	5.75006E-01	6.91490E-01	5.16521E-01	5.85005E-02	-4.06185E-07	9.99975E-01
13	.00000E+00	6.37102E-08	5.10120E-01	5.50101E-01	4.54992E-01	5.51430E-02	7.11566E-07	9.99989E-01
14	.00000E+00	1.26257E-08	4.91043E-01	5.14121E-01	4.12253E-01	7.85956E-02	1.09731E-07	9.99989E-01
15	.00000E+00	1.42684E-09	2.69902E-01	2.32999E-01	2.61909E-01	7.94000E-03	-3.94108E-06	1.00021E+00
16	.00000E+00	4.18970E-10	1.83549E-01	1.08600E-01	1.77503E-01	6.00905E-03	-2.67725E-06	1.00021E+00
17	.00000E+00	1.34929E-10	9.78477E-02	3.31787E-02	9.02667E-02	7.56590E-03	-3.14314E-06	1.00019E+00
18	.00000E+00	9.66050E-11	8.71243E-02	2.10447E-02	6.24600E-02	2.46591E-02	-1.27534E-06	1.00007E+00
19	.00000E+00	1.36579E-10	1.36984E-01	6.39733E-02	1.26661E-01	1.03079E-02	-3.91489E-06	1.00014E+00
20	.00000E+00	2.22091E-10	3.28654E-01	3.76185E-01	3.00770E-01	2.80365E-02	-7.54179E-06	1.00020E+00
21	.00000E+00	3.25070E-11	1.61383E-01	7.47852E-02	1.36867E-01	2.47814E-02	-2.85095E-06	1.00011E+00
22	.00000E+00	3.77155E-11	3.07276E-01	1.96009E-01	2.34243E-01	7.30043E-02	-2.47474E-06	1.00010E+00
23	.00000E+00	3.60602E-11	7.41519E-01	1.09535E+00	6.01185E-01	1.40220E-01	-8.76875E-06	1.00017E+00
24	.00000E+00	9.81512E-12	7.85665E-01	9.57414E-01	6.49036E-01	1.36540E-01	-5.42101E-07	1.00011E+00
25	.00000E+00	2.87322E-12	5.21100E-01	3.90665E-01	4.45806E-01	7.52569E-02	-9.54369E-07	1.00007E+00
26	.00000E+00	2.01472E-12	4.05560E-01	3.97485E-01	3.37140E-01	6.83962E-02	-1.20504E-07	1.00006E+00
27	.00000E+00	4.80119E-13	1.34354E-01	8.10578E-02	1.14769E-01	1.96018E-02	-6.61264E-09	1.00003E+00
28	.00000E+00	1.00000E+00	1.02287E+01	1.57538E+01	1.02287E+01	1.00211E+00	-4.78217E-05	1.00003E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.34078E-02	-5.92210E-09	1.28313E-02	.00000E+00	2.25448E-03	2.50851E-03	3.27759E-04	3.67747E-01
2	9.68924E-02	-6.22403E-08	9.04940E-02	.00000E+00	1.58652E-05	1.10279E-02	1.74039E-03	2.65139E+00

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3	1.20892E-01	-6.99422E-03	1.12590E-01	.00000E+00	.00000E+00	1.33342E-02	1.98418E-03	3.30655E+00
4	7.45277E-02	-6.03661E-03	6.89736E-02	.00000E+00	.00000E+00	5.72025E-03	9.55975E-04	2.03768E+00
5	1.11698E-01	-7.40120E-03	1.02724E-01	.00000E+00	.00000E+00	1.64010E-03	1.11459E-03	3.05188E+00
6	2.09742E-01	-1.39576E-07	1.92813E-01	.00000E+00	.00000E+00	1.36601E-03	1.86978E-03	5.72852E+00
7	2.03582E-01	-4.84922E-07	1.98097E-01	.00000E+00	.00000E+00	1.31990E-03	1.32555E-03	5.57657E+00
8	1.48948E-01	-3.07247E-03	1.46981E-01	.00000E+00	.00000E+00	1.32553E-03	7.53344E-04	4.09601E+00
9	1.15297E-01	-5.32790E-06	1.15921E-01	.00000E+00	.00000E+00	1.76700E-03	5.08901E-04	3.17757E+00
10	1.05618E-01	-2.03661E-06	1.07132E-01	.00000E+00	.00000E+00	3.77407E-03	4.62763E-04	2.91371E+00
11	9.74201E-02	-1.68307E-06	1.00890E-01	.00000E+00	.00000E+00	8.05927E-03	4.18940E-04	2.69400E+00
12	6.13341E-02	-4.06185E-07	6.54175E-02	.00000E+00	.00000E+00	1.07519E-02	2.46795E-04	1.70198E+00
13	5.21385E-02	7.11566E-07	5.58766E-02	.00000E+00	.00000E+00	1.19638E-02	2.10774E-04	1.44786E+00
14	4.77154E-02	1.09731E-07	5.32790E-02	.00000E+00	.00000E+00	7.58512E-03	1.89795E-04	1.33142E+00
15	2.81121E-02	-3.94108E-06	2.90520E-02	.00000E+00	.00000E+00	1.82802E-03	1.19127E-04	7.77517E-01
16	1.55520E-02	-2.67725E-06	1.60945E-02	.00000E+00	.00000E+00	1.27483E-03	6.16336E-05	4.30132E-01
17	6.55975E-03	-3.14314E-06	7.05892E-03	.00000E+00	.00000E+00	1.54140E-03	2.33061E-05	1.82213E-01
18	4.00778E-03	-1.27534E-06	5.39344E-03	.00000E+00	.00000E+00	1.21734E-03	1.08945E-05	1.14419E-01
19	9.83632E-03	-3.91489E-06	1.07443E-02	.00000E+00	.00000E+00	2.45687E-03	3.57731E-05	2.73829E-01
20	3.35383E-02	-7.54179E-06	3.56683E-02	.00000E+00	.00000E+00	1.45544E-02	1.33367E-04	9.30786E-01
21	9.43671E-03	-2.85095E-06	1.11366E-02	.00000E+00	.00000E+00	1.43881E-02	2.88658E-05	2.65252E-01
22	1.78411E-02	-2.47474E-06	2.29257E-02	.00000E+00	.00000E+00	4.25972E-02	5.05709E-05	5.02683E-01
23	6.22472E-02	-8.78875E-06	7.75747E-02	.00000E+00	.00000E+00	7.83473E-02	1.82056E-04	1.76796E+00
24	4.78878E-02	-5.42101E-07	6.34132E-02	.00000E+00	.00000E+00	7.50265E-02	1.10914E-04	1.37419E+00
25	2.05412E-02	-9.54369E-07	2.86785E-02	.00000E+00	.00000E+00	4.30511E-02	3.82968E-05	5.94328E-01
26	1.35246E-02	-1.20504E-07	2.06908E-02	.00000E+00	.00000E+00	3.95997E-02	1.92221E-05	3.96273E-01
27	2.27879E-03	-6.61264E-09	3.98083E-03	.00000E+00	.00000E+00	1.11363E-02	2.06181E-06	6.76653E-02
28	1.73088E+00	-4.78184E-05	1.75098E+00	.00000E+00	2.27083E-03	4.09170E-01	1.29276E-02	4.77601E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.14820E-03	5.05392E-03	5.29528E-03	2.50982E-03	3.18300E-03	5.52513E-03	3.71688E-03	1.74363E-03
2	6.99515E-04	4.99100E-03	5.79103E-03	3.44456E-03	4.29951E-03	6.15307E-03	4.33275E-03	2.14856E-03
3	1.17719E-03	5.47786E-03	5.87891E-03	2.91594E-03	3.86246E-03	6.77952E-03	4.37734E-03	1.82406E-03
4	8.08500E-04	4.30147E-03	4.95882E-03	2.38988E-03	2.82914E-03	4.80078E-03	3.52665E-03	1.79836E-03
5	8.32150E-04	4.36800E-03	4.98272E-03	2.41431E-03	2.87888E-03	4.89930E-03	3.37566E-03	1.79860E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11316E-03	1.01461E-03	1.09416E-03	8.74330E-04	7.94958E-04	1.04358E-03	3.18346E-04	1.64116E-04
2	1.79112E-03	1.95416E-03	2.04367E-03	1.60250E-03	1.42442E-03	1.70652E-03	6.27280E-04	3.45782E-04
3	1.12184E-03	1.05432E-03	1.29472E-03	1.22182E-03	1.12408E-03	1.58232E-03	3.81882E-04	2.04098E-04
4	1.19562E-03	1.09513E-03	1.08052E-03	6.78008E-04	6.01909E-04	6.42609E-04	3.11281E-04	1.61321E-04
5	1.19370E-03	1.09568E-03	1.04598E-03	7.05551E-04	6.28178E-04	6.85795E-04	3.15208E-04	1.63587E-04

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.95719E-05	2.09565E-04	1.77897E-04	4.81411E-04	2.74797E-04	7.98829E-04	2.12714E-03	1.85066E-03
2	1.83980E-04	3.27752E-04	3.07361E-04	8.75044E-04	4.41183E-04	1.22440E-03	3.27981E-03	2.85287E-03
3	1.47332E-04	3.58829E-04	2.62985E-04	6.59123E-04	4.39156E-04	1.29182E-03	3.25767E-03	2.86246E-03
4	7.14884E-05	7.86031E-05	1.19259E-04	3.84632E-04	1.37285E-04	3.42150E-04	1.06555E-03	8.42908E-04
5	7.52672E-05	9.27709E-05	1.26505E-04	3.98576E-04	1.52594E-04	3.90792E-04	1.17929E-03	9.49809E-04

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.38179E-04	5.92747E-04	9.03010E-05	4.21298E-02
2	1.30858E-03	9.51613E-04	1.63610E-04	5.52731E-02
3	1.33117E-03	9.96687E-04	1.86148E-04	5.20512E-02
4	3.52061E-04	2.13748E-04	2.65348E-05	3.45443E-02
5	4.03427E-04	2.54216E-04	3.40798E-05	3.54342E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6557E+06	1.9685E+09	7.2109E-01
2	9.0000E+05	1.5134E+05	9.9806E+06	2.7894E-01
3	4.0000E-01	1.2564E-01	3.6564E+05	1.2147E-10
4	1.0000E-05			

1 720 d, second part of ses2h pass to make library

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0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.90743E-01	1.13594E+00	2.20625E-01
2	3.95995E-01	1.13714E+00	2.11358E-01
3	3.98953E-01	1.13741E+00	2.07193E-01
4	4.16127E-01	1.13936E+00	1.77499E-01
5	4.14437E-01	1.13914E+00	1.80381E-01

0flux disadventage factors (zone average/cell average-flux)

0zone	grp. 1	grp. 2	grp. 3
1	9.42829E-01	9.97195E-01	1.22310E+00
2	9.55500E-01	9.98261E-01	1.17173E+00
3	9.62638E-01	9.98479E-01	1.14864E+00
4	1.00408E+00	1.00019E+00	9.84022E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

0zone	grp. 1	grp. 2	grp. 3
1	1.71908E-02	1.83715E-02	6.56768E-03
2	1.92278E-02	2.58234E-02	1.02221E-02
3	1.93123E-02	2.23937E-02	1.03451E-02
4	1.52678E-02	1.62563E-02	2.98020E-03
5	1.54761E-02	1.65943E-02	3.36371E-03

0zone	volume	vol. fraction
1	1.25665E+00	4.56236E-02
2	1.66687E-01	6.05165E-03
3	6.58265E-01	2.38987E-02
4	2.54634E+01	9.24429E-01
5	2.75440E+01	1.00000E+00

- elapsed time .03 min.

1

```
 cccccccccc    cccccccccc   ee        ee   ffffffffff   ll          eeeeeeeeeeee
cccccccccccc  cccccccccccc  ee        ee   ffffffffffff ll          eeeeeeeeeeee
cc        cc  cc        cc  ee        ee   ff      ff   ll          ee
cc            cc        cc  ee        ee   ff      ff   ll          ee
cc            cc        cc  ee        ee   ff      ff   ll          ee
cc            cc        cc  ee        ee   ffffffffff   ll          eeeeeeee
cc            cc        cc  ee        ee   ffffffffff   ll          eeeeeeee
cc            cc        cc  ee        ee   ff           ll          ee
cc            cc        cc  ee        ee   ff           ll          ee
cc        cc  cc        cc  ee        ee   ff           ll          ee
cccccccccccc  cccccccccccc  eeeeeeeeeeee   ff           llllllllllll eeeeeeeeeeee
 cccccccccc    cccccccccc    eeeeeeeeee    ff           llllllllllll eeeeeeeeeeee
```

0

```
dddddddddd     aaaaaaaa    ww        ww  iiiiiiiiiii    ssssssssss
dddddddddddd  aaaaaaaaaa   ww        ww  iiiiiiiiiii   ssssssssssss
dd        dd  aa        aa  ww        ww      ii       ss        ss
dd        dd  aa        aa  ww        ww      ii       ss
dd        dd  aa        aa  ww        ww      ii       ss
dd        dd  aaaaaaaaaaaa  ww        ww      ii       ssssssssss
dd        dd  aaaaaaaaaaaa   ww      ww       ii        ssssssssss
dd        dd  aa        aa    ww    ww        ii                ss
dd        dd  aa        aa     ww  ww         ii                ss
dd        dd  aa        aa      ww ww         ii       ss       ss
dddddddddddd  aa        aa       www      iiiiiiiiiii   ssssssssssss
dddddddddd    aa        aa        w       iiiiiiiiiii    ssssssssss
```

0

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```
0
1
0
```

```
program verification information
code system:  scale  version:  4.2

program:  c0c005
creation date:  04/27/95
```

```
*****          library:  /neutronics/scale/exe                    *****
*****                                                             *****
*****                                                             *****
*****   this is not a   scale  configuration controlled code      *****
*****                                                             *****
*****          jobname:  davis                                    *****
*****                                                             *****
*****   date of execution:  02/16/96                              *****
*****                                                             *****
*****   time of execution:  10:02:11                              *****
*****                                                             *****
*****                                                             *****
*******************************************************************
*******************************************************************
*******************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       2q array has      1 entries.
0        * core allocated to array-data (by -1$$ or default) was   200000 words. *
1         * broad 3-group flux weighting factors *
0
0                 therm =    .5110
0                 res   =    .4318
0                 fast  =   3.3315
0 user requested (see jacl) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from amx (normalized to thermal flux), barns

                    10010 to  10020  2.82969E-01
                    10010 tot-cap    2.82969E-01
                    50100 to  40100  2.38416E-02
                    50100 to  10010  2.38416E-02
                    50100 to  40090  3.63840E-03
                    50100 to  10020  3.63840E-03
                    50100 to  30070  3.25391E+03
                    50100 to  20040  3.25409E+03
                    50100 to  10030  8.94021E-02
                    50100 tot-cap    3.25403E+03
                    50110 to  50100  1.04597E-05
                    50110 to  50120  4.30798E-03
                    50110 to  40110  1.33476E-06
                    50110 to  10010  1.33476E-06
                    50110 to  40090  1.19114E-05
                    50110 to  10030  1.19114E-05
                    50110 to  30080  1.55497E-04
                    50110 to  20040  1.55497E-04
                    50110 tot-cap    4.48718E-03
                    80160 to  80170  1.51170E-04
                    80160 to  70160  9.15206E-05
                    80160 to  10010  9.15206E-05
                    80160 to  70150  1.72607E-05
                    80160 to  10020  1.72607E-05
                    80160 to  60130  2.55664E-02
```

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80160	to 20040	2.55664E-02
80160	to 80161	4.01577E-03
80160	tot-cap	2.58263E-02
360830	to 360820	2.07788E-02
360830	to 360810	2.19572E-09
360830	to 360840	1.53668E+02
360830	to 350830	8.52533E-04
360830	to 10010	8.52533E-04
360830	to 350820	6.86267E-06
360830	to 10020	6.86267E-06
360830	to 350810	2.39863E-06
360830	to 10030	2.39863E-06
360830	to 340810	3.88199E-08
360830	to 20030	3.88199E-08
360830	to 340800	4.55954E-05
360830	to 20040	4.55954E-05
360830	tot-cap	1.53690E+02
360850	to 360860	1.39090E+00
360850	tot-cap	1.39090E+00
380900	to 380910	6.28261E-01
380900	tot-cap	6.28261E-01
390890	to 390900	9.85036E-01
390890	tot-cap	9.85036E-01
400980	to 400940	1.32457E+01
400980	tot-cap	1.32457E+01
400940	to 400950	1.83934E-01
400940	tot-cap	1.83934E-01
400950	to 400960	2.19813E+00
400950	tot-cap	2.19813E+00
410940	to 410950	3.81058E+01
410940	tot-cap	3.81058E+01
420950	to 420960	3.78526E+01
420950	tot-cap	3.78526E+01
430990	to 430980	6.30459E-03
430990	to 431000	8.84718E+01
430990	tot-cap	8.84781E+01
441010	to 441020	2.78753E+01
441010	tot-cap	2.78753E+01
441060	to 441070	8.55579E-01
441060	tot-cap	8.55579E-01
451080	to 451020	2.28329E-03
451080	to 451040	3.50881E+02
451080	tot-cap	3.50883E+02
451050	to 451060	8.14800E+03
451050	tot-cap	8.14800E+03
461050	to 461060	3.34766E+01
461050	tot-cap	3.34766E+01
461080	to 461090	6.75897E+01
461080	tot-cap	6.75897E+01
471090	to 471080	5.30964E-03
471090	to 471100	3.66216E+02
471090	to 461090	3.00810E-04
471090	to 10010	3.00810E-04
471090	to 451060	2.48970E-04
471090	to 20040	2.48970E-04
471090	to 471091	6.27952E-01
471090	tot-cap	3.66221E+02
511240	to 511250	1.19520E+01
511240	tot-cap	1.19520E+01
541310	to 541300	6.43812E-02

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541310	to 541250	1.34622E-05
541310	to 541320	2.54120E+02
541310	to 531310	3.87298E-05
541310	to 10010	3.87298E-05
541310	to 531300	5.39901E-07
541310	to 10020	5.39901E-07
541310	to 531250	5.53614E-07
541310	to 10080	5.53614E-07
541310	to 521280	1.81271E-05
541310	to 20040	1.81271E-05
541310	tot-cap	2.54184E+02
541320	to 541310	1.04005E-02
541320	to 541300	2.20587E-05
541320	to 541330	9.16433E-01
541320	to 531320	7.93439E-06
541320	to 10010	7.93439E-06
541320	to 531310	3.35209E-07
541320	to 10020	3.35209E-07
541320	to 531300	4.51360E-08
541320	to 10080	4.51360E-08
541320	to 521250	9.77472E-07
541320	to 20040	9.77472E-07
541320	tot-cap	9.26865E-01
541350	to 541360	1.46510E+06
541350	tot-cap	1.46510E+06
541360	to 541350	1.77907E-02
541360	to 541340	5.43372E-05
541360	to 541370	1.22968E-01
541360	to 531360	3.28531E-07
541360	to 10010	3.28531E-07
541360	to 531350	1.22806E-07
541360	to 10020	1.22806E-07
541360	to 531340	2.76311E-08
541360	to 10080	2.76311E-08
541360	to 521330	2.75575E-07
541360	to 20040	2.75575E-07
541360	tot-cap	1.40814E-01
551330	to 551320	8.33107E-03
551330	to 551340	1.00417E+02
551330	to 541330	9.01970E-04
551330	to 10010	9.01970E-04
551330	to 531300	1.42543E-05
551330	to 20040	1.42543E-05
551330	tot-cap	1.00427E+02
551340	to 551350	1.28178E+02
551340	tot-cap	1.28178E+02
551350	to 551360	2.11933E+01
551350	tot-cap	2.11933E+01
551370	to 551380	2.27369E-01
551370	tot-cap	2.27369E-01
561360	to 561370	8.92118E-01
561360	tot-cap	8.92118E-01
571390	to 571400	7.91315E+00
571390	tot-cap	7.91315E+00
581440	to 581450	1.22858E+00
581440	tot-cap	1.22858E+00
591410	to 591400	5.98984E-03
591410	to 591390	1.71528E-06
591410	to 571370	2.56518E-06
591410	to 20040	5.29664E-05

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591410	to 581400	1.82016E-05
591410	to 10010	5.17892E-05
591410	to 591420	1.17725E+01
591410	to 581410	4.87956E-05
591410	to 10020	1.52100E-05
591410	to 581390	1.59511E-06
591410	to 10030	1.59511E-06
591410	to 571390	1.54048E-03
591410	to 20030	1.54048E-03
591410	to 571380	5.04013E-05
591410	tot-cap	1.17784E+01
591430	to 591440	9.73273E+01
591430	tot-cap	9.73273E+01
601430	to 601420	9.13324E-02
601430	to 601410	9.32257E-06
601430	to 581390	2.01613E-05
601430	to 20040	5.64097E-04
601430	to 591420	3.90241E-06
601430	to 10010	4.01248E-05
601430	to 601440	1.98700E+02
601430	to 591430	3.86546E-05
601430	to 10020	2.43219E-06
601430	to 591410	3.50478E-06
601430	to 10030	3.50478E-06
601430	to 581410	1.68390E-03
601430	to 20030	1.68390E-03
601430	to 581400	5.43935E-04
601430	tot-cap	1.98792E+02
601450	to 601440	1.17186E-01
601450	to 601430	1.19028E-04
601450	to 581410	8.41492E-06
601450	to 20040	2.10596E-04
601450	to 591440	2.23587E-06
601450	to 10010	1.45358E-05
601450	to 601460	7.77040E+01
601450	to 591450	1.36440E-05
601450	to 10020	1.34403E-06
601450	to 591430	2.11889E-06
601450	to 10030	2.11889E-06
601450	to 581430	4.31407E-09
601450	to 20030	4.31407E-09
601450	to 581420	2.02181E-04
601450	tot-cap	7.78215E+01
601470	to 601480	1.86601E+02
601470	tot-cap	1.86601E+02
611470	to 611460	3.20722E-02
611470	to 611450	1.00070E-04
611470	to 591430	8.87611E-06
611470	to 20040	8.22651E-05
611470	to 601460	1.22598E-05
611470	to 10010	2.79165E-05
611470	to 611480	5.75790E+02
611470	to 601470	2.48862E-05
611470	to 10020	9.22962E-06
611470	to 601450	3.48476E-06
611470	to 10030	3.48476E-06
611470	to 591450	5.23943E-09
611470	to 20030	5.23943E-09
611470	to 591440	7.33490E-05
611470	tot-cap	5.75823E+02

611480	to 611490	1.20170E+04
611480	tot-cap	1.20170E+04
621470	to 621460	8.34673E-02
621470	to 621450	7.53361E-03
621470	to 601430	6.50957E-05
621470	to 20040	1.24788E-03
621470	to 611460	1.51837E-04
621470	to 10010	2.16761E-04
621470	to 621480	2.30084E+02
621470	to 611470	1.91165E-04
621470	to 10020	1.26241E-04
621470	to 611450	1.35554E-04
621470	to 10030	1.35554E-04
621470	to 601450	6.23710E-06
621470	to 20030	6.23710E-06
621470	to 601440	1.18279E-03
621470	to 621471	1.64121E+00
621470	tot-cap	2.30176E+02
621490	to 621480	4.72897E-02
621490	to 621470	3.75517E-05
621490	to 621500	4.50644E+04
621490	to 611490	4.83152E-04
621490	to 10010	4.83152E-04
621490	to 601460	4.83152E-04
621490	to 20040	4.83152E-04
621490	tot-cap	4.50645E+04
621500	to 621510	1.33066E+02
621500	tot-cap	1.33066E+02
621510	to 621500	1.57776E-01
621510	to 621490	1.41304E-04
621510	to 601470	1.58432E-05
621510	to 20040	1.23404E-04
621510	to 611500	1.98487E-06
621510	to 10010	1.50424E-05
621510	to 621520	4.95300E+03
621510	to 611510	1.38603E-05
621510	to 10020	7.52736E-07
621510	to 611490	1.36803E-06
621510	to 10030	1.36803E-06
621510	to 601490	1.40986E-09
621510	to 20030	1.40986E-09
621510	to 601480	1.07561E-04
621510	tot-cap	4.95316E+03
621520	to 621510	1.89222E-02
621520	to 621500	1.27858E-04
621520	to 601480	2.85726E-06
621520	to 20040	1.18670E-05
621520	to 611510	8.19596E-07
621520	to 10010	2.41860E-06
621520	to 621530	7.25060E+02
621520	to 611520	2.14847E-06
621520	to 10020	5.49459E-07
621520	to 611500	1.42901E-07
621520	to 10030	1.42901E-07
621520	to 601500	4.33072E-10
621520	to 20030	4.33072E-10
621520	to 601490	9.00979E-06
621520	tot-cap	7.25079E+02
631530	to 631520	1.85779E-02
631530	to 631510	2.74439E-05

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631530	to 611490	4.3403E-05
631530	to 2004.0	6.2948E-04
631530	to 621520	7.6861E-06
631530	to 10010	6.4695E-05
631530	to 631540	6.1343E+02
631530	to 621530	6.2069E-05
631530	to 10020	5.0523E-06
631530	to 621510	1.1345E-06
631530	to 10030	1.1345E-06
631530	to 611510	2.5286E-08
631530	to 20030	2.5286E-08
631530	to 611500	5.8608E-04
631530	tot-cap	6.1353E+02
631540	to 631530	2.9578E-02
631540	to 631520	1.0553E-05
631540	to 611500	1.0261E-10
631540	to 2004.0	7.5563E-04
631540	to 621530	2.3100E-06
631540	to 10010	1.2301E-05
631540	to 631550	1.0666E+03
631540	to 621540	1.2301E-05
631540	to 10020	2.3087E-06
631540	to 621520	3.9107E-06
631540	to 10030	3.9107E-06
631540	to 611520	1.6581E-08
631540	to 20030	1.6581E-08
631540	to 611510	7.5563E-04
631540	tot-cap	1.0666E+03
631550	to 631540	2.4121E-02
631550	to 631530	6.7545E-05
631550	to 611510	1.8179E-06
631550	to 2004.0	8.9471E-06
631550	to 621540	3.6831E-06
631550	to 10010	7.7290E-06
631550	to 631560	2.5512E+03
631550	to 621550	5.9378E-06
631550	to 10020	1.8910E-06
631550	to 621530	6.2600E-07
631550	to 10030	6.2600E-07
631550	to 611530	1.4188E-10
631550	to 20030	1.4188E-10
631550	to 611520	7.1291E-06
631550	tot-cap	2.5512E+03
641550	to 641560	1.6960E+04
641550	tot-cap	1.6960E+04
922340	to 922330	6.3195E-05
922340	fission	4.3869E+00
922340	nu-sigf	1.1532E+01
922340	to 922320	9.1629E-05
922340	to 922350	1.8413E+02
922340	to 922341	2.9418E+00
922340	tot-cap	1.8853E+02
922350	to 922340	2.8843E-02
922350	fission	3.6047E+02
922350	nu-sigf	8.7283E+02
922350	to 922330	2.7601E-05
922350	to 922360	8.5399E+01
922350	to 922351	8.3673E-02
922350	tot-cap	4.4590E+02
922360	to 922350	3.2192E-02

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922360	fission	1.88166E+00
922360	nu-sigf	5.16557E+00
922360	to 922340	4.29024E-04
922360	to 922370	7.19083E+01
922360	to 922361	3.21845E+00
922360	tot-cap	7.38226E+01
922380	to 922370	6.42954E-02
922380	fission	9.43300E-01
922380	nu-sigf	2.65616E+00
922380	to 922360	4.15521E-04
922380	to 922390	8.38842E+00
922380	tot-cap	9.39644E+00
932370	to 932360	1.46575E-02
932370	fission	5.08698E+00
932370	nu-sigf	1.53206E+01
932370	to 932350	5.60746E-05
932370	to 932380	2.97598E+02
932370	to 932371	7.54346E-01
932370	tot-cap	3.02695E+02
942380	to 942370	2.35699E-03
942380	fission	2.20643E+01
942380	nu-sigf	6.25559E+01
942380	to 942360	1.31853E-05
942380	to 942390	2.64386E+02
942380	to 942381	2.95315E+00
942380	tot-cap	2.86453E+02
942390	to 942380	1.24739E-02
942390	fission	8.39238E+02
942390	nu-sigf	2.41301E+03
942390	to 942370	2.12276E-05
942390	to 942360	2.10432E-08
942390	to 942400	4.70561E+02
942390	tot-cap	1.30981E+03
942400	to 942390	5.86746E-03
942400	fission	5.78557E+00
942400	nu-sigf	1.81189E+01
942400	to 942380	5.72571E-05
942400	to 942410	1.49448E+03
942400	tot-cap	1.50027E+03
942410	to 942400	7.40039E-02
942410	fission	8.95401E+02
942410	nu-sigf	2.62727E+03
942410	to 942390	1.22514E-04
942410	to 942420	2.93008E+02
942410	tot-cap	1.18948E+03
942420	to 942410	2.39183E-02
942420	fission	4.40995E+00
942420	nu-sigf	1.38159E+01
942420	to 942400	2.90783E-04
942420	to 942430	3.28604E+02
942420	tot-cap	3.33038E+02
952410	fission	1.23494E+01
952410	nu-sigf	3.99002E+01
952410	to 952420	1.01244E+03
952410	tot-cap	1.02479E+03
952430	fission	3.40415E+00
952430	nu-sigf	1.14446E+01
952430	to 952440	4.16052E+02
952430	tot-cap	4.19456E+02
962440	to 962430	5.74828E-03

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```
                 962440 fission    1.51799E+01
                 962440 nu-sigf    5.08579E+01
                 962440 to 962420  5.73241E-05
                 962440 to 962450  1.39783E+02
                 962440 to 962441  3.76645E+00
                 962440 tot-cap    1.54968E+02
Othe reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                   in the search of library number 3
Othe reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                   in the search of library number 3
Othe reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                   in the search of library number 3
Othe reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                   in the search of library number 3
Othe reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
Othe reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
Othe fission product transitions for  922340 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922340 to 922341 was not used, because  922341 is not in library., (in subr pool)
Othe reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
Othe fission product transitions for  922360 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
Othe fission product transitions for  922370 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922370 to 922371 was not used, because  922371 is not in library., (in subr pool)
Othe fission product transitions for  942380 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
Othe fission product transitions for  942400 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  942420 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  942410 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  942430 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  962440 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  962440 to 962441 was not used, because  962441 is not in library., (in subr pool)
1
0                    case completed.  date,   2/16/1996
0 * normal termination *
1  ooooooooooo   rrrrrrrrrr   iiiiiiiiiiii   gggggggggg   eeeeeeeeeeee   m        m   sssssssssss
   ooooooooooooo rrrrrrrrrrr  iiiiiiiiiiii  gggggggggggg  eeeeeeeeeeee   mm       m  ssssssssssssss
   oo       oo   rr       rr     ii       gg       gg   ee             mm       m  ss        ss
   oo       oo   rr       rr     ii       gg            ee             m m      m  ss
   oo       oo   rr       rr     ii       gg            ee             m  m     m  ss
   oo       oo   rrrrrrrrrr      ii       gg   ggggggg  eeeeeeee       m   m    m  ssssssssssss
   oo       oo   rrrrrrrrrr      ii       gg   ggggggg  eeeeeeee       m    m   m   ssssssssssss
   oo       oo   rr     rr        ii       gg      gg   ee             m     m  m          ss
```

INFORMATION ONLY

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```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****              program verification information          *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****            program:  c0c004                           *****
*****                                                       *****
*****      creation date:  04/27/95                         *****
*****                                                       *****
*****            library:  /neutronics/scale/exe            *****
*****                                                       *****
*****                                                       *****
*****  this is not a   scale  configuration controlled code *****
*****                                                       *****
*****            jobname:  davis                            *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:02:12                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0           short-lived split test fraction, qn =    9.1188E-04
0           half-norm of matrix used, am =    7.0000E+00
0           4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      5/q array has     12 entries.
1library information...

        cross-section data taken from position number  1 of library on unit 15.

        pass  5
        pass  1
        pass  0
        *scale-system control module sas2 library*
        used a time-dependant neutron spectrum, for each of the above passes
```

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```
        pass 0 applies start-up fuel densiities
        pass n applies mid time densities of nth library interval
      first library updated was...
      pass   1
      pass   0
      *scale-system control module sas2 library*
      used a time-dependant neutron spectrum, for each of the above passes
        pass 0 applies start-up fuel densiities
        pass n applies mid time densities of nth library interval
      first library updated was...
      ****************************************************************
      *                                                              *
      *          prelim lwr origen-s binary working library--id = 1143 *
      *        made from modified card-image origen-s libraries of scale 4.2 *
      *      data from the light element, actinide, and fission product libraries *
      *        decay data, including gamma and total energy, are from endf/b-vi *
      *                                                              *
      *      neutron flux spectrum factors and cross sections were produced from *
      *      the "presas2" case updating all nuclides on the scale "burnup" library *
      *                                                              *
      *                fission product yields are from endf/b-v      *
      *                                                              *
      *            photon libraries use an 18-energy-group structure *
      *            the photon data are from the master photon data base, *
      *            produced to include bremsstrahlung from us2 matrix *
      *                                                              *
      *      see information above this box (if present) for later updates *
      *                                                              *
      ****************************************************************
      *                                                              *
0     ****************************************************************
0                .other identification and sizes of library.
0                 data set name:  ft15f001
0              2/16/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7935    number of nonzero off-diagonal matrix elements
0     ****************************************************************
1
   sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                    actinides        page   1
     power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13n/cm**2-sec
0                                   nuclide concentrations, gram atoms
                                    basis = converted to atoms/(barn-cm)
```

	charge	680.1 d	720.1 d	760.1 d	800.1 d	800.1 d	840.1 d	880.1 d
he 4	1.27E-08	1.60E-08	2.00E-08	2.48E-08	3.05E-08	3.05E-08	3.70E-08	4.47E-08
u230	4.38E-21	5.21E-21	6.05E-21	6.98E-21	7.98E-21	7.98E-21	9.00E-21	1.03E-20
u231	9.04E-20	1.07E-19	1.23E-19	1.40E-19	1.59E-19	1.58E-19	1.79E-19	2.02E-19
u232	1.21E-12	1.40E-12	1.61E-12	1.84E-12	2.10E-12	2.10E-12	2.38E-12	2.68E-12
u233	3.07E-11	3.22E-11	3.36E-11	3.49E-11	3.62E-11	3.62E-11	3.75E-11	3.88E-11
u234	4.75E-06	4.70E-06	4.65E-06	4.61E-06	4.56E-06	4.56E-06	4.51E-06	4.47E-06
u235	4.67E-04	4.56E-04	4.44E-04	4.34E-04	4.23E-04	4.23E-04	4.13E-04	4.03E-04
u236	4.40E-05	4.60E-05	4.79E-05	4.98E-05	5.16E-05	5.16E-05	5.34E-05	5.51E-05
u237	6.02E-08	6.25E-08	6.49E-08	6.68E-08	6.87E-08	6.85E-08	7.06E-08	7.24E-08
u238	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.19E-02	2.18E-02	2.18E-02
u239	1.97E-09	5.98E-09	5.97E-09	5.97E-09	5.98E-09	1.53E-09	5.99E-09	6.00E-09
u240	.00E+00	1.34E-33	2.46E-33	4.35E-33	7.46E-33	7.46E-33	1.24E-32	2.03E-32
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	3.45E-14	3.97E-14	4.51E-14	5.09E-14	5.69E-14	5.69E-14	6.33E-14	6.99E-14

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```
    np236m 4.59E-14 5.28E-14 5.73E-14 6.19E-14 6.66E-14 6.50E-14 7.14E-14 7.63E-14
    np236  3.15E-12 3.68E-12 4.25E-12 4.86E-12 5.53E-12 5.53E-12 6.25E-12 7.01E-12
    np237  2.39E-06 2.60E-06 2.82E-06 3.04E-06 3.27E-06 3.27E-06 3.50E-06 3.73E-06
    np238  2.94E-09 3.26E-09 3.54E-09 3.82E-09 4.11E-09 4.07E-09 4.41E-09 4.71E-09
    np239  8.42E-07 8.61E-07 8.62E-07 8.62E-07 8.63E-07 8.60E-07 8.64E-07 8.66E-07
    np240m  .00E+00 1.14E-35 2.10E-35 3.71E-35 6.36E-35 6.36E-35 1.08E-34 1.72E-34
    np240  9.84E-12 1.55E-11 1.55E-11 1.56E-11 1.56E-11 9.30E-12 1.56E-11 1.57E-11
    np241   .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00
    pu236  3.75E-12 4.34E-12 4.98E-12 5.66E-12 6.38E-12 6.38E-12 7.15E-12 7.98E-12
    pu237  1.95E-13 2.13E-13 2.30E-13 2.46E-13 2.62E-13 2.62E-13 2.79E-13 2.96E-13
    pu238  2.46E-07 2.85E-07 3.27E-07 3.75E-07 4.23E-07 4.23E-07 4.77E-07 5.35E-07
    pu239  9.04E-05 9.38E-05 9.70E-05 1.00E-04 1.03E-04 1.03E-04 1.05E-04 1.08E-04
    pu240  1.40E-05 1.52E-05 1.64E-05 1.78E-05 1.87E-05 1.87E-05 1.99E-05 2.10E-05
    pu241  6.40E-06 7.13E-06 7.90E-06 8.72E-06 9.57E-06 9.57E-06 1.05E-05 1.14E-05
    pu242  5.07E-07 6.08E-07 7.19E-07 8.41E-07 9.75E-07 9.75E-07 1.12E-06 1.28E-06
    pu243  6.18E-11 8.22E-11 9.73E-11 1.14E-10 1.32E-10 1.19E-10 1.53E-10 1.75E-10
    pu244  3.51E-23 6.67E-23 1.22E-22 2.16E-22 3.71E-22 3.72E-22 6.19E-22 1.01E-21
    pu245  2.41E-29 4.76E-29 8.73E-29 1.55E-28 2.66E-28 2.53E-28 4.44E-28 7.23E-28
    pu246   .00E+00 1.66E-31 3.21E-31 5.78E-31 1.00E-30 1.00E-30 1.70E-30 2.79E-30
    am239  2.19E-18 2.78E-18 3.27E-18 3.80E-18 4.37E-18 4.18E-18 4.99E-18 5.65E-18
    am240  9.75E-16 1.20E-15 1.41E-15 1.64E-15 1.89E-15 1.87E-15 2.14E-15 2.45E-15
    am241  1.42E-07 1.69E-07 1.98E-07 2.30E-07 2.64E-07 2.64E-07 3.01E-07 3.41E-07
    am242m 2.61E-09 3.21E-09 3.88E-09 4.64E-09 5.47E-09 5.47E-09 6.39E-09 7.39E-09
    am242  1.56E-10 1.91E-10 2.24E-10 2.60E-10 2.99E-10 2.90E-10 3.42E-10 3.87E-10
    am243  3.26E-08 4.20E-08 5.31E-08 6.60E-08 8.11E-08 8.11E-08 9.84E-08 1.18E-07
    am244m  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00
    am244  1.07E-11 1.46E-11 1.85E-11 2.31E-11 2.84E-11 2.69E-11 3.45E-11 4.15E-11
    am245  2.21E-27 4.21E-27 7.68E-27 1.35E-26 2.29E-26 2.29E-26 3.78E-26 6.09E-26
    am246   .00E+00 4.15E-34 8.03E-34 1.44E-33 2.51E-33 2.51E-33 4.24E-33 6.97E-33
    cm241  1.19E-18 1.65E-18 2.20E-18 2.87E-18 3.66E-18 3.66E-18 4.60E-18 5.69E-18
    cm242  1.37E-08 1.70E-08 2.08E-08 2.51E-08 2.99E-08 2.99E-08 3.52E-08 4.10E-08
    cm243  1.55E-10 2.06E-10 2.67E-10 3.41E-10 4.28E-10 4.28E-10 5.29E-10 6.45E-10
    cm244  2.16E-09 2.98E-09 4.03E-09 5.34E-09 6.95E-09 6.95E-09 8.92E-09 1.13E-08
    cm245  3.39E-11 4.98E-11 7.11E-11 9.92E-11 1.36E-10 1.36E-10 1.82E-10 2.41E-10
    cm246  1.00E-12 1.57E-12 2.38E-12 3.53E-12 5.12E-12 5.12E-12 7.27E-12 1.01E-11
    cm247  5.06E-15 8.48E-15 1.37E-14 2.15E-14 3.30E-14 3.30E-14 4.93E-14 7.22E-14
1
    sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                    actinides        page   2
      power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13n/cm**2-sec
0                                   nuclide concentrations, gram atoms
                                    basis = converted to atoms/(barn-cm)
          charge  680.1 d  720.1 d  760.1 d  800.1 d  800.1 d  840.1 d  880.1 d
    cm248 1.13E-16 2.03E-16 3.51E-16 5.87E-16 9.52E-16 9.52E-16 1.50E-15 2.32E-15
    cm249 4.96E-22 1.36E-21 2.35E-21 3.95E-21 6.39E-21 3.88E-21 1.01E-20 1.54E-20
    cm250 8.84E-26 1.70E-25 3.13E-25 5.58E-25 9.60E-25 9.60E-25 1.61E-24 2.63E-24
    cm251  .00E+00 4.04E-33 7.46E-33 1.33E-32 2.29E-32 3.42E-33 3.84E-32 6.28E-32
  totals  2.25E-02 2.25E-02 2.25E-02 2.25E-02 2.25E-02 2.25E-02 2.25E-02 2.24E-02
0  flux           1.60E+13 1.60E+13 1.60E+13 1.61E+13  .00E+00 1.61E+13 1.61E+13
0 .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
  title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0    .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *
0                                   table of contents for material tables
0                                     case or subcase printed      page

                                                 1                  1
```

INFORMATION ONLY

```
0rdset          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7935          0          5         99          2         16         96         18         18
          18          0         71
0       56q array has      2 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       57q array has      3 entries.
0        1q array has     20 entries.
0        1q array has     10 entries.
    l90  97376
    l116  60826
    l32  33663 nudata (library) storage size
    l44  33734
    l103  75953
0       58q array has      4 entries.
0       60q array has      7 entries.
0       58q array has      7 entries.
0       66q array has      1 entries.
0       73q array has   1697 entries.
0       74q array has   1697 entries.
0       75q array has   1697 entries.
    l140  66991
    used  101044 in size  200000
0jqpt           12
           0          0          0          0          0          0          0          0          0          0
           0          0
0therm           4
 5.109686E-01 4.317635E-01 3.331461E+00 1.000000E-31
0nn             5
        7935         20          6         18       1697
0mm             19
           7          7          0          0          1          1          0          0          0          0
          21        100       1697          4          3         74          4          1          0
0tconst         5
 8.640000E+04 6.400641E+02  .000000E+00  .000000E+00 1.000000E-08
0nzero          4
           0        689        129        879
0pow            3
  .000000E+00  .000000E+00  .000000E+00
0 lirp          9
           6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total mev/fission =          6.6274E+00  1.9520E+02  2.0283E+02
 start of interval flux =        1.59777E+13
 n-gamma, fission and total mev/fission =          6.7144E+00  1.9529E+02  2.0300E+02
 start of interval flux =        1.59962E+13
 n-gamma, fission and total mev/fission =          6.8126E+00  1.9537E+02  2.0319E+02
 start of interval flux =        1.60177E+13
 n-gamma, fission and total mev/fission =          6.9104E+00  1.9546E+02  2.0337E+02
 start of interval flux =        1.60416E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total mev/fission =          7.0227E+00  1.9554E+02  2.0356E+02
 start of interval flux =        1.60681E+13
 n-gamma, fission and total mev/fission =          7.1041E+00  1.9562E+02  2.0372E+02
 start of interval flux =        1.61008E+13
```

```
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has     20 entries.
0requested parm-halt8,skipcellwt,skipshipdata
  pass= 6, exec halts after pass   8
```

INFORMATION ONLY

INFORMATION ONLY

```
 11     00     00     :::    00     00    22      :::      11    66    66
 11     00     00     :::    00     00   22       :::      11    66    66
 11     00     00     :::    00     00  22        :::      11    66    66
11111111  00000000            00000000  22222222222         11111111  66666666666
11111111   000000              000000   22222222222         11111111   666666666
1
0                    ssssssssss   cccccccccc   aaaaaaaa   ll        eeeeeeeeeeee
                    ssssssssssss cccccccccccc aaaaaaaaaa ll        eeeeeeeeeeee
                    ss      ss   cc      cc   aa      aa ll        ee
                    ss           cc           aa      aa ll        ee
                    ss           cc           aa      aa ll        ee
                    ssssssssss   cc           aaaaaaaaaaaa ll      eeeeeeeee
                     ssssssssss  cc           aaaaaaaaaaaa ll      eeeeeeeee
                            ss   cc           aa      aa ll        ee
                            ss   cc           aa      aa ll        ee
                    ss      ss   cc      cc   aa      aa ll        ee
                    ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                     ssssssssss   cccccccccc  aa      aa llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****     code system:   scale  version:   4.2              *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c008                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /neutronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:02:16                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0     -1q array has     1 entries.
0      0q array has     4 entries.
0      1q array has     6 entries.
0      2q array has     2 entries.
1logical assignments
```

INFORMATION ONLY

```
0master library   12
 working library   0
 scratch file      18
 new library        1
0problem description
0ig--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0izm--number of zones or material regions                    4
0ms--mixing table length                                    66
0ibl--shielded cross section edit option (0/1--no/yes)       0
0ibr--bondarenko factor edit option (0/1--no/yes)            0
0issopt--dancoff factor option                               0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     66 entries.
0       4q array has     66 entries.
0       5q array has     66 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     66 entries.
0      11q array has      4 entries.
0mixing table
0entry  mixture  isotope  number density  new identifier
   1       1      92235    4.02695E-04        92235
   2       1      92234    4.46803E-06        92234
   3       1      92236    5.51142E-05        92236
   4       1      92238    2.18274E-02        92238
   5       1       8016    4.55359E-02         8016
   6       3       8016    2.09710E-02            6
   7       1      36083    1.42718E-06        36083
   8       1      36085    6.86405E-07        36085
   9       1      38090    1.56265E-05        38090
  10       1      39089    1.23885E-05        39089
  11       1      42095    1.65579E-05        42095
  12       1      40093    1.24626E-05        40093
  13       1      40094    1.95879E-05        40094
  14       1      40095    1.99661E-06        40095
  15       1      41094    9.70985E-12        41094
  16       1      43099    1.91603E-05        43099
  17       1      45103    1.05084E-05        45103
  18       1      45105    2.23564E-08        45105
  19       1      44101    1.73887E-05        44101
  20       1      44106    2.62773E-06        44106
  21       1      46105    6.86049E-06        46105
  22       1      46108    1.92546E-06        46108
  23       1      47109    1.34572E-06        47109
  24       1      51124    3.04849E-10        51124
  25       1      54131    8.77608E-06        54131
  26       1      54132    1.64947E-05        54132
  27       1      54135    6.67715E-09        54135
  28       1      54136    3.30816E-05        54136
  29       1      55134    9.57401E-07        55134
  30       1      55135    1.05022E-05        55135
  31       1      55137    2.05235E-05        55137
  32       1      56136    1.95125E-07        56136
  33       1      57139    2.03240E-05        57139
  34       1      59141    1.75987E-05        59141
  35       1      59143    3.71189E-07        59143
  36       1      58144    6.70562E-06        58144
```

INFORMATION ONLY

37	1	60143	1.59150E-05	60143
38	1	60145	1.17342E-05	60145
39	1	61147	4.02235E-06	61147
40	1	61148	1.17777E-03	61148
41	1	60147	1.29916E-07	60147
42	1	62147	1.40155E-06	62147
43	1	62149	8.69582E-08	62149
44	1	62150	4.18068E-06	62150
45	1	62151	4.01901E-07	62151
46	1	62152	2.00466E-06	62152
47	1	64155	2.18270E-09	64155
48	1	63153	1.20542E-06	63153
49	1	63154	2.52168E-07	63154
50	1	63155	1.30440E-07	63155
51	2	40302	4.25156E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	2.10205E-05	55133
56	1	95237	3.73057E-06	95237
57	1	94238	5.34530E-07	94238
58	1	94239	1.07741E-04	94239
59	1	94240	2.09730E-05	94240
60	1	94241	1.13808E-05	94241
61	1	94242	1.27952E-06	94242
62	1	95241	3.40567E-07	95241
63	1	95243	1.18128E-07	95243
64	1	96244	1.12993E-08	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05864E-01	0
2	4	4.78790E-01	2.93000E+02	5.49010E-01	0
3	2	5.46100E-01	6.50000E+02	.00000E+00	0
4	3	8.13968E-01	6.07600E+02	.00000E+00	0

7711 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical 1

Ocopy	999	1/v cross sectio	from lag 12 to lag 18	bondarenko trigger	0
Ocopy	999	1/v cross sectio	from lag 18 to lag 1	bondarenko trigger	0
Ocopy	999	1/v cross sectio	from lag 18 to lag 1	bondarenko trigger	0
Ocopy	1001	hydrogen	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218mp	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	5011	boron-11	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from lag 12 to lag 18	bondarenko trigger	0
Ocopy	8016	oxygen-16	from lag 18 to lag 1	bondarenko trigger	0
Ocopy	8016	oxygen-16	from lag 18 to lag 1	bondarenko trigger	0
Ocopy	36083	kr-83	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	36085	kr-85	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	38090	sr-90	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	39089	y-89	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	40093	zr-93	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	40094	zr-94	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	40095	zr-95	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	40302	zircalloy	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	41094	nb-94	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	42095	mo-95	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	43099	tc-99	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	44101	ru-101	from lag 12 to lag 1	bondarenko trigger	0
Ocopy	44106	ru-106	from lag 12 to lag 1	bondarenko trigger	0

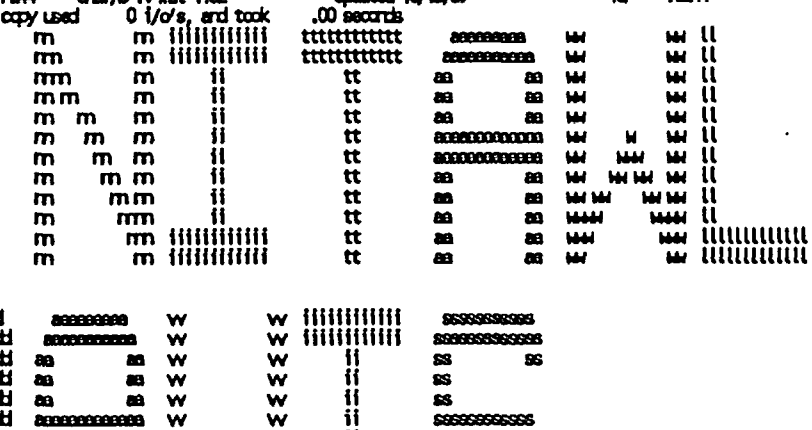
INFORMATION ONLY

```
Copy    45103  rh-103          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    45105  rh-105          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    46105  pd-105          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    46108  pd-108          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    47109  silver-109      from lcg 12 to lcg  1   bondarenko trigger 0
Copy    51124  sb-124          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    54131  xe-131          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    54132  xe-132          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    54135  xenon-135       from lcg 12 to lcg  1   bondarenko trigger 0
Copy    54136  xe-136          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    55133  cesium-133      from lcg 12 to lcg  1   bondarenko trigger 0
Copy    55134  cs-134          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    55135  cs-135          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    55137  cs-137          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    56136  ba-136          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    57139  la-139          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    58144  ce-144          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    59141  pr-141          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    59143  pr-143          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    60143  nd-143          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    60145  nd-145          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    60147  nd-147          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    61147  pm-147          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    61148  pm-148          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    62147  sm-147          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    62149  sm-149          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    62150  sm-150          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    62151  sm-151          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    62152  sm-152          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    63153  eu-153          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    63154  eu-154          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    63155  eu-155          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    64155  gd-155          from lcg 12 to lcg  1   bondarenko trigger 0
Copy    92234  u-234 1043 sigp= from lcg 12 to lcg  1   bondarenko trigger 0
Copy    92235  uranium-235     from lcg 12 to lcg  1   bondarenko trigger 0
Copy    92236  u-236 1163 sigp= from lcg 12 to lcg  1   bondarenko trigger 0
Copy    92238  uranium-238     from lcg 12 to lcg  1   bondarenko trigger 0
Copy    93237  neptunium-237   from lcg 12 to lcg  1   bondarenko trigger 0
Copy    94238  pu-238 1050 sigp from lcg 12 to lcg  1   bondarenko trigger 0
Copy    94239  plutonium-239   from lcg 12 to lcg  1   bondarenko trigger 0
Copy    94240  plutonium-240   from lcg 12 to lcg  1   bondarenko trigger 0
Copy    94241  plutonium-241   from lcg 12 to lcg  1   bondarenko trigger 0
Copy    94242  plutonium-242   from lcg 12 to lcg  1   bondarenko trigger 0
Copy    95241  am-241 1056 sigp from lcg 12 to lcg  1   bondarenko trigger 0
Copy    95243  am-243 1057 218 from lcg 12 to lcg  1   bondarenko trigger 0
Copy    96244  curium-244      from lcg 12 to lcg  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
           compiled for nrc      1/27/89
              last updated       9/16/93
                 l.m.petrie  -   ornl
        tape id                          4321        number of nuclides          66
        number of neutron groups           27        number of gamma groups       0
        first thermal group                15        logical unit                 1
                                   table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                  id    999
      1/v cross sections normalized to 1.0 at 0.0253 ev                  id     66
      hydrogen        endf/b-iv mat 1269/thml002    updated 10/13/89     id   1001
      b-10 1273 218ngp 042375 p-3 293k                                   id   5010
      boron-11        endf/b-iv mat 1160            updated 10/13/89     id   5011
```

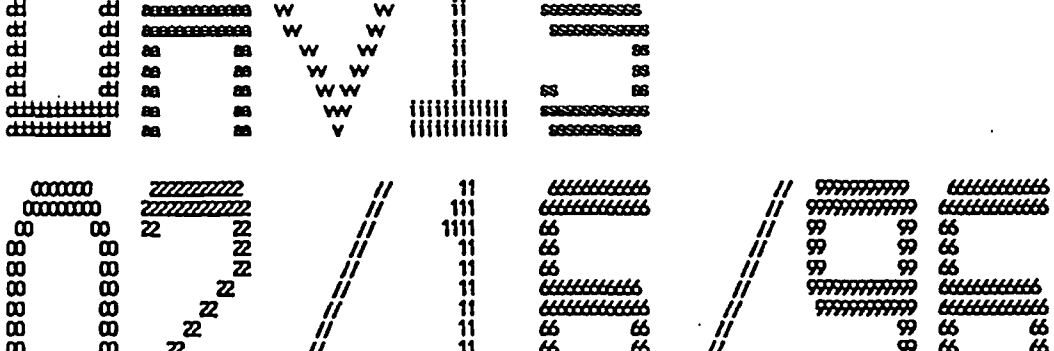
```
oxygen-16      endf/b-iv mat 1276          updated 10/13/89        id   8016
oxygen-16      endf/b-iv mat 1276          updated 10/13/89        id      6
kr-83          mt=102,103,103,105,106,107  updated 10/13/89        id  36083
kr-85            mt= 102                                           id  36085
sr-90          mt=102                      updated 10/13/89        id  38090
 y-89          mt=102                      updated 10/13/89        id  39089
zr-93            mt= 102                                           id  40093
zr-94          mt=102                      updated 10/13/89        id  40094
zr-95          mt=102                      updated 10/13/89        id  40095
zircalloy      endf/b-iv mat 1284          updated 10/13/89        id  40302
nb-94          mt=102                      updated 10/13/89        id  41094
mo-95          mt=102                      updated 10/13/89        id  42095
tc-99          mt=102                      updated 10/13/89        id  43099
ru-101         mt=102                      updated 10/13/89        id  44101
ru-106         mt=102                      updated 10/13/89        id  44106
rh-103         mt=102                      updated 10/13/89        id  45103
rh-105           mt= 102                                           id  45105
pd-105         mt=102                      updated 10/13/89        id  46105
pd-108         mt=102                      updated 10/13/89        id  46108
silver-109     endf/b-iv mat 1139          updated 10/13/89        id  47109
sb-124         mt=102                      updated 10/13/89        id  51124
xe-131         mt=102,103,104,105,106      updated 10/13/89        id  54131
xe-132         mt=102,103,104,105,106      updated 10/13/89        id  54132
xenon-135      endf/b-iv mat 1294          updated 10/13/89        id  54135
xe-136           mt= 102, 103, 104, 105, 107                       id  54136
cesium-133     endf/b-iv mat 1141          updated 10/13/89        id  55133
cs-134         mt=102                      updated 10/13/89        id  55134
cs-135           mt= 102                                           id  55135
cs-137         mt=102                      updated 10/13/89        id  55137
ba-136         mt=102                      updated 10/13/89        id  56136
la-139         mt=102                      updated 10/13/89        id  57139
ce-144           mt= 102                                           id  58144
pr-141         mt=102,103,104,105,106,107  updated 10/13/89        id  59141
pr-143         mt=102                      updated 10/13/89        id  59143
nd-143         mt=102                      updated 10/13/89        id  60143
nd-145         mt=102                      updated 10/13/89        id  60145
nd-147         mt=102                      updated 10/13/89        id  60147
pm-147         mt=102                      updated 10/13/89        id  61147
pm-148           mt= 102                                           id  61148
sm-147         endf/b-v fission product    updated 10/13/89        id  62147
sm-149         mt=102,103,107              updated 10/13/89        id  62149
sm-150         mt=102                      updated 10/13/89        id  62150
sm-151         mt=102,103,104,105,106,107  updated 10/13/89        id  62151
sm-152         mt=102,103,104,105,106,107  updated 10/13/89        id  62152
eu-153         mt=102,103,104,105,106,107  updated 10/13/89        id  63153
eu-154         mt=102,103,104,105,106,107  updated 10/13/89        id  63154
eu-155         mt=102,103,104,105,106,107  updated 10/13/89        id  63155
gd-155         mt=102                      updated 10/13/89        id  64155
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                 id  92234
uranium-235    endf/b-iv mat 1261          updated 10/13/89        id  92235
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                 id  92236
uranium-238    endf/b-iv mat 1262          updated 10/13/89        id  92238
neptunium-237  endf/b-iv mat 1263          updated 10/13/89        id  93237
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                id  94238
plutonium-239  endf/b-iv mat 1264          updated 10/13/89        id  94239
plutonium-240  endf/b-iv mat 1265          updated 10/13/89        id  94240
plutonium-241  endf/b-iv mat 1266          updated 10/13/89        id  94241
plutonium-242  endf/b-iv mat 1161          updated 10/13/89        id  94242
am-241 1056 sigo=5+4 nsxlacs 218ngp p-3 293k                       id  95241
am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                       id  95243
```

INFORMATION ONLY

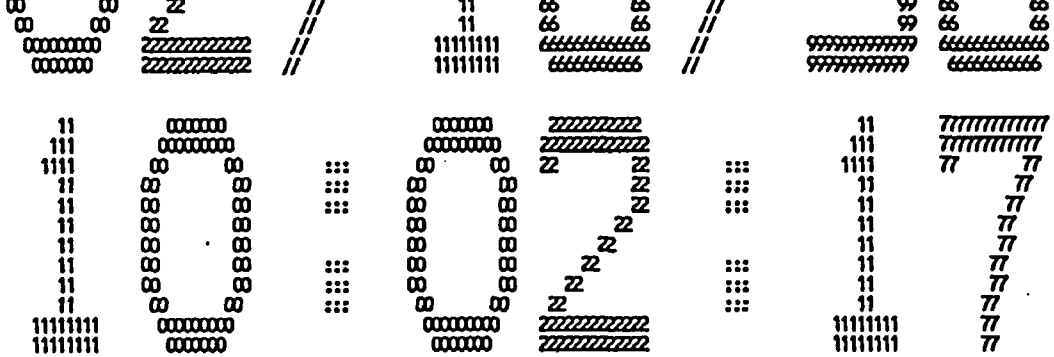
```
      curium-244    endf/b-iv mat 1162        updated 10/13/89            id    96244
0      tape copy used     0 i/o's, and took    .00 seconds
1
```



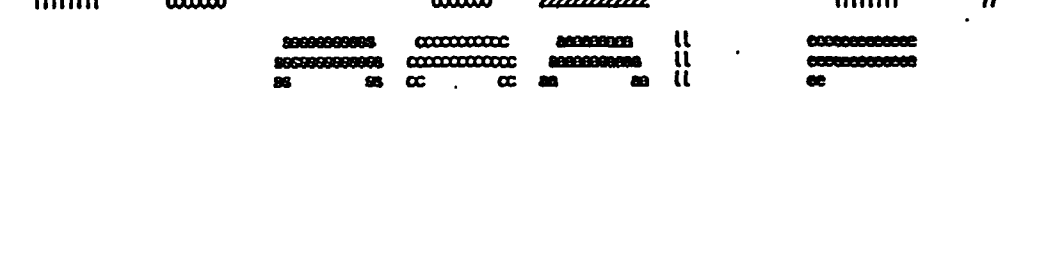
```
0
```



```
0
```



```
0
```



```
1
0
```

INFORMATION ONLY

```
ss          cc          aa      aa  ll          ee
ss          cc          aa      aa  ll          ee
sssssssssss cc          aaaaaaaaaaa ll          eeeeeeeee
 sssssssssss cc         aaaaaaaaaaa ll          eeeeeeeee
        ss  cc          aa      aa  ll          ee
        ss  cc          aa      aa  ll          ee
ss      ss  cc      cc  aa      aa  ll          ee
sssssssssss cccccccccccc aa     aa  llllllllllll eeeeeeeeeeee
 sssssssss   cccccccccc  aa     aa  llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c002                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nautronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:02:17                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has      1 entries.
0       0q array has      9 entries.
0       1q array has     12 entries.
0select 65 nuclides from the master  library on logical  1
        0 nuclides from the working library on logical  2
        0 nuclides from the working library on logical  3
          to create the new working library on logical  4

       61 resonance calculations have been requested
        0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0       2q array has     65 entries.
0       3q array has    915 entries.
0       4q array has     65 entries.
```

INFORMATION ONLY

```
0 general information concerning cross section library
    tape identification number                4321
    number of nuclides on tape                  66
    number of neutron energy groups             27
    first thermal neutron energy group          15
    number of gamma energy groups                0
0   direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                        compiled for nrc      1/27/89
                          last updated        9/16/93
                            l.m.petrie  -   ornl
0 nuclides from xsdrn tape
    1   1/v cross sections normalized to 1.0 at 0.0253 ev                                  999
    2   hydrogen        endf/b-iv mat 1269/thrm1002     updated 10/13/89                   1001
    3   b-10 1273 218ngp 042375 p-3 293k                                                   5010
    4   boron-11        endf/b-iv mat 1160              updated 10/13/89                   5011
    5   oxygen-16       endf/b-iv mat 1276              updated 10/13/89                   8016
    6   oxygen-16       endf/b-iv mat 1276              updated 10/13/89                      6
    7   kr-83           mt=102,103,103,105,106,107      updated 10/13/89                  36083
    8   kr-85             mt=  102                                                        36085
    9   sr-90           mt=102                          updated 10/13/89                  38090
   10    y-89           mt=102                          updated 10/13/89                  39089
   11   zr-93             mt=  102                                                        40093
   12   zr-94           mt=102                          updated 10/13/89                  40094
   13   zr-95           mt=102                          updated 10/13/89                  40095
   14   zircalloy       endf/b-iv mat 1284              updated 10/13/89                  40302
   15   nb-94           mt=102                          updated 10/13/89                  41094
   16   mo-95           mt=102                          updated 10/13/89                  42095
   17   tc-99           mt=102                          updated 10/13/89                  43099
   18   ru-101          mt=102                          updated 10/13/89                  44101
   19   ru-106          mt=102                          updated 10/13/89                  44106
   20   rh-103          mt=102                          updated 10/13/89                  45103
   21   rh-105            mt=  102                                                        45105
   22   pd-105          mt=102                          updated 10/13/89                  46105
   23   pd-108          mt=102                          updated 10/13/89                  46108
   24   silver-109      endf/b-iv mat 1139              updated 10/13/89                  47109
   25   sb-124          mt=102                          updated 10/13/89                  51124
   26   xe-131          mt=102,103,104,105,106          updated 10/13/89                  54131
   27   xe-132          mt=102,103,104,105,106          updated 10/13/89                  54132
   28   xenon-135       endf/b-iv mat 1294              updated 10/13/89                  54135
   29   xe-136            mt=  102, 103, 104, 105, 107                                    54136
   30   cesium-133      endf/b-iv mat 1141              updated 10/13/89                  55133
   31   cs-134          mt=102                          updated 10/13/89                  55134
   32   cs-135            mt=  102                                                        55135
   33   cs-137          mt=102                          updated 10/13/89                  55137
   34   ba-136          mt=102                          updated 10/13/89                  56136
   35   la-139          mt=102                          updated 10/13/89                  57139
   36   ce-144            mt=  102                                                        58144
   37   pr-141          mt=102,103,104,105,106,107      updated 10/13/89                  59141
   38   pr-143          mt=102                          updated 10/13/89                  59143
   39   nd-143          mt=102                          updated 10/13/89                  60143
   40   nd-145          mt=102                          updated 10/13/89                  60145
   41   nd-147          mt=102                          updated 10/13/89                  60147
   42   pm-147          mt=102                          updated 10/13/89                  61147
   43   pm-148            mt=  102                                                        61148
   44   sm-147          endf/b-v fission product        updated 10/13/89                  62147
   45   sm-149          mt=102,103,107                  updated 10/13/89                  62149
   46   sm-150          mt=102                          updated 10/13/89                  62150
```

INFORMATION ONLY

```
 47   sm-151        mt=102,103,104,105,106,107    updated 10/13/89          62151
 48   sm-152        mt=102,103,104,105,106,107    updated 10/13/89          62152
 49   eu-153        mt=102,103,104,105,106,107    updated 10/13/89          63153
 50   eu-154        mt=102,103,104,105,106,107    updated 10/13/89          63154
 51   eu-155        mt=102,103,104,105,106,107    updated 10/13/89          63155
 52   gd-155        mt=102                        updated 10/13/89          64155
 53  u-234 1043 sigo=5+4 nsw=lacs p-3 295k f-1/e-m(1.+5)                   92234
 54   uranium-235   endf/b-iv mat 1261           updated 10/13/89          92235
 55  u-236 1163 sigo=5+4 nsw=lacs p-3 295k f-1/e-m(1.+5)                   92236
 56   uranium-238   endf/b-iv mat 1262           updated 10/13/89          92238
 57   neptunium-237 endf/b-iv mat 1263           updated 10/13/89          93237
 58  pu-238 1050 sigo=5+4 nsw=lacs p-3 295k f-1/e-m(1.+5)                   94238
 59   plutonium-239 endf/b-iv mat 1264           updated 10/13/89          94239
 60   plutonium-240 endf/b-iv mat 1265           updated 10/13/89          94240
 61   plutonium-241 endf/b-iv mat 1266           updated 10/13/89          94241
 62   plutonium-242 endf/b-iv mat 1161           updated 10/13/89          94242
 63  am-241 1056 sigo=5+4 nsw=lacs 218ngp p-3 295k                         95241
 64  am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                          95243
 65   curium-244    endf/b-iv mat 1162           updated 10/13/89          96244
01/v cross sections normalized to 1.0 at 0.0253 ev                  999    temperature=  975.00
0 hydrogen      endf/b-iv mat 1269/thm1002   updated 10/13/89        1001   temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 295k                                   5010   temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11      endf/b-iv mat 1160           updated 10/13/89       5011   temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276           updated 10/13/89       8016   temperature=  975.00
0 oxygen-16     endf/b-iv mat 1276           updated 10/13/89          6   temperature=  607.60
0 kr-83         mt=102,103,103,105,106,107   updated 10/13/89      36083   temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202        temperature(kelvin)      =  975.000
0potential scatter sigma  =    7.004        lumped nuclear density   = 1.427176E-06
0spin factor (g)          =  4988.190        lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995        sigma(per absorber atom)= 1.196485E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953        sigma(per absorber atom)= 1.334905E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -2.107455E-03  .000000E+00  -2.665285E-03
  12      2.165458E-02  .000000E+00   9.892334E-03
  13     -4.670784E-01  .000000E+00  -1.405421E-01
  14      4.782560E-05  .000000E+00  -1.722596E-05
0excess resonance integrals
0                resolved
0absorption     1.4735E+02
 fission        .0000E+00
- elapsed time   .00 min.
0 kr-85          mt=  102                                   36085   temperature=  975.00
0 sr-90         mt=102                        updated 10/13/89       38090   temperature=  975.00
0  y-89         mt=102                        updated 10/13/89       39089   temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142        temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.644        lumped nuclear density   = 1.258854E-05
0spin factor (g)          =   78.664        lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00    dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.378367E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.537828E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -3.386356E-06    .000000E+00   -2.525319E-04
  10      -7.546894E-05    .000000E+00   -2.128284E-04
0excess resonance integrals
0                  resolved
0absorption      1.463965E-01
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-93          mt=  102                                    40093    temperature=  975.00
0 zr-94         mt=102                  updated 10/13/89     40094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    93.100          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.779          lumped nuclear density   = 1.958792E-05
0spin factor (g)          =   180.853          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 8.717599E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 9.726123E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   8      -1.205871E-06    .000000E+00   -1.136245E-03
   9      -3.808849E-05    .000000E+00   -3.369180E-03
0excess resonance integrals
0                  resolved
0absorption      3.436965E-02
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-95         mt=102                  updated 10/13/89     40095    temperature=  975.00
0 zircaloy      endf/b-iv mat 1284      updated 10/13/89     40302    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =    90.436          temperature(kelvin)      =   650.000
0potential scatter sigma  =     6.385          lumped nuclear density   = 4.251560E-02
0spin factor (g)          =     1.079          lump dimension (a-bar)   = 5.461000E-01
0inner radius             = 4.787899E-01       dancoff correction (c)   = 5.036463E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   8      -1.780598E-03    .000000E+00   -1.286907E+00
   9      -5.853373E-02    .000000E+00   -2.695297E+00
  10      -6.959985E-02    .000000E+00   -1.601321E+00
  11      -1.883937E-01    .000000E+00   -7.920912E-01
0excess resonance integrals
0                  resolved
0absorption      2.285395E-01
 fission          .00000E+00
- elapsed time    .02 min.
0 nb-94         mt=102                  updated 10/13/89     41094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    93.101          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.779          lumped nuclear density   = 9.709650E-12
```

INFORMATION ONLY

```
0spin factor (g)          = 43808.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 1.7586594E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953           sigma(per absorber atom)= 1.9621155E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  13       1.043254E-02     .000000E+00    9.253223E-04
  14       9.836713E-03     .000000E+00   -4.064832E-04
0excess resonance integrals
0                  resolved
0absorption       9.15001E+01
 fission           .00000E+00
- elapsed time     .02 min.
0 mo-95          mt=102                    updated 10/13/89          42095     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   94.091           temperature(kelvin)       =   975.000
0potential scatter sigma  =    3.806           lumped nuclear density    = 1.6657906E-05
0spin factor (g)          =  607.724           lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 1.0312880E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953           sigma(per absorber atom)= 1.1505958E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      -3.530957E-03     .000000E+00   -2.099522E-02
  11      -6.524231E-03     .000000E+00   -1.080906E-02
  12      -4.589763E-00     .000000E+00   -5.280679E+00
  13       1.575622E-04     .000000E+00   -2.129488E-05
0excess resonance integrals
0                  resolved
0absorption       9.75400E+01
 fission           .00000E+00
- elapsed time     .02 min.
0 tc-99          mt=102                    updated 10/13/89          43099     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   98.150           temperature(kelvin)       =   975.000
0potential scatter sigma  =    6.000           lumped nuclear density    = 1.9160281E-05
0spin factor (g)          = 4527.940           lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 8.9121709E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.953           sigma(per absorber atom)= 9.9432041E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11      -2.469531E-02     .000000E+00   -1.165742E-02
  12      -6.508100E-03     .000000E+00   -2.280359E-04
  13      -4.011463E-01     .000000E+00   -2.111810E-02
  14      -8.565925E+00     .000000E+00   -2.732188E-01
  15       1.070115E-02     .000000E+00   -5.387698E-04
  16       4.836025E-03     .000000E+00   -2.802101E-04
```

```
  17      2.074640E-04     .000000E+00   -1.192373E-05
0excess resonance integrals
0                 resolved
0absorption      3.23460E+02
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-101        mt=102                    updated 10/13/89          44101     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   100.039          temperature(kelvin)       =   975.000
0potential scatter sigma  =     3.965          lumped nuclear density    = 1.738691E-05
0spin factor (g)          =  8785.250          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 9.820158E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933          sigma(per absorber atom)= 1.095623E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11      -3.647632E-02     .000000E+00   -3.684222E-03
  12      -1.412914E-01     .000000E+00   -3.547557E-02
  13      -4.671092E-01     .000000E+00   -1.257778E-02
  14       2.371025E-04     .000000E+00   -4.152284E-05
0excess resonance integrals
0                 resolved
0absorption      7.92386E+01
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89          44106     temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89          45103     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   102.021          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.408          lumped nuclear density    = 1.050389E-05
0spin factor (g)          =      .500          lump dimension (a-bar)    = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.634984E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933          sigma(per absorber atom)= 1.812976E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9       1.236941E-03     .000000E+00    1.889577E-03
  10      -4.028342E-03     .000000E+00   -5.558081E-03
  11      -2.106917E-02     .000000E+00   -1.854124E-02
  12      -3.399178E-04     .000000E+00   -2.380681E-05
  13       .000000E+00      .000000E+00    .000000E+00
  14       .000000E+00      .000000E+00    .000000E+00
  15       2.268889E-01     .000000E+00    3.244993E-03
  16       3.156197E+01     .000000E+00   -7.005092E-02
  17      -1.862040E+02     .000000E+00   -1.642177E-01
  18       8.690983E+01     .000000E+00    2.607519E-01
  19       1.145288E+01     .000000E+00   -1.386590E-03
  20       1.084406E+00     .000000E+00   -2.447915E-03
  21       2.165818E-01     .000000E+00    1.925102E-03
  22       2.583956E-01     .000000E+00    2.928526E-03
  23      -9.879520E-02     .000000E+00    1.798871E-03
0excess resonance integrals
```

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```
0                resolved
0absorption      1.14205E+03
 fission          .00000E+00
- elapsed time    .07 min.
0 rh-105          mt=  102                                          45105    temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89          46105    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density     = 6.8504922E-06
0spin factor (g)          = 15210.000          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 2.4890259E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933            sigma(per absorber atom)= 2.7769813E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12      -5.988775E-02     .000000E+00    -1.660568E-03
  13      -3.455140E-02     .000000E+00    -1.063048E-03
  14       7.764513E-04     .000000E+00    -8.132564E-05
0excess resonance integrals
0                resolved
0absorption      6.12143E+01
 fission          .00000E+00
- elapsed time    .07 min.
0 pd-108        mt=102                    updated 10/13/89          46108    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density     = 1.9254592E-06
0spin factor (g)          = 21175.100          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 8.8685130E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933            sigma(per absorber atom)= 9.8945008E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11       1.170138E-04     .000000E+00     3.531508E-04
  12      -1.744531E+00     .000000E+00    -1.284438E+00
  13       6.798671E-03     .000000E+00     1.857198E-03
  14       8.561140E-02     .000000E+00    -3.208624E-05
  15      -1.840957E-01     .000000E+00     8.083612E-05
  16       2.946577E-04     .000000E+00    -9.255595E-06
0excess resonance integrals
0                resolved
0absorption      2.11957E+02
 fission          .00000E+00
- elapsed time    .07 min.
0 silver-109    endf/b-iv mat 1139        updated 10/13/89          47109    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)        =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density     = 1.3457249E-06
0spin factor (g)          =  1441.870          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.2689049E+05
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933              sigma(per absorber atom)= 1.4157022E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  10      -1.472962E-04    .000000E+00   -1.567339E-04
  11      -6.107400E-03    .000000E+00   -4.491020E-03
  12      -7.277873E-01    .000000E+00   -3.450912E-02
  13       7.669353E-01    .000000E+00    3.380737E-02
  14      -1.278852E+01    .000000E+00   -1.192197E+00
0excess resonance integrals
0                  resolved
0absorption      1.38632E+03
 fission          .00000E+00
-  elapsed time    .07 min.
0 sb-124        mt=102                    updated 10/13/89          51124    temperature=  975.00
0 xe-131        mt=102,103,104,105,106    updated 10/13/89          54131    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  129.781          temperature(kelvin)       =  975.000
0potential scatter sigma  =    4.301          lumped nuclear density    = 8.7760827E-06
0spin factor (g)          =  266.825          lump dimension (a-bar)    = 4.6812201E-01
0dimer radius             =  .0000000E+00     dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.9457393E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933            sigma(per absorber atom)= 2.1708383E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -2.843403E-06    .000000E+00   -2.640883E-05
  10      -1.938972E-04    .000000E+00   -1.666874E-04
  11      -2.365111E-03    .000000E+00   -1.765685E-03
  12      -4.517101E-02    .000000E+00   -4.207256E-03
  13      -7.038969E+01    .000000E+00   -1.650056E+02
  14       1.061634E-02    .000000E+00    1.486984E-02
0excess resonance integrals
0                  resolved
0absorption      7.58385E+02
 fission          .00000E+00
-  elapsed time    .03 min.
0 xe-132        mt=102,103,104,105,106    updated 10/13/89          54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  130.771          temperature(kelvin)       =  975.000
0potential scatter sigma  =    4.301          lumped nuclear density    = 1.6494707E-05
0spin factor (g)          =  675.899          lump dimension (a-bar)    = 4.6812201E-01
0dimer radius             =  .0000000E+00     dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.0552393E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933            sigma(per absorber atom)= 1.1550043E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -2.544254E-05    .000000E+00   -1.172793E-04
  10      -7.780082E-03    .000000E+00   -9.903657E-02
  11       3.338821E-08    .000000E+00   -9.229524E-07
0excess resonance integrals
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0                resolved
0absorption      9.71131E-01
 fission          .00000E+00
- elapsed time    .03 min.
0 xenon-135      endf/b-iv mat 1294          updated 10/13/89          54135    temperature=  975.00
0 xe-136            mt=  102, 103, 104, 105, 107                       54136    temperature=  975.00
0 cesium-133     endf/b-iv mat 1141          updated 10/13/89          55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   131.764          temperature(kelvin)      =   975.000
0potential scatter sigma  =     7.100          lumped nuclear density   = 2.102062E-05
0spin factor (g)          =   374.437          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 8.123436E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   258.051            sigma(per absorber atom)= 8.713451E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9       -5.815313E-05    .000000E+00   -3.912479E-04
 10       -2.859950E-03    .000000E+00   -5.542578E-03
 11       -1.080677E-01    .000000E+00   -1.850162E-01
 12       -1.675588E-01    .000000E+00   -2.331297E-02
 13       -2.787342E-01    .000000E+00   -1.516813E-02
 14       -1.213135E+01    .000000E+00   -5.310487E-01
 15        5.621247E-03    .000000E+00   -4.047216E-04
 16        2.777834E-03    .000000E+00   -2.215200E-04
 17        2.352213E-03    .000000E+00   -1.830883E-04
 18        2.215043E-03    .000000E+00   -1.679331E-04
 19        1.317405E-03    .000000E+00   -9.678893E-05
0excess resonance integrals
0                resolved
0absorption      3.51131E+02
 fission          .00000E+00
- elapsed time    .10 min.
0 cs-134         mt=102                      updated 10/13/89          55134    temperature=  975.00
0 cs-135            mt=  102                                           55135    temperature=  975.00
0 cs-137         mt=102                      updated 10/13/89          55137    temperature=  975.00
0 ba-136         mt=102                      updated 10/13/89          56136    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   134.757          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.835          lumped nuclear density   = 1.931250E-07
0spin factor (g)          =  1247.690          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 8.841925E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933            sigma(per absorber atom)= 9.864831E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
 10        1.097034E-06    .000000E+00    4.642062E-07
 11       -1.204376E-05    .000000E+00   -9.815700E-06
0excess resonance integrals
0                resolved
0absorption      1.3847E+00
 fission          .00000E+00
- elapsed time    .10 min.
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0 la-139        mt=102                          updated 10/13/89          57139    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  137.713          temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.906          lumped nuclear density   = 2.032425E-05
0spin factor (g)          =  145.855          lump dimension (a-bar)   = 4.681220 1E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 8.401864 3E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953            sigma(per absorber atom)= 9.373860 4E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss        res scat
  9      -1.254866E-05   .000000E+00   -2.225172E-04
 10      -3.955710E-04   .000000E+00   -2.243899E-02
 11       .000000E+00    .000000E+00    .000000E+00
 12      -6.961611E-02   .000000E+00   -4.203025E-02
0excess resonance integrals
0                resolved
0absorption      8.06569E+00
 fission         .00000E+00
- elapsed time    .12 min.
0 ce-144         mt=  102                                                58144    temperature=  975.00
0 pr-141        mt=102,103,104,105,106,107      updated 10/13/89          59141    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  139.697          temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.953          lumped nuclear density   = 1.759871 7E-05
0spin factor (g)          = 1026.500          lump dimension (a-bar)   = 4.681220 1E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 9.702962 9E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953            sigma(per absorber atom)= 1.082548 1E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss        res scat
 10      -6.883339E-03   .000000E+00   -2.339946E-01
 11      -1.126897E-01   .000000E+00   -1.498327E+00
 12      -2.585429E-03   .000000E+00   -2.528515E-04
0excess resonance integrals
0                resolved
0absorption      1.20978E+01
 fission         .00000E+00
- elapsed time    .12 min.
0 pr-143        mt=102                          updated 10/13/89          59143    temperature=  975.00
0 nd-143        mt=102                          updated 10/13/89          60143    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  141.682          temperature(kelvin)      =  975.000
0potential scatter sigma  =    5.000          lumped nuclear density   = 1.597505E-05
0spin factor (g)          = 1964.850          lump dimension (a-bar)   = 4.681220 1E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.072944 8E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.953            sigma(per absorber atom)= 1.197071 9E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
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0group        res abs        res fiss       res scat
  10      -1.574946E-04    .000000E+00   -8.823005E-05
  11      -3.695361E-01    .000000E+00   -4.298528E+00
  12      -2.444570E-01    .000000E+00   -1.202315E-01
0excess resonance integrals
0                 resolved
0absorption       5.07642E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 nd-145        mt=102                    updated 10/13/89          60145     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  143.668          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.047          lumped nuclear density    = 1.173418E-05
0spin factor (g)          =  1007.250         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 1.455233E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953            sigma(per absorber atom)= 1.623586E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -4.781522E-03    .000000E+00   -7.507609E-02
  11      -7.203243E-02    .000000E+00   -2.180945E-01
  12      -1.733671E+00    .000000E+00   -1.090983E+01
  13       9.577876E-05    .000000E+00    2.044937E-04
  14      -1.591639E+00    .000000E+00   -4.183234E-02
  15       5.898307E-03    .000000E+00   -4.609054E-04
  16       1.326662E-03    .000000E+00   -1.451343E-04
  17       9.642444E-04    .000000E+00   -1.063907E-04
  18       8.539835E-04    .000000E+00   -9.314132E-05
  19       7.634249E-04    .000000E+00   -8.070323E-05
  20       2.839224E-05    .000000E+00   -2.919392E-06
0excess resonance integrals
0                 resolved
0absorption       2.05973E+02
 fission          .00000E+00
- elapsed time    .13 min.
0 nd-147        mt=102                    updated 10/13/89          60147     temperature=  975.00
0 pm-147        mt=102                    updated 10/13/89          61147     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  145.653          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.093          lumped nuclear density    = 4.022350E-06
0spin factor (g)          = 21589.500         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 4.245271E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953            sigma(per absorber atom)= 4.736399E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -2.019988E-01    .000000E+00   -6.472597E-02
  13      -5.178917E-02    .000000E+00   -2.944189E-03
  14      -9.048184E+01    .000000E+00   -3.888611E+01
  15       4.127173E-02    .000000E+00    6.976340E-03
  16       1.697912E-02    .000000E+00    1.746667E-03
  17       1.369759E-02    .000000E+00    1.150427E-03
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  18      1.253775E-02     .000000E+00    9.649080E-04
  19      6.999401E-04     .000000E+00    5.068677E-05
0excess resonance integrals
0                 resolved
0absorption      2.00495E+03
 fission          .00000E+00
- elapsed time    .13 min.
0 pm-148          mt=  102                                          61148    temperature=   975.00
0 sm-147        endf/b-v fission product      updated 10/13/89        62147    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density    = 1.4015466E-06
0spin factor (g)          =      .000          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.2183662E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.3593167E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      2.691080E-01     .000000E+00    1.071706E+00
  12      8.990461E-01     .000000E+00   -1.596820E+00
  13     -3.912558E+00     .000000E+00   -2.285034E+00
  14     -4.358976E-01     .000000E+00   -5.141891E-03
  15      3.113321E-01     .000000E+00   -1.904650E-03
  16      7.287706E-03     .000000E+00   -3.738560E-04
  17      4.281466E-03     .000000E+00   -2.401682E-04
  18      3.510456E-03     .000000E+00   -1.997176E-04
  19      2.910619E-03     .000000E+00   -1.649500E-04
  20      8.435568E-04     .000000E+00   -4.628307E-05
0excess resonance integrals
0                 resolved
0absorption      7.21750E+02
 fission          .00000E+00
- elapsed time    .15 min.
                          thermal scattering matrix number   3 at a temperature of    900.03 was selected.
0 sm-149        mt=102,103,107                updated 10/13/89        62149    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   147.638          temperature(kelvin)       =   975.000
0potential scatter sigma  =     3.260          lumped nuclear density    = 8.6958181E-03
0spin factor (g)          =  10407.900         lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.9636990E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 2.1908758E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11      8.546890E-03     .000000E+00    3.071159E-02
  12     -5.533295E-02     .000000E+00   -1.820874E-01
  13      2.289286E-02     .000000E+00    2.796631E-03
  14      2.746277E-03     .000000E+00   -7.935149E-03
0excess resonance integrals
0                 resolved
0absorption      8.04332E+02
 fission          .00000E+00
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- elapsed time    .15 min.
0 sm-150        mt=102                          updated 10/13/89          62150    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   148.629          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.162          lumped nuclear density    = 4.1806816E-06
0spin factor (g)          =  4376.420          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 4.0844941E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933            sigma(per absorber atom)= 4.5570219E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -1.398363E-03    .000000E+00   -1.341212E-02
  11      -3.151566E-02    .000000E+00   -3.565074E-01
  12      -1.026808E-01    .000000E+00   -3.103027E-02
  13      -7.244654E+00    .000000E+00   -5.702447E+00
  14       1.065287E-04    .000000E+00   -6.390289E-05
0excess resonance integrals
0                 resolved
0absorption      2.8664 9E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-151        mt=102,103,104,105,106,107      updated 10/13/89          62151    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   149.623          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.185          lumped nuclear density    = 4.0190145E-07
0spin factor (g)          = 75574.703          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 4.2487953E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.933            sigma(per absorber atom)= 4.7405309E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  14      -2.313708E-01    .000000E+00   -2.198228E-02
  15       1.485611E+01    .000000E+00    7.515553E-02
  16      -2.182088E+01    .000000E+00   -6.201120E-02
  17       1.735828E+02    .000000E+00    8.269866E-01
  18      -3.207103E+02    .000000E+00   -1.784223E+00
  19       6.253944E+01    .000000E+00    3.857666E-01
  20       1.141187E+00    .000000E+00   -1.395821E-04
  21      -7.117673E-02    .000000E+00    1.244103E-02
  22       6.952596E-02    .000000E+00    3.838923E-03
  23      -1.091910E-02    .000000E+00    3.374031E-04
0excess resonance integrals
0                 resolved
0absorption      2.0561 6E+03
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-152        mt=102,103,104,105,106,107      updated 10/13/89          62152    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   150.615          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.208          lumped nuclear density    = 2.0046550E-06
0spin factor (g)          =   863.594          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 8.5181586E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 9.5036094E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9        2.402705E-06     .000000E+00    1.158603E-04
 10       -1.613120E-03     .000000E+00   -2.503739E-02
 11       -2.328024E-02     .000000E+00   -8.863147E-02
 12       -1.561992E-01     .000000E+00   -4.954254E-01
 13        4.184015E-02     .000000E+00    1.017387E-01
 14       -1.348911E+02     .000000E+00   -2.642978E+02
0excess resonance integrals
0                 resolved
0absorption      2.73423E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   151.607          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 1.2054246E-06
0spin factor (g)          = 12265.900          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269861E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.4165936E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.5804769E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
 12       -2.948301E-01     .000000E+00   -5.761088E-02
 13       -1.746831E-01     .000000E+00   -6.441054E-03
 14       -9.135323E-01     .000000E+00   -1.894943E-03
 15        1.268074E+00     .000000E+00   -4.252725E-02
 16       -3.300678E+00     .000000E+00    8.155595E-03
 17        1.505588E-01     .000000E+00   -3.437673E-03
 18        7.726851E-02     .000000E+00   -2.231216E-03
 19        5.055454E-02     .000000E+00   -1.541080E-03
 20       -1.253804E-01     .000000E+00   -1.274997E-03
0excess resonance integrals
0                 resolved
0absorption      1.35385E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-154        mt=102,103,104,105,106,107     updated 10/13/89              63154     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   152.601          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 2.5216809E-07
0spin factor (g)          = 19135.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269861E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.7716613E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 7.5550625E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
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0group      res abs        res fiss       res scat
  12      -3.936354E-01   .000000E+00   -6.141107E-02
  13      -3.243814E-01   .000000E+00   -2.535955E-02
  14       3.137259E-01   .000000E+00    1.434408E-02
  15       1.216527E-01   .000000E+00    2.082218E-02
  16       7.156821E+00   .000000E+00    9.208286E-02
  17      -1.443276E+02   .000000E+00   -1.897852E+00
  18       1.134462E+02   .000000E+00    1.857145E+00
  19      -1.014757E+02   .000000E+00    1.187365E+00
0excess resonance integrals
0                  resolved
0absorption      2.136261E+03
 fission          .000000E+00
- elapsed time    .18 min.
0 eu-155        mt=102,103,104,105,106,107     updated 10/13/89          63155    temperature=  975.00
0 gd-155        mt=102                         updated 10/13/89          64155    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  153.592          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.277          lumped nuclear density    = 2.1827047E-09
0spin factor (g)          = 12700.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 7.823072E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 8.728371E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  12      -1.439325E+00   .000000E+00   -1.839493E-01
  13       1.541064E+00   .000000E+00    1.984967E-01
  14       2.189140E-01   .000000E+00    9.804462E-03
  15      -3.353145E-01   .000000E+00   -1.141159E-04
  16       1.477358E+00   .000000E+00   -4.148867E-03
  17       1.568660E-01   .000000E+00   -1.479133E-03
  18       9.605134E-02   .000000E+00   -1.078060E-03
  19       6.295293E-02   .000000E+00   -8.026360E-04
  20       1.670391E-02   .000000E+00    1.627049E-04
  21        .000000E+00   .000000E+00     .000000E+00
  22        .000000E+00   .000000E+00     .000000E+00
  23        .000000E+00   .000000E+00     .000000E+00
  24        .000000E+00   .000000E+00     .000000E+00
  25      -2.127871E+03   .000000E+00   -1.622070E+00
  26      -5.205742E+03   .000000E+00    1.961503E+00
  27      -1.660003E+03   .000000E+00    7.392749E-01
0excess resonance integrals
0                  resolved
0absorption      3.970152E+04
 fission          .000000E+00
- elapsed time    .18 min.
0u-234 1043 sigo=5+4 newdacs p-3 293k f-1/e-x(1.+5)                    92234    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  232.029          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.021          lumped nuclear density    = 4.4680287E-06
0spin factor (g)          = 6948.450          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.821812E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.985          sigma(per absorber atom)= 4.262546E+04
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0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -2.135940E-02  .000000E+00  -6.230421E-02
  12     -1.742367E-01  .000000E+00  -7.295460E-02
  13      7.760082E-04  .000000E+00  -6.472778E-04
  14     -1.712841E+01  .000000E+00  -2.805241E+00
0excess resonance integrals
0                 resolved
0absorption      5.83639E+02
 fission          .00000E+00
- elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89          92235    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  233.025          temperature(kelvin)      =  975.000
0potential scatter sigma  =   11.500          lumped nuclear density   = 4.0269271E-04
0spin factor (g)          = 15171.100         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 4.240468E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.049            sigma(per absorber atom)= 4.550709E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  12     -1.700832E+00  -1.059861E+00  -3.985436E-02
  13     -6.016437E+00  -2.996895E+00  -1.303385E-01
  14     -4.839519E+00  -2.977209E+00  -3.309245E-02
0excess resonance integrals
0                 resolved
0absorption      2.13451E+02
 fission         1.27087E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 nsw4acs p-3 293k f-1/e-m(1.+5)                        92236    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  234.017          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.995          lumped nuclear density   = 5.5114171E-05
0spin factor (g)          = 6328.490          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995            sigma(per absorber atom)= 3.098290E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.934            sigma(per absorber atom)= 3.456122E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -2.655879E-01  .000000E+00  -6.672736E-01
  12     -1.435917E+00  .000000E+00  -9.749925E-01
  13     -6.729545E-02  .000000E+00  -3.511908E-03
  14     -4.638329E+01  .000000E+00  -4.057908E+00
0excess resonance integrals
0                 resolved
0absorption      2.73775E+02
 fission          .00000E+00
- elapsed time    .22 min.
0 uranium-238   endf/b-iv mat 1262          updated 10/13/89          92238    temperature=  975.00
0resonance data for this nuclide
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0mass number (a)          =  236.006          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density   = 2.1827353E-02
0spin factor (g)          =  656.527          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995          sigma(per absorber atom)= 7.8231969E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  235.041          sigma(per absorber atom)= 3.3684471E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9      -3.931561E-02    .000000E+00   -4.039221E-01
 10      -1.024608E+00   -1.744971E-05   -6.475117E+00
 11      -9.704499E+00    .000000E+00   -2.689068E+01
 12      -4.304145E+01    .000000E+00   -4.998128E+01
 13      -5.400749E+01    .000000E+00   -1.768951E+01
 14      -1.044879E+02    .000000E+00   -6.059095E+00
0excess resonance integrals
0                 resolved
0absorption      1.8046 4E+01
 fission         5.0406 5E-04
- elapsed time    .23 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  235.012          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.500          lumped nuclear density   = 3.7305724E-06
0spin factor (g)          = 10100.800         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995          sigma(per absorber atom)= 4.5773051E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  235.051          sigma(per absorber atom)= 4.9097598E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
 11      -6.374864E-02   -2.167091E-06   -7.428924E-03
 12       1.776590E-02   -1.164552E-04    6.408805E-03
 13      -5.210491E-02    8.608940E-05   -2.513370E-03
 14      -1.046165E-01   -1.266708E-05   -1.750064E-03
0excess resonance integrals
0                 resolved
0absorption      2.9295 6E+02
 fission         1.3853 9E-01
- elapsed time    .27 min.
0pu-238 1050 sigp=544 resxlacs p-3 298k f-1/e-n(1.+5)                          94238     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.167          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.890          lumped nuclear density   = 5.3452993E-07
0spin factor (g)          = 13130.600         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995          sigma(per absorber atom)= 3.1945766E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051          sigma(per absorber atom)= 3.4266022E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
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  11      -3.282652E-03  -5.090203E-04  -3.151380E-03
  12      -2.240102E-03  -2.553125E-04  -1.062740E-03
  13       3.933082E-01   7.479770E-02  -1.106841E-02
  14      -3.827046E-01  -6.995343E-02   8.539104E-03
0excess resonance integrals
0                 resolved
0absorption      8.25191E+01
 fission         9.08318E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          '9239     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.999          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.200          lumped nuclear density    = 1.077087E-04
0spin factor (g)          =  6435.710         lump dimension (a-bar)    = 4.681220 1E-01
0inner radius             =  .0000000E+00     dancoff correction (c)    = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.584911 0E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 1.700084 9E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11      -2.247174E-01  -9.051856E-02  -6.875905E-02
  12      -1.989344E+00  -7.468539E-01  -2.615587E-01
  13      -6.506670E+00  -3.828007E+00  -9.953720E-02
  14      -2.074125E+00  -1.108918E+00  -1.838425E-02
0excess resonance integrals
0                 resolved
0absorption      3.06743E+02
 fission         1.72348E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89          9240      temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  237.992          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density    = 2.097302 4E-05
0spin factor (g)          =  669.244          lump dimension (a-bar)    = 4.681220 1E-01
0inner radius             =  .0000000E+00     dancoff correction (c)    = 3.426926 1E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 8.141872 1E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 8.733225 6E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
   9      -5.648960E-05  -1.690455E-06  -2.566680E-04
  10      -5.007082E-03  -3.075440E-04  -2.286355E-02
  11      -1.592344E-01  -9.211631E-04  -2.116976E-01
  12      -2.199089E+00  -1.200747E-02  -2.108182E+00
  13      -2.726513E-01  -1.671806E-03  -1.987130E-02
  14       .000000E+00    .000000E+00   .000000E+00
  15       1.732440E-02   3.306438E-06   3.407707E-03
  16       2.825561E+00   5.392708E-04   3.514705E-01
  17       4.313114E+02   8.231768E-02   3.839492E+01
  18      -8.231488E+03  -1.571016E+00  -6.492285E+02
  19       5.877919E+02   1.121827E-01   4.667348E+01
  20      -9.384860E+01  -1.791142E-02   1.798124E+00
0excess resonance integrals
0                 resolved
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0absorption      4.49037E+03
 fission         1.86623E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9241    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.978          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.959          lumped nuclear density    = 1.138080E-05
0spin factor (g)          = 16402.100         lump dimension (a-bar)    = 4.681220IE-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 1.500418E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 1.609896IE+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  12     -3.737381E-03  -3.810023E-03  5.682180E-04
  13     -7.564958E-01  -5.802743E-01  -2.221067E-02
  14     -7.322109E-01  -5.134649E-01  -1.796259E-03
  15      1.786078E-02   1.600558E-02  -4.640525E-04
0excess resonance integrals
0                 resolved
0absorption      5.07453E+02
 fission         4.25525E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          9242    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.145          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.694          lumped nuclear density    = 1.279521E-06
0spin factor (g)          = 6606.710          lump dimension (a-bar)    = 4.681220IE-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   .   =   15.995         sigma(per absorber atom)= 1.334588E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 1.431489E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -3.409954E-03   .000000E+00  -9.329526E-03
  12     -7.254744E-02   .000000E+00  -1.407043E-01
  13     -1.297766E-04   .000000E+00   2.430201E-06
  14      8.128826E-02   .000000E+00   1.520801E-02
  15     -2.541045E+01   .000000E+00  -2.054759E+00
  16      4.029600E-02   .000000E+00  -3.450822E-03
  17      1.550384E-02   .000000E+00  -1.848195E-03
  18      1.112555E-02   .000000E+00  -1.430695E-03
0excess resonance integrals
0                 resolved
0absorption      1.09547E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=544 new-klacs 218grp p-3 293k                          9541    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.950          temperature(kelvin)       =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density    = 3.405669E-07
0spin factor (g)          = 82058.203         lump dimension (a-bar)    = 4.681220IE-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926IE-01
0the absorber will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 5.013928E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 5.378153E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  13      4.867330E-01   1.209541E-02   4.627123E-03
  14     -4.587215E-01  -1.130258E-02  -5.073899E-03
0excess resonance integrals
0                resolved
0absorption      1.95433E+02
 fission         1.07581E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                          95243    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =  240.940          temperature(kelvin)      =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density   = 1.1812765E-07
0spin factor (g)          = 8052.602          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4289261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.455521E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.550543E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  13     -7.920427E-03    .000000E+00   4.008657E-04
  14      1.597974E-02    .000000E+00   1.415215E-04
0excess resonance integrals
0                resolved
0absorption      1.60142E+02
 fission          .00000E+00
- elapsed time    .32 min.
0 curium-244     endf/b-iv mat 1162          updated 10/13/89          95244    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =  242.133          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.320          lumped nuclear density   = 1.1299580E-08
0spin factor (g)          = 5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4289261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.511156E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.620914E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      2.241775E-04   6.144474E-06   2.592307E-04
  12      5.799049E-04   2.804284E-05   9.876156E-05
  13      2.536457E-03   1.259993E-04   7.055791E-04
  14      2.975255E-02   1.780067E-03   5.875189E-04
0excess resonance integrals
0                resolved
0absorption      6.13835E+02
 fission         3.54181E+01
- elapsed time    .33 min.
- elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:02:17
```

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```
the title of the parent case is as follows
scale 4.2 - 27 group neutron burnup library
  based on endf-b version 4 data with endf-b version 5 fission products
    compiled for nrc      1/27/89
  tape id                          4321        number of nuclides                65
  number of neutron groups           27        number of gamma groups             0
  first thermal group                15        logical unit                       4
                          table of contents
 1/v cross sections normalized to 1.0 at 0.0253 ev                    id     999
 hydrogen       endf/b-iv mat 1269/thmal002   updated 10/13/89        id    1001
b-10 1273 218ngp 042375 p-3 293k                                      id    5010
 boron-11       endf/b-iv mat 1160            updated 10/13/89        id    5011
 oxygen-16      endf/b-iv mat 1276            updated 10/13/89        id    8016
 oxygen-16      endf/b-iv mat 1276            updated 10/13/89        id       6
 kr-83          mt=102,103,103,105,106,107    updated 10/13/89        id   36083
 kr-85            mt=  102                                             id   36085
 sr-90          mt=102                        updated 10/13/89        id   38090
  y-89          mt=102                        updated 10/13/89        id   39089
 zr-93            mt=  102                                             id   40093
 zr-94          mt=102                        updated 10/13/89        id   40094
 zr-95          mt=102                        updated 10/13/89        id   40095
 zircalloy      endf/b-iv mat 1284            updated 10/13/89        id   40802
 nb-94          mt=102                        updated 10/13/89        id   41094
 mo-95          mt=102                        updated 10/13/89        id   42095
 tc-99          mt=102                        updated 10/13/89        id   43099
 ru-101         mt=102                        updated 10/13/89        id   44101
 ru-106         mt=102                        updated 10/13/89        id   44106
 rh-103         mt=102                        updated 10/13/89        id   45103
 rh-105           mt=  102                                             id   45105
 pd-105         mt=102                        updated 10/13/89        id   46105
 pd-108         mt=102                        updated 10/13/89        id   46108
 silver-109     endf/b-iv mat 1139            updated 10/13/89        id   47109
 sb-124         mt=102                        updated 10/13/89        id   51124
 xe-131         mt=102,103,104,105,106        updated 10/13/89        id   54131
 xe-132         mt=102,103,104,105,106        updated 10/13/89        id   54132
 xenon-135      endf/b-iv mat 1294            updated 10/13/89        id   54135
 xe-136           mt=  102, 103, 104, 105, 107                         id   54136
 cesium-133     endf/b-iv mat 1141            updated 10/13/89        id   55133
 cs-134         mt=102                        updated 10/13/89        id   55134
 cs-135           mt=  102                                             id   55135
 cs-137         mt=102                        updated 10/13/89        id   55137
 ba-136         mt=102                        updated 10/13/89        id   56136
 la-139         mt=102                        updated 10/13/89        id   57139
 ce-144           mt=  102                                             id   58144
 pr-141         mt=102,103,104,105,106,107    updated 10/13/89        id   59141
 pr-143         mt=102                        updated 10/13/89        id   59143
 nd-143         mt=102                        updated 10/13/89        id   60143
 nd-145         mt=102                        updated 10/13/89        id   60145
 nd-147         mt=102                        updated 10/13/89        id   60147
 pm-147         mt=102                        updated 10/13/89        id   61147
 pm-148           mt=  102                                             id   61148
 sm-147         endf/b-v fission product      updated 10/13/89        id   62147
 sm-149         mt=102,103,107                updated 10/13/89        id   62149
 sm-150         mt=102                        updated 10/13/89        id   62150
 sm-151         mt=102,103,104,105,106,107    updated 10/13/89        id   62151
 sm-152         mt=102,103,104,105,106,107    updated 10/13/89        id   62152
 eu-153         mt=102,103,104,105,106,107    updated 10/13/89        id   63153
 eu-154         mt=102,103,104,105,106,107    updated 10/13/89        id   63154
 eu-155         mt=102,103,104,105,106,107    updated 10/13/89        id   63155
 gd-155         mt=102                        updated 10/13/89        id   64155
```

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```
      u-234 1043 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                id   92234
       uranium-235   endf/b-iv mat 1261          updated 10/13/89        id   92235
      u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                id   92236
       uranium-238   endf/b-iv mat 1262          updated 10/13/89        id   92238
       neptunium-237 endf/b-iv mat 1263          updated 10/13/89        id   93237
      pu-238 1050 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)               id   94238
       plutonium-239 endf/b-iv mat 1264          updated 10/13/89        id   94239
       plutonium-240 endf/b-iv mat 1265          updated 10/13/89        id   94240
       plutonium-241 endf/b-iv mat 1266          updated 10/13/89        id   94241
       plutonium-242 endf/b-iv mat 1161          updated 10/13/89        id   94242
      am-241 1056 sigo=5+4 newxlacs 218ngp p-3 293k                      id   95241
      am-243 1057 218 gp wt f-1/e-m 0.03576 p3 293k                      id   95243
       curium-244    endf/b-iv mat 1162          updated 10/13/89        id   96244
0       tape copy used     0 i/o's, and took     .00 seconds
```

```
1 xx        xx   sssssssssss   ddddddddddd   rrrrrrrrrr   m        m   ppppppppp   mm        mm
  xx        xx   sssssssssssss ddddddddddd   rrrrrrrrrrr  mm       m   pppppppppp  mmm       mmm
   xx     xx     ss        ss  dd       dd   rr       rr  mmm      m   pp      pp  mmmm     mmmm
    xx   xx      ss            dd       dd   rr       rr  m m      m   pp      pp  mm mm   mm mm
     xx xx       ss            dd       dd   rr       rr  m . m    m   pp      pp  mm  mm mm  mm
      xxx        sssssssssss   dd       dd   rrrrrrrrrr   m   m    m   ppppppppp   mm   mmm   mm
      xxx         sssssssssssss dd       dd   rrrrrrrrrr   m    m   m   ppppppppp   mm    m    mm
     xx xx                ss   dd       dd   rr      rr   m     m  m   pp          mm         mm
    xx   xx               ss   dd       dd   rr      rr   m      m m   pp          mm         mm
   xx     xx     ss        ss  dd       dd   rr      rr   m       mm   pp          mm         mm
  xx        xx   sssssssssssss ddddddddddd   rr       rr  m        m   pp          mm         mm
 xx         xx   sssssssssss   ddddddddddd   rr       rr  m        m   pp          mm         mm
0
```

```
  ddddddddddd     aaaaaaaa    w        w  iiiiiiiiiiii    sssssssssss
  ddddddddddd    aaaaaaaaaa   w        w  iiiiiiiiiiii   ssssssssssssss
  dd       dd    aa      aa   w        w      ii        ss        ss
  dd       dd    aa      aa   w        w      ii        ss
  dd       dd    aa      aa   w        w      ii        ss
  dd       dd    aaaaaaaaaaaa  w        w      ii        sssssssssssss
  dd       dd    aaaaaaaaaaaa   w      w       ii         ssssssssssss
  dd       dd    aa      aa     w    w         ii                 ss
  dd       dd    aa      aa      w  w          ii                 ss
  dd       dd    aa      aa       w w          ii        ss       ss
  ddddddddddd    aa      aa        ww   iiiiiiiiiiii   ssssssssssss
  ddddddddddd    aa      aa         v   iiiiiiiiiiii    sssssssssss
0
```

```
    000000     2222222222        //     11      6666666666        //  9999999999   6666666666
   00000000    2222222222       //     111      6666666666       //  9999999999   6666666666
  00      00   22        22     //    1111      66               //  99      99   66
 00        00          22      //      11      66               //  99      99   66
 00        00         22       //      11      66               //  99      99   66
 00        00       22         //      11      6666666666       //  9999999999   6666666666
 00        00     22           //      11      6666666666       //   99999999    6666666666
 00        00   22             //      11      66      66       //          99   66      66
  00      00   22              //      11      66      66       //          99   66      66
   00000000    2222222222      //    11111111  6666666666       //  9999999999   6666666666
    000000     2222222222      //    11111111   66666666        //   99999999    66666666
0
```

```
      11       000000          000000    3333333333              2222222222      44
     111      00000000         00000000   3333333333              2222222222     444
    1111     00      00   :::  00      00 33        33   :::    22        22   4444
      11     00      00   :::  00      00          33   :::                22  44 44
```

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```
      11      00      00      :::     00      00        33      :::          22    44 44
      11      00      00              00      00      333                  22    44 44
      11      00      00              00      00      333                22    44   44
      11      00      00      :::     00      00        33      :::      22    ##########
      11      00      00      :::     00      00        33      :::    22      ##########
      11      00      00      :::     00      00  33    33      :::  22            44
   11111111    00000000                00000000  3333333333333            ??????????????        44
   11111111     000000                  000000    333333333333            ??????????????        44
1
0                          ssssssssss   cccccccccc    aaaaaaaa   ll          eeeeeeeeeeee
                           ssssssssssss cccccccccccc  aaaaaaaaaa ll          eeeeeeeeeeee
                           ss      ss   cc      cc    aa      aa ll          ee
                           ss           cc            aa      aa ll          ee
                           ss           cc            aa      aa ll          ee
                           ssssssssssss cc            aaaaaaaaaaaa ll        eeeeeeeee
                            ssssssssssss cc           aaaaaaaaaaaa ll        eeeeeeeee
                                     ss  cc           aa      aa ll          ee
                                     ss  cc           aa      aa ll          ee
                           ss        ss  cc      cc   aa      aa ll          ee
                           ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                            ssssssssss   cccccccccc   aa      aa llllllllllll eeeeeeeeeeee
```

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****          program verification information              *****
*****                                                       *****
*****     code system:   scale  version:   4.2              *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****          program:  c0c001                             *****
*****                                                       *****
*****     creation date:  04/27/95                          *****
*****                                                       *****
*****          library:  /nautronics/scale/exe              *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****          jobname:  davis                              *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:03:24                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
          880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/htu burn high temp
0     -1q array has     1 entries.
```

INFORMATION ONLY

```
0        1q array has     15 entries.
0        2q array has     10 entries.
0        3q array has     12 entries.
0        4q array has      9 entries.
0        5q array has     12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                    880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                                  general problem data

 igs  1/2/3 = plane/cylinder/sphere      2        isn  quadrature order                    8
 ism  number of zones                    4        isct order of scattering                 3
 im   number of spacial intervals       24        iext 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            20
 ibr  right boundary condition           3        iom  outer iteration maximum            25
 mxx  number of mixtures                 3        iclc -1/0/n--flat res/sn/cpt             0
 ms   mixing table length               65        ith  0/1 = forward/adjoint               0
 igm  number of energy groups           27        iflu not used(always ugtd)               0
 nng  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print       -2
 ngg  number of gamma groups             0        icl  0/1/2/3=no/prt nd/pch n/both       53
 iftg number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt       0
0                                 special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param             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
 ifn  0/1/2 = input 33*/34*/use last    53        iai  0/1=none/activities by interval     0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling        0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch    0
 isx  broad group fluxes                 0        isen outer iteration acceleration        0
 iblm activity data unit                 0        rbnd band rebalm parameter               0
 jtkl 0/1/2 buckling geometry            0
0                                weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight    -1        ihtf total xsect psn in brd gp tables    3
 igmf number of broad groups            27        ndsf psn grp or file number              4
 itp  0/10/20/30/40 0/c/e/ac/a           0        nusf table length or ass order           4
 ipp  -2/-1/0/n=gtad xsect print        -2        nscm extra 1-d x-sect positions          0
 iap  -1/n anisn xsect print            -1
0                              floating point parameters

 eps  overall convergence        1.00000E-04      dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04      dz   plane depth for buckling    .00000E+00
 xnf  normalization factor       1.00000E+00      vec  void streaming correction   .00000E+00
 ev   eigenvalue guess            .00000E+00      pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00      eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892 1.42089E+00        xrpm new param mod for search   7.50000E-01
      this case will require      2535 locations for mixing
      this case has been allocated 200000 locations
1                    880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       13q array has     65 entries.
0       14q array has     65 entries.
0       15q array has     65 entries.
0                              data block 2 (mixing table, etc.)
0    nuclides        cccc                          mixing table                          extra
       on tape     identification              mixture  component    atom density      xsect id's
     1    999                                     1      92235     4.02693E-04
     2   1001                                     1      92234     4.46803E-06
     3   5010                                     1      92236     5.51142E-05
     4   5011                                     1      92238     2.18274E-02
```

5	8016	1	8016	4.55359E-02
6	6	3	6	2.09710E-02
7	36083	1	36083	1.42718E-06
8	36085	1	36085	6.86405E-07
9	38090	1	38090	1.56265E-05
10	39089	1	39089	1.23885E-05
11	40093	1	42095	1.65579E-05
12	40094	1	40093	1.24626E-05
13	40095	1	40094	1.95879E-05
14	40802	1	40095	1.99661E-06
15	41094	1	41094	9.70985E-12
16	42095	1	43099	1.91603E-05
17	43099	1	45103	1.05084E-05
18	44101	1	45105	2.23564E-03
19	44106	1	44101	1.73887E-05
20	45103	1	44106	2.62773E-06
21	45105	1	46105	6.86049E-06
22	46105	1	46108	1.92546E-06
23	46108	1	47109	1.34572E-06
24	47109	1	51124	3.04849E-10
25	51124	1	54131	8.77608E-06
26	54131	1	54132	1.64947E-05
27	54132	1	54135	6.67715E-09
28	54135	1	54136	3.30816E-05
29	54136	1	55134	9.57401E-07
30	55133	1	55135	1.05022E-05
31	55134	1	55137	2.05235E-05
32	55135	1	56136	1.93125E-07
33	55137	1	57139	2.03240E-05
34	56136	1	59141	1.75987E-05
35	57139	1	59143	3.71186E-07
36	58144	1	58144	6.70562E-06
37	59141	1	60143	1.59150E-05
38	59143	1	60145	1.17342E-05
39	60143	1	61147	4.02235E-06
40	60145	1	61148	1.17777E-08
41	60147	1	60147	1.29916E-07
42	61147	1	62147	1.40155E-06
43	61148	1	62149	8.69582E-08
44	62147	1	62150	4.18068E-06
45	62149	1	62151	4.01901E-07
46	62150	1	62152	2.00466E-06
47	62151	1	64155	2.18270E-09
48	62152	1	63153	1.20542E-06
49	63153	1	63154	2.52168E-07
50	63154	1	63155	1.30440E-07
51	63155	2	40802	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	2.10206E-05
56	92238	1	95237	3.73057E-06
57	95237	1	94238	5.34530E-07
58	94238	1	94239	1.07741E-04
59	94239	1	94240	2.09730E-05
60	94240	1	94241	1.13808E-05
61	94241	1	94242	1.27952E-06
62	94242	1	95241	3.40569E-07
63	95241	1	95243	1.18128E-07
64	95243	1	96244	1.12999E-08

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```
   65  96244                                  1        999      1.00000E-20
-  elapsed time     .00 min.
0  21649 locations will be used
0      35q array has      25 entries.
0      36q array has      24 entries.
0      38q array has      24 entries.
0      39q array has       4 entries.
0      40q array has       4 entries.
0      47q array has      27 entries.
0      51q array has      27 entries.
1                 880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
                        neutron group parameters
0  gp   energy      lethargy    weighted   broad gp    calc      group      right      left
       boundaries   boundaries  velocities  numbers     type      band       albedo     albedo
   1  2.00000E+07 -6.95147E-01 4.60581E+09   1          0         1       1.00000E+00
   2  6.43400E+06 4.40989E-01 2.88737E+09   2          0         2       1.00000E+00
   3  3.00000E+06 1.20397E+00 2.12201E+09   3          0         3       1.00000E+00
   4  1.85000E+06 1.68740E+00 1.75673E+09   4          0         4       1.00000E+00
   5  1.40000E+06 1.96611E+00 1.46535E+09   5          0         5       1.00000E+00
   6  9.00000E+05 2.40795E+00 1.06620E+09   6          0         6       1.00000E+00
   7  4.00000E+05 3.21888E+00 6.07557E+08   7          0         7       1.00000E+00
   8  1.00000E+05 4.60517E+00 2.72415E+08   8          0         8       1.00000E+00
   9  1.70000E+04 6.37713E+00 1.13526E+08   9          0         9       1.00000E+00
  10  3.00000E+03 8.11173E+00 4.82126E+07  10          0        10       1.00000E+00
  11  5.50000E+02 9.80818E+00 2.05946E+07  11          0        11       1.00000E+00
  12  1.00000E+02 1.15125E+01 1.01036E+07  12          0        12       1.00000E+00
  13  3.00000E+01 1.27169E+01 5.69599E+06  13          0        13       1.00000E+00
  14  1.00000E+01 1.38155E+01 3.20957E+06  14          0        14       1.00000E+00
  15  3.04999E+00 1.50030E+01 2.10601E+06  15          0        15       1.00000E+00
  16  1.77000E+00 1.55471E+01 1.70522E+06  16          0        16       1.00000E+00
  17  1.29999E+00 1.58557E+01 1.52545E+06  17          0        17       1.00000E+00
  18  1.12999E+00 1.59959E+01 1.42857E+06  18          0        18       1.00000E+00
  19  1.00000E+00 1.61181E+01 1.31002E+06  19          0        19       1.00000E+00
  20  8.00000E-01 1.63412E+01 9.05898E+05  20          0        20       1.00000E+00
  21  4.00000E-01 1.70844E+01 8.17974E+05  21          0        21       1.00000E+00
  22  3.25000E-01 1.72420E+01 6.90070E+05  22          0        22       1.00000E+00
  23  2.25000E-01 1.76098E+01 4.86953E+05  23          0        23       1.00000E+00
  24  9.99999E-02 1.84207E+01 3.57766E+05  24          0        24       1.00000E+00
  25  5.00000E-02 1.91138E+01 2.71895E+05  25          0        25       1.00000E+00
  26  3.00000E-02 1.96247E+01 1.87283E+05  26          0        26       1.00000E+00
  27  1.00000E-02 2.07233E+01 8.88201E+04  27          0        27       1.00000E+00
  28  1.00000E-05 2.76310E+01
1                 880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0        mixture    order p(l)     activity table                    quadrature constants
         by zone    by zone     mtl no.     reaction     weights     directions   refl direc   wt x cos
   1       1          3                                     0        -2.79004E-01     3           0
   2       1          3                                 5.06143E-02  -1.97285E-01     3      -9.98548E-03
   3       2          3                                 5.06143E-02   1.97285E-01     2       9.98548E-03
   4       3          3                                     0        -6.04419E-01     8           0
   5                                                    5.59953E-02  -5.58410E-01     8      -3.10450E-02
   6                                                    5.59953E-02  -2.31301E-01     7      -1.28658E-02
   7                                                    5.59953E-02   2.31301E-01     6       1.28658E-02
   8                                                    5.59953E-02   5.58410E-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  -6.01588E-01    14      -3.14537E-02
  12                                                    5.22844E-02  -2.20196E-01    13      -1.15128E-02
  13                                                    5.22844E-02   2.20196E-01    12       1.15128E-02
  14                                                    5.22844E-02   6.01588E-01    11       3.14537E-02
  15                                                    5.22844E-02   8.21784E-01    10       4.29665E-02
```

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16				0	-9.83032E-01	24	0
17				4.53365E-02	-9.64143E-01	24	-4.37099E-02
18				4.53365E-02	-8.17361E-01	23	-3.70666E-02
19				4.53365E-02	-5.46143E-01	22	-2.47597E-02
20				4.53365E-02	-1.91780E-01	21	-8.69444E-03
21				4.53365E-02	1.91780E-01	20	8.69444E-03
22				4.53365E-02	5.46143E-01	19	2.47597E-02
23				4.53365E-02	8.17361E-01	18	3.70666E-02
24				4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83236E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83236E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83236E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dns fact	radius mod	spec(int)
1	0	1.29561E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59100E-02	4.33406E-02	1	1.62798E-01	9.44318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21239E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06323E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24903E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41751E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63892E-01	4	4.70354E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89116E-02	1.00000E+00		
24	7.99141E-01	8.06654E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		

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```
   25  8.13968E-01                    5.11431E+00
- elapsed time     .00 min.
1 outer inner  1 - balance   eigenvalue  1 - source   1 - scatter  1 - upscat    search       time
  iter iters                             ratio        ratio        ratio      parameter     (min)
    1   124 -4.56957E-06  1.03027E+00 -3.30817E-02  1.00000E+00 -1.13682E-02  .00000E+00     .0000
    2   190  1.53566E-05  1.03327E+00 -8.04118E-04 -3.40286E-03 -1.82550E-03  .00000E+00     .0000
    3   243 -1.66574E-05  1.03412E+00 -1.36843E-04 -5.07636E-04 -4.35670E-04  .00000E+00     .0000
    4   282  1.94148E-05  1.03385E+00 -3.16278E-05 -1.22508E-04 -1.00950E-04  .00000E+00     .0000
```

grp to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1 1	1	1	7.38235E-03	24	1.00000E+00	1
2 2	1	1	8.32965E-03	24	1.00000E+00	1
3 3	1	1	7.61077E-03	24	1.00000E+00	1
4 4	1	1	7.19577E-03	24	1.00000E+00	1
5 5	1	1	6.73921E-03	24	1.00000E+00	1
6 6	1	1	4.05286E-03	24	1.00000E+00	1
7 7	1	1	2.43421E-03	24	1.00000E+00	1
8 8	1	1	5.59101E-09	24	1.00000E+00	1
9 9	1	2	5.01341E-09	24	1.00000E+00	1
10 10	1	2	4.61203E-09	24	1.00000E+00	1
11 11	1	24	5.02188E-09	24	1.00000E+00	1
12 12	1	24	1.19703E-03	24	1.00000E+00	1
13 13	1	24	1.49805E-03	24	1.00000E+00	1
14 14	1	24	1.43680E-03	24	1.00000E+00	1
15 15	1	19	2.97082E-05	24	9.99879E-01	1
16 16	1	19	3.59892E-05	24	9.99880E-01	1
17 17	1	20	5.24040E-05	24	9.99896E-01	1
18 18	1	20	7.00924E-05	24	9.99904E-01	1
19 19	1	20	5.16881E-05	24	9.99885E-01	1
20 20	1	19	3.65304E-05	24	9.99851E-01	1
21 21	1	19	7.03520E-05	24	9.99869E-01	1
22 22	1	19	3.62693E-05	24	9.99913E-01	1
23 23	1	24	7.99269E-06	24	1.00000E+00	1
24 24	1	24	3.68039E-05	24	1.00002E+00	1
25 25	1	24	3.99912E-05	24	1.00002E+00	1
26 26	1	21	4.11259E-05	24	9.99979E-01	2
27 27	1	24	2.27592E-05	19	1.00001E+00	2

```
    5  309 -1.45963E-05  1.03425E+00 -7.58119E-06 -2.82615E-05 -2.13481E-05  .00000E+00     .0167
            final monitor
                lambda 1.03409E+00          production/absorption 1.03409E+00          angular flux on  16
- elapsed time     .02 min.
1                 880 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0 int. zone number     radius    int. midpoint    area        volume     prod density
    1      1          .00000E+00  1.29551E-02  .00000E+00  2.10906E-03  3.02061E-03
    2      1          2.59102E-02  4.33406E-02  1.62798E-01  9.49318E-03  1.35900E-02
    3      1          6.07710E-02  8.75100E-02  3.81835E-01  2.94045E-02  4.21756E-02
    4      1          1.14246E-01  1.74155E-01  7.17848E-01  1.31104E-01  1.89916E-01
    5      1          2.34061E-01  2.93967E-01  1.47065E+00  2.21259E-01  3.28455E-01
    6      1          3.53873E-01  3.80612E-01  2.22345E+00  1.27890E-01  1.94941E-01
    7      1          4.07351E-01  4.24781E-01  2.55946E+00  9.30423E-02  1.44661E-01
    8      1          4.42212E-01  4.55167E-01  2.77850E+00  7.41004E-02  1.17336E-01
    9      2          4.68122E-01  4.88814E-01  2.94130E+00  4.07946E-03  .00000E+00
   10      2          4.69507E-01  4.71481E-01  2.95000E+00  1.16988E-02  .00000E+00
   11      2          4.73456E-01  4.75431E-01  2.97481E+00  1.17968E-02  .00000E+00
   12      2          4.77405E-01  4.78098E-01  2.99962E+00  4.16023E-03  .00000E+00
   13      3          4.78790E-01  4.83159E-01  3.00833E+00  2.65266E-02  .00000E+00
   14      3          4.87528E-01  4.99987E-01  3.06323E+00  7.82768E-02  .00000E+00
   15      3          5.12445E-01  5.24903E-01  3.21979E+00  8.21777E-02  .00000E+00
   16      3          5.37362E-01  5.41731E-01  3.37634E+00  2.97427E-02  .00000E+00
   17      4          5.46100E-01  5.53513E-01  3.43125E+00  5.15631E-02  .00000E+00
```

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18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19	4	5.80874E-01	5.98175E-01	3.64974E+00	1.14628E-01	.00000E+00
20	4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21	4	6.80034E-01	7.14313E-01	4.27278E+00	3.07002E-01	.00000E+00
22	4	7.48592E-01	7.63893E-01	4.70354E+00	1.46875E-01	.00000E+00
23	4	7.79198E-01	7.89167E-01	4.89582E+00	9.89114E-02	.00000E+00
24	4	7.99141E-01	8.06554E-01	5.02115E+00	7.51357E-02	.00000E+00
25		8.13968E-01		5.11431E+00		

1 880 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.80843E-01	1.33844E+00	1.68610E+00	1.04357E+00	1.57719E+00	3.03165E+00	2.90598E+00	2.08175E+00
2	1.80908E-01	1.33908E+00	1.68694E+00	1.04407E+00	1.57788E+00	3.03256E+00	2.90660E+00	2.08182E+00
3	1.80651E-01	1.33846E+00	1.68617E+00	1.04360E+00	1.57711E+00	3.03135E+00	2.90558E+00	2.08162E+00
4	1.80448E-01	1.33419E+00	1.68073E+00	1.04025E+00	1.57185E+00	3.02090E+00	2.89928E+00	2.08057E+00
5	1.79401E-01	1.32321E+00	1.66691E+00	1.03194E+00	1.55864E+00	2.99499E+00	2.88578E+00	2.07795E+00
6	1.78192E-01	1.31068E+00	1.65133E+00	1.02258E+00	1.54395E+00	2.96660E+00	2.86688E+00	2.07506E+00
7	1.77226E-01	1.30084E+00	1.63980E+00	1.01544E+00	1.53288E+00	2.94563E+00	2.85450E+00	2.07288E+00
8	1.76266E-01	1.29124E+00	1.62774E+00	1.00859E+00	1.52256E+00	2.92548E+00	2.84330E+00	2.07083E+00
9	1.75740E-01	1.28604E+00	1.62153E+00	1.00510E+00	1.51713E+00	2.91650E+00	2.83751E+00	2.06974E+00
10	1.75630E-01	1.28499E+00	1.62025E+00	1.00441E+00	1.51613E+00	2.91471E+00	2.83652E+00	2.06955E+00
11	1.75470E-01	1.28347E+00	1.61850E+00	1.00342E+00	1.51472E+00	2.91218E+00	2.83513E+00	2.06928E+00
12	1.75364E-01	1.28247E+00	1.61732E+00	1.00278E+00	1.51380E+00	2.91055E+00	2.83424E+00	2.06907E+00
13	1.75167E-01	1.28060E+00	1.61510E+00	1.00154E+00	1.51199E+00	2.90712E+00	2.83231E+00	2.06869E+00
14	1.74631E-01	1.27532E+00	1.60857E+00	9.97701E-01	1.50619E+00	2.89586E+00	2.82590E+00	2.06764E+00
15	1.74031E-01	1.26930E+00	1.60016E+00	9.92581E-01	1.49780E+00	2.87924E+00	2.81632E+00	2.06650E+00
16	1.73737E-01	1.26536E+00	1.59513E+00	9.88903E-01	1.49208E+00	2.86770E+00	2.80961E+00	2.06598E+00
17	1.73596E-01	1.26333E+00	1.59201E+00	9.86578E-01	1.48810E+00	2.85975E+00	2.80495E+00	2.06584E+00
18	1.73411E-01	1.26069E+00	1.58801E+00	9.83604E-01	1.48304E+00	2.84978E+00	2.79903E+00	2.06570E+00
19	1.73179E-01	1.25757E+00	1.58339E+00	9.80238E-01	1.47736E+00	2.83864E+00	2.79253E+00	2.06546E+00
20	1.72869E-01	1.25352E+00	1.57750E+00	9.76020E-01	1.47029E+00	2.82480E+00	2.78439E+00	2.06512E+00
21	1.72657E-01	1.25070E+00	1.57335E+00	9.73034E-01	1.46528E+00	2.81499E+00	2.77871E+00	2.06502E+00
22	1.72658E-01	1.25057E+00	1.57305E+00	9.72751E-01	1.46474E+00	2.81398E+00	2.77826E+00	2.06524E+00
23	1.72736E-01	1.25143E+00	1.57418E+00	9.73480E-01	1.46591E+00	2.81627E+00	2.77974E+00	2.06553E+00
24	1.72820E-01	1.25245E+00	1.57554E+00	9.74378E-01	1.46737E+00	2.81912E+00	2.78154E+00	2.06580E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58651E+00	1.44832E+00	1.30795E+00	7.96783E-01	6.70388E-01	5.81640E-01	3.67597E-01	2.01547E-01
2	1.58844E+00	1.44822E+00	1.30775E+00	7.96652E-01	6.70177E-01	5.81351E-01	3.67564E-01	2.01521E-01
3	1.58862E+00	1.44803E+00	1.30821E+00	7.97100E-01	6.70644E-01	5.82072E-01	3.67645E-01	2.01572E-01
4	1.58865E+00	1.44964E+00	1.31083E+00	8.00192E-01	6.73259E-01	5.86083E-01	3.68092E-01	2.01869E-01
5	1.59221E+00	1.45259E+00	1.31729E+00	8.07829E-01	6.79853E-01	5.96038E-01	3.69171E-01	2.02592E-01
6	1.59507E+00	1.45582E+00	1.32434E+00	8.16225E-01	6.87061E-01	6.07065E-01	3.70333E-01	2.03339E-01
7	1.59723E+00	1.45818E+00	1.32956E+00	8.22454E-01	6.92398E-01	6.15301E-01	3.71170E-01	2.03970E-01
8	1.59929E+00	1.46033E+00	1.33430E+00	8.28173E-01	6.97288E-01	6.22900E-01	3.71917E-01	2.04499E-01
9	1.60088E+00	1.46144E+00	1.33675E+00	8.31145E-01	6.99856E-01	6.26852E-01	3.72300E-01	2.04774E-01
10	1.60057E+00	1.46162E+00	1.33714E+00	8.31622E-01	7.00251E-01	6.27480E-01	3.72365E-01	2.04821E-01
11	1.60085E+00	1.46187E+00	1.33771E+00	8.32304E-01	7.00843E-01	6.28377E-01	3.72657E-01	2.04888E-01
12	1.60104E+00	1.46204E+00	1.33807E+00	8.32745E-01	7.01227E-01	6.28959E-01	3.72517E-01	2.04931E-01
13	1.60141E+00	1.46238E+00	1.33882E+00	8.33645E-01	7.02010E-01	6.30146E-01	3.72640E-01	2.05020E-01
14	1.60342E+00	1.46347E+00	1.34119E+00	8.36462E-01	7.04461E-01	6.33860E-01	3.73034E-01	2.05298E-01
15	1.60355E+00	1.46503E+00	1.34453E+00	8.40347E-01	7.07842E-01	6.38976E-01	3.73591E-01	2.05683E-01
16	1.60408E+00	1.46606E+00	1.34674E+00	8.42853E-01	7.10022E-01	6.42265E-01	3.73961E-01	2.05931E-01
17	1.60536E+00	1.46684E+00	1.34839E+00	8.44696E-01	7.11592E-01	6.44669E-01	3.74162E-01	2.06098E-01
18	1.60479E+00	1.46785E+00	1.35064E+00	8.47215E-01	7.13719E-01	6.47940E-01	3.74387E-01	2.06308E-01
19	1.60533E+00	1.46905E+00	1.35320E+00	8.50114E-01	7.16173E-01	6.51711E-01	3.74651E-01	2.06548E-01
20	1.60607E+00	1.47060E+00	1.35646E+00	8.53808E-01	7.19299E-01	6.56514E-01	3.74974E-01	2.06856E-01
21	1.60664E+00	1.47169E+00	1.35879E+00	8.56441E-01	7.21500E-01	6.59916E-01	3.75137E-01	2.07052E-01
22	1.60669E+00	1.47179E+00	1.35901E+00	8.56673E-01	7.21647E-01	6.60181E-01	3.75047E-01	2.07034E-01
23	1.60654E+00	1.47152E+00	1.35842E+00	8.55989E-01	7.21028E-01	6.59263E-01	3.74894E-01	2.06946E-01
24	1.60639E+00	1.47118E+00	1.35770E+00	8.55145E-01	7.20276E-01	6.58142E-01	3.74740E-01	2.06850E-01

INFORMATION ONLY

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.03422E-02	3.13534E-02	1.17498E-01	4.16060E-01	1.03445E-01	1.65884E-01	6.47045E-01	4.81091E-01
2	8.02111E-02	3.13567E-02	1.17447E-01	4.19954E-01	1.02378E-01	1.65780E-01	6.46640E-01	4.80762E-01
3	8.02756E-02	3.16152E-02	1.17563E-01	4.16166E-01	1.02584E-01	1.66430E-01	6.47674E-01	4.81681E-01
4	8.06466E-02	3.27864E-02	1.18221E-01	4.17978E-01	1.03698E-01	1.69681E-01	6.53408E-01	4.86708E-01
5	8.15678E-02	3.58212E-02	1.19831E-01	4.20408E-01	1.06476E-01	1.77883E-01	6.67628E-01	4.99203E-01
6	8.25864E-02	3.94368E-02	1.21587E-01	4.23699E-01	1.09591E-01	1.87224E-01	6.83373E-01	5.13091E-01
7	8.33457E-02	4.24003E-02	1.22859E-01	4.26114E-01	1.11949E-01	1.94434E-01	6.95128E-01	5.23508E-01
8	8.40464E-02	4.53694E-02	1.24028E-01	4.28313E-01	1.14146E-01	2.01280E-01	7.05968E-01	5.33172E-01
9	8.44114E-02	4.69621E-02	1.24625E-01	4.29452E-01	1.15298E-01	2.04878E-01	7.11400E-01	5.38204E-01
10	8.44710E-02	4.71529E-02	1.24721E-01	4.29641E-01	1.15472E-01	2.05381E-01	7.12466E-01	5.38959E-01
11	8.45562E-02	4.74265E-02	1.24858E-01	4.29911E-01	1.15720E-01	2.06101E-01	7.13700E-01	5.40034E-01
12	8.46113E-02	4.76041E-02	1.24946E-01	4.30085E-01	1.15881E-01	2.06566E-01	7.14498E-01	5.40726E-01
13	8.47259E-02	4.79645E-02	1.25125E-01	4.30442E-01	1.16209E-01	2.07514E-01	7.16124E-01	5.42140E-01
14	8.50759E-02	4.90748E-02	1.25706E-01	4.31559E-01	1.17253E-01	2.10455E-01	7.21188E-01	5.46502E-01
15	8.55597E-02	5.05685E-02	1.26515E-01	4.33098E-01	1.18636E-01	2.14442E-01	7.28061E-01	5.52533E-01
16	8.58700E-02	5.15061E-02	1.27045E-01	4.34079E-01	1.19533E-01	2.16961E-01	7.32395E-01	5.55942E-01
17	8.60983E-02	5.22101E-02	1.27428E-01	4.34780E-01	1.20222E-01	2.18922E-01	7.35561E-01	5.59834E-01
18	8.64112E-02	5.31899E-02	1.27940E-01	4.35682E-01	1.21194E-01	2.21720E-01	7.41271E-01	5.64449E-01
19	8.67721E-02	5.43152E-02	1.28533E-01	4.36760E-01	1.22320E-01	2.24974E-01	7.47610E-01	5.70736E-01
20	8.72520E-02	5.57433E-02	1.29283E-01	4.38141E-01	1.23763E-01	2.29163E-01	7.56034E-01	5.79223E-01
21	8.75593E-02	5.67633E-02	1.29821E-01	4.39089E-01	1.24804E-01	2.32197E-01	7.62391E-01	5.85846E-01
22	8.75877E-02	5.68644E-02	1.29865E-01	4.39110E-01	1.24914E-01	2.32526E-01	7.63327E-01	5.87108E-01
23	8.75029E-02	5.66151E-02	1.29705E-01	4.38997E-01	1.24662E-01	2.31802E-01	7.62041E-01	5.86052E-01
24	8.73988E-02	5.63034E-02	1.29523E-01	4.38631E-01	1.24347E-01	2.30889E-01	7.60348E-01	5.84555E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.00500E-01	1.22198E-01	1.61350E-02
2	2.00362E-01	1.22111E-01	1.61347E-02
3	2.00842E-01	1.22573E-01	1.62778E-02
4	2.03385E-01	1.24901E-01	1.69274E-02
5	2.09712E-01	1.30717E-01	1.85768E-02
6	2.16775E-01	1.37280E-01	2.05000E-02
7	2.22104E-01	1.42301E-01	2.20433E-02
8	2.27082E-01	1.47052E-01	2.35720E-02
9	2.29882E-01	1.49547E-01	2.43889E-02
10	2.30060E-01	1.49885E-01	2.44839E-02
11	2.30598E-01	1.50367E-01	2.46187E-02
12	2.30945E-01	1.50677E-01	2.47056E-02
13	2.31651E-01	1.51307E-01	2.48821E-02
14	2.33793E-01	1.53205E-01	2.54057E-02
15	2.36882E-01	1.55636E-01	2.60489E-02
16	2.38250E-01	1.57060E-01	2.64039E-02
17	2.39925E-01	1.58762E-01	2.68984E-02
18	2.42697E-01	1.61735E-01	2.79507E-02
19	2.46089E-01	1.65350E-01	2.91890E-02
20	2.50714E-01	1.70280E-01	3.07663E-02
21	2.54409E-01	1.74307E-01	3.20639E-02
22	2.55216E-01	1.75337E-01	3.24492E-02
23	2.54735E-01	1.74984E-01	3.24043E-02
24	2.53999E-01	1.74334E-01	3.22603E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.29947E-02	.00000E+00	1.28935E-02	1.07384E-02	3.26098E-03	1.13208E-02	9.98838E-01
2	.00000E+00	1.93992E-01	2.37599E-03	1.67861E-01	6.68848E-02	1.36629E-02	1.15830E-01	1.00004E+00
3	.00000E+00	2.15874E-01	2.64680E-02	1.61475E-01	8.14233E-02	1.55286E-02	1.45389E-01	1.00000E+00
4	.00000E+00	1.23819E-01	3.91315E-02	1.05553E-01	6.79140E-02	7.39240E-03	8.76414E-02	1.00001E+00
5	.00000E+00	1.66144E-01	6.81671E-02	2.59856E-01	9.47590E-02	4.39442E-03	1.33160E-01	9.99998E-01
6	.00000E+00	1.77110E-01	1.34943E-01	6.53834E-01	5.43736E-02	6.89551E-03	2.50774E-01	1.00003E+00
7	.00000E+00	8.75280E-02	9.85133E-02	7.44613E-01	3.63352E-02	7.40472E-03	1.42258E-01	1.00001E+00

8	.00000E+00	1.34833E-02	4.25831E-02	6.30533E-01	2.15129E-02	1.37327E-02	2.08185E-02	1.00005E+00
9	.00000E+00	9.78514E-04	2.17359E-02	5.35740E-01	2.07052E-02	2.28072E-02	-2.07978E-02	9.99989E-01
10	.00000E+00	7.26783E-05	2.07272E-02	4.62262E-01	1.07205E-02	3.53954E-02	-2.53167E-02	1.00001E+00
11	.00000E+00	5.71782E-06	1.07215E-02	4.24562E-01	8.16514E-03	5.78653E-02	-5.52919E-02	1.00001E+00
12	.00000E+00	4.01667E-07	8.16519E-03	2.40830E-01	9.38597E-03	6.41184E-02	-6.53356E-02	9.99958E-01
13	.00000E+00	6.37810E-08	9.38592E-03	1.79474E-01	6.15265E-03	5.98476E-02	-5.66145E-02	1.00000E+00
14	.00000E+00	1.26397E-08	6.15264E-03	1.52046E-01	7.35414E-03	8.47368E-02	-8.59385E-02	1.00000E+00
15	.00000E+00	1.42843E-09	7.44018E-03	8.41441E-02	8.83603E-03	7.22145E-03	-8.69178E-03	1.00464E+00
16	.00000E+00	4.19435E-10	8.99353E-03	4.22469E-02	9.48904E-03	5.84706E-03	-6.39505E-03	1.00342E+00
17	.00000E+00	1.35078E-10	7.57841E-03	1.41545E-02	7.21129E-03	8.52735E-03	-8.18167E-03	1.00136E+00
18	.00000E+00	9.67122E-11	6.94410E-03	8.02218E-03	3.77598E-03	2.82583E-02	-2.50985E-02	1.00026E+00
19	.00000E+00	1.36730E-10	6.05006E-03	2.29525E-02	8.40648E-03	1.11651E-02	-1.35437E-02	1.00113E+00
20	.00000E+00	2.22338E-10	9.52379E-03	9.93866E-02	9.40809E-03	2.61904E-02	-2.61542E-02	1.00223E+00
21	.00000E+00	3.25431E-11	8.78140E-03	2.01075E-02	7.82425E-03	2.51524E-02	-2.42179E-02	1.00069E+00
22	.00000E+00	3.77574E-11	1.13989E-02	3.84634E-02	8.67412E-03	7.21888E-02	-6.95075E-02	1.00048E+00
23	.00000E+00	3.61000E-11	1.36214E-02	1.57540E-01	1.73339E-02	1.21121E-01	-1.24958E-01	1.00090E+00
24	.00000E+00	9.82602E-12	2.12274E-02	1.10800E-01	2.13618E-02	1.10601E-01	-1.10830E-01	1.00071E+00
25	.00000E+00	2.87641E-12	1.82968E-02	4.18787E-02	1.38470E-02	5.99759E-02	-5.56659E-02	1.00053E+00
26	.00000E+00	2.01696E-12	9.02276E-03	2.92122E-02	6.23720E-03	5.38528E-02	-5.10991E-02	1.00042E+00
27	.00000E+00	4.80652E-13	1.95433E-03	4.38097E-03	1.06862E-03	1.50777E-02	-1.41956E-02	1.00022E+00
28	.00000E+00	1.00000E+00	6.19898E-01	5.40388E+00	6.19898E-01	9.42214E-01	5.94682E-02	1.00057E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*dt**2	total flux
1	1.75768E-01	1.13208E-02	1.80781E-01	.00000E+00	2.29600E-03	2.66921E-03	.00000E+00	1.23115E-01
2	1.28632E+00	1.15830E-01	1.33782E+00	.00000E+00	1.69692E-05	1.18841E-02	.00000E+00	9.06972E-01
3	1.62186E+00	1.45389E-01	1.68525E+00	.00000E+00	.00000E+00	1.45034E-02	.00000E+00	1.14272E+00
4	1.00529E+00	8.76414E-02	1.04308E+00	.00000E+00	.00000E+00	6.24657E-03	.00000E+00	7.07554E-01
5	1.51740E+00	1.33160E-01	1.57647E+00	.00000E+00	.00000E+00	1.79278E-03	.00000E+00	1.06858E+00
6	2.91698E+00	2.50774E-01	3.03030E+00	.00000E+00	.00000E+00	1.50139E-03	.00000E+00	2.05348E+00
7	2.85777E+00	1.42298E-01	2.90520E+00	.00000E+00	.00000E+00	1.42872E-03	.00000E+00	1.98037E+00
8	2.06975E+00	2.08185E-02	2.08166E+00	.00000E+00	.00000E+00	1.42590E-03	.00000E+00	1.42968E+00
9	1.60053E+00	-2.07978E-02	1.58861E+00	.00000E+00	.00000E+00	1.88846E-03	.00000E+00	1.09702E+00
10	1.46139E+00	-2.53167E-02	1.44844E+00	.00000E+00	.00000E+00	4.02264E-03	.00000E+00	1.00097E+00
11	1.33664E+00	-5.52919E-02	1.30820E+00	.00000E+00	.00000E+00	8.63481E-03	.00000E+00	9.08961E-01
12	8.31018E-01	-6.53356E-02	7.97077E-01	.00000E+00	.00000E+00	1.13917E-02	.00000E+00	5.58638E-01
13	6.99726E-01	-5.66145E-02	6.70649E-01	.00000E+00	.00000E+00	1.29779E-02	.00000E+00	4.70180E-01
14	6.26686E-01	-8.59385E-02	5.82013E-01	.00000E+00	.00000E+00	8.03307E-03	.00000E+00	4.13644E-01
15	3.72317E-01	-8.69178E-03	3.67673E-01	.00000E+00	.00000E+00	1.88098E-03	.00000E+00	2.54489E-01
16	2.04780E-01	-6.39505E-03	2.01597E-01	.00000E+00	.00000E+00	1.32236E-03	.00000E+00	1.39708E-01
17	8.44019E-02	-8.18167E-03	8.02856E-02	.00000E+00	.00000E+00	1.51080E-03	.00000E+00	5.64597E-02
18	4.69148E-02	-2.50985E-02	3.14037E-02	.00000E+00	.00000E+00	1.05237E-03	.00000E+00	2.58692E-02
19	1.24610E-01	-1.35437E-02	1.17572E-01	.00000E+00	.00000E+00	2.39214E-03	.00000E+00	8.30098E-02
20	4.29454E-01	-2.61542E-02	4.16234E-01	.00000E+00	.00000E+00	1.49907E-02	.00000E+00	2.90398E-01
21	1.15264E-01	-2.42179E-02	1.02549E-01	.00000E+00	.00000E+00	1.52027E-02	.00000E+00	7.42526E-02
22	2.04757E-01	-6.95075E-02	1.66122E-01	.00000E+00	.00000E+00	4.34837E-02	.00000E+00	1.25378E-01
23	7.11347E-01	-1.24958E-01	6.47548E-01	.00000E+00	.00000E+00	7.35685E-02	.00000E+00	4.64343E-01
24	5.37997E-01	-1.10830E-01	4.81509E-01	.00000E+00	.00000E+00	6.69890E-02	.00000E+00	3.47861E-01
25	2.29571E-01	-5.56659E-02	2.00695E-01	.00000E+00	.00000E+00	3.80098E-02	.00000E+00	1.46520E-01
26	1.49451E-01	-5.10991E-02	1.22354E-01	.00000E+00	.00000E+00	3.48944E-02	.00000E+00	9.20172E-02
27	2.43629E-02	-1.41956E-02	1.61634E-02	.00000E+00	.00000E+00	9.86634E-03	.00000E+00	1.34155E-02
28	2.32221E+01	5.94682E-02	2.31873E+01	.00000E+00	2.31297E-03	3.93568E-01	.00000E+00	1.59756E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-07	9.99999E-01
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.60770E-08	9.99999E-01

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9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.98023E-08	9.99999E-01
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.63689E-08	1.00000E+00
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.79397E-09	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.65661E-09	9.99999E-01
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.65661E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.58794E-09	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.35743E-08	9.99998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.75337E-01	1.13208E-02	1.75768E-01	1.13208E-02	.00000E+00	.00000E+00	.00000E+00	5.57112E-03
2	1.28222E+00	1.15830E-01	1.28652E+00	1.15830E-01	.00000E+00	.00000E+00	.00000E+00	4.07554E-02
3	1.61703E+00	1.45389E-01	1.62186E+00	1.45389E-01	.00000E+00	.00000E+00	.00000E+00	5.13918E-02
4	1.00262E+00	8.76414E-02	1.00529E+00	8.76414E-02	.00000E+00	.00000E+00	.00000E+00	3.18595E-02
5	1.51367E+00	1.33160E-01	1.51740E+00	1.33160E-01	.00000E+00	.00000E+00	.00000E+00	4.80925E-02
6	2.91015E+00	2.50774E-01	2.91698E+00	2.50774E-01	.00000E+00	.00000E+00	.00000E+00	9.24592E-02
7	2.85401E+00	1.42258E-01	2.85777E+00	1.42258E-01	.00000E+00	.00000E+00	.00000E+00	8.99758E-02
8	2.06903E+00	2.08189E-02	2.06979E+00	2.08189E-02	.00000E+00	.00000E+00	.00000E+00	6.56730E-02
9	1.60108E+00	-2.07975E-02	1.60183E+00	-2.07975E-02	.00000E+00	.00000E+00	.00000E+00	5.07989E-02
10	1.46208E+00	-2.53168E-02	1.46139E+00	-2.53167E-02	.00000E+00	.00000E+00	.00000E+00	4.63888E-02
11	1.33816E+00	-5.52919E-02	1.33664E+00	-5.52919E-02	.00000E+00	.00000E+00	.00000E+00	4.24435E-02
12	8.32856E-01	-6.53356E-02	8.31018E-01	-6.53356E-02	.00000E+00	.00000E+00	.00000E+00	2.64025E-02
13	7.01323E-01	-5.66145E-02	6.99726E-01	-5.66145E-02	.00000E+00	.00000E+00	.00000E+00	2.22530E-02
14	6.29104E-01	-8.59385E-02	6.26689E-01	-8.59385E-02	.00000E+00	.00000E+00	.00000E+00	1.99274E-02
15	3.72566E-01	-8.69178E-03	3.72517E-01	-8.69178E-03	.00000E+00	.00000E+00	.00000E+00	1.18185E-02
16	2.04960E-01	-6.39503E-03	2.04780E-01	-6.39503E-03	.00000E+00	.00000E+00	.00000E+00	6.50103E-03
17	8.46313E-02	-8.18167E-03	8.44019E-02	-8.18167E-03	.00000E+00	.00000E+00	.00000E+00	2.68205E-03
18	4.76518E-02	-2.50985E-02	4.69148E-02	-2.50985E-02	.00000E+00	.00000E+00	.00000E+00	1.50073E-03
19	1.26975E-01	-1.35437E-02	1.24610E-01	-1.35437E-02	.00000E+00	.00000E+00	.00000E+00	3.96020E-03
20	4.30180E-01	-2.61542E-02	4.29454E-01	-2.61542E-02	.00000E+00	.00000E+00	.00000E+00	1.36390E-02
21	1.15983E-01	-2.42179E-02	1.15264E-01	-2.42179E-02	.00000E+00	.00000E+00	.00000E+00	3.66846E-03
22	2.06694E-01	-6.95074E-02	2.04757E-01	-6.95075E-02	.00000E+00	.00000E+00	.00000E+00	6.52919E-03
23	7.14671E-01	-1.24958E-01	7.11347E-01	-1.24958E-01	.00000E+00	.00000E+00	.00000E+00	2.26298E-02
24	5.40872E-01	-1.10830E-01	5.37997E-01	-1.10830E-01	.00000E+00	.00000E+00	.00000E+00	1.71209E-02
25	2.31021E-01	-5.55659E-02	2.29571E-01	-5.55659E-02	.00000E+00	.00000E+00	.00000E+00	7.30950E-03
26	1.50749E-01	-5.10991E-02	1.49651E-01	-5.10991E-02	.00000E+00	.00000E+00	.00000E+00	4.76425E-03
27	2.47264E-02	-1.41956E-02	2.43629E-02	-1.41956E-02	.00000E+00	.00000E+00	.00000E+00	7.79127E-04
28	2.32182E+01	5.94883E-02	2.32221E+01	5.94882E-02	.00000E+00	.00000E+00	.00000E+00	7.36894E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.86447E-03	2.89697E-03	1.48455E-03	-2.80842E-03	1.00001E+00
2	.00000E+00	.00000E+00	5.05989E-04	2.61268E-02	1.87473E-02	5.19052E-03	-1.82985E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.67471E-03	5.02989E-02	1.59040E-02	1.37571E-04	-1.33668E-02	9.99998E-01
4	.00000E+00	.00000E+00	5.16500E-03	4.21770E-02	5.46101E-03	1.03540E-04	-3.99187E-04	9.99998E-01
5	.00000E+00	.00000E+00	1.11266E-02	8.17082E-02	5.16743E-03	1.52221E-04	5.80660E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85594E-02	2.35090E-01	3.21198E-03	3.20125E-04	1.50276E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.25395E-02	2.35228E-01	1.18258E-03	3.44813E-04	1.08123E-02	1.00000E+00
8	.00000E+00	.00000E+00	2.16496E-03	1.58640E-01	7.63897E-03	2.95027E-04	-5.76940E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.67222E-03	1.05288E-01	8.77698E-04	1.11024E-03	5.68445E-03	9.99998E-01

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10	.00000E+00	.00000E+00	8.7887E-04	8.5708E-02	8.5032E-04	8.3694E-04	-8.0824E-04	9.9999E-01
11	.00000E+00	.00000E+00	8.5088E-04	7.7216E-02	8.7204E-04	1.3398E-03	-1.3613E-03	9.9999E-01
12	.00000E+00	.00000E+00	8.7253E-04	4.6874E-02	8.7288E-04	4.1733E-05	-4.1835E-05	1.0000E+00
13	.00000E+00	.00000E+00	8.7209E-04	3.9498E-02	8.0573E-04	5.9998E-05	6.3814E-06	1.0000E+00
14	.00000E+00	.00000E+00	8.0573E-04	3.5688E-02	6.7255E-04	9.5057E-05	3.8147E-05	1.0000E+00
15	.00000E+00	.00000E+00	7.1605E-04	2.0499E-02	8.3896E-04	8.2525E-05	-2.0480E-04	9.9996E-01
16	.00000E+00	.00000E+00	9.3583E-04	1.0803E-02	9.3995E-04	5.0909E-05	-5.1234E-05	9.9998E-01
17	.00000E+00	.00000E+00	9.9054E-04	3.9119E-03	9.6284E-04	2.3630E-05	4.4778E-06	9.9998E-01
18	.00000E+00	.00000E+00	1.0039E-03	2.1523E-03	6.9490E-04	1.4738E-05	2.9878E-04	9.9999E-01
19	.00000E+00	.00000E+00	7.4627E-04	6.2785E-03	9.2639E-04	4.0578E-05	-2.2058E-04	9.9998E-01
20	.00000E+00	.00000E+00	1.1038E-03	2.3691E-02	1.0072E-03	1.7615E-04	-7.8878E-05	9.9997E-01
21	.00000E+00	.00000E+00	1.2391E-03	5.4392E-03	1.2992E-03	5.9984E-05	-1.1980E-04	9.9999E-01
22	.00000E+00	.00000E+00	1.6398E-03	1.0708E-02	1.4311E-03	1.2477E-04	8.3799E-05	9.9999E-01
23	.00000E+00	.00000E+00	2.1384E-03	3.8567E-02	2.8315E-03	5.8406E-04	-1.2771E-03	1.0000E+00
24	.00000E+00	.00000E+00	3.5020E-03	2.7605E-02	3.7883E-03	6.4306E-04	-9.2975E-04	1.0000E+00
25	.00000E+00	.00000E+00	3.4201E-03	1.0685E-02	2.7505E-03	3.6348E-04	3.0513E-04	1.0000E+00
26	.00000E+00	.00000E+00	1.4313E-03	7.7918E-03	1.0297E-03	3.4023E-04	6.1206E-05	1.0000E+00
27	.00000E+00	.00000E+00	2.9858E-04	1.4687E-03	7.5673E-07	1.0742E-04	1.9088E-04	1.0000E+00
28	.00000E+00	.00000E+00	8.3567E-02	1.3980E+00	8.3567E-02	7.5151E-03	-7.4026E-03	9.9998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.7367E-01	8.5123E-03	1.7533E-01	1.1320E-02	1.0850E-04	.00000E+00	.00000E+00	3.7865E-02
2	1.2645E+00	9.7536E-02	1.2822E+00	1.1583E-01	.00000E+00	.00000E+00	.00000E+00	2.7570E-01
3	1.5939E+00	1.3202E-01	1.6170E+00	1.4538E-01	.00000E+00	.00000E+00	.00000E+00	3.4768E-01
4	9.8799E-01	8.7242E-02	1.0082E+00	8.7614E-02	.00000E+00	.00000E+00	.00000E+00	2.1562E-01
5	1.4905E+00	1.3896E-01	1.5135E+00	1.3316E-01	.00000E+00	.00000E+00	.00000E+00	3.2547E-01
6	2.8645E+00	2.6580E-01	2.9101E+00	2.5077E-01	.00000E+00	.00000E+00	.00000E+00	6.2569E-01
7	2.8077E+00	1.5311E-01	2.8340E+00	1.4229E-01	.00000E+00	.00000E+00	.00000E+00	6.1138E-01
8	2.0658E+00	1.5049E-02	2.0690E+00	2.0818E-02	.00000E+00	.00000E+00	.00000E+00	4.4799E-01
9	1.6041E+00	-1.5113E-02	1.6010E+00	-2.0797E-02	.00000E+00	.00000E+00	.00000E+00	3.4739E-01
10	1.4665E+00	-2.6125E-02	1.4620E+00	-2.5316E-02	.00000E+00	.00000E+00	.00000E+00	3.1734E-01
11	1.3475E+00	-5.6653E-02	1.3381E+00	-5.5291E-02	.00000E+00	.00000E+00	.00000E+00	2.9104E-01
12	8.4350E-01	-6.5377E-02	8.3856E-01	-6.5335E-02	.00000E+00	.00000E+00	.00000E+00	1.8171E-01
13	7.1088E-01	-5.6608E-02	7.0132E-01	-5.6614E-02	.00000E+00	.00000E+00	.00000E+00	1.5305E-01
14	6.4311E-01	-8.5900E-02	6.2910E-01	-8.5288E-02	.00000E+00	.00000E+00	.00000E+00	1.3794E-01
15	3.7409E-01	-8.8869E-03	3.7256E-01	-8.6917E-03	.00000E+00	.00000E+00	.00000E+00	8.0908E-02
16	2.0601E-01	-6.4462E-03	2.0496E-01	-6.3950E-03	.00000E+00	.00000E+00	.00000E+00	4.4536E-02
17	8.5956E-02	-8.1771E-03	8.4631E-02	-8.1816E-03	.00000E+00	.00000E+00	.00000E+00	1.8492E-02
18	5.1748E-02	-2.4799E-02	4.7851E-02	-2.5098E-02	.00000E+00	.00000E+00	.00000E+00	1.0803E-02
19	1.2719E-01	-1.3764E-02	1.2497E-01	-1.3543E-02	.00000E+00	.00000E+00	.00000E+00	2.7334E-02
20	4.3437E-01	-2.6253E-02	4.3018E-01	-2.6154E-02	.00000E+00	.00000E+00	.00000E+00	9.3700E-02
21	1.1977E-01	-2.4337E-02	1.1983E-01	-2.4217E-02	.00000E+00	.00000E+00	.00000E+00	2.5563E-02
22	2.1761E-01	-6.9423E-02	2.0669E-01	-6.9507E-02	.00000E+00	.00000E+00	.00000E+00	4.6053E-02
23	7.3346E-01	-1.2623E-01	7.1467E-01	-1.2495E-01	.00000E+00	.00000E+00	.00000E+00	1.5706E-01
24	5.5681E-01	-1.1176E-01	5.4087E-01	-1.1083E-01	.00000E+00	.00000E+00	.00000E+00	1.1908E-01
25	2.3864E-01	-5.5259E-02	2.3102E-01	-5.5569E-02	.00000E+00	.00000E+00	.00000E+00	5.0973E-02
26	1.5739E-01	-5.1037E-02	1.5074E-01	-5.1099E-02	.00000E+00	.00000E+00	.00000E+00	3.3467E-02
27	2.6480E-02	-1.4005E-02	2.4726E-02	-1.4195E-02	.00000E+00	.00000E+00	.00000E+00	5.5746E-03
28	2.3192E+01	5.2086E-02	2.3218E+01	5.9498E-02	1.0850E-04	.00000E+00	.00000E+00	5.0298E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.1061E-03	8.0820E-03	4.3073E-04	-8.5123E-03	9.9951E-01
2	.00000E+00	.00000E+00	4.6373E-03	7.6918E-02	1.0107E-01	1.0835E-03	-9.7537E-02	9.9962E-01
3	.00000E+00	.00000E+00	4.7978E-02	6.9182E-02	1.8000E-01	5.4376E-06	-1.3202E-01	9.9977E-01
4	.00000E+00	.00000E+00	7.0550E-02	4.5984E-02	1.5779E-01	3.2598E-06	-8.7242E-02	9.9987E-01
5	.00000E+00	.00000E+00	1.3027E-01	1.4860E-01	2.6925E-01	3.7779E-06	-1.3896E-01	9.9990E-01
6	.00000E+00	.00000E+00	2.7542E-01	4.5534E-01	5.4121E-01	1.1479E-05	-2.6580E-01	9.9998E-01
7	.00000E+00	.00000E+00	5.5309E-01	7.9532E-01	7.0618E-01	2.5356E-05	-1.5311E-01	9.9988E-01
8	.00000E+00	.00000E+00	7.3570E-01	1.0012E+00	7.5076E-01	4.7028E-05	-1.5049E-02	9.9991E-01
9	.00000E+00	.00000E+00	7.4108E-01	9.1665E-01	7.2590E-01	9.5968E-05	1.5113E-02	9.9989E-01
10	.00000E+00	.00000E+00	7.2258E-01	8.6644E-01	6.9632E-01	2.1171E-04	2.6125E-02	9.9986E-01

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11	.00000E+00	.00000E+00	7.01225E-01	8.06847E-01	6.44159E-01	4.58187E-04	5.46533E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.60698E-01	4.20470E-01	4.94739E-01	5.98279E-04	6.53774E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.90687E-01	3.37798E-01	4.33197E-01	8.97254E-04	5.66081E-02	9.99969E-01
14	.00000E+00	.00000E+00	4.70437E-01	3.20692E-01	3.83091E-01	1.45136E-03	8.59003E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50396E-01	1.28231E-01	2.40229E-01	1.27767E-03	8.87064E-03	1.00007E+00
16	.00000E+00	.00000E+00	1.66003E-01	5.38644E-02	1.98689E-01	8.71922E-04	6.42820E-03	1.00008E+00
17	.00000E+00	.00000E+00	8.52379E-02	1.47325E-02	7.66513E-02	4.11501E-04	8.16897E-03	1.00007E+00
18	.00000E+00	.00000E+00	7.52768E-02	9.18684E-03	5.01988E-02	2.81082E-04	2.47980E-02	1.00005E+00
19	.00000E+00	.00000E+00	1.21976E-01	3.23915E-02	1.07500E-01	7.09988E-04	1.37523E-02	1.00008E+00
20	.00000E+00	.00000E+00	2.96567E-01	2.36429E-01	2.67314E-01	3.02475E-03	2.61975E-02	1.00010E+00
21	.00000E+00	.00000E+00	1.37652E-01	4.32250E-02	1.12448E-01	1.07102E-03	2.43225E-02	1.00008E+00
22	.00000E+00	.00000E+00	2.59266E-01	1.20520E-01	1.87556E-01	2.29087E-03	6.94045E-02	1.00006E+00
23	.00000E+00	.00000E+00	6.07051E-01	7.16451E-01	4.70474E-01	1.03289E-02	1.26234E-01	1.00002E+00
24	.00000E+00	.00000E+00	6.15921E-01	6.38135E-01	4.92582E-01	1.15685E-02	1.11756E-01	1.00002E+00
25	.00000E+00	.00000E+00	3.97665E-01	2.61008E-01	3.35781E-01	6.61997E-03	5.52596E-02	1.00001E+00
26	.00000E+00	.00000E+00	3.14313E-01	2.78086E-01	2.56845E-01	6.42634E-03	5.10289E-02	1.00003E+00
27	.00000E+00	.00000E+00	1.04722E-01	5.80978E-02	8.85057E-02	2.21064E-03	1.40051E-02	1.00000E+00
28	.00000E+00	.00000E+00	8.93656E+00	8.85795E+00	8.93655E+00	5.24145E-02	-5.22439E-02	9.99981E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r@n rate	fiss rate	flux*db**2	total flux
1	1.72873E-01	-5.88278E-09	1.73679E-01	8.51234E-03	4.46959E-10	.00000E+00	.00000E+00	1.97854E-01
2	1.25298E+00	-7.84505E-08	1.26455E+00	9.75369E-02	.00000E+00	.00000E+00	.00000E+00	1.43460E+00
3	1.57625E+00	4.51767E-08	1.59390E+00	1.33023E-01	.00000E+00	.00000E+00	.00000E+00	1.80528E+00
4	9.74847E-01	4.47741E-08	9.87999E-01	8.72422E-02	.00000E+00	.00000E+00	.00000E+00	1.11669E+00
5	1.46813E+00	3.21072E-08	1.49053E+00	1.38966E-01	.00000E+00	.00000E+00	.00000E+00	1.68243E+00
6	2.82061E+00	1.48563E-07	2.86455E+00	2.66802E-01	.00000E+00	.00000E+00	.00000E+00	3.23239E+00
7	2.78247E+00	-1.55781E-07	2.80777E+00	1.53110E-01	.00000E+00	.00000E+00	.00000E+00	3.18656E+00
8	2.06978E+00	2.50965E-08	2.06589E+00	1.50492E-02	.00000E+00	.00000E+00	.00000E+00	2.36381E+00
9	1.60625E+00	-3.31722E-08	1.60418E+00	-1.51131E-02	.00000E+00	.00000E+00	.00000E+00	1.83828E+00
10	1.47101E+00	2.56478E-08	1.46634E+00	-2.61250E-02	.00000E+00	.00000E+00	.00000E+00	1.68324E+00
11	1.35732E+00	3.41550E-08	1.34732E+00	-5.66532E-02	.00000E+00	.00000E+00	.00000E+00	1.55269E+00
12	8.54703E-01	-2.95514E-08	8.43501E-01	-6.53975E-02	.00000E+00	.00000E+00	.00000E+00	9.77399E-01
13	7.19884E-01	-1.49502E-08	7.10686E-01	-5.66082E-02	.00000E+00	.00000E+00	.00000E+00	8.23377E-01
14	6.57556E-01	-1.79083E-08	6.43118E-01	-6.59004E-02	.00000E+00	.00000E+00	.00000E+00	7.51611E-01
15	3.74697E-01	-2.59454E-05	3.74092E-01	-8.89659E-03	.00000E+00	.00000E+00	.00000E+00	4.29087E-01
16	2.06820E-01	-1.80713E-05	2.06013E-01	-6.44628E-03	.00000E+00	.00000E+00	.00000E+00	2.36736E-01
17	8.73508E-02	-8.21982E-06	8.59562E-02	-8.17719E-03	.00000E+00	.00000E+00	.00000E+00	9.98628E-02
18	5.61431E-02	-6.76166E-06	5.17481E-02	-2.47997E-02	.00000E+00	.00000E+00	.00000E+00	6.38786E-02
19	1.29439E-01	-1.19516E-05	1.27194E-01	-1.37643E-02	.00000E+00	.00000E+00	.00000E+00	1.48008E-01
20	4.38295E-01	-3.56484E-05	4.34379E-01	-2.62331E-02	.00000E+00	.00000E+00	.00000E+00	5.01482E-01
21	1.24194E-01	-1.51265E-05	1.19775E-01	-2.43377E-02	.00000E+00	.00000E+00	.00000E+00	1.41742E-01
22	2.30421E-01	-1.91628E-05	2.17614E-01	-6.94257E-02	.00000E+00	.00000E+00	.00000E+00	2.62563E-01
23	7.59424E-01	-1.40479E-06	7.33468E-01	-1.26235E-01	.00000E+00	.00000E+00	.00000E+00	8.66199E-01
24	5.83718E-01	-3.49994E-06	5.56812E-01	-1.11760E-01	.00000E+00	.00000E+00	.00000E+00	6.64155E-01
25	2.55578E-01	-1.09521E-07	2.38642E-01	-5.52597E-02	.00000E+00	.00000E+00	.00000E+00	2.87734E-01
26	1.73964E-01	-9.33473E-06	1.57392E-01	-5.10579E-02	.00000E+00	.00000E+00	.00000E+00	1.95874E-01
27	3.21713E-02	-1.21619E-07	2.64894E-02	-1.40052E-02	.00000E+00	.00000E+00	.00000E+00	3.55586E-02
28	2.32310E+01	-1.55435E-04	2.31925E+01	5.20885E-02	4.46959E-10	.00000E+00	.00000E+00	2.65798E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.29947E-02	.00000E+00	2.28642E-02	2.17173E-02	3.70656E-03	-5.88278E-09	9.98833E-01
2	.00000E+00	1.93592E-01	7.51923E-03	2.70906E-01	1.86727E-01	1.47973E-02	-7.84505E-08	1.00002E+00
3	.00000E+00	2.15374E-01	7.71209E-02	2.80897E-01	2.77327E-01	1.56716E-02	4.51767E-08	9.99986E-01
4	.00000E+00	1.23819E-01	1.14847E-01	1.93654E-01	2.31166E-01	7.49917E-03	4.47741E-08	1.00000E+00
5	.00000E+00	1.64144E-01	2.09563E-01	4.90174E-01	3.69161E-01	4.55042E-03	3.21072E-08	9.99989E-01
6	.00000E+00	1.77110E-01	4.28926E-01	1.34430E+00	5.98800E-01	7.22711E-03	1.48563E-07	1.00001E+00
7	.00000E+00	8.75260E-02	6.63945E-01	1.77516E+00	7.43704E-01	7.77485E-03	-1.55781E-07	9.99990E-01
8	.00000E+00	1.34833E-02	7.80448E-01	1.79054E+00	7.79920E-01	1.40748E-02	2.50965E-08	9.99920E-01
9	.00000E+00	9.78514E-04	7.70438E-01	1.55788E+00	7.47485E-01	2.40135E-02	-3.31722E-08	9.99858E-01
10	.00000E+00	7.26783E-05	7.44188E-01	1.41441E+00	7.07891E-01	3.64441E-02	2.56478E-08	9.99900E-01
11	.00000E+00	5.71782E-06	7.12797E-01	1.30862E+00	6.53192E-01	5.96513E-02	3.41550E-08	9.99942E-01

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12	.00000E+00	4.01667E-07	5.69736E-01	7.07675E-01	5.04993E-01	6.47584E-02	-2.95514E-08	9.99974E-01
13	.00000E+00	6.37810E-08	5.00945E-01	5.56765E-01	4.40155E-01	6.08048E-02	-1.49502E-08	9.99970E-01
14	.00000E+00	1.26397E-08	4.77396E-01	5.08630E-01	3.91118E-01	8.62832E-02	-1.79083E-08	9.99985E-01
15	.00000E+00	1.42843E-09	2.58652E-01	2.33875E-01	2.49904E-01	8.58145E-03	-2.59454E-05	1.00036E+00
16	.00000E+00	4.19435E-10	1.75952E-01	1.06918E-01	1.69114E-01	6.76988E-03	-1.80713E-05	1.00038E+00
17	.00000E+00	1.35078E-10	9.38072E-02	3.27984E-02	8.48255E-02	8.96349E-03	-8.21982E-06	1.00029E+00
18	.00000E+00	9.67122E-11	8.32293E-02	1.93613E-02	5.46697E-02	2.85541E-02	-6.76165E-06	1.00015E+00
19	.00000E+00	1.36730E-10	1.28773E-01	6.16230E-02	1.16839E-01	1.19157E-02	-1.19514E-05	1.00034E+00
20	.00000E+00	2.22338E-10	3.07195E-01	3.59517E-01	2.77730E-01	2.93913E-02	-3.56484E-05	1.00036E+00
21	.00000E+00	3.25431E-11	1.47873E-01	6.87718E-02	1.21572E-01	2.62833E-02	-1.51265E-05	1.00022E+00
22	.00000E+00	3.77574E-11	2.72300E-01	1.69692E-01	1.97661E-01	7.46044E-02	-1.91628E-05	1.00020E+00
23	.00000E+00	3.61002E-11	6.22811E-01	9.12559E-01	4.90640E-01	1.32183E-01	-1.40479E-06	1.00022E+00
24	.00000E+00	9.82602E-12	6.40650E-01	7.76039E-01	5.17752E-01	1.22813E-01	-3.49594E-06	1.00017E+00
25	.00000E+00	2.87641E-12	4.19381E-01	3.13568E-01	3.52379E-01	6.69994E-02	-1.09521E-07	1.00010E+00
26	.00000E+00	2.01696E-12	3.24767E-01	3.15090E-01	2.64116E-01	6.06239E-02	-9.33473E-06	1.00011E+00
27	.00000E+00	4.80652E-13	1.06975E-01	6.39472E-02	8.95751E-02	1.73958E-02	-1.21519E-07	1.00004E+00
28	.00000E+00	1.00000E+00	9.64011E+00	1.56548E+01	9.64011E+00	1.00215E+00	-1.55334E-04	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*df**2	total flux
1	1.72873E-01	-5.88278E-09	1.80781E-01	.00000E+00	2.39950E-03	2.66921E-03	.00000E+00	3.64326E-01
2	1.25298E+00	-7.84500E-08	1.33782E+00	.00000E+00	1.69892E-05	1.18841E-02	.00000E+00	2.65803E+00
3	1.57625E+00	4.51767E-08	1.68529E+00	.00000E+00	.00000E+00	1.45034E-02	.00000E+00	3.34709E+00
4	9.74847E-01	4.47741E-08	1.04308E+00	.00000E+00	.00000E+00	6.24689E-03	.00000E+00	2.07198E+00
5	1.46813E+00	3.21072E-08	1.57647E+00	.00000E+00	.00000E+00	1.79278E-03	.00000E+00	3.12458E+00
6	2.82061E+00	1.48563E-07	3.08380E+00	.00000E+00	.00000E+00	1.50139E-03	.00000E+00	6.00408E+00
7	2.78347E+00	-1.55781E-07	2.90520E+00	.00000E+00	.00000E+00	1.42872E-03	.00000E+00	5.86827E+00
8	2.06593E+00	2.50985E-08	2.08166E+00	.00000E+00	.00000E+00	1.42930E-03	.00000E+00	4.30715E+00
9	1.60625E+00	-3.31722E-08	1.58861E+00	.00000E+00	.00000E+00	1.88846E-03	.00000E+00	3.33349E+00
10	1.47101E+00	2.56478E-08	1.44844E+00	.00000E+00	.00000E+00	4.02264E-03	.00000E+00	3.04795E+00
11	1.35732E+00	3.41550E-08	1.30820E+00	.00000E+00	.00000E+00	8.63481E-03	.00000E+00	2.79514E+00
12	8.54703E-01	-2.95514E-08	7.97077E-01	.00000E+00	.00000E+00	1.13917E-02	.00000E+00	1.74416E+00
13	7.19884E-01	-1.49502E-08	6.70649E-01	.00000E+00	.00000E+00	1.29779E-02	.00000E+00	1.46884E+00
14	6.57556E-01	-1.79083E-08	5.82013E-01	.00000E+00	.00000E+00	8.03307E-03	.00000E+00	1.32513E+00
15	3.74697E-01	-2.59454E-05	3.67973E-01	.00000E+00	.00000E+00	1.88096E-03	.00000E+00	7.76300E-01
16	2.06820E-01	-1.80713E-05	2.01597E-01	.00000E+00	.00000E+00	1.32236E-03	.00000E+00	4.27481E-01
17	8.73500E-02	-8.21982E-06	8.02856E-02	.00000E+00	.00000E+00	1.51080E-03	.00000E+00	1.77497E-01
18	5.61431E-02	-6.76165E-06	3.14037E-02	.00000E+00	.00000E+00	1.05237E-03	.00000E+00	1.02050E-01
19	1.29439E-01	-1.19516E-05	1.17572E-01	.00000E+00	.00000E+00	2.39214E-03	.00000E+00	2.62307E-01
20	4.38295E-01	-3.56484E-05	4.16236E-01	.00000E+00	.00000E+00	1.46907E-02	.00000E+00	8.99214E-01
21	1.24194E-01	-1.51265E-05	1.02549E-01	.00000E+00	.00000E+00	1.52027E-02	.00000E+00	2.45227E-01
22	2.30421E-01	-1.91628E-05	1.66122E-01	.00000E+00	.00000E+00	4.34857E-02	.00000E+00	4.40529E-01
23	7.59424E-01	-1.40479E-06	6.47548E-01	.00000E+00	.00000E+00	7.35685E-02	.00000E+00	1.51023E+00
24	5.83718E-01	-3.49594E-06	4.81509E-01	.00000E+00	.00000E+00	6.69850E-02	.00000E+00	1.14822E+00
25	2.53578E-01	-1.09521E-07	2.00695E-01	.00000E+00	.00000E+00	3.80096E-02	.00000E+00	4.92539E-01
26	1.73964E-01	-9.33473E-06	1.22354E-01	.00000E+00	.00000E+00	3.48944E-02	.00000E+00	3.26122E-01
27	3.21713E-02	-1.21519E-07	1.61634E-02	.00000E+00	.00000E+00	9.86634E-03	.00000E+00	5.53279E-02
28	2.32510E+01	-1.55436E-04	2.31873E+01	.00000E+00	2.41647E-03	3.93568E-01	.00000E+00	4.83211E+01

- elapsed time .02 min.

0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.42234E-03	2.48847E-02	3.15362E-02	1.90531E-02	2.90892E-02	5.56074E-02	3.16623E-02	4.65054E-03
2	3.80659E-03	3.89576E-02	4.88739E-02	2.94615E-02	4.47680E-02	8.43008E-02	4.78349E-02	6.99836E-03
3	3.09226E-03	3.32185E-02	4.31495E-02	2.71715E-02	4.22564E-02	8.01985E-02	4.58641E-02	5.59651E-03
4	1.05741E-03	1.22251E-02	1.65398E-02	1.09248E-02	1.73966E-02	3.32783E-02	1.98338E-02	2.01088E-03
5	1.76814E-03	1.90574E-02	2.47634E-02	1.55875E-02	2.42695E-02	4.63270E-02	2.65579E-02	3.33334E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.65498E-03	5.67528E-03	1.29576E-02	1.45458E-02	1.26081E-02	1.90154E-02	1.96888E-03	1.43062E-03
2	6.99132E-03	8.51047E-03	1.85869E-02	2.19632E-02	1.90316E-02	2.88891E-02	2.92157E-03	2.14957E-03
3	5.60218E-03	7.98864E-03	1.73860E-02	2.03074E-02	1.75904E-02	2.66971E-02	2.73171E-03	1.99468E-03
4	1.85889E-03	3.25174E-03	7.06161E-03	8.15520E-03	7.09909E-03	1.07534E-02	1.19044E-03	8.30491E-04

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5	3.25144E-03	4.62607E-03	1.00640E-02	1.17448E-02	1.01955E-02	1.54116E-02	1.63379E-03	1.17081E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.81256E-03	5.11151E-03	3.06944E-03	5.86532E-03	5.25495E-03	1.49573E-02	2.75943E-02	2.43594E-02
2	2.75015E-03	8.43657E-03	4.55264E-03	8.79097E-03	8.14025E-03	2.33643E-02	4.20072E-02	3.72584E-02
3	2.54130E-03	7.75198E-03	4.26208E-03	8.13795E-03	7.54199E-03	2.15825E-02	3.90215E-02	3.45789E-02
4	1.02016E-03	3.05944E-03	1.73354E-03	3.34197E-03	3.02967E-03	8.64070E-03	1.60191E-02	1.41650E-02
5	1.46701E-03	4.30875E-03	2.47297E-03	4.75571E-03	4.32667E-03	1.22955E-02	2.26388E-02	2.00145E-02

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.21560E-02	1.10255E-02	2.92634E-03	3.85380E-01
2	1.86799E-02	1.71781E-02	4.77214E-03	5.89949E-01
3	1.72202E-02	1.58686E-02	4.38234E-03	5.43704E-01
4	6.98614E-03	6.33737E-03	1.60628E-03	2.18805E-01
5	9.94000E-03	9.04568E-03	2.38022E-03	3.13388E-01

1 880 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0cell averaged fluxes

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.78831E-01	1.31743E+00	1.65988E+00	1.02776E+00	1.55217E+00	2.98279E+00	2.87659E+00	2.07668E+00
2	1.75550E-01	1.28429E+00	1.61959E+00	1.00592E+00	1.51543E+00	2.91346E+00	2.83583E+00	2.06940E+00
3	1.74346E-01	1.27217E+00	1.60434E+00	9.94946E-01	1.50178E+00	2.88707E+00	2.80082E+00	2.05711E+00
4	1.72868E-01	1.25343E+00	1.57730E+00	9.75843E-01	1.46996E+00	2.82418E+00	2.78415E+00	2.06525E+00
5	1.75085E-01	1.27702E+00	1.60806E+00	9.95431E-01	1.50116E+00	2.88455E+00	2.81983E+00	2.06931E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59348E+00	1.45397E+00	1.32051E+00	8.11451E-01	6.82961E-01	6.00842E-01	3.69655E-01	2.02934E-01
2	1.60071E+00	1.46175E+00	1.33742E+00	8.31961E-01	7.00545E-01	6.27927E-01	3.72410E-01	2.04854E-01
3	1.60295E+00	1.46428E+00	1.34295E+00	8.38467E-01	7.06206E-01	6.36479E-01	3.75324E-01	2.05477E-01
4	1.60613E+00	1.47067E+00	1.35661E+00	8.53967E-01	7.19396E-01	6.56695E-01	3.74859E-01	2.06839E-01
5	1.60153E+00	1.46435E+00	1.34289E+00	8.37955E-01	7.05684E-01	6.35670E-01	3.72963E-01	2.05377E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.20107E-02	3.75765E-02	1.20576E-01	4.21811E-01	1.07856E-01	1.82119E-01	6.74483E-01	5.05287E-01
2	8.45134E-02	4.72892E-02	1.24789E-01	4.29775E-01	1.15598E-01	2.05739E-01	7.13080E-01	5.39428E-01
3	8.53252E-02	4.98395E-02	1.26126E-01	4.32549E-01	1.17955E-01	2.12500E-01	7.24712E-01	5.49475E-01
4	8.72515E-02	5.58117E-02	1.29512E-01	4.38152E-01	1.23842E-01	2.29405E-01	7.56810E-01	5.80281E-01
5	8.52758E-02	4.90285E-02	1.26022E-01	4.32015E-01	1.17816E-01	2.11644E-01	7.25572E-01	5.51647E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.12828E-01	1.33660E-01	1.94868E-02
2	2.30327E-01	1.50125E-01	2.45500E-02
3	2.35200E-01	1.54434E-01	2.57225E-02
4	2.51397E-01	1.71137E-01	3.10680E-02
5	2.34653E-01	1.54681E-01	2.65815E-02

0flux disadvantage factors (zone average/cell average-flux)

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02169E+00	1.03164E+00	1.03221E+00	1.03248E+00	1.03398E+00	1.03405E+00	1.03051E+00	1.00856E+00
2	1.00294E+00	1.00565E+00	1.00705E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00588E+00	1.00004E+00
3	9.96055E-01	9.96202E-01	9.97683E-01	9.99513E-01	1.00061E+00	1.00087E+00	1.00053E+00	9.98957E-01
4	9.87619E-01	9.81529E-01	9.80869E-01	9.80322E-01	9.79218E-01	9.79072E-01	9.87521E-01	9.98057E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94970E-01	9.92912E-01	9.85190E-01	9.68570E-01	9.67799E-01	9.45198E-01	9.91131E-01	9.88101E-01
2	9.99485E-01	9.98224E-01	9.95952E-01	9.92847E-01	9.92718E-01	9.87805E-01	9.98520E-01	9.97452E-01
3	1.00035E+00	9.99958E-01	1.00008E+00	1.00061E+00	1.00074E+00	1.00129E+00	1.00097E+00	1.00058E+00
4	1.00287E+00	1.00432E+00	1.01022E+00	1.01911E+00	1.01943E+00	1.03306E+00	1.00519E+00	1.00712E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.61711E-01	7.66422E-01	9.56787E-01	9.76881E-01	9.15461E-01	8.60486E-01	9.29589E-01	9.15960E-01
2	9.91060E-01	9.64525E-01	9.90215E-01	9.94816E-01	9.81155E-01	9.72101E-01	9.82783E-01	9.77988E-01
3	1.00058E+00	1.01653E+00	1.00083E+00	1.00077E+00	1.00118E+00	1.00404E+00	9.98816E-01	9.96052E-01
4	1.02317E+00	1.13835E+00	1.02611E+00	1.01420E+00	1.05115E+00	1.08392E+00	1.04305E+00	1.05191E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

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Ozone	grp. 25	grp. 26	grp. 27
1	8.99401E-01	8.53071E-01	7.33094E-01
2	9.73355E-01	9.58156E-01	9.23606E-01
3	9.93947E-01	9.85592E-01	9.67682E-01
4	1.06240E+00	1.09227E+00	1.16878E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

0cell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.42234E-03	2.49847E-02	3.15362E-02	1.90531E-02	2.90892E-02	5.56074E-02	3.16623E-02	4.66054E-03
2	3.80559E-03	3.89576E-02	4.88739E-02	2.94615E-02	4.47630E-02	8.43008E-02	4.78349E-02	6.99836E-03
3	3.09226E-03	3.32185E-02	4.31495E-02	2.71775E-02	4.22554E-02	8.01985E-02	4.58541E-02	5.59651E-03
4	1.06741E-03	1.22231E-02	1.65398E-02	1.09248E-02	1.73966E-02	3.32783E-02	1.92438E-02	2.01088E-03
5	1.76814E-03	1.90574E-02	2.47636E-02	1.55875E-02	2.42695E-02	4.63270E-02	2.65579E-02	3.33334E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.65498E-03	5.67328E-03	1.23576E-02	1.45458E-02	1.26081E-02	1.50154E-02	1.96588E-03	1.43062E-03
2	6.99132E-03	8.51047E-03	1.85869E-02	2.19632E-02	1.90314E-02	2.88897E-02	2.92157E-03	2.14957E-03
3	5.60218E-03	7.98864E-03	1.73860E-02	2.08074E-02	1.75904E-02	2.66971E-02	2.73171E-03	1.99465E-03
4	1.85839E-03	3.25174E-03	7.06161E-03	8.15520E-03	7.09909E-03	1.07334E-02	1.19044E-03	8.30491E-04
5	3.25144E-03	4.62607E-03	1.00640E-02	1.17448E-02	1.01955E-02	1.54116E-02	1.65379E-03	1.17031E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.81256E-03	5.11151E-03	3.04944E-03	5.86532E-03	5.25495E-03	1.49579E-02	2.75943E-02	2.43594E-02
2	2.75015E-03	8.43657E-03	4.55246E-03	8.79097E-03	8.14025E-03	2.33643E-02	4.20072E-02	3.72584E-02
3	2.54130E-03	7.75198E-03	4.26208E-03	8.13795E-03	7.54199E-03	2.15829E-02	3.90215E-02	3.45789E-02
4	1.02016E-03	3.05944E-03	1.73356E-03	3.34197E-03	3.02967E-03	8.64090E-03	1.60191E-02	1.41650E-02
5	1.46701E-03	4.30875E-03	2.47297E-03	4.75571E-03	4.32667E-03	1.22955E-02	2.26389E-02	2.00145E-02

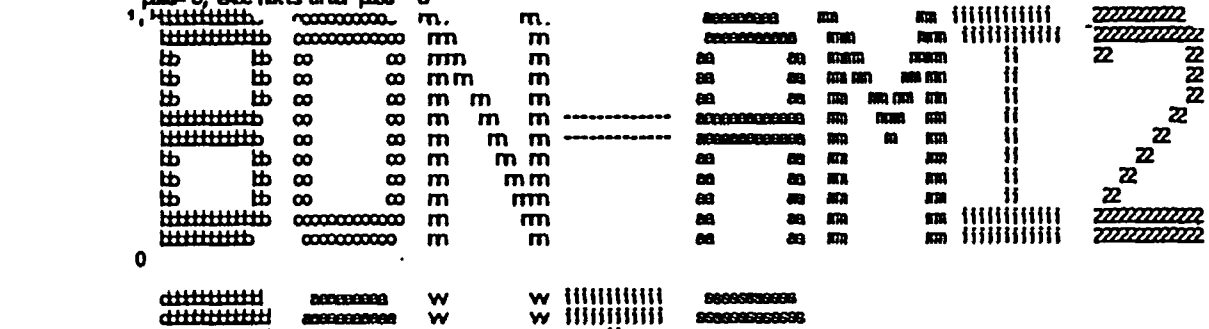
Ozone	grp. 25	grp. 26	grp. 27
1	1.21560E-02	1.10255E-02	2.92636E-03
2	1.86799E-02	1.71781E-02	4.77216E-03
3	1.72202E-02	1.58686E-02	4.38236E-03
4	6.98616E-03	6.33737E-03	1.60628E-03
5	9.94000E-03	9.04668E-03	2.38022E-03

Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

- elapsed time .02 min.

0requested parameter t8, skipcellwt, skipshipdata

pass= 6, exec halts after pass 8



0

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```
  dd      dd  aa      aa  w      w    ii      ss
  dd      dd  aaaaaaaaaaa  w      w    ii      sssssssssss
  dd      dd  aaaaaaaaaaa   w    w     ii       sssssssssss
  dd      dd  aa      aa    w  w       ii             ss
  dd      dd  aa      aa     w w       ii             ss
  dd      dd  aa      aa      ww       ii      ss     ss
  dddddddddd  aa      aa      ww   iiiiiiiiiii  sssssssssss
  dddddddddd  aa      aa       v   iiiiiiiiiii   sssssssss
0

   000000     zzzzzzzzzz        //    11     666666666        //  99999999   666666666
  00000000    zzzzzzzzzz       //    111     666666666        //  99999999   666666666
 00      00   zz      zz      //    1111    66               //  99     99  66
00        00        zz      //      11    66               //  99     99  66
00        00        zz     //       11    66               //  99     99  66
00        00       zz     //        11    666666666        //  99999999   666666666
00        00      zz     //         11    666666666        //   99999999  666666666
00        00     zz     //          11    66     66        //         99  66     66
00        00    zz     //           11    66     66        //         99  66     66
 00      00    zz     //            11    66     66        //         99  66     66
  00000000    zzzzzzzzzz  //      11111111  666666666      //  99999999   666666666
   000000     zzzzzzzzzz  //      11111111   666666666     //  99999999   666666666
0

    11       000000              000000    333333333            zzzzzzzz   ttttttttttt
   111      00000000             00000000  333333333            zzzzzzzz   ttttttttttt
  1111     00      00    :::    00      00 33      33    :::   zz      zz tt      tt
   11      00      00    :::    00      00         33    :::           zz         tt
   11      00      00    :::    00      00         33    :::          zz          tt
   11      00      00           00      00        333                zz           tt
   11      00      00           00      00        333               zz            tt
   11      00      00    :::    00      00         33    :::       zz             tt
   11      00      00    :::    00      00         33    :::      zz              tt
   11      00      00    :::    00      00 33      33    :::     zz               tt
 11111111   00000000            00000000  333333333            zzzzzzzzzzz        tt
 11111111    000000              000000   333333333            zzzzzzzzzzz        tt
1
0                    ssssssssss   cccccccccc   aaaaaaaa   ll        eeeeeeeeeeee
                    ssssssssssss cccccccccccc aaaaaaaaaa ll        eeeeeeeeeeee
                    ss      ss   cc      cc   aa      aa ll        ee
                    ss           cc           aa      aa ll        ee
                    ss           cc           aa      aa ll        ee
                    ssssssssss   cc           aaaaaaaaaa ll        eeeeeeeee
                     ssssssssss  cc           aaaaaaaaaa ll        eeeeeeeee
                            ss   cc           aa      aa ll        ee
                            ss   cc           aa      aa ll        ee
                    ss      ss   cc      cc   aa      aa ll        ee
                    ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                     ssssssssss   cccccccccc  aa      aa llllllllllll eeeeeeeeeeee
```

program verification information

```
*****                 code system:    scale  version:   4.2                *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                 program:  c0c008                                     *****
*****                                                                      *****
*****             creation date:  04/27/95                                 *****
*****                                                                      *****
*****                 library:  /nautronics/scale/exe                      *****
*****                                                                      *****
*****                                                                      *****
*****        this is not a   scale  configuration controlled code          *****
*****                                                                      *****
*****                 jobname:  davis                                      *****
*****                                                                      *****
*****        date of execution:  02/16/96                                  *****
*****                                                                      *****
*****        time of execution:  10:03:27                                  *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
*****                                                                      *****
```

```
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0iza--number of zones or material regions                       4
0ma--mixing table length                                       70
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0iscpt--dancoff factor option                                   0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has    70 entries.
0       4q array has    70 entries.
0       5q array has    70 entries.
0       6q array has     4 entries.
0       7q array has     4 entries.
0       8q array has     4 entries.
0       9q array has     4 entries.
0      10q array has    70 entries.
0      11q array has     4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
   1       3       8016    2.09710E-02          201
   2       3       1001    4.19420E-02          202
   3       3       5010    3.81515E-06          203
   4       3       5011    1.54884E-05          204
   5       2      40302    4.25156E-02          205
```

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6	1	92235	1.33192E-04	200006
7	1	92234	1.47781E-06	200007
8	1	92236	1.82292E-05	200008
9	1	92238	7.21944E-03	200009
10	1	8016	1.50611E-02	200010
11	1	8016	1.15315E-02	200011
12	1	36083	4.72043E-07	200012
13	1	36085	2.27030E-07	200013
14	1	38090	5.16852E-06	200014
15	1	39089	4.09755E-06	200015
16	1	42095	5.47657E-06	200016
17	1	40093	4.12208E-06	200017
18	1	40094	6.47876E-06	200018
19	1	40095	6.60885E-07	200019
20	1	41094	3.21149E-12	200020
21	1	43099	6.33732E-06	200021
22	1	45103	3.47568E-06	200022
23	1	45105	7.39443E-09	200023
24	1	44101	5.75136E-06	200024
25	1	44106	8.69130E-07	200025
26	1	46105	2.26913E-06	200026
27	1	46108	6.38851E-07	200027
28	1	47109	4.45102E-07	200028
29	1	51124	1.00830E-10	200029
30	1	54131	2.90271E-06	200030
31	1	54132	5.45567E-06	200031
32	1	54135	2.20848E-09	200032
33	1	54136	1.09418E-05	200033
34	1	55134	3.16663E-07	200034
35	1	55135	3.47362E-06	200035
36	1	55137	6.78821E-06	200036
37	1	56136	6.38766E-03	200037
38	1	57139	6.72223E-06	200038
39	1	59141	5.83082E-06	200039
40	1	59143	1.22771E-07	200040
41	1	58144	2.21790E-06	200041
42	1	60143	5.26395E-06	200042
43	1	60145	3.88111E-06	200043
44	1	61147	1.33040E-06	200044
45	1	61148	3.89552E-09	200045
46	1	60147	4.29701E-08	200046
47	1	62147	4.63568E-07	200047
48	1	62149	2.87617E-08	200048
49	1	62150	1.38277E-06	200049
50	1	62151	1.32930E-07	200050
51	1	62152	6.63045E-07	200051
52	1	64155	7.21936E-10	200052
53	1	63153	3.98598E-07	200053
54	1	63154	8.34053E-08	200054
55	1	63155	4.31432E-08	200055
56	1	40302	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	6.95263E-06	200060
61	1	93237	1.23390E-06	200061
62	1	94238	1.76997E-07	200062
63	1	94239	3.56356E-05	200063
64	1	94240	6.95689E-06	200064
65	1	94241	3.76423E-06	200065

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```
  66     1      94242   4.23205E-07        200066
  67     1      95241   1.12643E-07        200067
  68     1      95243   3.90711E-08        200068
  69     1      96244   3.73748E-09        200069
  70     1        999   3.30753E-21        200070
Geometry and material description
Zone   mixture   outer dimension   temperature      extra xs   type (0/1--fuel/mod)
   1      3          6.32460E-01   6.07600E+02   7.90564E-01          0
   2      2          6.73100E-01   6.50000E+02   1.29382E+01          0
   3      3          8.14000E-01   6.07600E+02   3.54862E+00          0
   4      1          2.96100E+00   9.75000E+02   2.32883E-01          0
     8067 locations of   200000 available are required to make a new master containing the self-shielded values
One nuclides in your problem have bondarenko factor data**bonsai will copy from logical 12 to logical  1
Copy      999  1/v cross sectio from log 12 to log  1   bondarenko trigger 0
Copy     1001  hydrogen         from log 12 to log 18   bondarenko trigger 0
Copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
Copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
Copy     5010  b-10 1273 218grp from log 12 to log 18   bondarenko trigger 0
Copy     5010  b-10 1273 218grp from log 18 to log  1   bondarenko trigger 0
Copy     5010  b-10 1273 218grp from log 18 to log  1   bondarenko trigger 0
Copy     5011  boron-11         from log 12 to log 18   bondarenko trigger 0
Copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
Copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
Copy     8016  oxygen-16        from log 12 to log 18   bondarenko trigger 0
Copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
Copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
Copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
Copy    36083  kr-83            from log 12 to log  1   bondarenko trigger 0
Copy    36085  kr-85            from log 12 to log  1   bondarenko trigger 0
Copy    38090  sr-90            from log 12 to log  1   bondarenko trigger 0
Copy    39089   y-89            from log 12 to log  1   bondarenko trigger 0
Copy    40093  zr-93            from log 12 to log  1   bondarenko trigger 0
Copy    40094  zr-94            from log 12 to log  1   bondarenko trigger 0
Copy    40095  zr-95            from log 12 to log  1   bondarenko trigger 0
Copy    40302  zircalloy        from log 12 to log 18   bondarenko trigger 0
Copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
Copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
Copy    41094  nb-94            from log 12 to log  1   bondarenko trigger 0
Copy    42095  mo-95            from log 12 to log  1   bondarenko trigger 0
Copy    43099  tc-99            from log 12 to log  1   bondarenko trigger 0
Copy    44101  ru-101           from log 12 to log  1   bondarenko trigger 0
Copy    44106  ru-106           from log 12 to log  1   bondarenko trigger 0
Copy    45103  rh-103           from log 12 to log  1   bondarenko trigger 0
Copy    45105  rh-105           from log 12 to log  1   bondarenko trigger 0
Copy    46105  pd-105           from log 12 to log  1   bondarenko trigger 0
Copy    46108  pd-108           from log 12 to log  1   bondarenko trigger 0
Copy    47109  silver-109       from log 12 to log  1   bondarenko trigger 0
Copy    51124  sb-124           from log 12 to log  1   bondarenko trigger 0
Copy    54131  xe-131           from log 12 to log  1   bondarenko trigger 0
Copy    54132  xe-132           from log 12 to log  1   bondarenko trigger 0
Copy    54135  xenon-135        from log 12 to log  1   bondarenko trigger 0
Copy    54136  xe-136           from log 12 to log  1   bondarenko trigger 0
Copy    55133  cesium-133       from log 12 to log  1   bondarenko trigger 0
Copy    55134  cs-134           from log 12 to log  1   bondarenko trigger 0
Copy    55135  cs-135           from log 12 to log  1   bondarenko trigger 0
Copy    55137  cs-137           from log 12 to log  1   bondarenko trigger 0
Copy    56136  ba-136           from log 12 to log  1   bondarenko trigger 0
Copy    57139  la-139           from log 12 to log  1   bondarenko trigger 0
Copy    58144  ce-144           from log 12 to log  1   bondarenko trigger 0
Copy    59141  pr-141           from log 12 to log  1   bondarenko trigger 0
```

INFORMATION ONLY

```
0copy   59143  pr-143          from lag 12 to lag  1   bondarenko trigger 0
0copy   60143  nd-143          from lag 12 to lag  1   bondarenko trigger 0
0copy   60145  nd-145          from lag 12 to lag  1   bondarenko trigger 0
0copy   60147  nd-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   61147  pm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   61148  pm-148          from lag 12 to lag  1   bondarenko trigger 0
0copy   62147  sm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   62149  sm-149          from lag 12 to lag  1   bondarenko trigger 0
0copy   62150  sm-150          from lag 12 to lag  1   bondarenko trigger 0
0copy   62151  sm-151          from lag 12 to lag  1   bondarenko trigger 0
0copy   62152  sm-152          from lag 12 to lag  1   bondarenko trigger 0
0copy   63153  eu-153          from lag 12 to lag  1   bondarenko trigger 0
0copy   63154  eu-154          from lag 12 to lag  1   bondarenko trigger 0
0copy   63155  eu-155          from lag 12 to lag  1   bondarenko trigger 0
0copy   64155  gd-155          from lag 12 to lag  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigo= from lag 12 to lag  1   bondarenko trigger 0
0copy   92235  uranium-235     from lag 12 to lag  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigo= from lag 12 to lag  1   bondarenko trigger 0
0copy   92238  uranium-238     from lag 12 to lag  1   bondarenko trigger 0
0copy   93237  neptunium-237   from lag 12 to lag  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigo from lag 12 to lag  1   bondarenko trigger 0
0copy   94239  plutonium-239   from lag 12 to lag  1   bondarenko trigger 0
0copy   94240  plutonium-240   from lag 12 to lag  1   bondarenko trigger 0
0copy   94241  plutonium-241   from lag 12 to lag  1   bondarenko trigger 0
0copy   94242  plutonium-242   from lag 12 to lag  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigo from lag 12 to lag  1   bondarenko trigger 0
0copy   95243  am-243 1057 218 from lag 12 to lag  1   bondarenko trigger 0
0copy   96244  curium-244      from lag 12 to lag  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated        9/16/93
              l.m.petrie  -  ornl
        tape id                          4321        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     1
                                  table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                        id   200030
       hydrogen      endf/b-iv mat 1269/thrmal002   updated 10/13/89           id      202
       hydrogen      endf/b-iv mat 1269/thrmal002   updated 10/13/89           id   200057
      b-10 1273 218grp 042375 p-3 293k                                         id      203
      b-10 1273 218grp 042375 p-3 293k                                         id   200058
       boron-11      endf/b-iv mat 1160             updated 10/13/89           id      204
       boron-11      endf/b-iv mat 1160             updated 10/13/89           id   200059
       oxygen-16     endf/b-iv mat 1276             updated 10/13/89           id      201
       oxygen-16     endf/b-iv mat 1276             updated 10/13/89           id   200010
       oxygen-16     endf/b-iv mat 1276             updated 10/13/89           id   200011
       kr-83         mt=102,103,103,105,106,107     updated 10/13/89           id   200012
       kr-85           mt=  102                                                 id   200013
       sr-90         mt=102                         updated 10/13/89           id   200014
        y-89         mt=102                         updated 10/13/89           id   200015
       zr-93           mt=  102                                                 id   200017
       zr-94         mt=102                         updated 10/13/89           id   200018
       zr-95         mt=102                         updated 10/13/89           id   200019
       zircalloy     endf/b-iv mat 1284             updated 10/13/89           id      205
       zircalloy     endf/b-iv mat 1284             updated 10/13/89           id   200056
       nb-94         mt=102                         updated 10/13/89           id   200020
       mo-95         mt=102                         updated 10/13/89           id   200016
       tc-99         mt=102                         updated 10/13/89           id   200021
       ru-101        mt=102                         updated 10/13/89           id   200024
```

```
ru-106        mt=102                    updated 10/13/89          id   200025
rh-103        mt=102                    updated 10/13/89          id   200022
rh-105          mt=  102                                          id   200023
pd-105        mt=102                    updated 10/13/89          id   200026
pd-108        mt=102                    updated 10/13/89          id   200027
silver-109    endf/b-iv mat 1139        updated 10/13/89          id   200028
sb-124        mt=102                    updated 10/13/89          id   200029
xe-131        mt=102,103,104,105,106    updated 10/13/89          id   200030
xe-132        mt=102,103,104,105,106    updated 10/13/89          id   200031
xenon-135     endf/b-iv mat 1294        updated 10/13/89          id   200032
xe-136          mt=  102, 103, 104, 105, 107                      id   200033
cesium-133    endf/b-iv mat 1141        updated 10/13/89          id   200060
cs-134        mt=102                    updated 10/13/89          id   200034
cs-135          mt=  102                                          id   200035
cs-137        mt=102                    updated 10/13/89          id   200036
ba-136        mt=102                    updated 10/13/89          id   200037
la-139        mt=102                    updated 10/13/89          id   200038
ce-144          mt=  102                                          id   200041
pr-141        mt=102,103,104,105,106,107 updated 10/13/89         id   200039
pr-143        mt=102                    updated 10/13/89          id   200040
nd-143        mt=102                    updated 10/13/89          id   200042
nd-145        mt=102                    updated 10/13/89          id   200043
nd-147        mt=102                    updated 10/13/89          id   200046
pm-147        mt=102                    updated 10/13/89          id   200044
pm-148          mt=  102                                          id   200045
sm-147        endf/b-v fission product  updated 10/13/89          id   200047
sm-149        mt=102,103,107            updated 10/13/89          id   200048
sm-150        mt=102                    updated 10/13/89          id   200049
sm-151        mt=102,103,104,105,106,107 updated 10/13/89         id   200050
sm-152        mt=102,103,104,105,106,107 updated 10/13/89         id   200051
eu-153        mt=102,103,104,105,106,107 updated 10/13/89         id   200053
eu-154        mt=102,103,104,105,106,107 updated 10/13/89         id   200054
eu-155        mt=102,103,104,105,106,107 updated 10/13/89         id   200055
gd-155        mt=102                    updated 10/13/89          id   200052
u-234 1043 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                id   200007
uranium-235   endf/b-iv mat 1261        updated 10/13/89          id   200006
u-236 1163 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                id   200008
uranium-238   endf/b-iv mat 1262        updated 10/13/89          id   200009
neptunium-237 endf/b-iv mat 1263        updated 10/13/89          id   200061
pu-238 1050 sigo=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)               id   200062
plutonium-239 endf/b-iv mat 1264        updated 10/13/89          id   200063
plutonium-240 endf/b-iv mat 1265        updated 10/13/89          id   200064
plutonium-241 endf/b-iv mat 1266        updated 10/13/89          id   200065
plutonium-242 endf/b-iv mat 1161        updated 10/13/89          id   200066
am-241 1056 sigo=5+4 nsxlacs 218'gp p-3 293k                      id   200067
am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                      id   200068
curium-244    endf/b-iv mat 1162        updated 10/13/89          id   200069
0     tape copy used     0 i/o's, and took     .00 seconds
1          m       m iiiiiiiiiiii   tttttttttttt    aaaaaaaa   ww        ww ll
           mm      m iiiiiiiiiiii   tttttttttttt   aaaaaaaaaa  ww        ww ll
           mmm     m     ii            tt        aa      aa   ww        ww ll
           mm m    m     ii            tt        aa      aa   ww        ww ll
           m  m    m     ii            tt        aa      aa   ww        ww ll
           m   m   m     ii            tt        aaaaaaaaaaaa ww    w    ww ll
           m    m  m     ii            tt        aaaaaaaaaaaa ww   www   ww ll
           m     m m     ii            tt        aa      aa   ww ww ww ww ll
           m      mm     ii            tt        aa      aa   ww ww   ww ww ll
           m       mm    ii            tt        aa      aa   wwww     wwww ll
           m        mm iiiiiiiiiiii   tt        aa      aa   www       www llllllllllll
           m        m iiiiiiiiiiii    tt        aa      aa   ww        ww llllllllllll
```

INFORMATION ONLY

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0

```
dddddddddd   aaaaaaaa   w      w  iiiiiiiiiii   ssssssssss
dddddddddd  aaaaaaaaaa  w      w  iiiiiiiiiii  ssssssssssss
dd      dd  aa      aa  w      w     ii        ss      ss
dd      dd  aa      aa  w      w     ii        ss
dd      dd  aa      aa  w      w     ii        ss
dd      dd  aaaaaaaaaaaa  w    w     ii        ssssssssss
dd      dd  aaaaaaaaaaaa   w  w      ii         ssssssssss
dd      dd  aa      aa    w  w       ii                ss
dd      dd  aa      aa     ww        ii                ss
dd      dd  aa      aa     ww        ii        ss      ss
dddddddddd  aa      aa      v    iiiiiiiiiii  ssssssssssss
dddddddddd  aa      aa      v    iiiiiiiiiii   ssssssssss
```

0

```
  oooooo    zzzzzzzzzz        //    11      eeeeeeeeee        //  99999999    eeeeeeeeee
 oooooooo  zzzzzzzzzzz       //    111     eeeeeeeeeee       //  99999999999 eeeeeeeeeee
oo      oo zz        zz      //    1111    ee              //  99      99  ee
oo      oo         zz       //     11     ee              //  99      99  ee
oo      oo        zz        //     11     ee              //  99      99  ee
oo      oo       zz         //     11     eeeeeeeeee      //  99999999999 eeeeeeeeee
oo      oo      zz          //     11     eeeeeeeeeee     //   99999999   eeeeeeeeeee
oo      oo     zz           //     11     ee      ee      //         99  ee      ee
oo      oo    zz            //     11     ee      ee      //         99  ee      ee
oo      oo   zz             //     11     ee      ee      //         99  ee      ee
 oooooooo   zzzzzzzzzzz     //   11111111 eeeeeeeeeee     //  99999999999 eeeeeeeeeee
  oooooo    zzzzzzzzzzz     //   11111111  eeeeeeeeee     //  99999999    eeeeeeeeee
```

0

```
    11      oooooo                oooooo   ssssssssss              zzzzzzzzzz  bbbbbbbbb
   111     oooooooo              oooooooo  ssssssssssss            zzzzzzzzzzz bbbbbbbbbb
  1111    oo      oo     :::    oo      oo 33      ss      :::    zz      zz  bb      bb
   11     oo      oo     :::    oo      oo         ss      :::            zz  bb      bb
   11     oo      oo     :::    oo      oo         ss      :::            zz  bb      bb
   11     oo      oo            oo      oo         sss                zz      bbbbbbbbb
   11     oo      oo            oo      oo         sss                zz      bbbbbbbbb
   11     oo      oo     :::    oo      oo         ss      :::        zz      bb      bb
   11     oo      oo     :::    oo      oo         ss      :::        zz      bb      bb
   11     oo      oo     :::    oo      oo 33      ss      :::    zz          bb      bb
 11111111  oooooooo            oooooooo  ssssssssssss            zzzzzzzzzzz bbbbbbbbbb
 11111111   oooooo              oooooo   ssssssssss              zzzzzzzzzzz  bbbbbbbbb
```

1
0

```
                    sssssssss   cccccccccc   aaaaaaaa   ll        eeeeeeeeeeee
                   ssssssssssss cccccccccccc aaaaaaaaaa ll        eeeeeeeeeeee
                   ss       ss  cc        cc aa      aa ll        ee
                   ss          cc           aa      aa ll        ee
                   ss          cc           aa      aa ll        ee
                   ssssssssss  cc           aaaaaaaaaaaa ll        eeeeeeeee
                    ssssssssss cc           aaaaaaaaaaaa ll        eeeeeeeee
                            ss cc           aa      aa ll        ee
                            ss cc           aa      aa ll        ee
                   ss       ss cc        cc aa      aa ll        ee
                   ssssssssssss cccccccccccc aa      aa llllllllllll eeeeeeeeeeee
                    ssssssssss   cccccccccc  aa      aa llllllllllll eeeeeeeeeeee
```

INFORMATION ONLY

```
**********************************************************************
**********************************************************************
**********************************************************************
*****                                                            *****
*****              program verification information               *****
*****                                                            *****
*****              code system:    scale  version:    4.2         *****
*****                                                            *****
**********************************************************************
**********************************************************************
*****                                                            *****
*****                                                            *****
*****              program:  c0c002                              *****
*****                                                            *****
*****        creation date:  04/27/95                            *****
*****                                                            *****
*****              library:  /neutronics/scale/exe               *****
*****                                                            *****
*****                                                            *****
*****   this is not a   scale  configuration controlled code     *****
*****                                                            *****
*****              jobname:  davis                               *****
*****                                                            *****
*****   date of execution:  02/16/96                             *****
*****                                                            *****
*****   time of execution:  10:03:28                             *****
*****                                                            *****
*****                                                            *****
**********************************************************************
**********************************************************************
**********************************************************************
```

```
1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
         0 output option for aapx formatted cross section data
0the storage allocated for this case is 200000 words
0       2q array has     70 entries.
0       3q array has     15 entries.
0       4q array has      5 entries.
0 general information concerning cross section library
    tape identification number              4349
    number of nuclides on tape                65
    number of neutron energy groups           27
    first thermal neutron energy group        15
    number of gamma energy groups              0
0  direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                         compiled for nrc      1/27/89
                            last updated       9/16/93
                              l.w.petrie  -   ornl
- work tape   4349
```

INFORMATION ONLY

xsdrn weighted tape--parent case entitled-- 880 d, sas2h: babcock wilcox 15x15,
3.00wt%, 20gwd/mtu burn high temp

```
0 nuclides from xsdrn tape
    1   hydrogen        endf/b-iv mat 1269/thrm1002   updated 10/13/89        202
    2   b-10 1273 218ngp 04375 p-3 295k                                         203
    3   boron-11        endf/b-iv mat 1160            updated 10/13/89        204
    4   oxygen-16       endf/b-iv mat 1276            updated 10/13/89        201
    5   zircalloy       endf/b-iv mat 1284            updated 10/13/89        205
0 nuclides from work tape
    6   1/v cross sections normalized to 1.0 at 0.0253 ev                       999
    7   hydrogen        endf/b-iv mat 1269/thrm1002   updated 10/13/89       1001
    8   b-10 1273 218ngp 04375 p-3 295k                                        5010
    9   boron-11        endf/b-iv mat 1160            updated 10/13/89        5011
   10   oxygen-16       endf/b-iv mat 1276            updated 10/13/89        8016
   11   oxygen-16       endf/b-iv mat 1276            updated 10/13/89           6
   12   kr-83           mt=102,103,103,105,106,107    updated 10/13/89       36083
   13   kr-85             mt=  102                                             36085
   14   sr-90           mt=102                        updated 10/13/89       38090
   15    y-89           mt=102                        updated 10/13/89       39089
   16   zr-93             mt=  102                                             40093
   17   zr-94           mt=102                        updated 10/13/89       40094
   18   zr-95           mt=102                        updated 10/13/89       40095
   19   zircalloy       endf/b-iv mat 1284            updated 10/13/89       40802
   20   nb-94           mt=102                        updated 10/13/89       41094
   21   mo-95           mt=102                        updated 10/13/89       42095
   22   tc-99           mt=102                        updated 10/13/89       43099
   23   ru-101          mt=102                        updated 10/13/89       44101
   24   ru-106          mt=102                        updated 10/13/89       44106
   25   rh-103          mt=102                        updated 10/13/89       45103
   26   rh-105            mt=  102                                             45105
   27   pd-105          mt=102                        updated 10/13/89       46105
   28   pd-108          mt=102                        updated 10/13/89       46108
   29   silver-109      endf/b-iv mat 1139            updated 10/13/89       47109
   30   sb-124          mt=102                        updated 10/13/89       51124
   31   xe-131          mt=102,103,104,105,106        updated 10/13/89       54131
   32   xe-132          mt=102,103,104,105,106        updated 10/13/89       54132
   33   xenon-135       endf/b-iv mat 1294            updated 10/13/89       54135
   34   xe-136            mt=  102, 103, 104, 105, 107                         54136
   35   cesium-133      endf/b-iv mat 1141            updated 10/13/89       55133
   36   cs-134          mt=102                        updated 10/13/89       55134
   37   cs-135            mt=  102                                             55135
   38   cs-137          mt=102                        updated 10/13/89       55137
   39   ba-136          mt=102                        updated 10/13/89       56136
   40   la-139          mt=102                        updated 10/13/89       57139
   41   ce-144            mt=  102                                             58144
   42   pr-141          mt=102,103,104,105,106,107    updated 10/13/89       59141
   43   pr-143          mt=102                        updated 10/13/89       59143
   44   nd-143          mt=102                        updated 10/13/89       60143
   45   nd-145          mt=102                        updated 10/13/89       60145
   46   nd-147          mt=102                        updated 10/13/89       60147
   47   pm-147          mt=102                        updated 10/13/89       61147
   48   pm-148            mt=  102                                             61148
   49   sm-147          endf/b-v fission product      updated 10/13/89       62147
   50   sm-149          mt=102,103,107                updated 10/13/89       62149
   51   sm-150          mt=102                        updated 10/13/89       62150
   52   sm-151          mt=102,103,104,105,106,107    updated 10/13/89       62151
```

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```
   53    sm-152          mt=102,103,104,105,106,107    updated 10/13/89          62152
   54    eu-153          mt=102,103,104,105,106,107    updated 10/13/89          63153
   55    eu-154          mt=102,103,104,105,106,107    updated 10/13/89          63154
   56    eu-155          mt=102,103,104,105,106,107    updated 10/13/89          63155
   57    gd-155          mt=102                        updated 10/13/89          64155
   58   u-234 1043 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                       92234
   59    uranium-235     endf/b-iv mat 1261            updated 10/13/89          92235
   60   u-236 1163 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                       92236
   61    uranium-238     endf/b-iv mat 1262            updated 10/13/89          92238
   62    neptunium-237   endf/b-iv mat 1263            updated 10/13/89          93237
   63   pu-238 1050 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                       94238
   64    plutonium-239   endf/b-iv mat 1264            updated 10/13/89          94239
   65    plutonium-240   endf/b-iv mat 1265            updated 10/13/89          94240
   66    plutonium-241   endf/b-iv mat 1266            updated 10/13/89          94241
   67    plutonium-242   endf/b-iv mat 1161            updated 10/13/89          94242
   68   am-241 1056 sigp=5+4 nsxlacs 218ngp p-3 293k                             95241
   69   am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                             95243
   70    curium-244      endf/b-iv mat 1162            updated 10/13/89          96244
0 hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          202    temperature=  607.60
                                  thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                          203    temperature=  607.60
                                  thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160             updated 10/13/89          204    temperature=  607.60
                                  thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89          201    temperature=  607.60
0 zircalloy       endf/b-iv mat 1284             updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436            temperature(kelvin)       =   650.000
0potential scatter sigma  =    6.385            lumped nuclear density    = 4.2515602E-02
0spin factor (g)          =    1.079            lump dimension (a-bar)    = 6.7309999E-01
0inner radius             = 6.3246000E-01        dancoff correction (c)    = 1.6805907E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
   8      -1.156752E-03    .000000E+00   -7.806053E-01
   9      -4.625978E-02    .000000E+00   -2.073270E+00
  10      -5.962230E-02    .000000E+00   -1.351984E+00
  11      -1.761672E-01    .000000E+00   -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption       2.9240E-01
 fission          .00000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:03:28
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled--  880 d, sas2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

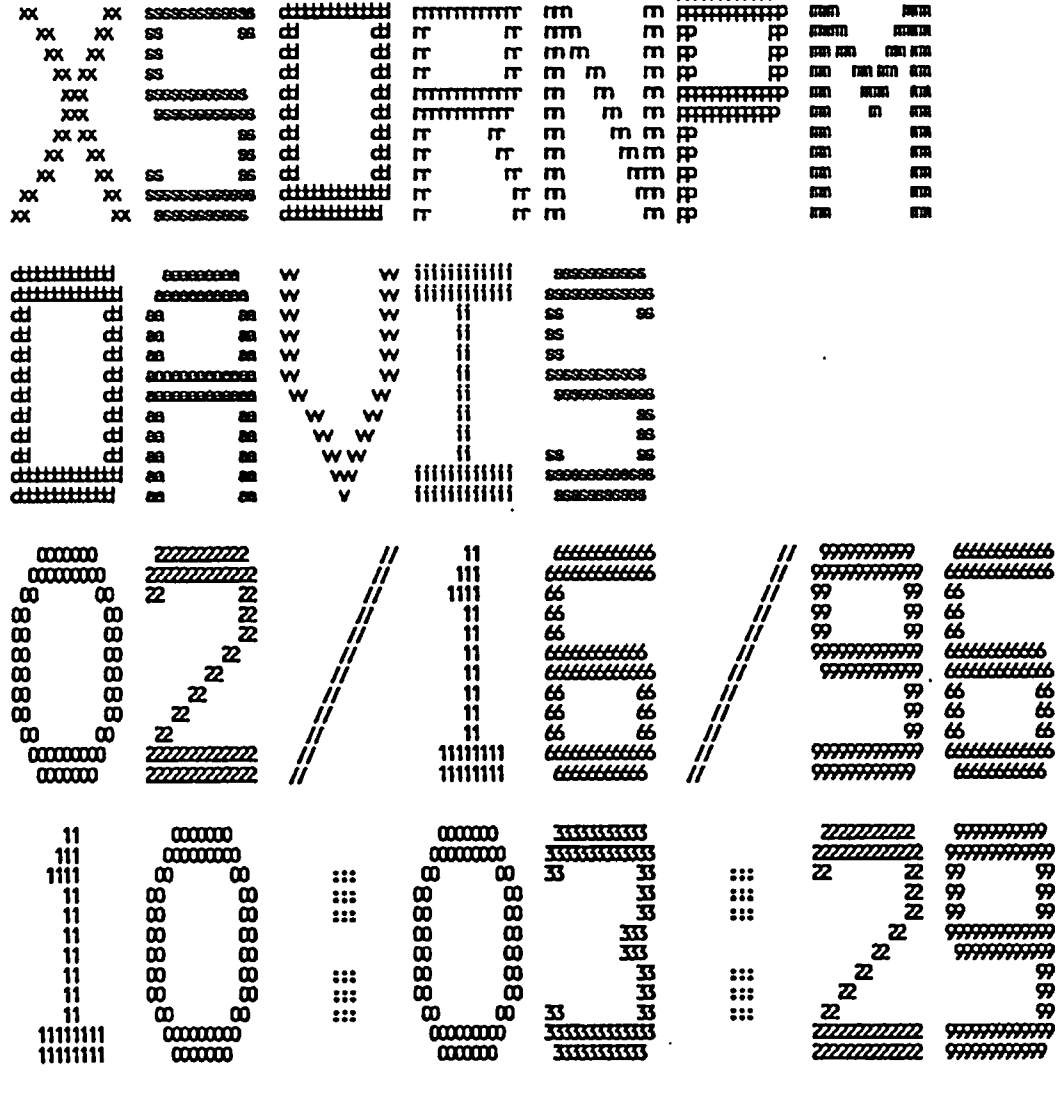
         tape id                      8670        number of nuclides              70
         number of neutron groups       27        number of gamma groups           0
         first thermal group            15        logical unit                     4
                                 table of contents
        hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          id    202
       b-10 1273 218ngp 042375 p-3 293k                                           id    203
        boron-11        endf/b-iv mat 1160             updated 10/13/89          id    204
        oxygen-16       endf/b-iv mat 1276             updated 10/13/89          id    201
        zircalloy       endf/b-iv mat 1284             updated 10/13/89          id    205
       1/v cross sections normalized to 1.0 at 0.0253 ev                          id    999
```

```
 hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89          id    1001
b-10 1273 218grp 042375 p-3 293k                                         id    5010
 boron-11       endf/b-iv mat 1160            updated 10/13/89          id    5011
 oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id    8016
 oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id       6
 kr-83          mt=102,103,103,105,106,107    updated 10/13/89          id   36083
 kr-85            mt=  102                                               id   36085
 sr-90          mt=102                        updated 10/13/89          id   38090
  y-89          mt=102                        updated 10/13/89          id   39089
 zr-93            mt=  102                                               id   40093
 zr-94          mt=102                        updated 10/13/89          id   40094
 zr-95          mt=102                        updated 10/13/89          id   40095
 zircalloy      endf/b-iv mat 1284            updated 10/13/89          id   40302
 rb-94          mt=102                        updated 10/13/89          id   41094
 mo-95          mt=102                        updated 10/13/89          id   42095
 tc-99          mt=102                        updated 10/13/89          id   43099
 ru-101         mt=102                        updated 10/13/89          id   44101
 ru-106         mt=102                        updated 10/13/89          id   44106
 rh-103         mt=102                        updated 10/13/89          id   45103
 rh-105           mt=  102                                               id   45105
 pd-105         mt=102                        updated 10/13/89          id   46105
 pd-108         mt=102                        updated 10/13/89          id   46108
 silver-109     endf/b-iv mat 1139            updated 10/13/89          id   47109
 sb-124         mt=102                        updated 10/13/89          id   51124
 xe-131         mt=102,103,104,105,106        updated 10/13/89          id   54131
 xe-132         mt=102,103,104,105,106        updated 10/13/89          id   54132
 xenon-135      endf/b-iv mat 1294            updated 10/13/89          id   54135
 xe-136           mt=  102, 103, 104, 105, 107                          id   54136
 cesium-133     endf/b-iv mat 1141            updated 10/13/89          id   55133
 cs-134         mt=102                        updated 10/13/89          id   55134
 cs-135           mt=  102                                               id   55135
 cs-137         mt=102                        updated 10/13/89          id   55137
 ba-136         mt=102                        updated 10/13/89          id   56136
 la-139         mt=102                        updated 10/13/89          id   57139
 ce-144           mt=  102                                               id   58144
 pr-141         mt=102,103,104,105,106,107    updated 10/13/89          id   59141
 pr-143         mt=102                        updated 10/13/89          id   59143
 nd-143         mt=102                        updated 10/13/89          id   60143
 nd-145         mt=102                        updated 10/13/89          id   60145
 nd-147         mt=102                        updated 10/13/89          id   60147
 pm-147         mt=102                        updated 10/13/89          id   61147
 pm-148           mt=  102                                               id   61148
 sm-147         endf/b-v fission product      updated 10/13/89          id   62147
 sm-149         mt=102,103,107                updated 10/13/89          id   62149
 sm-150         mt=102                        updated 10/13/89          id   62150
 sm-151         mt=102,103,104,105,106,107    updated 10/13/89          id   62151
 sm-152         mt=102,103,104,105,106,107    updated 10/13/89          id   62152
 eu-153         mt=102,103,104,105,106,107    updated 10/13/89          id   63153
 eu-154         mt=102,103,104,105,106,107    updated 10/13/89          id   63154
 eu-155         mt=102,103,104,105,106,107    updated 10/13/89          id   63155
 gd-155         mt=102                        updated 10/13/89          id   64155
u-234 1043 sigo=5+4 newlacs p-3 293k f-1/e-n(1.+5)                       id   92234
 uranium-235    endf/b-iv mat 1261            updated 10/13/89          id   92235
u-236 1163 sigo=5+4 newlacs p-3 293k f-1/e-n(1.+5)                       id   92236
 uranium-238    endf/b-iv mat 1262            updated 10/13/89          id   92238
 neptunium-237  endf/b-iv mat 1263            updated 10/13/89          id   93237
pu-238 1050 sigo=5+4 newlacs p-3 293k f-1/e-n(1.+5)                      id   94238
 plutonium-239  endf/b-iv mat 1264            updated 10/13/89          id   94239
 plutonium-240  endf/b-iv mat 1265            updated 10/13/89          id   94240
 plutonium-241  endf/b-iv mat 1266            updated 10/13/89          id   94241
```

INFORMATION ONLY

```
      plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id    9242
     am-241 1056 sigp-5+4 nsaclacs 218rgp p-3 255k                         id    9241
     am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                          id    9243
      curium-244     endf/b-iv mat 1162          updated 10/13/89          id    9244
0       tape copy used      0 i/o's, and took     .00 seconds
```

INFORMATION ONLY



INFORMATION ONLY

```
0
                    ssssssssss    cccccccccc     aaaaaaaa    ll          eeeeeeeeeeee
                   ssssssssssss  cccccccccccc   aaaaaaaaaa   ll          eeeeeeeeeeee
                   ss        ss  cc        cc  aa        aa  ll          ee
                   ss            cc            aa        aa  ll          ee
                   ss            cc            aa        aa  ll          ee
                   ssssssssss    cc            aaaaaaaaaaaa  ll          eeeeeeeee
                    ssssssssss   cc            aaaaaaaaaaaa  ll          eeeeeeeee
                            ss   cc            aa        aa  ll          ee
                            ss   cc            aa        aa  ll          ee
                   ss        ss  cc        cc  aa        aa  ll          ee
                   ssssssssssss  cccccccccccc  aa        aa  llllllllllll eeeeeeeeeeee
                    ssssssssss    cccccccccc   aa        aa  llllllllllll eeeeeeeeeeee


                  ****************************************************************
                  ****************************************************************
                  ****************************************************************
                  *****                                                      *****
                  *****                program verification information       *****
                  *****                                                      *****
                  *****              code system:    scale  version:   4.2    *****
                  *****                                                      *****
                  ****************************************************************
                  ****************************************************************
                  *****                                                      *****
                  *****                                                      *****
                  *****            program:  c0c001                          *****
                  *****                                                      *****
                  *****       creation date:  04/27/95                       *****
                  *****                                                      *****
                  *****            library:  /nautronics/scale/exe           *****
                  *****                                                      *****
                  *****                                                      *****
                  *****   this is not a   scale  configuration controlled code *****
                  *****                                                      *****
                  *****            jobname:  davis                           *****
                  *****                                                      *****
                  *****   date of execution:  02/16/96                       *****
                  *****                                                      *****
                  *****   time of execution:  10:03:29                       *****
                  *****                                                      *****
                  ****************************************************************
                  ****************************************************************
                  ****************************************************************
1
                  880 d, second part of aas2h pass to make library
0      -1q array has     1 entries.
0       0q array has    11 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit  9 requires    12 blocks of length  704 for cross section mixing.
1                  880 d, second part of aas2h pass to make library
0general problem description data block
```

INFORMATION ONLY

```
0                                  general problem data

 igeo  1/2/3 = plane/cylinder/sphere      2      isn   quadrature order                    8
 izm   number of zones                    4      isct  order of scattering                3
 im    number of special intervals       28      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            20
 ibr   right boundary condition           3      iom   outer iteration maximum            25
 mxx   number of mixtures                 3      iclc  -1/0/n--flat res/sry/cpt           0
 ms    mixing table length               70      ith   0/1 = forward/adjoint               0
 igm   number of energy groups           27      iflu  not used(always wgtd)               0
 nrg   number of neutron groups          27      iprt  -2/-1/0/n=mixture xsec print        -2
 ngg   number of gamma groups             0      idl   0/1/2/3=no/prt nd/pch n/both        14
 iftg  number of first thermal group     15      ipbt  -1/0/1=none/fine/all bal. prt        0
0                                  special options

 ifg   0/1 = none/weighting calculation   1      ipn   0/1/2 diff. coef. param             0
 iqm   volumetric sources (0/n=no/yes)    0      idfm  0/1 = none/density factors 38*       0
 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    14      iai   0/1=none/activities by interval     0
 itmx  maximum time (minutes)            10      ifct  0/1=no/yes upscatter scaling         0
 idt1  0/1/2/3=no/xsect/srce/flux--out    0      ipvt  0/1/2=no/k/alpha parametric srch     0
 isx   broad group fluxes                 0      isen  outer iteration acceleration        0
 ibln  activity data unit                 0      rbnd  band rebaln parameter               0
 jbkl  0/1/2 buckling geometry            0
0                                  weighting data (ifg=1)

 icon  -1/0/1=cell/zone/region weight    -1      ihtf  total xsect pan in brd gp tables    3
 igmf  number of broad groups             3      ndsf  pan g-g or file number              4
 itp   0/10/20/30/40 0/c/e/ac/a           0      nusf  table length or max order           6
 ipp   -2/-1/0/n=wgtd xsect print        -2      nsxm  extra 1-d x-sect positions          0
 iap   -1/n anisn xsect print            -1
0                                  floating point parameters

 eps   overall convergence        1.00000E-04      dy    cyl/pla ht for buckling     .00000E+00
 ptc   point convergence          1.00000E-04      dz    plane depth for buckling   2.00000E+02
 xnf   normalization factor       1.00000E+00      vsc   void streaming correction   .00000E+00
 ev    eigenvalue guess            .00000E+00      pv    ipvt=1/2--k/alpha          1.00000E+00
 evm   eigenvalue modifier         .00000E+00      eql   ev change eps for search    1.00000E-03
 bf    buckling factor=1.420892   1.42089E+00      xrpm  resx param mod for search   7.50000E-01
       this case will require        2611 locations for mixing
       this case has been allocated 200000 locations
1                        880 d, second part of sas2h pass to make library
0        13q array has      70 entries.
0        14q array has      70 entries.
0        15q array has      70 entries.
0                                  data block 2 (mixing table, etc.)
0     nuclides        cccc                          mixing table                          extra
        on tape     identification          mixture   component     atom density        xsect id's
    1     202                                   3         201       2.09710E-02
    2     203                                   3         202       4.19420E-02
    3     204                                   3         203       3.81515E-06
    4     201                                   3         204       1.54884E-05
    5     205                                   2         205       4.25156E-02
    6     999                                   1       92235       1.33192E-04
    7    1001                                   1       92234       1.47781E-06
    8    5010                                   1       92236       1.82258E-05
    9    5011                                   1       92238       7.21946E-03
   10    8016                                   1        8016       1.50611E-02
   11       6                                   1           6       1.15315E-02
   12   36083                                   1       36083       4.72043E-07
```

INFORMATION ONLY

13	36085	1	36085	2.27030E-07
14	38090	1	38090	5.16852E-06
15	39089	1	39089	4.09755E-06
16	40093	1	42095	5.47657E-06
17	40094	1	40093	4.12203E-06
18	40095	1	40094	6.47876E-06
19	40302	1	40095	6.60885E-07
20	41094	1	41094	3.21149E-12
21	42095	1	43099	6.33752E-06
22	43099	1	45103	3.47568E-06
23	44101	1	45105	7.39443E-09
24	44106	1	44101	5.75136E-06
25	45103	1	44106	8.69130E-07
26	45105	1	46105	2.26913E-06
27	46105	1	46108	6.38851E-07
28	46108	1	47109	4.45102E-07
29	47109	1	51124	1.00830E-10
30	51124	1	54131	2.90271E-06
31	54131	1	54132	5.45567E-06
32	54132	1	54135	2.20848E-09
33	54135	1	54136	1.09418E-05
34	54136	1	55134	3.16663E-07
35	55133	1	55135	3.47352E-06
36	55134	1	55137	6.78821E-06
37	55135	1	56136	6.38766E-08
38	55137	1	57139	6.72223E-06
39	56136	1	59141	5.82082E-06
40	57139	1	59143	1.22771E-07
41	58144	1	58144	2.21750E-06
42	59141	1	60143	5.26395E-06
43	59143	1	60145	3.88111E-06
44	60143	1	61147	1.33040E-06
45	60145	1	61148	3.89552E-09
46	60147	1	60147	4.29701E-08
47	61147	1	62147	4.63565E-07
48	61148	1	62149	2.87617E-08
49	62147	1	62150	1.38277E-06
50	62149	1	62151	1.32930E-07
51	62150	1	62152	6.63065E-07
52	62151	1	64155	7.21936E-10
53	62152	1	63153	3.98698E-07
54	63153	1	63154	8.34053E-08
55	63154	1	63155	4.31432E-08
56	63155	1	40302	4.42681E-03
57	64155	1	1001	2.30630E-02
58	92234	1	5010	2.09787E-06
59	92235	1	5011	8.51673E-06
60	92236	1	55133	6.95263E-06
61	92238	1	93237	1.23390E-06
62	93237	1	94238	1.76799E-07
63	94238	1	94239	3.56356E-05
64	94239	1	94240	6.98680E-06
65	94240	1	94241	3.76429E-06
66	94241	1	94242	4.23205E-07
67	94242	1	95241	1.12643E-07
68	95241	1	95243	3.90711E-08
69	95243	1	96244	3.73748E-09
70	96244	1	999	3.30753E-21

- elapsed time .00 min.
0 2459 locations will be used

INFORMATION ONLY

```
0      35q array has     29 entries.
0      36q array has     28 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                    880 d, second part of sas2h pass to make library
                       neutron group parameters
0  gp   energy     lethargy   weighted  broad gp   calc      group     right     left
       boundaries  boundaries  velocities  numbers   type      band     albedo    albedo
    1  2.00000E+07 -6.95147E-01 4.60581E+09   1       0         1      1.00000E+00
    2  6.43400E+06 4.40989E-01 2.88737E+09   1       0         2      1.00000E+00
    3  3.00000E+06 1.20397E+00 2.12201E+09   1       0         3      1.00000E+00
    4  1.85000E+06 1.68740E+00 1.75673E+09   1       0         4      1.00000E+00
    5  1.40000E+06 1.96611E+00 1.46535E+09   1       0         5      1.00000E+00
    6  9.00000E+05 2.40795E+00 1.06620E+09   2       0         6      1.00000E+00
    7  4.00000E+05 3.21888E+00 6.07557E+08   2       0         7      1.00000E+00
    8  1.00000E+05 4.60517E+00 2.72415E+08   2       0         8      1.00000E+00
    9  1.70000E+04 6.37713E+00 1.13526E+08   2       0         9      1.00000E+00
   10  3.00000E+03 8.11173E+00 4.82126E+07   2       0        10      1.00000E+00
   11  5.50000E+02 9.80818E+00 2.05946E+07   2       0        11      1.00000E+00
   12  1.00000E+02 1.15129E+01 1.01036E+07   2       0        12      1.00000E+00
   13  3.00000E+01 1.27169E+01 5.69595E+06   2       0        13      1.00000E+00
   14  1.00000E+01 1.38155E+01 3.20957E+06   2       0        14      1.00000E+00
   15  3.04999E+00 1.50030E+01 2.10601E+06   2       0        15      1.00000E+00
   16  1.77000E+00 1.55471E+01 1.70522E+06   2       0        16      1.00000E+00
   17  1.29999E+00 1.58557E+01 1.52545E+06   2       0        17      1.00000E+00
   18  1.12999E+00 1.59959E+01 1.42867E+06   2       0        18      1.00000E+00
   19  1.00000E+00 1.61181E+01 1.31002E+06   2       0        19      1.00000E+00
   20  8.00000E-01 1.63412E+01 9.05898E+05   2       0        20      1.00000E+00
   21  4.00000E-01 1.70344E+01 8.17974E+05   3       0        21      1.00000E+00
   22  3.25000E-01 1.72420E+01 6.90070E+05   3       0        22      1.00000E+00
   23  2.25000E-01 1.76098E+01 4.85953E+05   3       0        23      1.00000E+00
   24  9.99999E-02 1.84207E+01 3.57766E+05   3       0        24      1.00000E+00
   25  5.00000E-02 1.91138E+01 2.71895E+05   3       0        25      1.00000E+00
   26  3.00000E-02 1.96247E+01 1.87283E+05   3       0        26      1.00000E+00
   27  1.00000E-02 2.07233E+01 8.88201E+04   3       0        27      1.00000E+00
   28  1.00000E-05 2.76310E+01
1                    880 d, second part of sas2h pass to make library
0        mixture   order p(l)   activity table                quadrature constants
         by zone   by zone     matl no.   reaction   weights   directions  refl direc   wt x cos
    1      3         3                                  0       -2.79004E-01   3          0
    2      2         3                                5.06143E-02 -1.97286E-01   3      -9.98548E-03
    3      3         3                                5.06143E-02  1.97286E-01   2       9.98548E-03
    4      1         3                                  0       -6.04419E-01   8          0
    5                                                 5.55953E-02 -5.58410E-01   8      -3.10450E-02
    6                                                 5.55953E-02 -2.31301E-01   7      -1.28598E-02
    7                                                 5.55953E-02  2.31301E-01   6       1.28598E-02
    8                                                 5.55953E-02  5.58410E-01   5       3.10450E-02
    9                                                   0       -8.50774E-01   15         0
   10                                                 5.22834E-02 -8.21784E-01   15     -4.29665E-02
   11                                                 5.22834E-02 -6.01588E-01   14     -3.14537E-02
   12                                                 5.22834E-02 -2.20196E-01   13     -1.15128E-02
   13                                                 5.22834E-02  2.20196E-01   12      1.15128E-02
   14                                                 5.22834E-02  6.01588E-01   11      3.14537E-02
   15                                                 5.22834E-02  8.21784E-01   10      4.29665E-02
   16                                                   0       -9.83052E-01   24         0
   17                                                 4.53355E-02 -9.64143E-01   24     -4.37099E-02
   18                                                 4.53355E-02 -8.17361E-01   23     -3.70555E-02
   19                                                 4.53355E-02 -5.46143E-01   22     -2.47597E-02
```

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20				4.53355E-02	-1.91780E-01	21	-8.69444E-03
21				4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40530E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40530E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83082E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46614E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46614E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dns fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98685E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42520E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02			
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60386E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10577E+00	4	6.34088E+00	1.35731E+00			
19	1.20236E+00	1.30195E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00			
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			

INFORMATION ONLY

```
   29 2.96100E+00                          1.86045E+01
- elapsed time    .00 min.
1 outer inner  1 - balance   eigenvalue  1 - source   1 - scatter  1 - upscat    search        time
  iter iters                              ratio        ratio        ratio       parameter     (min)
     1   172 -8.63675E-06  1.03791E+00 -4.15808E-02  1.00000E+00 -1.29588E-02  .00000E+00     .0000
     2   251  5.66640E-06  1.04195E+00 -9.95511E-04 -5.16134E-03 -2.02897E-03  .00000E+00     .0000
     3   314 -3.70457E-07  1.04265E+00 -1.59963E-04 -7.56361E-04 -4.78395E-04  .00000E+00     .0167
     4   361 -1.31994E-06  1.04280E+00 -3.61601E-05 -1.80436E-04 -1.10090E-04  .00000E+00     .0167
```

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	1.37258E-06	28	1.00000E+00	1
2	2	1	17	1.66839E-06	28	1.00000E+00	1
3	3	1	17	1.54704E-06	28	1.00000E+00	1
4	4	1	17	1.51222E-06	28	1.00000E+00	1
5	5	1	17	1.59874E-06	28	1.00000E+00	1
6	6	1	17	1.09976E-06	28	1.00000E+00	1
7	7	1	24	1.17530E-06	28	1.00000E+00	2
8	8	1	23	7.98909E-08	20	1.00000E+00	2
9	9	1	27	1.50382E-05	28	9.99986E-01	3
10	10	1	28	9.83594E-07	28	1.00000E+00	3
11	11	1	26	4.76753E-06	28	9.99996E-01	3
12	12	1	25	8.77948E-07	28	9.99999E-01	3
13	13	1	26	4.85440E-06	28	9.99995E-01	3
14	14	1	25	8.47485E-07	28	9.99999E-01	3
15	15	2	28	3.36890E-05	28	1.00000E+00	2
16	16	2	28	4.08865E-05	28	1.00001E+00	2
17	17	2	26	9.14355E-05	28	1.00010E+00	3
18	18	2	28	4.33017E-05	28	1.00002E+00	3
19	19	2	26	8.20417E-05	28	1.00009E+00	3
20	20	2	25	2.21060E-05	28	1.00002E+00	3
21	21	2	28	5.23587E-05	28	1.00001E+00	3
22	22	1	14	8.38734E-05	28	9.99980E-01	3
23	23	1	27	4.27573E-05	28	1.00004E+00	4
24	24	1	1	3.70277E-05	9	1.00003E+00	4
25	25	1	1	4.36447E-05	28	1.00003E+00	5
26	26	1	1	3.11985E-05	6	1.00002E+00	6
27	27	1	1	2.80956E-05	5	1.00002E+00	8

```
    5   395  1.90825E-06  1.04280E+00 -8.50867E-06 -4.18172E-05 -2.48051E-05  .00000E+00     .0167
          final monitor
                 lambda  1.04283E+00        production/absorption  1.05648E+00        angular flux on  16.
- elapsed time    .02 min.
1                 880 d, second part of search pass to make library
0 int.  zone number     radius   int. midpoint    area        volume      prod density
    1       1          .00000E+00  1.97644E-02  .00000E+00  4.90881E-03  .00000E+00
    2       1          3.95287E-02  5.92931E-02  2.48366E-01  1.47264E-02  .00000E+00
    3       1          7.90575E-02  1.18586E-01  4.96733E-01  5.89057E-02  .00000E+00
    4       1          1.58115E-01  1.97644E-01  9.93466E-01  9.81762E-02  .00000E+00
    5       1          2.37172E-01  2.76701E-01  1.49020E+00  1.37447E-01  .00000E+00
    6       1          3.16230E-01  3.55759E-01  1.98692E+00  1.76717E-01  .00000E+00
    7       1          3.95288E-01  4.34816E-01  2.48366E+00  2.15988E-01  .00000E+00
    8       1          4.74346E-01  5.13874E-01  2.98040E+00  2.55258E-01  .00000E+00
    9       1          5.53403E-01  5.73167E-01  3.47713E+00  1.42355E-01  .00000E+00
   10       1          5.92931E-01  6.12598E-01  3.72550E+00  1.52173E-01  .00000E+00
   11       2          6.32460E-01  6.42520E-01  3.97386E+00  8.20460E-02  .00000E+00
   12       2          6.52780E-01  6.62940E-01  4.10154E+00  8.46405E-02  .00000E+00
   13       3          6.73100E-01  6.96883E-01  4.22921E+00  2.05662E-01  .00000E+00
   14       3          7.20067E-01  7.43550E-01  4.52431E+00  2.19422E-01  .00000E+00
   15       3          7.67033E-01  7.90517E-01  4.81941E+00  2.33182E-01  .00000E+00
   16       4          8.14000E-01  8.62795E-01  5.11451E+00  5.29061E-01  2.38059E-02
   17       4          9.11591E-01  9.60386E-01  5.72769E+00  5.88691E-01  2.59056E-02
```

18	4	1.00918E+00	1.10657E+00	6.34088E+00	1.35731E+00	5.84708E-02
19	4	1.20336E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.73591E-02
20	4	1.39955E+00	1.49714E+00	8.79860E+00	1.83603E+00	7.63332E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	8.53572E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+00	9.44350E-02
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.03575E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.12792E-01
25	4	2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.22103E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.31540E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	6.93567E-02
28	4	2.85341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.17984E-02
29		2.96100E+00		1.86045E+01		

1 880 d, second part of ses2h pass to make library

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.29528E-02	9.08020E-02	1.12533E-01	6.90100E-02	1.02732E-01	1.92768E-01	1.98076E-01	1.47004E-01
2	1.29478E-02	9.07508E-02	1.12468E-01	6.89718E-02	1.02679E-01	1.92681E-01	1.98036E-01	1.46978E-01
3	1.29483E-02	9.07638E-02	1.12486E-01	6.89869E-02	1.02714E-01	1.92751E-01	1.98089E-01	1.47009E-01
4	1.29550E-02	9.08345E-02	1.12602E-01	6.90682E-02	1.02863E-01	1.92994E-01	1.98245E-01	1.47088E-01
5	1.29673E-02	9.09864E-02	1.12798E-01	6.92011E-02	1.03059E-01	1.93392E-01	1.98493E-01	1.47082E-01
6	1.29841E-02	9.11817E-02	1.13067E-01	6.93844E-02	1.03357E-01	1.93941E-01	1.98882E-01	1.47138E-01
7	1.30052E-02	9.14316E-02	1.13413E-01	6.96224E-02	1.03745E-01	1.94657E-01	1.94273E-01	1.47208E-01
8	1.30307E-02	9.17437E-02	1.13853E-01	6.99297E-02	1.04250E-01	1.95598E-01	1.94849E-01	1.47291E-01
9	1.30523E-02	9.20182E-02	1.14247E-01	7.02116E-02	1.04718E-01	1.96461E-01	1.95385E-01	1.47360E-01
10	1.30669E-02	9.22335E-02	1.14578E-01	7.04598E-02	1.05139E-01	1.97246E-01	1.95871E-01	1.47409E-01
11	1.30792E-02	9.24118E-02	1.14851E-01	7.06682E-02	1.05492E-01	1.97922E-01	1.96289E-01	1.47454E-01
12	1.30925E-02	9.25446E-02	1.15025E-01	7.07765E-02	1.05662E-01	1.98259E-01	1.96492E-01	1.47497E-01
13	1.31206E-02	9.27865E-02	1.15295E-01	7.09140E-02	1.05851E-01	1.98598E-01	1.96683E-01	1.47566E-01
14	1.31618E-02	9.31719E-02	1.15746E-01	7.11692E-02	1.06225E-01	1.99254E-01	1.97052E-01	1.47658E-01
15	1.32102E-02	9.36678E-02	1.16374E-01	7.15558E-02	1.06822E-01	2.00528E-01	1.97650E-01	1.47759E-01
16	1.32656E-02	9.44619E-02	1.17391E-01	7.22008E-02	1.07834E-01	2.02168E-01	1.98781E-01	1.47925E-01
17	1.33595E-02	9.52521E-02	1.18407E-01	7.28489E-02	1.08866E-01	2.04060E-01	1.99922E-01	1.48126E-01
18	1.34189E-02	9.58923E-02	1.19240E-01	7.33843E-02	1.09731E-01	2.05695E-01	2.00988E-01	1.48330E-01
19	1.34703E-02	9.64605E-02	1.19988E-01	7.38665E-02	1.10521E-01	2.07221E-01	2.01904E-01	1.48542E-01
20	1.35004E-02	9.68017E-02	1.20445E-01	7.41670E-02	1.11015E-01	2.08208E-01	2.02542E-01	1.48697E-01
21	1.35193E-02	9.70209E-02	1.20743E-01	7.43634E-02	1.11344E-01	2.08873E-01	2.02886E-01	1.48813E-01
22	1.35314E-02	9.71639E-02	1.20942E-01	7.44944E-02	1.11568E-01	2.09339E-01	2.03300E-01	1.48900E-01
23	1.35389E-02	9.72558E-02	1.21071E-01	7.45805E-02	1.11712E-01	2.09654E-01	2.03517E-01	1.48962E-01
24	1.35433E-02	9.73106E-02	1.21150E-01	7.46331E-02	1.11803E-01	2.09855E-01	2.03658E-01	1.49004E-01
25	1.35452E-02	9.73356E-02	1.21187E-01	7.46582E-02	1.11848E-01	2.09959E-01	2.03752E-01	1.49025E-01
26	1.35448E-02	9.73324E-02	1.21186E-01	7.46570E-02	1.11848E-01	2.09966E-01	2.03738E-01	1.49025E-01
27	1.35430E-02	9.73129E-02	1.21159E-01	7.46395E-02	1.11819E-01	2.09911E-01	2.03701E-01	1.49012E-01
28	1.35405E-02	9.72826E-02	1.21119E-01	7.46130E-02	1.11775E-01	2.09821E-01	2.03638E-01	1.48992E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15956E-01	1.07187E-01	1.00969E-01	6.54718E-02	5.59586E-02	5.32164E-02	2.89561E-02	1.60417E-02
2	1.15957E-01	1.07185E-01	1.00973E-01	6.54768E-02	5.59035E-02	5.32235E-02	2.89584E-02	1.60428E-02
3	1.15955E-01	1.07180E-01	1.00952E-01	6.54529E-02	5.58809E-02	5.31902E-02	2.89519E-02	1.60391E-02
4	1.15951E-01	1.07159E-01	1.00903E-01	6.53954E-02	5.58266E-02	5.31100E-02	2.89757E-02	1.60301E-02
5	1.15944E-01	1.07126E-01	1.00828E-01	6.53077E-02	5.57441E-02	5.29880E-02	2.89516E-02	1.60166E-02
6	1.15935E-01	1.07082E-01	1.00726E-01	6.51885E-02	5.56325E-02	5.28225E-02	2.89198E-02	1.59988E-02
7	1.15923E-01	1.07029E-01	1.00597E-01	6.50329E-02	5.54868E-02	5.26060E-02	2.88797E-02	1.59756E-02
8	1.15909E-01	1.06944E-01	1.00412E-01	6.48263E-02	5.52961E-02	5.23214E-02	2.88292E-02	1.59461E-02
9	1.15900E-01	1.06870E-01	1.00304E-01	6.46342E-02	5.51190E-02	5.20662E-02	2.87888E-02	1.59191E-02
10	1.15901E-01	1.06800E-01	1.00089E-01	6.44578E-02	5.49588E-02	5.18154E-02	2.87442E-02	1.58950E-02
11	1.15906E-01	1.06746E-01	9.99662E-02	6.43221E-02	5.48316E-02	5.16254E-02	2.87095E-02	1.58748E-02
12	1.15902E-01	1.06726E-01	9.99303E-02	6.42684E-02	5.47795E-02	5.15478E-02	2.86904E-02	1.58651E-02
13	1.15857E-01	1.06699E-01	9.98577E-02	6.41862E-02	5.47045E-02	5.14358E-02	2.86743E-02	1.58550E-02
14	1.15787E-01	1.06657E-01	9.97144E-02	6.40080E-02	5.45463E-02	5.11929E-02	2.86477E-02	1.58357E-02
15	1.15711E-01	1.06532E-01	9.94808E-02	6.37275E-02	5.42586E-02	5.08112E-02	2.86078E-02	1.58055E-02
16	1.15607E-01	1.06361E-01	9.90950E-02	6.32655E-02	5.38895E-02	5.01785E-02	2.85346E-02	1.57538E-02

INFORMATION ONLY

17	1.15513E-01	1.06191E-01	9.87054E-02	6.28037E-02	5.34751E-02	4.95426E-02	2.84473E-02	1.56977E-02
18	1.15447E-01	1.06047E-01	9.83759E-02	6.24095E-02	5.31127E-02	4.89984E-02	2.83531E-02	1.56427E-02
19	1.15394E-01	1.05915E-01	9.80647E-02	6.20425E-02	5.27697E-02	4.84907E-02	2.82552E-02	1.55869E-02
20	1.15370E-01	1.05831E-01	9.78648E-02	6.18052E-02	5.25436E-02	4.81621E-02	2.81784E-02	1.55448E-02
21	1.15357E-01	1.05773E-01	9.77259E-02	6.16405E-02	5.23842E-02	4.79331E-02	2.81211E-02	1.55167E-02
22	1.15351E-01	1.05733E-01	9.76270E-02	6.15233E-02	5.22694E-02	4.77697E-02	2.80775E-02	1.54941E-02
23	1.15348E-01	1.05705E-01	9.75567E-02	6.14400E-02	5.21873E-02	4.76534E-02	2.80453E-02	1.54775E-02
24	1.15346E-01	1.05686E-01	9.75089E-02	6.13832E-02	5.21312E-02	4.75742E-02	2.80233E-02	1.54662E-02
25	1.15344E-01	1.05674E-01	9.74803E-02	6.13494E-02	5.20982E-02	4.75272E-02	2.80108E-02	1.54598E-02
26	1.15342E-01	1.05670E-01	9.74712E-02	6.13385E-02	5.20885E-02	4.75128E-02	2.80088E-02	1.54587E-02
27	1.15340E-01	1.05672E-01	9.74784E-02	6.13452E-02	5.20962E-02	4.75230E-02	2.80141E-02	1.54613E-02
28	1.15337E-01	1.05677E-01	9.74919E-02	6.13637E-02	5.21158E-02	4.75497E-02	2.80295E-02	1.54662E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	6.99978E-03	5.26375E-03	1.05900E-02	3.52499E-02	1.09386E-02	2.23971E-02	7.57244E-02	6.21490E-02
2	7.00052E-03	5.26524E-03	1.05913E-02	3.52526E-02	1.09389E-02	2.23989E-02	7.57195E-02	6.21346E-02
3	6.99729E-03	5.25695E-03	1.05852E-02	3.52383E-02	1.09286E-02	2.23538E-02	7.56081E-02	6.20099E-02
4	6.98948E-03	5.23694E-03	1.05706E-02	3.52044E-02	1.09031E-02	2.22840E-02	7.53472E-02	6.17416E-02
5	6.97759E-03	5.20625E-03	1.05484E-02	3.51539E-02	1.08647E-02	2.21640E-02	7.49678E-02	6.13446E-02
6	6.96147E-03	5.16406E-03	1.05185E-02	3.50860E-02	1.08126E-02	2.20018E-02	7.44619E-02	6.08158E-02
7	6.94088E-03	5.10817E-03	1.04796E-02	3.49988E-02	1.07446E-02	2.17906E-02	7.38175E-02	6.01437E-02
8	6.91264E-03	5.03350E-03	1.04289E-02	3.48866E-02	1.06553E-02	2.15148E-02	7.30052E-02	5.92999E-02
9	6.88676E-03	4.96309E-03	1.03819E-02	3.47837E-02	1.05720E-02	2.12593E-02	7.22709E-02	5.85448E-02
10	6.85317E-03	4.89835E-03	1.03395E-02	3.46919E-02	1.04958E-02	2.10282E-02	7.16342E-02	5.78993E-02
11	6.81447E-03	4.84881E-03	1.03056E-02	3.46180E-02	1.04374E-02	2.08542E-02	7.11707E-02	5.74486E-02
12	6.83698E-03	4.83123E-03	1.02915E-02	3.45864E-02	1.04170E-02	2.07961E-02	7.10275E-02	5.73339E-02
13	6.82606E-03	4.79869E-03	1.02725E-02	3.45462E-02	1.03835E-02	2.06894E-02	7.07517E-02	5.70489E-02
14	6.80256E-03	4.72549E-03	1.02334E-02	3.44644E-02	1.03072E-02	2.04477E-02	7.01395E-02	5.63998E-02
15	6.76534E-03	4.60961E-03	1.01721E-02	3.43384E-02	1.01860E-02	2.00716E-02	6.92448E-02	5.54712E-02
16	6.70403E-03	4.40664E-03	1.00598E-02	3.41300E-02	9.98748E-03	1.94515E-02	6.78671E-02	5.40951E-02
17	6.64270E-03	4.20615E-03	9.96401E-03	3.39100E-02	9.79100E-03	1.88370E-02	6.64655E-02	5.27168E-02
18	6.59002E-03	4.05544E-03	9.86791E-03	3.37022E-02	9.62549E-03	1.83261E-02	6.51270E-02	5.13972E-02
19	6.54066E-03	3.92709E-03	9.77531E-03	3.34945E-02	9.47172E-03	1.78557E-02	6.37816E-02	5.00666E-02
20	6.50834E-03	3.85355E-03	9.71287E-03	3.33482E-02	9.37240E-03	1.75547E-02	6.28250E-02	4.91165E-02
21	6.48561E-03	3.80536E-03	9.66831E-03	3.32408E-02	9.30286E-03	1.73448E-02	6.21049E-02	4.84048E-02
22	6.46927E-03	3.77485E-03	9.63594E-03	3.31598E-02	9.25200E-03	1.71943E-02	6.15611E-02	4.78666E-02
23	6.45760E-03	3.75339E-03	9.61264E-03	3.31007E-02	9.21697E-03	1.70857E-02	6.11532E-02	4.74630E-02
24	6.44984E-03	3.73911E-03	9.59663E-03	3.30598E-02	9.19215E-03	1.70102E-02	6.08584E-02	4.71701E-02
25	6.44498E-03	3.73041E-03	9.58707E-03	3.30350E-02	9.17665E-03	1.69621E-02	6.06695E-02	4.69733E-02
26	6.44361E-03	3.72671E-03	9.58407E-03	3.30282E-02	9.17047E-03	1.69405E-02	6.05687E-02	4.68682E-02
27	6.44524E-03	3.72705E-03	9.58669E-03	3.30337E-02	9.17174E-03	1.69409E-02	6.05583E-02	4.68445E-02
28	6.44800E-03	3.73028E-03	9.59197E-03	3.30477E-02	9.17816E-03	1.69569E-02	6.06100E-02	4.68977E-02

0 int.	grp. 25	grp. 26	grp. 27
1	2.81217E-02	2.02953E-02	3.85488E-03
2	2.81110E-02	2.02814E-02	3.85212E-03
3	2.80442E-02	2.02229E-02	3.84012E-03
4	2.79023E-02	2.00928E-02	3.81469E-03
5	2.76920E-02	1.99151E-02	3.77623E-03
6	2.74114E-02	1.96672E-02	3.72358E-03
7	2.70550E-02	1.93497E-02	3.65472E-03
8	2.66095E-02	1.89498E-02	3.56592E-03
9	2.62144E-02	1.85931E-02	3.48563E-03
10	2.58798E-02	1.82869E-02	3.41665E-03
11	2.56557E-02	1.80980E-02	3.37492E-03
12	2.56077E-02	1.80533E-02	3.37213E-03
13	2.54485E-02	1.79169E-02	3.33282E-03
14	2.50858E-02	1.75694E-02	3.25808E-03
15	2.45809E-02	1.70788E-02	3.09726E-03
16	2.38500E-02	1.63782E-02	2.89161E-03
17	2.31323E-02	1.57165E-02	2.71461E-03
18	2.24490E-02	1.51197E-02	2.58104E-03

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19	2.17641E-02	1.45404E-02	2.46055E-03
20	2.12802E-02	1.41490E-02	2.38726E-03
21	2.09215E-02	1.38691E-02	2.33791E-03
22	2.06531E-02	1.36661E-02	2.30372E-03
23	2.04535E-02	1.35186E-02	2.27948E-03
24	2.03094E-02	1.34140E-02	2.26261E-03
25	2.02119E-02	1.33437E-02	2.25142E-03
26	2.01574E-02	1.33052E-02	2.24497E-03
27	2.01415E-02	1.32888E-02	2.24254E-03
28	2.01520E-02	1.32919E-02	2.24234E-03

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.04510E-04	6.67761E-04	5.56079E-05	-7.23328E-04	9.99953E-01
2	.00000E+00	.00000E+00	3.83148E-04	6.16418E-03	8.10169E-03	1.76150E-04	-7.89438E-03	9.99963E-01
3	.00000E+00	.00000E+00	3.84799E-03	5.46598E-03	1.42214E-02	9.28018E-05	-1.04659E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.59085E-03	3.60098E-03	1.25726E-02	4.20232E-05	-6.82364E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02689E-02	1.15287E-02	2.08865E-02	4.96820E-05	-1.06671E-02	9.99992E-01
6	.00000E+00	.00000E+00	2.15109E-02	3.45000E-02	4.10034E-02	8.42975E-05	-1.95771E-02	9.99999E-01
7	.00000E+00	.00000E+00	4.22446E-02	6.09745E-02	5.41408E-02	6.12258E-05	-1.19568E-02	9.99988E-01
8	.00000E+00	.00000E+00	5.63661E-02	7.83630E-02	5.87581E-02	3.64109E-05	-2.42325E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.77976E-02	7.26404E-02	5.75344E-02	2.98873E-05	2.50324E-04	9.99890E-01
10	.00000E+00	.00000E+00	5.71018E-02	6.92160E-02	5.56253E-02	3.60861E-05	1.44639E-03	9.99894E-01
11	.00000E+00	.00000E+00	5.59047E-02	6.56889E-02	5.24190E-02	5.52110E-05	3.43382E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54492E-02	3.51301E-02	4.13349E-02	6.05084E-05	4.05481E-03	9.99978E-01
13	.00000E+00	.00000E+00	4.06016E-02	2.85832E-02	3.66661E-02	8.46726E-05	3.86204E-03	9.99970E-01
14	.00000E+00	.00000E+00	3.94906E-02	2.81703E-02	3.36515E-02	1.35950E-04	5.70361E-03	9.99988E-01
15	.00000E+00	.00000E+00	2.16591E-02	1.08422E-02	2.03118E-02	1.12496E-04	1.23565E-03	9.99961E-01
16	.00000E+00	.00000E+00	1.42107E-02	4.56608E-03	1.34521E-02	7.61473E-05	6.82897E-04	9.99972E-01
17	.00000E+00	.00000E+00	7.29140E-03	1.28544E-03	6.88810E-03	3.67973E-05	5.66708E-04	9.99972E-01
18	.00000E+00	.00000E+00	6.45842E-03	9.19768E-04	5.02580E-03	2.87800E-05	1.40390E-03	9.99990E-01
19	.00000E+00	.00000E+00	1.06562E-02	2.85901E-03	9.55519E-03	6.44814E-05	1.03678E-03	9.99977E-01
20	.00000E+00	.00000E+00	2.60612E-02	2.07213E-02	2.34283E-02	2.70250E-04	2.36309E-03	9.99986E-01
21	.00000E+00	.00000E+00	1.24522E-02	4.10951E-03	1.06907E-02	1.08060E-04	1.65868E-03	9.99983E-01
22	.00000E+00	.00000E+00	2.45964E-02	1.25329E-02	1.95039E-02	2.40724E-04	4.85135E-03	1.00002E+00
23	.00000E+00	.00000E+00	6.35762E-02	7.65646E-02	5.02779E-02	1.11145E-03	1.21889E-02	1.00006E+00
24	.00000E+00	.00000E+00	6.78364E-02	7.26320E-02	5.59109E-02	1.31778E-03	1.06050E-02	1.00004E+00
25	.00000E+00	.00000E+00	4.51869E-02	3.07501E-02	3.95600E-02	7.81536E-04	4.84419E-03	1.00002E+00
26	.00000E+00	.00000E+00	3.61066E-02	3.43869E-02	3.17622E-02	7.95286E-04	3.54856E-03	1.00002E+00
27	.00000E+00	.00000E+00	1.22538E-02	7.46532E-03	1.13726E-02	2.84159E-04	5.97017E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.84903E-01	7.79957E-01	7.84903E-01	6.22283E-03	-6.20259E-03	9.99975E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*dr**2	total flux
1	1.30740E-02	-7.23328E-04	1.29571E-02	.00000E+00	3.69291E-11	.00000E+00	2.00132E-05	1.63473E-02
2	9.23472E-02	-7.89438E-03	9.08655E-02	.00000E+00	.00000E+00	.00000E+00	8.93467E-05	1.14988E-01
3	1.14755E-01	-1.04659E-02	1.12588E-01	.00000E+00	.00000E+00	.00000E+00	9.23722E-05	1.42631E-01
4	7.05999E-02	-6.82364E-03	6.90441E-02	.00000E+00	.00000E+00	.00000E+00	4.17695E-05	8.75769E-02
5	1.05379E-01	-1.06671E-02	1.02781E-01	.00000E+00	.00000E+00	.00000E+00	4.93889E-05	1.30518E-01
6	1.97699E-01	-1.95771E-02	1.92851E-01	.00000E+00	.00000E+00	.00000E+00	8.34278E-05	2.44892E-01
7	1.98151E-01	-1.19568E-02	1.93118E-01	.00000E+00	.00000E+00	.00000E+00	5.92818E-05	2.44303E-01
8	1.47433E-01	-2.42325E-03	1.47011E-01	.00000E+00	.00000E+00	.00000E+00	3.27300E-05	1.85001E-01
9	1.15904E-01	2.50324E-04	1.15956E-01	.00000E+00	.00000E+00	.00000E+00	2.16822E-05	1.45675E-01
10	1.06760E-01	1.44639E-03	1.07184E-01	.00000E+00	.00000E+00	.00000E+00	1.91755E-05	1.34465E-01
11	9.99994E-02	3.43382E-03	1.00961E-01	.00000E+00	.00000E+00	.00000E+00	1.79254E-05	1.26353E-01
12	6.43590E-02	4.05481E-03	6.54629E-02	.00000E+00	.00000E+00	.00000E+00	1.05224E-05	8.16613E-02
13	5.48671E-02	3.86204E-03	5.58900E-02	.00000E+00	.00000E+00	.00000E+00	8.74912E-06	6.96722E-02
14	5.16774E-02	5.70361E-03	5.32088E-02	.00000E+00	.00000E+00	.00000E+00	8.45943E-06	6.60231E-02
15	2.87205E-02	1.23565E-03	2.89915E-02	.00000E+00	.00000E+00	.00000E+00	4.46673E-06	3.62800E-02
16	1.58805E-02	6.82897E-04	1.60383E-02	.00000E+00	.00000E+00	.00000E+00	2.23451E-06	2.00681E-02
17	6.86927E-03	5.66708E-04	6.99815E-03	.00000E+00	.00000E+00	.00000E+00	8.91834E-07	8.71339E-03
18	4.86091E-03	1.40390E-03	5.26061E-03	.00000E+00	.00000E+00	.00000E+00	6.38581E-07	6.39540E-03

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19	1.03147E-02	1.03678E-03	1.05871E-02	.00000E+00	.00000E+00	.00000E+00	1.37643E-06	1.31547E-02
20	3.46379E-02	2.36309E-03	3.52632E-02	.00000E+00	.00000E+00	.00000E+00	5.15148E-06	4.39514E-02
21	1.04519E-02	1.66868E-03	1.09349E-02	.00000E+00	.00000E+00	.00000E+00	1.29661E-06	1.34758E-02
22	2.08960E-02	4.85135E-03	2.23888E-02	.00000E+00	.00000E+00	.00000E+00	2.49604E-06	2.73040E-02
23	7.12707E-02	1.21839E-02	7.57014E-02	.00000E+00	.00000E+00	.00000E+00	7.63495E-06	9.25678E-02
24	5.75309E-02	1.06050E-02	6.21325E-02	.00000E+00	.00000E+00	.00000E+00	4.62083E-06	7.53854E-02
25	2.56907E-02	4.84419E-03	2.81161E-02	.00000E+00	.00000E+00	.00000E+00	1.60529E-06	3.38998E-02
26	1.81170E-02	3.54856E-03	2.02911E-02	.00000E+00	.00000E+00	.00000E+00	8.47061E-07	2.42219E-02
27	3.37778E-03	5.97017E-04	3.85509E-03	.00000E+00	.00000E+00	.00000E+00	9.98282E-08	4.56914E-03
28	1.73960E+00	-6.20296E-03	1.74639E+00	.00000E+00	3.69291E-11	.00000E+00	5.88141E-04	2.19007E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.23088E-04	1.67253E-04	2.50375E-06	-1.63776E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.92069E-05	1.46077E-03	1.04817E-03	1.40569E-05	-1.05305E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.50721E-04	2.77156E-03	8.76337E-04	2.02812E-05	-7.45839E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.87481E-04	2.30585E-03	2.98558E-04	1.31034E-05	-2.41627E-05	9.99997E-01
5	.00000E+00	.00000E+00	6.18142E-04	4.41802E-03	2.79406E-04	1.68695E-05	3.21851E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02416E-03	1.24062E-02	1.69503E-04	2.70703E-05	8.27594E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.73363E-04	1.25960E-02	6.33138E-05	2.68186E-05	5.83230E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17530E-04	9.20975E-03	4.43464E-04	2.21164E-05	-3.48079E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45309E-04	6.36200E-03	5.30834E-05	7.67387E-05	3.15545E-04	9.99987E-01
10	.00000E+00	.00000E+00	5.30998E-05	4.99152E-03	4.95264E-05	5.98821E-05	-5.58123E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.95275E-05	4.45974E-03	5.03665E-05	9.01200E-05	-9.09625E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.03665E-05	2.76454E-03	5.14333E-05	5.67973E-05	-6.76743E-05	1.00000E+00
13	.00000E+00	.00000E+00	5.14334E-05	2.35753E-03	4.80920E-05	6.31695E-05	-2.97604E-05	1.00000E+00
14	.00000E+00	.00000E+00	4.80921E-05	2.22465E-03	4.19258E-05	8.49585E-05	-2.32784E-05	1.00000E+00
15	.00000E+00	.00000E+00	4.45078E-05	1.21206E-03	4.96056E-05	6.27695E-05	-1.13790E-05	1.00000E+00
16	.00000E+00	.00000E+00	5.55508E-05	6.41699E-04	5.56914E-05	3.80825E-05	-3.84630E-05	1.00000E+00
17	.00000E+00	.00000E+00	6.03665E-05	2.41195E-04	5.98707E-05	1.79293E-05	-7.93196E-07	9.99994E-01
18	.00000E+00	.00000E+00	6.23425E-05	1.60750E-04	5.19055E-05	1.33832E-05	9.10097E-06	9.99999E-01
19	.00000E+00	.00000E+00	5.37654E-05	3.94315E-04	5.81776E-05	3.05978E-05	-7.46769E-06	9.99996E-01
20	.00000E+00	.00000E+00	7.09980E-05	1.45834E-03	6.19994E-05	1.25378E-05	-3.53763E-06	9.99997E-01
21	.00000E+00	.00000E+00	8.15146E-05	3.69810E-04	8.83341E-05	4.58403E-06	-1.13980E-05	9.99997E-01
22	.00000E+00	.00000E+00	1.16403E-04	8.07124E-04	1.07869E-04	1.04215E-05	-1.82679E-05	9.99988E-01
23	.00000E+00	.00000E+00	1.66569E-04	2.91009E-03	2.13649E-04	4.75308E-05	-9.46401E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.75410E-04	2.21755E-03	3.04325E-04	5.44330E-05	-8.34102E-05	1.00001E+00
25	.00000E+00	.00000E+00	2.81808E-04	8.95630E-04	2.30523E-04	3.16952E-05	1.95573E-05	1.00001E+00
26	.00000E+00	.00000E+00	1.19951E-04	7.01566E-04	9.27138E-05	3.14948E-05	-4.27651E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.68834E-05	1.48149E-04	7.63516E-08	1.09713E-05	1.58114E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.01450E-03	8.07095E-02	5.01450E-03	6.09531E-04	-6.03612E-04	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.31006E-02	-8.87104E-04	1.30740E-02	-7.23528E-04	5.97500E-06	.00000E+00	1.65175E-06	2.18126E-03
2	9.26127E-02	-8.92743E-03	9.23472E-02	-7.89438E-03	.00000E+00	.00000E+00	1.11676E-05	1.54150E-02
3	1.15103E-01	-1.12117E-02	1.14755E-01	-1.04697E-02	.00000E+00	.00000E+00	1.27008E-05	1.97588E-02
4	7.08166E-02	-6.84780E-03	7.05999E-02	-6.82564E-03	.00000E+00	.00000E+00	7.44281E-06	1.17886E-02
5	1.05718E-01	-1.03452E-02	1.05379E-01	-1.06671E-02	.00000E+00	.00000E+00	8.63880E-06	1.75985E-02
6	1.98369E-01	-1.87495E-02	1.97698E-01	-1.95771E-02	.00000E+00	.00000E+00	1.01766E-05	3.30194E-02
7	1.96556E-01	-1.13736E-02	1.96151E-01	-1.19568E-02	.00000E+00	.00000E+00	8.35461E-06	3.27559E-02
8	1.47521E-01	-2.77132E-03	1.47433E-01	-2.42525E-03	.00000E+00	.00000E+00	5.27569E-06	2.45822E-02
9	1.15894E-01	5.65790E-04	1.15904E-01	2.50246E-04	.00000E+00	.00000E+00	4.58653E-06	1.95196E-02
10	1.06721E-01	1.39088E-03	1.05760E-01	1.44639E-03	.00000E+00	.00000E+00	4.91381E-06	1.77914E-02
11	9.99095E-02	3.34286E-03	9.99994E-02	3.43382E-03	.00000E+00	.00000E+00	4.76975E-06	1.66591E-02
12	6.42518E-02	4.04806E-03	6.43590E-02	4.05481E-03	.00000E+00	.00000E+00	3.21588E-06	1.07171E-02
13	5.47628E-02	3.85906E-03	5.48671E-02	3.86204E-03	.00000E+00	.00000E+00	2.73753E-06	9.13628E-03
14	5.15252E-02	5.70129E-03	5.16774E-02	5.70361E-03	.00000E+00	.00000E+00	2.57040E-06	8.59881E-03
15	2.86823E-02	1.22427E-03	2.87205E-02	1.23565E-03	.00000E+00	.00000E+00	1.40948E-06	4.78587E-03
16	1.58612E-02	6.79050E-04	1.58805E-02	6.88897E-04	.00000E+00	.00000E+00	7.79422E-07	2.64530E-03
17	6.83429E-03	5.65975E-04	6.84927E-03	5.66708E-04	.00000E+00	.00000E+00	3.35805E-07	1.14025E-03
18	4.82579E-03	1.41300E-03	4.85091E-03	1.40890E-03	.00000E+00	.00000E+00	2.37513E-07	8.06974E-04
19	1.02866E-02	1.02351E-03	1.03147E-02	1.03678E-03	.00000E+00	.00000E+00	5.05165E-07	1.71661E-03

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20	3.45746E-02	2.35955E-03	3.46379E-02	2.36309E-03	.00000E+00	.00000E+00	1.69494E-06	5.75768E-03
21	1.04109E-02	1.64718E-03	1.04515E-02	1.68858E-03	.00000E+00	.00000E+00	5.09913E-07	1.73805E-03
22	2.07798E-02	4.84952E-03	2.08960E-02	4.85135E-03	.00000E+00	.00000E+00	1.01706E-06	3.47119E-03
23	7.09843E-02	1.20890E-02	7.12707E-02	1.21839E-02	.00000E+00	.00000E+00	3.46012E-06	1.18511E-02
24	5.73016E-02	1.05214E-02	5.75309E-02	1.06105E-02	.00000E+00	.00000E+00	2.77605E-06	9.56620E-03
25	2.55947E-02	4.86374E-03	2.56907E-02	4.84419E-03	.00000E+00	.00000E+00	1.25246E-06	4.27240E-03
26	1.80577E-02	3.54429E-03	1.81170E-02	3.54856E-03	.00000E+00	.00000E+00	8.60109E-07	3.01335E-03
27	3.37218E-03	6.12828E-04	3.37776E-03	5.97017E-04	.00000E+00	.00000E+00	1.55587E-07	5.62318E-04
28	1.74042E+00	-6.80663E-03	1.73960E+00	-6.20296E-03	5.97500E-06	.00000E+00	1.03178E-04	2.90036E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.67474E-04	3.54023E-04	2.94782E-05	-3.85424E-04	9.99986E-01
2	.00000E+00	.00000E+00	2.03132E-04	3.29036E-03	4.32658E-03	9.40265E-05	-4.21532E-03	9.99988E-01
3	.00000E+00	.00000E+00	2.05364E-03	2.92198E-03	7.60225E-03	4.96089E-05	-5.59802E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98767E-03	1.92785E-03	6.62392E-03	2.24475E-05	-3.65867E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.49275E-03	6.18192E-03	1.11998E-02	2.66405E-05	-5.73358E-03	9.99998E-01
6	.00000E+00	.00000E+00	1.15223E-02	1.84943E-02	2.19806E-02	4.51890E-05	-1.05085E-02	1.00000E+00
7	.00000E+00	.00000E+00	2.26403E-02	3.23982E-02	2.87627E-02	3.25267E-05	-6.15459E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99969E-02	4.11733E-02	3.08725E-02	1.91308E-05	-8.92048E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04304E-02	3.80044E-02	3.00960E-02	1.53227E-05	3.22407E-04	9.99828E-01
10	.00000E+00	.00000E+00	2.99079E-02	3.61271E-02	2.90339E-02	1.88950E-05	8.58774E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.91981E-02	3.40757E-02	2.72207E-02	2.86705E-05	1.95042E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36271E-02	1.81134E-02	2.13127E-02	3.11988E-05	2.28369E-03	9.99983E-01
13	.00000E+00	.00000E+00	2.09892E-02	1.47201E-02	1.88778E-02	4.36057E-05	2.06864E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.03642E-02	1.43616E-02	1.71560E-02	6.93092E-05	3.13989E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10848E-02	5.63445E-03	1.05556E-02	5.84617E-05	4.71198E-04	9.99962E-01
16	.00000E+00	.00000E+00	7.32352E-03	2.37109E-03	6.98545E-03	3.95420E-05	2.98753E-04	9.99972E-01
17	.00000E+00	.00000E+00	3.76259E-03	6.60032E-04	3.43412E-03	1.88942E-05	3.09684E-04	9.99975E-01
18	.00000E+00	.00000E+00	3.33066E-03	4.45638E-04	2.43550E-03	1.39442E-05	8.81677E-04	9.99994E-01
19	.00000E+00	.00000E+00	5.45331E-03	1.47294E-03	4.88858E-03	3.29898E-05	5.31881E-04	9.99979E-01
20	.00000E+00	.00000E+00	1.33362E-02	1.06900E-02	1.20854E-02	1.39420E-04	1.11058E-03	9.99985E-01
21	.00000E+00	.00000E+00	6.35607E-03	2.06524E-03	5.37266E-03	5.17980E-05	9.31733E-04	9.99988E-01
22	.00000E+00	.00000E+00	1.24484E-02	6.16087E-03	9.58784E-03	1.18834E-04	2.74224E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.14738E-02	3.81199E-02	2.50323E-02	5.53369E-04	5.88688E-03	1.00008E+00
24	.00000E+00	.00000E+00	3.33394E-02	3.55915E-02	2.74734E-02	6.47516E-04	5.21732E-03	1.00008E+00
25	.00000E+00	.00000E+00	2.20632E-02	1.42858E-02	1.92207E-02	3.79707E-04	2.46258E-03	1.00000E+00
26	.00000E+00	.00000E+00	1.75554E-02	1.63588E-02	1.51092E-02	3.78317E-04	2.06758E-03	1.00001E+00
27	.00000E+00	.00000E+00	5.92781E-03	3.46074E-03	5.27208E-03	1.31725E-04	5.25982E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.02870E-01	4.00043E-01	4.02870E-01	3.09006E-03	-3.07884E-03	9.99973E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.32575E-02	-1.27069E-03	1.31006E-02	-8.87104E-04	1.95788E-11	.00000E+00	1.06108E-05	8.66678E-03
2	9.39521E-02	-1.31427E-02	9.26127E-02	-8.92743E-03	.00000E+00	.00000E+00	4.76921E-05	6.13683E-02
3	1.16737E-01	-1.68098E-02	1.15103E-01	-1.12117E-02	.00000E+00	.00000E+00	4.58792E-05	7.62659E-02
4	7.17864E-02	-1.05065E-02	7.08166E-02	-6.84780E-03	.00000E+00	.00000E+00	2.23621E-05	4.68860E-02
5	1.07178E-01	-1.60788E-02	1.05718E-01	-1.03452E-02	.00000E+00	.00000E+00	2.64834E-05	6.99867E-02
6	2.00970E-01	-2.92530E-02	1.98369E-01	-1.87495E-02	.00000E+00	.00000E+00	4.47228E-05	1.31278E-01
7	1.98066E-01	-1.75281E-02	1.98556E-01	-1.13736E-02	.00000E+00	.00000E+00	3.14939E-05	1.29788E-01
8	1.47814E-01	-3.66337E-03	1.47521E-01	-2.77132E-03	.00000E+00	.00000E+00	1.71969E-05	9.72027E-02
9	1.15670E-01	8.88198E-04	1.15894E-01	5.65790E-04	.00000E+00	.00000E+00	1.13438E-05	7.62153E-02
10	1.06469E-01	2.24985E-03	1.05721E-01	1.39058E-03	.00000E+00	.00000E+00	1.00078E-05	7.01839E-02
11	9.93395E-02	5.28335E-03	9.99075E-02	3.34286E-03	.00000E+00	.00000E+00	9.30847E-06	6.56136E-02
12	6.35997E-02	6.33178E-03	6.42518E-02	4.04806E-03	.00000E+00	.00000E+00	5.42544E-06	4.21054E-02
13	5.41511E-02	5.92770E-03	5.47628E-02	3.85906E-03	.00000E+00	.00000E+00	4.50573E-06	3.58807E-02
14	5.05852E-02	8.84118E-03	5.15252E-02	5.70129E-03	.00000E+00	.00000E+00	4.31272E-06	3.36594E-02
15	2.85838E-02	1.69546E-03	2.88829E-02	1.22427E-03	.00000E+00	.00000E+00	2.32126E-06	1.88539E-02
16	1.57870E-02	9.77808E-04	1.58612E-02	6.79050E-04	.00000E+00	.00000E+00	1.16034E-06	1.04210E-02
17	6.74270E-03	8.75598E-04	6.83429E-03	5.65975E-04	.00000E+00	.00000E+00	4.57927E-07	4.47404E-03
18	4.53947E-03	2.29468E-03	4.82575E-03	1.41300E-03	.00000E+00	.00000E+00	3.03599E-07	3.09864E-03
19	1.01351E-02	1.56119E-03	1.02866E-02	1.02931E-03	.00000E+00	.00000E+00	7.04202E-07	6.73015E-03
20	3.42629E-02	3.47013E-03	3.45746E-02	2.35955E-03	.00000E+00	.00000E+00	2.65761E-06	2.26742E-02

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21	1.01129E-02	2.57891E-03	1.04109E-02	1.64718E-03	.00000E+00	.00000E+00	6.20959E-07	6.77228E-03
22	1.98472E-02	7.59177E-03	2.07798E-02	4.84952E-03	.00000E+00	.00000E+00	1.22669E-06	1.34220E-02
23	6.87225E-02	1.79761E-02	7.09843E-02	1.20892E-02	.00000E+00	.00000E+00	3.80129E-06	4.60875E-02
24	5.49320E-02	1.57389E-02	5.73016E-02	1.05214E-02	.00000E+00	.00000E+00	2.27057E-06	3.70427E-02
25	2.42893E-02	7.32672E-03	2.55947E-02	4.86374E-03	.00000E+00	.00000E+00	7.79912E-07	1.64699E-02
26	1.67988E-02	5.61187E-03	1.80577E-02	3.54429E-03	.00000E+00	.00000E+00	4.02947E-07	1.15223E-02
27	3.01148E-03	1.13681E-03	3.37218E-03	6.12828E-04	.00000E+00	.00000E+00	4.62779E-08	2.11814E-03
28	1.73727E+00	-9.88547E-03	1.74042E+00	-6.80663E-03	1.95785E-11	.00000E+00	3.11604E-04	1.14477E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.32907E-02	.00000E+00	2.19581E-02	2.05148E-02	3.79999E-03	1.27058E-03	9.98905E-01
2	.00000E+00	1.94883E-01	7.10288E-03	2.51726E-01	1.73507E-01	1.53486E-02	1.31427E-02	1.00002E+00
3	.00000E+00	2.16031E-01	7.17082E-02	2.57985E-01	2.54706E-01	1.62264E-02	1.68097E-02	9.99989E-01
4	.00000E+00	1.23708E-01	1.05777E-01	1.76962E-01	2.11241E-01	7.73803E-03	1.05064E-02	1.00000E+00
5	.00000E+00	1.63830E-01	1.92374E-01	4.44771E-01	3.34957E-01	5.16145E-03	1.60787E-02	9.99990E-01
6	.00000E+00	1.76584E-01	3.91392E-01	1.19114E+00	5.30580E-01	8.13540E-03	2.92529E-02	1.00001E+00
7	.00000E+00	8.71931E-02	5.98645E-01	1.56400E+00	6.55240E-01	8.07672E-03	1.75290E-02	9.99989E-01
8	.00000E+00	1.34264E-02	6.89754E-01	1.57558E+00	6.86290E-01	1.30835E-02	3.66342E-03	9.99900E-01
9	.00000E+00	9.74272E-04	6.78380E-01	1.37263E+00	6.58884E-01	2.16321E-02	-8.97595E-04	9.99906E-01
10	.00000E+00	7.23618E-05	6.55693E-01	1.24970E+00	6.25453E-01	3.26288E-02	-2.24891E-03	9.99898E-01
11	.00000E+00	5.69290E-06	6.29467E-01	1.16465E+00	5.81327E-01	5.34754E-02	-5.29615E-03	9.99947E-01
12	.00000E+00	3.99916E-07	5.06309E-01	6.36473E-01	4.54183E-01	5.84704E-02	-6.33213E-03	9.99975E-01
13	.00000E+00	6.35030E-08	4.48841E-01	5.05227E-01	3.99411E-01	5.53707E-02	-5.92953E-03	9.99974E-01
14	.00000E+00	1.25846E-08	4.31262E-01	4.68528E-01	3.60423E-01	7.96850E-02	-8.84148E-03	9.99991E-01
15	.00000E+00	1.42220E-09	2.36696E-01	2.14619E-01	2.30314E-01	8.01925E-03	-1.69317E-03	1.00004E+00
16	.00000E+00	4.17607E-10	1.61569E-01	9.87491E-02	1.56194E-01	6.30966E-03	-9.76297E-04	1.00026E+00
17	.00000E+00	1.34490E-10	8.63537E-02	3.04912E-02	7.88587E-02	8.35307E-03	-8.71588E-04	1.00014E+00
18	.00000E+00	9.62907E-11	7.67666E-02	1.83898E-02	5.19057E-02	2.71259E-02	-2.29589E-03	1.00005E+00
19	.00000E+00	1.36134E-10	1.19175E-01	5.77618E-02	1.09517E-01	1.12012E-02	-1.55591E-03	1.00010E+00
20	.00000E+00	2.21369E-10	2.85464E-01	3.38005E-01	2.61112E-01	2.77545E-02	-3.46472E-03	1.00022E+00
21	.00000E+00	3.24012E-11	1.40025E-01	6.63100E-02	1.17220E-01	2.53680E-02	-2.57710E-03	1.00010E+00
22	.00000E+00	3.75928E-11	2.66641E-01	1.69534E-01	1.97581E-01	7.46177E-02	-7.59884E-03	1.00015E+00
23	.00000E+00	3.59429E-11	6.30940E-01	9.50573E-01	5.11078E-01	1.37696E-01	-1.79617E-02	1.00020E+00
24	.00000E+00	9.78320E-12	6.67393E-01	8.27379E-01	5.51983E-01	1.31037E-01	-1.57348E-02	1.00016E+00
25	.00000E+00	2.86388E-12	4.42915E-01	3.36617E-01	3.78280E-01	7.19151E-02	-7.32404E-03	1.00010E+00
26	.00000E+00	2.00817E-12	3.43672E-01	3.38860E-01	2.84041E-01	6.52141E-02	-5.61219E-03	1.00008E+00
27	.00000E+00	4.78557E-13	1.13558E-01	6.85610E-02	9.60378E-02	1.86526E-02	-1.13682E-03	1.00004E+00
28	.00000E+00	1.00000E+00	8.97067E+00	1.43969E+01	8.97067E+00	9.92100E-01	9.90574E-03	1.00008E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*db**2	total flux
1	1.35389E-02	-7.77195E-09	1.32375E-02	-1.27057E-03	2.26664E-03	2.52141E-03	2.98674E-04	3.44153E-01
2	9.72642E-02	-6.45417E-08	9.39521E-02	-1.31427E-02	1.57678E-05	1.10427E-02	1.59890E-03	2.46984E+00
3	1.21094E-01	-9.77021E-08	1.16737E-01	-1.68098E-02	.00000E+00	1.33204E-02	1.83308E-03	3.07408E+00
4	7.45965E-02	-8.01678E-08	7.17846E-02	-1.05065E-02	.00000E+00	5.70815E-03	8.85254E-04	1.88834E+00
5	1.11747E-01	-8.22760E-08	1.07178E-01	-1.60788E-02	.00000E+00	1.62672E-03	1.08252E-03	2.83516E+00
6	2.09764E-01	-6.88761E-08	2.00970E-01	-2.92530E-02	.00000E+00	1.33034E-03	1.73166E-03	5.32001E+00
7	2.08598E-01	8.54238E-07	1.98066E-01	-1.75281E-02	.00000E+00	1.25877E-03	1.22666E-03	5.17023E+00
8	1.48979E-01	5.02141E-08	1.47814E-01	-3.66337E-03	.00000E+00	1.25771E-03	6.98634E-04	3.79007E+00
9	1.15338E-01	-9.39736E-06	1.15670E-01	8.88198E-04	.00000E+00	1.66411E-03	4.71514E-04	2.95747E+00
10	1.05681E-01	4.43340E-07	1.06469E-01	2.24935E-03	.00000E+00	3.55418E-03	4.28857E-04	2.69800E+00
11	9.75028E-02	-2.80511E-06	9.95399E-02	5.29535E-03	.00000E+00	7.68478E-03	3.87139E-04	2.48761E+00
12	6.13761E-02	-3.70699E-07	6.35597E-02	6.33178E-03	.00000E+00	1.03455E-02	2.27659E-04	1.56867E+00
13	5.21291E-02	-1.63153E-06	5.41511E-02	5.92770E-03	.00000E+00	1.17766E-02	1.94428E-04	1.33287E+00
14	4.75678E-02	-3.01591E-07	5.05852E-02	8.84118E-03	.00000E+00	7.40263E-03	1.73398E-04	1.21995E+00
15	2.80289E-02	2.29467E-06	2.85633E-02	1.69546E-03	.00000E+00	1.73351E-03	1.10520E-04	7.15444E-01
16	1.54886E-02	1.51225E-06	1.57870E-02	9.77805E-04	.00000E+00	1.22133E-03	5.70208E-05	3.94820E-01
17	6.44890E-03	4.01001E-06	6.74270E-03	8.75598E-04	.00000E+00	1.40452E-03	2.10229E-05	1.65011E-01
18	3.73240E-03	7.91146E-07	4.53947E-03	2.29468E-03	.00000E+00	9.99567E-04	8.52702E-06	9.69296E-02
19	9.59424E-03	5.28060E-06	1.01351E-02	1.56119E-03	.00000E+00	2.24225E-03	3.20494E-05	2.45872E-01
20	3.30550E-02	5.40600E-06	3.42629E-02	3.47013E-03	.00000E+00	1.40957E-02	1.21869E-04	8.45408E-01
21	9.18212E-03	1.81122E-06	1.01129E-02	2.57891E-03	.00000E+00	1.46585E-02	2.55259E-05	2.36449E-01

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22	1.69691E-02	-7.07403E-06	1.98472E-02	7.59177E-03	.00000E+00	4.34662E-02	4.33671E-05	4.40348E-01
23	6.06425E-02	1.43647E-05	6.87225E-02	1.79761E-02	.00000E+00	7.66330E-02	1.62200E-04	1.57315E+00
24	4.69015E-02	4.10178E-06	5.49520E-02	1.57589E-02	.00000E+00	7.14206E-02	9.90671E-05	1.22418E+00
25	2.01605E-02	2.68412E-06	2.42893E-02	7.33672E-03	.00000E+00	4.08034E-02	3.40254E-05	5.28740E-01
26	1.32954E-02	-3.23816E-07	1.67928E-02	5.61187E-03	.00000E+00	3.75268E-02	1.68204E-05	3.50725E-01
27	2.24254E-03	-9.92357E-09	3.01148E-03	1.13681E-03	.00000E+00	1.05782E-02	1.73149E-06	5.95197E-02
28	1.72590E+00	2.13532E-05	1.73727E+00	-9.88547E-03	2.28240E-03	3.97178E-01	1.19219E-02	4.40122E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.32907E-02	.00000E+00	2.25952E-02	2.17088E-02	3.88758E-03	-7.77195E-09	9.98903E-01
2	.00000E+00	1.94883E-01	7.71837E-03	2.63641E-01	1.86981E-01	1.56328E-02	-6.45417E-08	1.00002E+00
3	.00000E+00	2.16031E-01	7.77606E-02	2.69145E-01	2.77406E-01	1.63891E-02	-9.77021E-08	9.99987E-01
4	.00000E+00	1.23708E-01	1.14643E-01	1.84797E-01	2.30534E-01	7.81568E-03	-8.01678E-08	9.99999E-01
5	.00000E+00	1.63830E-01	2.08753E-01	4.66899E-01	3.67333E-01	5.25464E-03	-8.22760E-08	9.99990E-01
6	.00000E+00	1.76584E-01	4.25450E-01	1.25654E+00	5.95734E-01	8.29199E-03	-6.88761E-08	1.00001E+00
7	.00000E+00	8.71931E-02	6.59203E-01	1.66997E+00	7.38207E-01	8.19729E-03	8.54238E-07	9.99988E-01
8	.00000E+00	1.34264E-02	7.76086E-01	1.70433E+00	7.76364E-01	1.31612E-02	5.02141E-08	9.99919E-01
9	.00000E+00	9.74272E-04	7.67053E-01	1.48963E+00	7.46357E-01	2.17539E-02	-9.39736E-06	9.99904E-01
10	.00000E+00	7.23618E-05	7.42756E-01	1.36003E+00	7.10161E-01	3.27431E-02	4.43340E-07	9.99898E-01
11	.00000E+00	5.69290E-06	7.14619E-01	1.26886E+00	6.61017E-01	5.36494E-02	-2.80511E-06	9.99945E-01
12	.00000E+00	3.99916E-07	5.75435E-01	6.93481E-01	5.16852E-01	5.85678E-02	-3.70699E-07	9.99975E-01
13	.00000E+00	6.35080E-08	5.10483E-01	5.50888E-01	4.54993E-01	5.55053E-02	-1.63153E-06	9.99973E-01
14	.00000E+00	1.25846E-08	4.91166E-01	5.13284E-01	4.11272E-01	7.98988E-02	-3.01591E-07	9.99990E-01
15	.00000E+00	1.42220E-09	2.69485E-01	2.32308E-01	2.61231E-01	8.19648E-03	2.29467E-06	1.00020E+00
16	.00000E+00	4.17607E-10	1.83159E-01	1.05328E-01	1.76687E-01	6.42916E-03	1.51225E-06	1.00022E+00
17	.00000E+00	1.34490E-10	9.74680E-02	3.26779E-02	8.90402E-02	8.41055E-03	4.01007E-06	1.00014E+00
18	.00000E+00	9.62907E-11	8.66180E-02	1.99160E-02	5.94394E-02	2.71739E-02	7.91146E-07	1.00004E+00
19	.00000E+00	1.36134E-10	1.35338E-01	6.25080E-02	1.24019E-01	1.13017E-02	5.28060E-06	1.00005E+00
20	.00000E+00	2.21369E-10	3.24982E-01	3.70895E-01	2.96889E-01	2.81767E-02	5.40600E-06	1.00019E+00
21	.00000E+00	3.24012E-11	1.58915E-01	7.28546E-02	1.33372E-01	2.55274E-02	1.81122E-06	1.00009E+00
22	.00000E+00	3.75928E-11	3.01808E-01	1.89125E-01	2.26781E-01	7.49872E-02	-7.07403E-06	1.00014E+00
23	.00000E+00	3.59425E-11	7.26157E-01	1.09817E+00	5.86602E-01	1.39408E-01	1.43647E-05	1.00018E+00
24	.00000E+00	9.78520E-12	7.68844E-01	9.37620E-01	6.35671E-01	1.33057E-01	4.10178E-06	1.00015E+00
25	.00000E+00	2.85888E-12	5.10446E-01	3.83202E-01	4.37291E-01	7.31081E-02	2.68412E-06	1.00009E+00
26	.00000E+00	2.00817E-12	3.97154E-01	3.90309E-01	3.31005E-01	6.64192E-02	-3.23816E-07	1.00007E+00
27	.00000E+00	4.78557E-13	1.31766E-01	7.96352E-02	1.12883E-01	1.90795E-02	-9.92357E-09	1.00003E+00
28	.00000E+00	1.00000E+00	1.01635E+01	1.56576E+01	1.01635E+01	1.00202E+00	2.12889E-05	1.00002E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.35389E-02	-7.77195E-09	1.29571E-02	.00000E+00	2.27261E-03	2.52141E-03	3.30949E-04	3.71348E-01
2	9.72642E-02	-6.45417E-08	9.08455E-02	.00000E+00	1.57678E-05	1.10427E-02	1.74711E-03	2.66159E+00
3	1.21094E-01	-9.77021E-08	1.12588E-01	.00000E+00	.00000E+00	1.33204E-02	1.98748E-03	3.31211E+00
4	7.45985E-02	-8.01678E-08	6.90441E-02	.00000E+00	.00000E+00	5.70815E-03	9.56828E-04	2.03959E+00
5	1.11747E-01	-8.22760E-08	1.02781E-01	.00000E+00	.00000E+00	1.62672E-03	1.11708E-03	3.05326E+00
6	2.09764E-01	-6.88761E-08	1.92851E-01	.00000E+00	.00000E+00	1.33034E-03	1.86999E-03	5.72920E+00
7	2.08598E-01	8.54238E-07	1.95118E-01	.00000E+00	.00000E+00	1.25877E-03	1.32579E-03	5.57706E+00
8	1.48979E-01	5.02141E-08	1.47011E-01	.00000E+00	.00000E+00	1.25771E-03	7.53636E-04	4.09686E+00
9	1.15338E-01	-9.39736E-06	1.15956E-01	.00000E+00	.00000E+00	1.66411E-03	5.09126E-04	3.17868E+00
10	1.05681E-01	4.43340E-07	1.07184E-01	.00000E+00	.00000E+00	3.55418E-03	4.62962E-04	2.91544E+00
11	9.75028E-02	-2.80511E-06	1.00961E-01	.00000E+00	.00000E+00	7.68478E-03	4.19143E-04	2.69634E+00
12	6.13761E-02	-3.70699E-07	6.54629E-02	.00000E+00	.00000E+00	1.02455E-02	2.46826E-04	1.70315E+00
13	5.21291E-02	-1.63153E-06	5.58900E-02	.00000E+00	.00000E+00	1.17766E-02	2.10421E-04	1.44756E+00
14	4.75678E-02	-3.01591E-07	5.32088E-02	.00000E+00	.00000E+00	7.40263E-03	1.88738E-04	1.32757E+00
15	2.80285E-02	2.29467E-06	2.89915E-02	.00000E+00	.00000E+00	1.73351E-03	1.18718E-04	7.75362E-01
16	1.54685E-02	1.51225E-06	1.60395E-02	.00000E+00	.00000E+00	1.22133E-03	6.11950E-05	4.27955E-01
17	6.44890E-03	4.01007E-06	6.99815E-03	.00000E+00	.00000E+00	1.40452E-03	2.27084E-05	1.79539E-01
18	3.75340E-03	7.91146E-07	5.26061E-03	.00000E+00	.00000E+00	9.99567E-04	9.71251E-06	1.07230E-01
19	9.59424E-03	5.28060E-06	1.05871E-02	.00000E+00	.00000E+00	2.24225E-03	3.46352E-05	2.67473E-01
20	3.30550E-02	5.40600E-06	3.52432E-02	.00000E+00	.00000E+00	1.40957E-02	1.31373E-04	9.17802E-01
21	9.18212E-03	1.81122E-06	1.09344E-02	.00000E+00	.00000E+00	1.46585E-02	2.78984E-05	2.58435E-01
22	1.69691E-02	-7.07403E-06	2.25888E-02	.00000E+00	.00000E+00	4.34662E-02	4.81072E-05	4.84545E-01

INFORMATION ONLY

23	6.0425E-02	1.4364E-05	7.5701E-02	.00000E+00	.00000E+00	7.6633E-02	1.7709E-04	1.7236E+00
24	4.6901E-02	4.1017E-06	6.2132E-02	.00000E+00	.00000E+00	7.1420E-02	1.0873E-04	1.3461E+00
25	2.0160E-02	2.6841E-06	2.8116E-02	.00000E+00	.00000E+00	4.0803E-02	3.7643E-05	5.8338E-01
26	1.3295E-02	-3.2381E-07	2.0291E-02	.00000E+00	.00000E+00	3.7526E-02	1.8930E-05	3.8948E-01
27	2.2425E-03	-9.9235E-09	3.8550E-03	.00000E+00	.00000E+00	1.0578E-02	2.0531E-06	6.6569E-02
28	1.7259E+00	2.1353E-05	1.7463E+00	.00000E+00	2.2883E-03	3.9717E-01	1.2984E-02	4.7637E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.1594E-03	5.0734E-03	5.3040E-03	2.5118E-03	3.1836E-03	5.5232E-03	3.7162E-03	1.7440E-03
2	7.0637E-04	5.0106E-03	5.8021E-03	3.4472E-03	4.3006E-03	6.1507E-03	4.3312E-03	2.1490E-03
3	1.1887E-03	5.4886E-03	5.8878E-03	2.9176E-03	3.8620E-03	6.7767E-03	4.3754E-03	1.8244E-03
4	8.1634E-04	4.3179E-03	4.9467E-03	2.3917E-03	2.8297E-03	4.8004E-03	3.3267E-03	1.7990E-03
5	8.4025E-04	4.3847E-03	4.9905E-03	2.4161E-03	2.8794E-03	4.8889E-03	3.3756E-03	1.7992E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.1134E-03	1.0145E-03	1.0936E-03	8.7474E-04	7.9770E-04	1.0533E-03	3.2085E-04	1.6713E-04
2	1.7916E-03	1.9546E-03	2.0378E-03	1.6034E-03	1.4283E-03	1.7178E-03	6.2825E-04	3.4788E-04
3	1.1219E-03	1.0534E-03	1.2950E-03	1.2225E-03	1.1287E-03	1.6001E-03	3.8669E-04	2.1015E-04
4	1.1961E-03	1.0954E-03	1.0307E-03	6.7806E-04	6.0193E-04	6.4376E-04	3.1135E-04	1.6137E-04
5	1.1942E-03	1.0959E-03	1.0598E-03	7.0565E-04	6.2847E-04	6.9180E-04	3.1551E-04	1.6393E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.0603E-04	2.2873E-04	1.8965E-04	4.8985E-04	2.8230E-04	8.1210E-04	2.1171E-03	1.8154E-03
2	1.9084E-04	3.5588E-04	3.2052E-04	8.7947E-04	4.4999E-04	1.2482E-03	3.2562E-03	2.7968E-03
3	1.5989E-04	3.9291E-04	2.8403E-04	6.7369E-04	4.5222E-04	1.3243E-03	3.2244E-03	2.8052E-03
4	7.2536E-05	8.0654E-05	1.2136E-04	3.8467E-04	1.3829E-04	3.4305E-04	1.0551E-03	8.2864E-04
5	7.6671E-05	9.6588E-05	1.2957E-04	3.9987E-04	1.5424E-04	3.9338E-04	1.1687E-03	9.3282E-04

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.1903E-04	5.7818E-04	8.8072E-05	4.2179E-02
2	1.2785E-03	9.2828E-04	1.5958E-04	5.5277E-02
3	1.2991E-03	9.7078E-04	1.8126E-04	5.2116E-02
4	3.4541E-04	2.0961E-04	2.6035E-05	3.4552E-02
5	3.9548E-04	2.4897E-04	3.3383E-05	3.5445E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6894E+06	1.9694E+09	7.2174E-01
2	9.0000E+05	1.5150E+05	1.0065E+07	2.7826E-01
3	4.0000E-01	1.2516E-01	3.6496E+05	1.2107E-10
4	1.0000E-05			

1 880 d, second part of sas2h pass to make library

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.9154E-01	1.1352E+00	2.1598E-01
2	3.9680E-01	1.1363E+00	2.0682E-01
3	3.9976E-01	1.1365E+00	2.0270E-01
4	4.1695E-01	1.1382E+00	1.7331E-01
5	4.1526E-01	1.1380E+00	1.7616E-01

0flux disadvantage factors (zone average/cell average-flux)

0zone	grp. 1	grp. 2	grp. 3
1	9.4289E-01	9.9751E-01	1.2260E+00
2	9.5556E-01	9.9851E-01	1.1740E+00
3	9.6289E-01	9.9870E-01	1.1506E+00
4	1.0040E+00	1.0001E+00	9.8380E-01
5	1.0000E+00	1.0000E+00	1.0000E+00

0cell averaged currents

0zone	grp. 1	grp. 2	grp. 3
1	1.7252E-02	1.8434E-02	6.5122E-03

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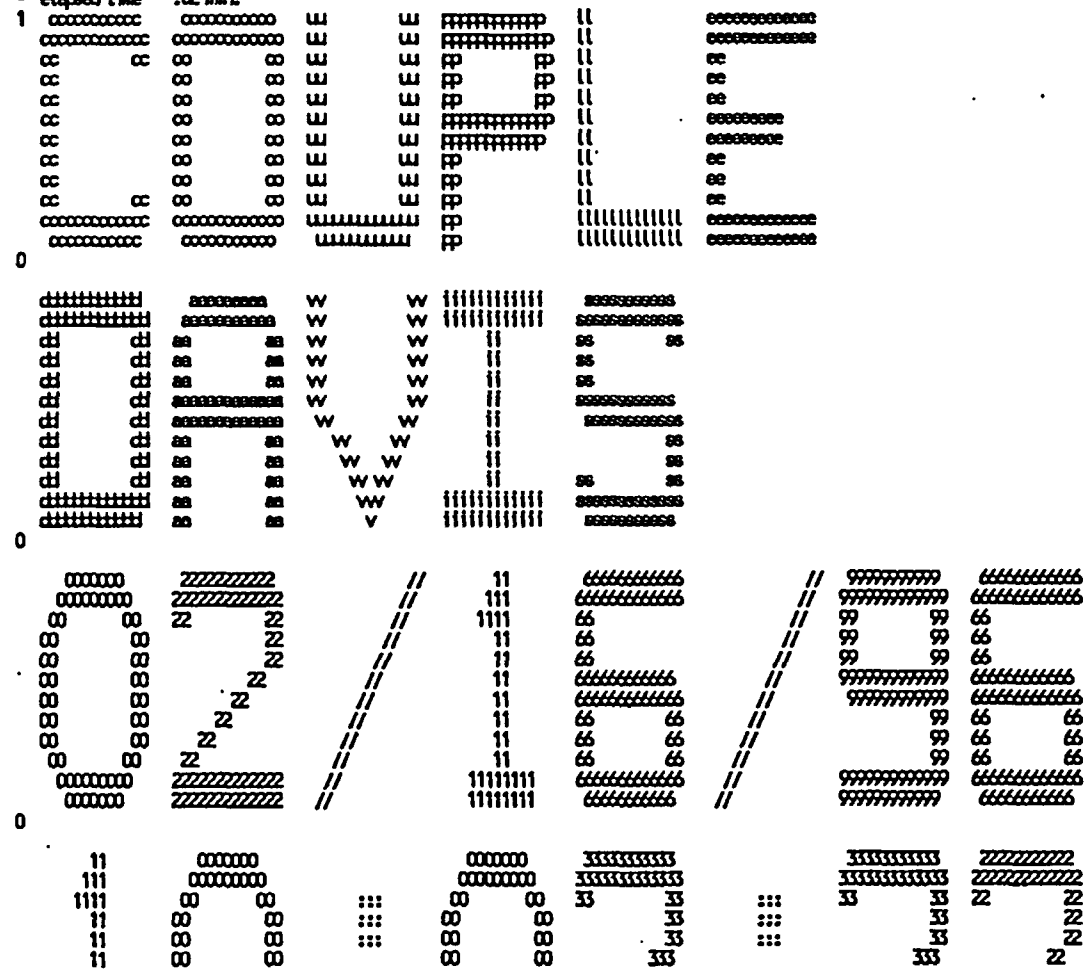
```
   2  1.92659E-02  2.58942E-02  1.01178E-02
   3  1.98552E-02  2.25041E-02  1.02574E-02
   4  1.53024E-02  1.63041E-02  2.94620E-03
   5  1.55113E-02  1.66075E-02  3.32702E-03
Ozone      volume      vol. fraction

   1    1.25665E+00     4.56236E-02
   2    1.66687E-01     6.05165E-03
   3    6.58265E-01     2.38987E-02
   4    2.54624E+01     9.24426E-01
   5    2.75440E+01     1.00000E+00
- elapsed time    .02 min.
```



INFORMATION ONLY

```
      11      00      00              00      00      333                   333      22
      11      00      00      :::     00      00        33       :::          33    22
      11      00      00      :::     00      00        33       :::          33   22
      11       00    00       :::      00    00    33   33       :::     33   33  22
   11111111     00000000                00000000   333333333333          333333333333  222222222222
   11111111      0000000                 0000000    3333333333            3333333333   222222222222
1
0                          ssssssssss   cccccccccc    aaaaaaaa    ll          eeeeeeeeeeee
                          ssssssssssss cccccccccccc  aaaaaaaaaa   ll          eeeeeeeeeeee
                          ss        ss cc        cc aa        aa  ll          ee
                          ss           cc           aa        aa  ll          ee
                          ss           cc           aa        aa  ll          ee
                          sssssssssss  cc           aaaaaaaaaaaa  ll          eeeeeeeee
                           ssssssssss  cc           aaaaaaaaaaaa  ll          eeeeeeeee
                                    ss cc           aa        aa  ll          ee
                                    ss cc           aa        aa  ll          ee
                          ss        ss cc        cc aa        aa  ll          ee
                          ssssssssssss cccccccccccc aa        aa  llllllllllll eeeeeeeeeeee
                           ssssssssss   cccccccccc  aa        aa  llllllllllll eeeeeeeeeeee
```

```
*****************************************************************************
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                 program verification information                  *****
*****                                                                   *****
*****                code system:    scale  version:   4.2              *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                                                                   *****
*****                 program:  c0c005                                  *****
*****                                                                   *****
*****           creation date:  04/27/95                                *****
*****                                                                   *****
*****                 library:  /neutronics/scale/exe                   *****
*****                                                                   *****
*****                                                                   *****
*****   this is not a   scale  configuration controlled code            *****
*****                                                                   *****
*****                 jobname:  davis                                   *****
*****                                                                   *****
*****       date of execution:  02/16/96                                *****
*****                                                                   *****
*****       time of execution:  10:03:32                                *****
*****                                                                   *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

```
1
0       -1q array has       1 entries.
0        0q array has       1 entries.
0        0q array has       1 entries.
0        1q array has       1 entries.
```

INFORMATION ONLY

```
0        1q array has      1 entries.
0        1q array has      1 entries.
0        1q array has      1 entries.
0        1q array has      1 entries.
0        2q array has      1 entries.
0         * core allocated to array-data (by -19$ or default) was   200000 words. *
1          * broad 3-group flux weighting factors *
0
0                 therm =    .5118
0                 res   =    .4417
0                 fast  =   3.4180
0 user requested (see jadt) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from aapx (normalized to thermal flux), barns

                 10010 to  10020  2.8440E-01
                 10010 tot-cap    2.8440E-01
                 50100 to  40100  2.44839E-02
                 50100 to  10010  2.44839E-02
                 50100 to  40090  3.75530E-03
                 50100 to  10020  3.75530E-03
                 50100 to  30070  3.27073E+03
                 50100 to  20040  3.27091E+03
                 50100 to  10030  9.18802E-02
                 50100 tot-cap    3.27085E+03
                 50110 to  50100  1.08152E-05
                 50110 to  50120  4.33124E-03
                 50110 to  40110  1.38013E-06
                 50110 to  10010  1.38013E-06
                 50110 to  40090  1.23162E-05
                 50110 to  10030  1.23162E-05
                 50110 to  30080  1.60782E-04
                 50110 to  20040  1.60782E-04
                 50110 tot-cap    4.51653E-03
                 80160 to  80170  1.51959E-04
                 80160 to  70160  9.46311E-05
                 80160 to  10010  9.46311E-05
                 80160 to  70150  1.78475E-05
                 80160 to  10020  1.78475E-05
                 80160 to  60130  2.63247E-02
                 80160 to  20040  2.63247E-02
                 80160 to  80161  4.15019E-03
                 80160 tot-cap    2.65891E-02
                360830 to 360820  2.14844E-02
                360830 to 360810  2.28822E-09
                360830 to 360840  1.54886E+02
                360830 to 350830  8.78859E-04
                360830 to  10010  8.78859E-04
                360830 to 350820  7.09573E-06
                360830 to  10020  7.09573E-06
                360830 to 350810  2.48009E-06
                360830 to  10030  2.48009E-06
                360830 to 340810  4.01382E-08
                360830 to  20030  4.01382E-08
                360830 to 340800  4.71372E-05
                360830 to  20040  4.71372E-05
                360830 tot-cap    1.54708E+02
                360850 to 360860  1.40838E+00
                360850 tot-cap    1.40838E+00
                380900 to 380910  6.31952E-01
```

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380900	tot-cap	6.31932E-01
390890	to 390900	9.92494E-01
390890	tot-cap	9.92494E-01
400880	to 400940	1.35410E+01
400880	tot-cap	1.35410E+01
400940	to 400950	1.87668E-01
400940	tot-cap	1.87668E-01
400950	to 400960	2.24580E+00
400950	tot-cap	2.24580E+00
410940	to 410950	3.88374E+01
410940	tot-cap	3.88374E+01
420950	to 420960	3.82943E+01
420950	tot-cap	3.82943E+01
430990	to 430980	6.51869E-03
430990	to 431000	8.97106E+01
430990	tot-cap	8.97171E+01
441010	to 441020	2.84705E+01
441010	tot-cap	2.84705E+01
441060	to 441070	8.74631E-01
441060	tot-cap	8.74631E-01
451080	to 451020	2.36088E-03
451080	to 451040	3.50676E+02
451080	tot-cap	3.50679E+02
451050	to 451060	8.18578E+03
451050	tot-cap	8.18578E+03
461050	to 461060	3.40965E+01
461050	tot-cap	3.40965E+01
461080	to 461090	6.89271E+01
461080	tot-cap	6.89271E+01
471090	to 471080	5.48996E-03
471090	to 471100	3.71689E+02
471090	to 461090	3.10426E-04
471090	to 10010	3.10426E-04
471090	to 451060	2.57311E-04
471090	to 20040	2.57311E-04
471090	to 471091	6.43395E-01
471090	tot-cap	3.71695E+02
511240	to 511250	1.21394E+01
511240	tot-cap	1.21394E+01
541310	to 541300	6.66676E-02
541310	to 541250	1.39194E-05
541310	to 541320	2.55972E+02
541310	to 531310	3.99220E-05
541310	to 10010	3.99220E-05
541310	to 531300	5.58236E-07
541310	to 10020	5.58236E-07
541310	to 531250	5.72615E-07
541310	to 10030	5.72615E-07
541310	to 521280	1.87034E-05
541310	to 20040	1.87034E-05
541310	tot-cap	2.56038E+02
541320	to 541310	1.07537E-02
541320	to 541300	2.28078E-05
541320	to 541330	9.32028E-01
541320	to 531320	8.19490E-06
541320	to 10010	8.19490E-06
541320	to 531310	3.46958E-07
541320	to 10020	3.46958E-07
541320	to 531300	4.66688E-08
541320	to 10030	4.66688E-08

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541320	to 521290	1.01067E-06
541320	to 20040	1.01067E-06
541320	tot-cap	9.42879E-01
541350	to 541360	1.47045E+06
541350	tot-cap	1.47045E+06
541360	to 541350	1.83949E-02
541360	to 541340	5.61825E-05
541360	to 541370	1.23898E-01
541360	to 531360	3.39678E-07
541360	to 10010	3.39678E-07
541360	to 531350	1.26459E-07
541360	to 10020	1.26459E-07
541360	to 531340	2.85694E-08
541360	to 10030	2.85694E-08
541360	to 521330	2.84984E-07
541360	to 20040	2.84984E-07
541360	tot-cap	1.42350E-01
551330	to 551320	8.61399E-03
551330	to 551340	1.01647E+02
551330	to 541330	9.29567E-04
551330	to 10010	9.29567E-04
551330	to 531300	1.47174E-05
551330	to 20040	1.47174E-05
551330	tot-cap	1.01656E+02
551340	to 551350	1.29469E+02
551340	tot-cap	1.29469E+02
551350	to 551360	2.15946E+01
551350	tot-cap	2.15946E+01
551370	to 551380	2.31515E-01
551370	tot-cap	2.31515E-01
561360	to 561370	9.08765E-01
561360	tot-cap	9.08765E-01
571350	to 571400	7.98602E+00
571350	tot-cap	7.98602E+00
581440	to 581450	1.26572E+00
581440	tot-cap	1.26572E+00
591410	to 591400	6.17258E-03
591410	to 591390	1.77353E-06
591410	to 571370	2.64952E-06
591410	to 20040	5.46942E-05
591410	to 581400	1.88146E-05
591410	to 10010	5.34694E-05
591410	to 591420	1.19000E+01
591410	to 581410	5.03813E-05
591410	to 10020	1.57265E-05
591410	to 581390	1.64928E-06
591410	to 10030	1.64928E-06
591410	to 571390	1.59280E-03
591410	to 20030	1.59280E-03
591410	to 571380	5.20447E-05
591410	tot-cap	1.19063E+01
591430	to 591440	9.85435E+01
591430	tot-cap	9.85435E+01
601430	to 601420	9.44140E-02
601430	to 601410	9.63916E-06
601430	to 581390	2.07491E-05
601430	to 20040	5.80742E-04
601430	to 591420	4.03494E-06
601430	to 10010	4.14371E-05
601430	to 601440	1.99531E+02

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601430	to 591430	3.99169E-05
601430	to 10020	2.51478E-06
601430	to 591410	3.62380E-06
601430	to 10030	3.62380E-06
601430	to 581410	1.74109E-03
601430	to 20030	1.74109E-03
601430	to 581400	5.59993E-04
601430	tot-cap	1.99626E+02
601450	to 601440	1.21125E-01
601450	to 601430	1.23070E-04
601450	to 581410	8.67977E-06
601450	to 20040	2.17027E-04
601450	to 591440	2.31180E-06
601450	to 10010	1.50213E-05
601450	to 601460	7.87674E+01
601450	to 591450	1.40992E-05
601450	to 10020	1.38968E-06
601450	to 591430	2.19085E-06
601450	to 10030	2.19085E-06
601450	to 581430	4.46058E-09
601450	to 20030	4.46058E-09
601450	to 581420	2.08348E-04
601450	tot-cap	7.88889E+01
601470	to 601480	1.90249E+02
601470	tot-cap	1.90249E+02
611470	to 611460	3.31614E-02
611470	to 611450	1.03469E-04
611470	to 591430	9.16700E-06
611470	to 20040	8.48670E-05
611470	to 601460	1.26718E-05
611470	to 10010	2.88323E-05
611470	to 611480	5.83713E+02
611470	to 601470	2.57036E-05
611470	to 10020	9.54306E-06
611470	to 601450	3.60310E-06
611470	to 10030	3.60310E-06
611470	to 591450	5.41737E-09
611470	to 20030	5.41737E-09
611470	to 591440	7.57000E-05
611470	tot-cap	5.83746E+02
611480	to 611490	1.20692E+04
611480	tot-cap	1.20692E+04
621470	to 621460	8.65070E-02
621470	to 621450	7.78945E-03
621470	to 601430	6.70743E-05
621470	to 20040	1.28160E-03
621470	to 611460	1.56974E-04
621470	to 10010	2.23830E-04
621470	to 621480	2.34403E+02
621470	to 611470	1.97355E-04
621470	to 10020	1.30528E-04
621470	to 611450	1.40158E-04
621470	to 10030	1.40158E-04
621470	to 601450	6.44892E-05
621470	to 20030	6.44892E-05
621470	to 601440	1.21453E-03
621470	to 621471	1.68099E+00
621470	tot-cap	2.34539E+02
621490	to 621480	4.88893E-02
621490	to 621470	3.88270E-05

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621490 to 621500	4.51610E+04
621490 to 611490	4.98258E-04
621490 to 10010	4.98258E-04
621490 to 601460	4.98258E-04
621490 to 20040	4.98258E-04
621490 tot-cap	4.51611E+04
621500 to 621510	1.34636E+02
621500 tot-cap	1.34636E+02
621510 to 621500	1.62978E-01
621510 to 621490	1.46108E-04
621510 to 601470	1.63534E-05
621510 to 20040	1.27239E-04
621510 to 611500	2.00068E-06
621510 to 10010	1.55395E-05
621510 to 621520	4.96056E+03
621510 to 611510	1.43172E-05
621510 to 10020	7.78259E-07
621510 to 611490	1.41451E-06
621510 to 10030	1.41451E-06
621510 to 601490	1.45722E-09
621510 to 20030	1.45722E-09
621510 to 601480	1.10885E-04
621510 tot-cap	4.96073E+03
621520 to 621510	1.95648E-02
621520 to 621500	1.32200E-04
621520 to 601480	2.95398E-06
621520 to 20040	1.22679E-05
621520 to 611510	8.47430E-07
621520 to 10010	2.50074E-06
621520 to 621530	7.31195E+02
621520 to 611520	2.22143E-06
621520 to 10020	5.68119E-07
621520 to 611500	1.47754E-07
621520 to 10030	1.47754E-07
621520 to 601500	4.47780E-10
621520 to 20030	4.47780E-10
621520 to 601490	9.31594E-06
621520 tot-cap	7.31215E+02
631530 to 631520	1.90020E-02
631530 to 631510	2.83959E-05
631530 to 611490	4.44449E-05
631530 to 20040	6.46822E-04
631530 to 621520	7.94486E-06
631530 to 10010	6.67364E-05
631530 to 631540	6.22530E+02
631530 to 621530	6.40248E-05
631530 to 10020	5.23528E-06
631530 to 621510	1.17306E-06
631530 to 10030	1.17306E-06
631530 to 611510	2.68175E-03
631530 to 20030	2.68175E-03
631530 to 611500	6.02377E-04
631530 tot-cap	6.22550E+02
631540 to 631530	3.03970E-02
631540 to 631520	1.09120E-05
631540 to 611500	1.06100E-10
631540 to 20040	7.77437E-04
631540 to 621530	2.38844E-06
631540 to 10010	1.26831E-03
631540 to 631550	1.07363E+03

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631540	to 621540	1.26831E-03
631540	to 10020	2.38712E-06
631540	to 621520	4.04318E-06
631540	to 10030	4.04318E-06
631540	to 611520	1.71447E-03
631540	to 20030	1.71447E-03
631540	to 611510	7.77436E-04
631540	tot-cap	1.07366E+03
631550	to 631540	2.49407E-02
631550	to 631530	6.98394E-05
631550	to 611510	1.87941E-06
631550	to 20040	9.24945E-06
631550	to 621540	3.80822E-06
631550	to 10010	7.98825E-06
631550	to 631560	2.56117E+03
631550	to 621550	6.13529E-06
631550	to 10020	1.95526E-06
631550	to 621530	6.47259E-07
631550	to 10030	6.47259E-07
631550	to 611530	1.46704E-10
631550	to 20030	1.46704E-10
631550	to 611520	7.37004E-06
631550	tot-cap	2.56119E+03
641550	to 641560	1.70609E+04
641550	tot-cap	1.70609E+04
922340	to 922330	6.53411E-03
922340	fission	4.49894E+00
922340	nu-sigf	1.18286E+01
922340	to 922320	9.47408E-05
922340	to 922350	1.87219E+02
922340	to 922341	3.01266E+00
922340	tot-cap	1.91725E+02
922350	to 922340	2.97957E-02
922350	fission	3.62536E+02
922350	nu-sigf	8.77960E+02
922350	to 922330	2.85392E-05
922350	to 922360	8.63216E+01
922350	to 922351	8.56857E-02
922350	tot-cap	4.48887E+02
922360	to 922350	3.32861E-02
922360	fission	1.95115E+00
922360	nu-sigf	5.30249E+00
922360	to 922340	4.43594E-04
922360	to 922370	7.20576E+01
922360	to 922361	3.29586E+00
922360	tot-cap	7.40225E+01
922380	to 922370	6.64767E-02
922380	fission	9.68614E-01
922380	nu-sigf	2.72801E+00
922380	to 922360	4.29632E-04
922380	to 922390	8.55442E+00
922380	tot-cap	9.58974E+00
932370	to 932360	1.51552E-02
932370	fission	5.21673E+00
932370	nu-sigf	1.57137E+01
932370	to 932350	5.79792E-05
932370	to 932380	3.01354E+02
932370	to 932371	7.72498E-01
932370	tot-cap	3.06586E+02
942380	to 942370	2.43600E-03

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```
942380 fission    2.24679E+01
942380 nu-sigf    6.37163E+01
942380 to 942360  1.36331E-05
942380 to 942390  2.66029E+02
942380 to 942381  3.02734E+00
942380 tot-cap    2.88499E+02
942390 to 942380  1.28918E-02
942390 fission    8.36076E+02
942390 nu-sigf    2.40398E+03
942390 to 942370  2.19485E-05
942390 to 942360  2.17579E-03
942390 to 942400  4.67858E+02
942390 tot-cap    1.30895E+03
942400 to 942390  6.06672E-03
942400 fission    5.90498E+00
942400 nu-sigf    1.85024E+01
942400 to 942380  5.98015E-05
942400 to 942410  1.39834E+03
942400 tot-cap    1.39925E+03
942410 to 942400  7.63800E-02
942410 fission    8.96700E+02
942410 nu-sigf    2.63112E+03
942410 to 942390  1.26675E-04
942410 to 942420  2.92817E+02
942410 tot-cap    1.18959E+03
942420 to 942410  2.47305E-02
942420 fission    4.52350E+00
942420 nu-sigf    1.41737E+01
942420 to 942400  3.00658E-04
942420 to 942430  3.33458E+02
942420 tot-cap    3.38006E+02
952410 fission    1.24977E+01
952410 nu-sigf    4.04062E+01
952410 to 952420  1.01288E+03
952410 tot-cap    1.02531E+03
952430 fission    3.44225E+00
952430 nu-sigf    1.17422E+01
952430 to 952440  4.22109E+02
952430 tot-cap    4.25601E+02
962440 to 962430  5.94350E-03
962440 fission    1.55149E+01
962440 nu-sigf    5.19995E+01
962440 to 962420  5.92708E-05
962440 to 962450  1.42507E+02
962440 to 962441  3.86081E+00
962440 tot-cap    1.58028E+02
0the reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                 in the search of library number 3
0the reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                 in the search of library number 3
0the reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                 in the search of library number 3
0the reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                 in the search of library number 3
0the reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
0the reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
0the fission product transitions for  922340 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 922340 to 922341 was not used, because 922341 is not in library., (in subr pool)
```

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0the reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
0the fission product transitions for  922360 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
0the fission product transitions for  952370 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  952370 to 952371 was not used, because  952371 is not in library., (in subr pool)
0the fission product transitions for  942380 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
0the fission product transitions for  942400 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  942420 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952410 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  962440 to 962441 was not used, because  962441 is not in library., (in subr pool)
1
0                    case completed.  date,   2/16/1996
0 * normal termination *
1  ooooooooooo   rrrrrrrrrrr   iiiiiiiiiiiii   gggggggggggg   eeeeeeeeeeeee   m        m   sssssssssss
   ooooooooooooo rrrrrrrrrrrr  iiiiiiiiiiiii  gggggggggggggg  eeeeeeeeeeeee   mm       m  ssssssssssssss
   oo       oo   rr       rr      ii       gg       gg  ee           mmm      m  ss        ss
   oo       oo   rr       rr      ii       gg           ee           mmm      m  ss
   oo       oo   rr       rr      ii       gg           ee           m m      m  ss
   oo       oo   rrrrrrrrrrrr      ii       gg   ggggggg  eeeeeeeee   m  m     m  ssssssssssss
   oo       oo   rrrrrrrrrrrr      ii       gg   ggggggg  eeeeeeeee   m   m    m   ssssssssssss
   oo       oo   rr     rr        ii       gg       gg  ee           m    m   m           ss
   oo       oo   rr      rr       ii       gg       gg  ee           m     mm m           ss
   oo       oo   rr       rr      ii       gg       gg  ee           m      mmm  ss        ss
   ooooooooooooo rr        rr  iiiiiiiiiiiii  gggggggggggggg  eeeeeeeeeeeee   m       mm  ssssssssssssss
    ooooooooooo  rr        rr  iiiiiiiiiiiii   gggggggggggg   eeeeeeeeeeeee   m        m   ssssssssssss
0

   ddddddddddd     aaaaaaaa    w        w  iiiiiiiiiiiii    sssssssssss
   ddddddddddddd   aaaaaaaaaa  w        w  iiiiiiiiiiiii   ssssssssssss
   dd       dd   aa       aa  w        w      ii       ss        ss
   dd       dd   aa       aa  w        w      ii       ss
   dd       dd   aa       aa  w        w      ii       ss
   dd       dd   aaaaaaaaaaaa  w        w      ii       ssssssssssss
   dd       dd   aaaaaaaaaaaa   w      w       ii        ssssssssssss
   dd       dd   aa       aa    w    w         ii                ss
   dd       dd   aa       aa     w  w          ii                ss
   dd       dd   aa       aa      w w          ii       ss       ss
   dddddddddddd  aa       aa       ww      iiiiiiiiiiiii   ssssssssssss
   ddddddddddd   aa       aa        v      iiiiiiiiiiiii    sssssssssss
0
```

INFORMATION ONLY

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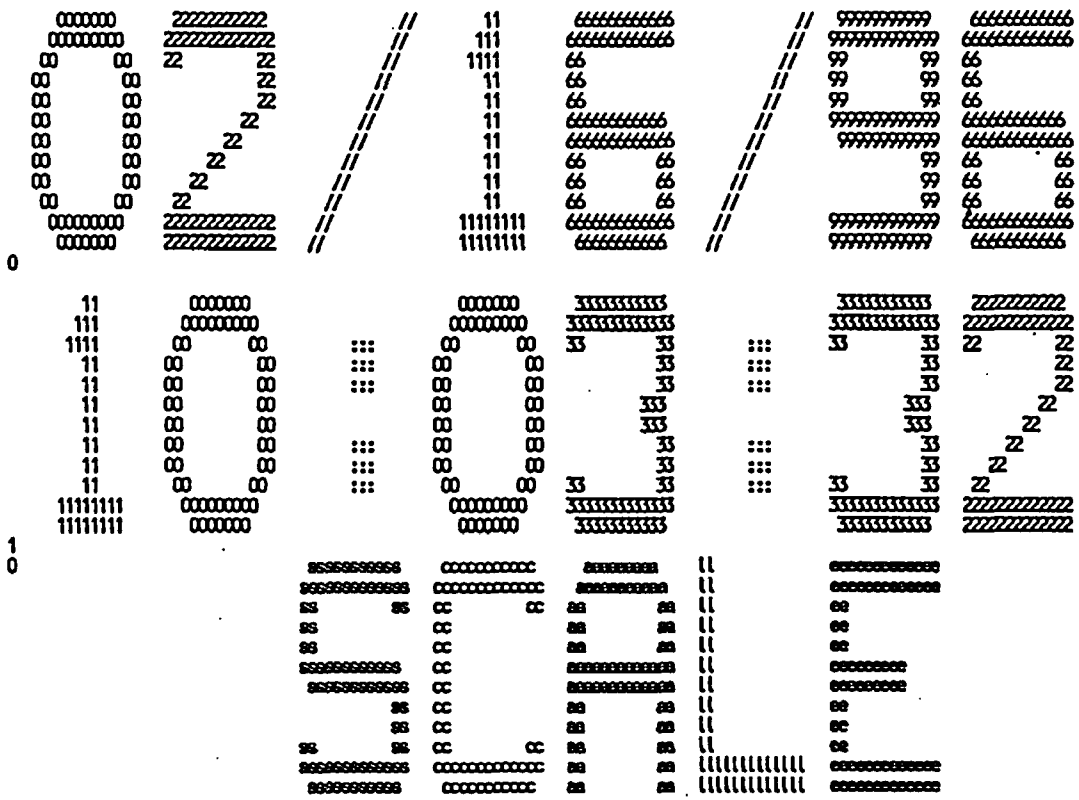

program verification information

code system: scale version: 4.2

program: c0c004

creation date: 04/27/95

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```
*****          library:  /neutronics/scale/exe                    *****
*****                                                             *****
*****                                                             *****
*****   this is not a   scale  configuration controlled code      *****
*****                                                             *****
*****          jobname:  davis                                    *****
*****                                                             *****
*****   date of execution:  02/16/96                              *****
*****                                                             *****
*****   time of execution:  10:03:32                              *****
*****                                                             *****
*****                                                             *****
*******************************************************************
*******************************************************************
*******************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0           short-lived split test fraction, qn =    9.1188E-04
0           half-norm of matrix used, am =    7.0000E+00
0           4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

        cross-section data taken from position number  1 of library on unit 15.

        pass   6
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densities
          pass n applies mid time densities of nth library interval
        first library updated was...
        pass   1
        pass   0
        *scale-system control module sas2 library*
        used a time-dependent neutron spectrum, for each of the above passes
          pass 0 applies start-up fuel densities
          pass n applies mid time densities of nth library interval
        first library updated was...
        ***************************************************************
        *                                                             *
        *          prelim lwr origen-s binary working library--id = 1143  *
        *        made from modified card-image origen-s libraries of scale 4.2  *
        *      data from the light element, actinide, and fission product libraries  *
        *        decay data, including gamma and total energy, are from endf/b-vi  *
        *                                                             *
        *     neutron flux spectrum factors and cross sections were produced from  *
        *    the "pressc2" case updating all nuclides on the scale "burnup" library  *
        *                                                             *
```

INFORMATION ONLY

```
*                fission product yields are from endf/b-v                *
*                                                                        *
*             photon libraries use an 18-energy-group structure          *
*            the photon data are from the master photon data base,       *
*             produced to include bremsstrahlung from uo2 matrix         *
*                                                                        *
*        see information above this box (if present) for later updates   *
*                                                                        *
**************************************************************************
*                                                                        *
**************************************************************************
0
0          .other identification and sizes of library.
0          data set name:  ft15f001
0        2/16/1996   date library was produced
0             1697   total number of nuclides in library
                689   number of light-element nuclides
                129   number of actinide nuclides
                879   number of fission product nuclides
0              7985   number of nonzero off-diagonal matrix elements
0
**************************************************************************
1
  sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/mtu burn high temp                    actinides        page   1
    power= 8.466E-05mw, burnup=2.0318E-03mwd, flux= 1.61E+13n/cm**2-sec
0                                  nuclide concentrations, gram atoms
                                   basis = converted to atoms/(barn-cm)
```

	charge	840.1 d	880.1 d	920.1 d	960.1 d	960.1 d	1000.1 d	1040.1 d
he 4	3.05E-08	3.70E-08	4.46E-08	5.34E-08	6.33E-08	6.33E-08	7.46E-08	8.72E-08
u230	7.96E-21	9.22E-21	1.05E-20	1.19E-20	1.33E-20	1.33E-20	1.49E-20	1.67E-20
u231	1.58E-19	1.84E-19	2.07E-19	2.32E-19	2.59E-19	2.58E-19	2.88E-19	3.21E-19
u232	2.10E-12	2.39E-12	2.68E-12	3.02E-12	3.37E-12	3.37E-12	3.76E-12	4.17E-12
u233	3.62E-11	3.75E-11	3.87E-11	3.99E-11	4.10E-11	4.10E-11	4.21E-11	4.31E-11
u234	4.56E-06	4.51E-06	4.47E-06	4.42E-06	4.37E-06	4.37E-06	4.33E-06	4.28E-06
u235	4.23E-04	4.13E-04	4.03E-04	3.93E-04	3.83E-04	3.83E-04	3.74E-04	3.64E-04
u236	5.16E-05	5.34E-05	5.51E-05	5.68E-05	5.84E-05	5.84E-05	6.00E-05	6.16E-05
u237	6.85E-08	7.10E-08	7.28E-08	7.46E-08	7.64E-08	7.61E-08	7.81E-08	7.98E-08
u238	2.19E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
u239	1.53E-09	6.08E-09	6.09E-09	6.10E-09	6.11E-09	1.19E-09	6.12E-09	6.13E-09
u240	.00E+00	1.25E-32	2.03E-32	3.23E-32	5.04E-32	5.04E-32	7.71E-32	1.16E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	5.69E-14	6.36E-14	7.05E-14	7.77E-14	8.52E-14	8.52E-14	9.30E-14	1.01E-13
np236m	6.50E-14	7.35E-14	7.86E-14	8.37E-14	8.90E-14	8.65E-14	9.44E-14	9.98E-14
np236	5.53E-12	6.27E-12	7.05E-12	7.90E-12	8.79E-12	8.79E-12	9.74E-12	1.07E-11
np237	3.27E-06	3.50E-06	3.73E-06	3.97E-06	4.21E-06	4.21E-06	4.48E-06	4.70E-06
np238	4.07E-09	4.45E-09	4.75E-09	5.07E-09	5.39E-09	5.32E-09	5.71E-09	6.04E-09
np239	8.60E-07	8.78E-07	8.79E-07	8.80E-07	8.82E-07	8.77E-07	8.83E-07	8.85E-07
np240m	.00E+00	1.06E-34	1.73E-34	2.76E-34	4.30E-34	4.30E-34	6.58E-34	9.88E-34
np240	9.30E-12	1.61E-11	1.62E-11	1.62E-11	1.63E-11	8.77E-12	1.64E-11	1.64E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	6.38E-12	7.18E-12	8.02E-12	8.91E-12	9.84E-12	9.84E-12	1.08E-11	1.19E-11
pu237	2.62E-13	2.83E-13	3.02E-13	3.22E-13	3.41E-13	3.41E-13	3.61E-13	3.82E-13
pu238	4.23E-07	4.77E-07	5.35E-07	5.98E-07	6.64E-07	6.64E-07	7.34E-07	8.09E-07
pu239	1.03E-04	1.06E-04	1.08E-04	1.11E-04	1.13E-04	1.13E-04	1.15E-04	1.17E-04
pu240	1.87E-05	2.00E-05	2.12E-05	2.23E-05	2.35E-05	2.35E-05	2.46E-05	2.57E-05
pu241	9.57E-06	1.04E-05	1.12E-05	1.20E-05	1.29E-05	1.29E-05	1.38E-05	1.48E-05
pu242	9.75E-07	1.12E-06	1.27E-06	1.44E-06	1.62E-06	1.62E-06	1.81E-06	2.01E-06
pu243	1.19E-10	1.54E-10	1.76E-10	1.99E-10	2.24E-10	1.97E-10	2.51E-10	2.79E-10
pu244	3.72E-22	6.20E-22	1.01E-21	1.61E-21	2.51E-21	2.51E-21	3.84E-21	5.76E-21
pu245	2.53E-28	4.44E-28	7.24E-28	1.14E-27	1.81E-27	1.70E-27	2.77E-27	4.17E-27
pu246	1.00E-30	1.66E-30	2.80E-30	4.51E-30	7.12E-30	7.11E-30	1.10E-29	1.67E-29
am239	4.18E-18	5.09E-18	5.76E-18	6.46E-18	7.21E-18	6.83E-18	8.00E-18	8.82E-18

INFORMATION ONLY

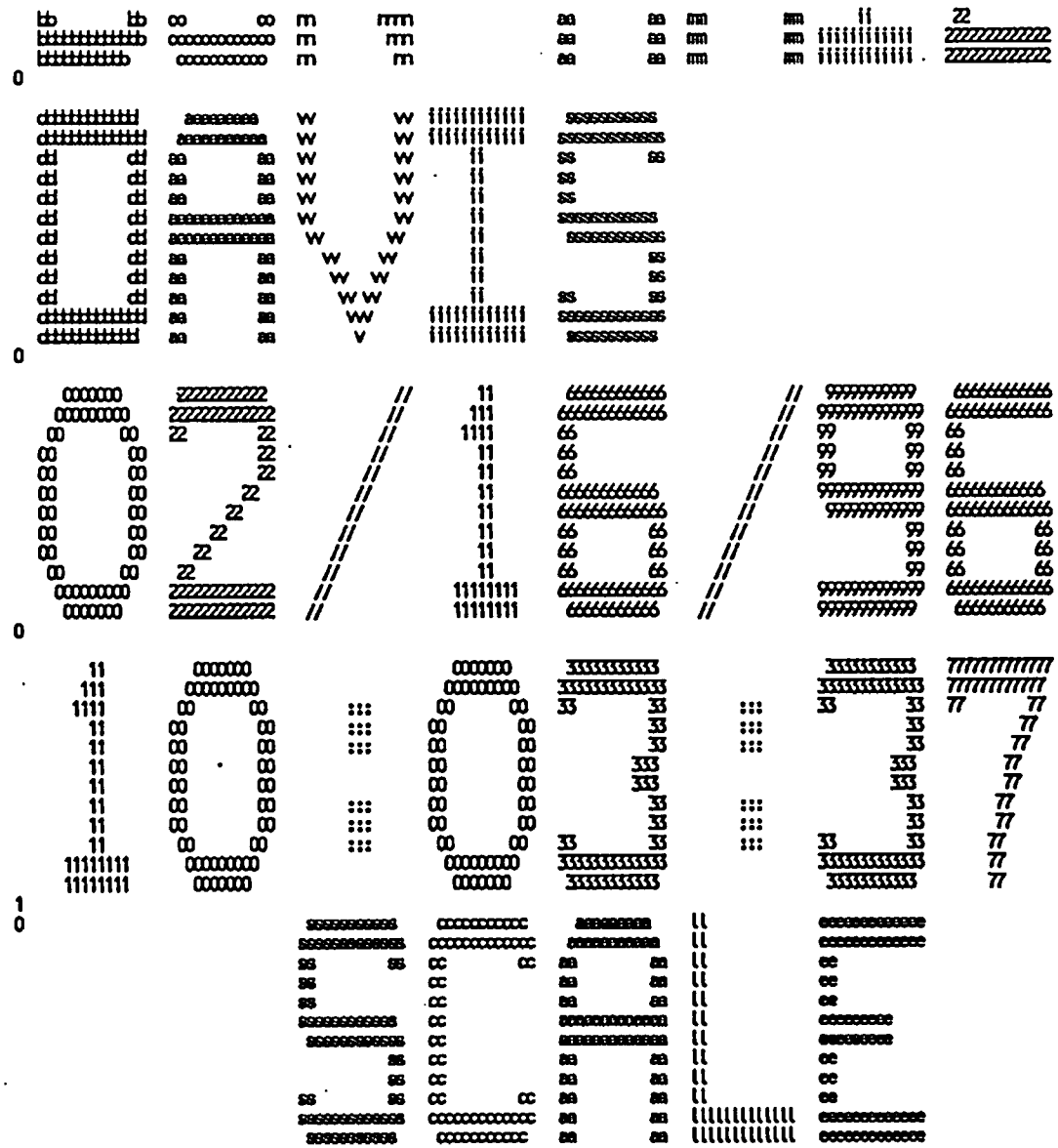
```
    am240   1.87E-15  2.20E-15  2.46E-15  2.80E-15  3.12E-15  3.08E-15  3.46E-15  3.82E-15
    am241   2.64E-07  3.01E-07  3.40E-07  3.80E-07  4.23E-07  4.23E-07  4.69E-07  5.16E-07
    am242m  5.47E-09  6.38E-09  7.36E-09  8.42E-09  9.56E-09  9.56E-09  1.08E-08  1.20E-08
    am242   2.90E-10  3.40E-10  3.85E-10  4.32E-10  4.82E-10  4.63E-10  5.34E-10  5.90E-10
    am243   8.11E-08  9.86E-08  1.18E-07  1.41E-07  1.66E-07  1.66E-07  1.94E-07  2.25E-07
    am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
    am244   2.69E-11  3.46E-11  4.21E-11  5.01E-11  5.92E-11  5.56E-11  6.94E-11  8.07E-11
    am245   2.29E-26  3.82E-26  6.20E-26  9.81E-26  1.52E-25  1.52E-25  2.30E-25  3.42E-25
    am246    .00E+00  4.24E-33  6.99E-33  1.13E-32  1.78E-32  1.78E-32  2.75E-32  4.17E-32
    cm241   3.66E-18  4.67E-18  5.82E-18  7.14E-18  8.69E-18  8.64E-18  1.03E-17  1.23E-17
    cm242   2.99E-08  3.51E-08  4.09E-08  4.72E-08  5.40E-08  5.40E-08  6.13E-08  6.92E-08
    cm243   4.28E-10  5.30E-10  6.48E-10  7.83E-10  9.35E-10  9.35E-10  1.11E-09  1.29E-09
    cm244   6.95E-09  8.95E-09  1.14E-08  1.42E-08  1.78E-08  1.78E-08  2.16E-08  2.62E-08
    cm245   1.34E-10  1.83E-10  2.43E-10  3.17E-10  4.09E-10  4.09E-10  5.20E-10  6.54E-10
    cm246   5.12E-12  7.28E-12  1.02E-11  1.40E-11  1.90E-11  1.90E-11  2.53E-11  3.34E-11
    cm247   3.30E-14  4.98E-14  7.30E-14  1.05E-13  1.49E-13  1.49E-13  2.08E-13  2.85E-13
1
    sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                    actinides        page   2
      power= 8.466E-05mw, burnup=2.0518E-03mwd, flux= 1.61E+13n/cm**2-sec
0                                   nuclide concentrations, gram atoms
                                    basis = converted to atoms/(barn-cm)
            charge   840.1 d  880.1 d  920.1 d  960.1 d  960.1 d  1000.1 d  1040.1 d
    cm248   9.52E-16  1.52E-15  2.35E-15  3.58E-15  5.32E-15  5.32E-15  7.78E-15  1.12E-14
    cm249   3.88E-21  1.04E-20  1.61E-20  2.46E-20  3.66E-20  2.02E-20  5.37E-20  7.74E-20
    cm250   9.60E-25  1.62E-24  2.66E-24  4.26E-24  6.68E-24  6.68E-24  1.03E-23  1.55E-23
    cm251    .00E+00  3.86E-32  6.35E-32  1.02E-31  1.60E-31  1.63E-32  2.46E-31  3.73E-31
   totals   2.25E-02  2.25E-02  2.24E-02  2.24E-02  2.24E-02  2.24E-02  2.24E-02  2.24E-02
0   flux             1.60E+13  1.61E+13  1.61E+13  1.61E+13   .00E+00  1.62E+13  1.62E+13
0  .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
0                                   table of contents for material tables
0                                     case or subcase printed      page

                                                 1                 1
0rdbet          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7985          0          5         99          2         16         96         18         18
          18          0         71
0       56q array has      2 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       57q array has      3 entries.
0        1q array has     20 entries.
0        1q array has     10 entries.
    l90   97376
    l116  60826
    l32   33663 nuclida (library) storage size
    l44   33734
    l103  75953
```

INFORMATION ONLY

```
0      58q array has      4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
    1140  66991
    used   101044 in size   200000
0jqpt          12
          0          0          0          0          0          0          0          0          0          0
          0          0
0therm          4
  5.117607E-01 4.416862E-01 3.418002E+00 1.000000E-31
0nn             5
       7935         20          6         18       1697
0mm            19
          7          7          0          0          1          1          0          0          0          0
         21        100       1697          4          3         74          4          1          0
0tconst         5
  8.640000E+04 8.000961E+02  .000000E+00  .000000E+00 1.000000E-08
0nzero          4
          0        689        129        879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 lirp          9
          6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total nev/fission =          7.0320E+00   1.9653E+02   2.0356E+02
 start of interval flux =        1.60012E+13
 n-gamma, fission and total nev/fission =          7.1140E+00   1.9661E+02   2.0372E+02
 start of interval flux =        1.60313E+13
 n-gamma, fission and total nev/fission =          7.2102E+00   1.9669E+02   2.0390E+02
 start of interval flux =        1.60621E+13
 n-gamma, fission and total nev/fission =          7.3057E+00   1.9677E+02   2.0407E+02
 start of interval flux =        1.60950E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total nev/fission =          7.4184E+00   1.9684E+02   2.0426E+02
 start of interval flux =        1.61298E+13
 n-gamma, fission and total nev/fission =          7.4947E+00   1.9692E+02   2.0441E+02
 start of interval flux =        1.61698E+13
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00w%, 20gd/atu burn high temp
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has     20 entries.
0requested panic/halt8,skipcellwt,skipshipdata
  pass= 7, exec halts after pass   8
1 bbbbbbbbbbb    cccccccccccc  m        m              aaaaaaaa    mm        mm  iiiiiiiiiiii    zzzzzzzzzz
  bbbbbbbbbbbb   cccccccccccccc mm       m             aaaaaaaaaa  mmm      mmm  iiiiiiiiiiii    zzzzzzzzzzzz
  bb       bb    cc        cc  mmm      m            aa        aa  mmmm    mmmm      ii        zz        zz
  bb       bb    cc        cc  m mm     m            aa        aa  mm mm  mm mm      ii                  zz
  bb       bb    cc        cc  m  m     m            aa        aa  mm  mmmm  mm      ii                  zz
  bbbbbbbbbbb    cc        cc  m   m    m ------------ aaaaaaaaaaaa  mm   mm   mm      ii                zz
  bbbbbbbbbbb    cc        cc  m    m   m ------------ aaaaaaaaaaaa  mm    m   mm      ii              zz
  bb       bb    cc        cc  m     m  m            aa        aa  mm        mm      ii            zz
  bb       bb    cc        cc  m      mm m            aa        aa  mm        mm      ii          zz
```

INFORMATION ONLY



INFORMATION ONLY

```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****              program verification information          *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****            program:  c0c008                           *****
*****                                                       *****
*****      creation date:  04/27/95                         *****
*****                                                       *****
*****            library:  /neutronics/scale/exe            *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****            jobname:  davis                            *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:03:37                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
0      -1q array has     1 entries.
0       0q array has     4 entries.
0       1q array has     6 entries.
0       2q array has     2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0ig--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0ian--number of zones or material regions                    4
0ns--mixing table length                                    66
0ibl--shielded cross section edit option (0/1--no/yes)       0
0ibr--bondarenko factor edit option (0/1--no/yes)            0
0iasopt--dancoff factor option                               0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has    66 entries.
0       4q array has    66 entries.
0       5q array has    66 entries.
0       6q array has     4 entries.
0       7q array has     4 entries.
0       8q array has     4 entries.
0       9q array has     4 entries.
```

INFORMATION ONLY

0 10q array has 66 entries.
0 11q array has 4 entries.
0mixing table

0ntry	mixture	isotope	number density	new identifier
1	1	92235	3.64452E-04	92235
2	1	92234	4.28462E-06	92234
3	1	92236	6.15586E-05	92236
4	1	92238	2.17808E-02	92238
5	1	8016	4.55359E-02	8016
6	3	8016	2.09710E-02	6
7	1	36083	1.62790E-06	36083
8	1	36085	7.82545E-07	36085
9	1	38090	1.79089E-05	38090
10	1	39089	1.44715E-05	39089
11	1	42095	1.98509E-05	42095
12	1	40093	1.44600E-05	40093
13	1	40094	2.28864E-05	40094
14	1	40095	1.96022E-06	40095
15	1	41094	1.19775E-11	41094
16	1	43099	2.23951E-05	43099
17	1	45103	1.24431E-05	45103
18	1	45105	2.38399E-08	45105
19	1	44101	2.05378E-05	44101
20	1	44106	3.08150E-06	44106
21	1	46105	8.54907E-06	46105
22	1	46108	2.52032E-06	46108
23	1	47109	1.72855E-06	47109
24	1	51124	3.84644E-10	51124
25	1	54131	1.01675E-05	54131
26	1	54132	1.98610E-05	54132
27	1	54135	6.66399E-09	54135
28	1	54136	3.91142E-05	54136
29	1	55134	1.27988E-06	55134
30	1	55135	1.24307E-05	55135
31	1	55137	2.41337E-05	55137
32	1	56136	2.66545E-07	56136
33	1	57139	2.38740E-05	57139
34	1	59141	2.08456E-05	59141
35	1	59143	3.65349E-07	59143
36	1	58144	6.86967E-06	58144
37	1	60143	1.82864E-05	60143
38	1	60145	1.36331E-05	60145
39	1	61147	4.30510E-06	61147
40	1	61148	1.28358E-08	61148
41	1	60147	1.29256E-07	60147
42	1	62147	1.79999E-06	62147
43	1	62149	8.91136E-08	62149
44	1	62150	5.01098E-06	62150
45	1	62151	4.32635E-07	62151
46	1	62152	2.36311E-06	62152
47	1	64155	2.83530E-09	64155
48	1	63153	1.53061E-06	63153
49	1	63154	3.59468E-07	63154
50	1	63155	1.67707E-07	63155
51	2	40302	4.25156E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	2.45710E-05	55133
56	1	95237	4.70039E-06	95237

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57	1	94238	8.09288E-07	94238
58	1	94239	1.16852E-04	94239
59	1	94240	2.56808E-05	94240
60	1	94241	1.47634E-05	94241
61	1	94242	2.01045E-06	94242
62	1	95241	5.15913E-07	95241
63	1	95243	2.25204E-07	95243
64	1	96244	2.62619E-08	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05864E-01	0
2	4	4.78790E-01	2.93000E+02	5.49010E-01	0
3	2	5.46100E-01	6.50000E+02	.00000E+00	0
4	3	8.13968E-01	6.07600E+02	.00000E+00	0

7711 locations of 200000 available are required to make a new master containing the self-shielded values

Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical 1

Ocopy	999	1/v cross sectio	from log 12	to log 18	bondarenko trigger 0
Ocopy	999	1/v cross sectio	from log 18	to log 1	bondarenko trigger 0
Ocopy	999	1/v cross sectio	from log 18	to log 1	bondarenko trigger 0
Ocopy	1001	hydrogen	from log 12	to log 1	bondarenko trigger 0
Ocopy	5010	b-10 1273 218ngp	from log 12	to log 1	bondarenko trigger 0
Ocopy	5011	boron-11	from log 12	to log 1	bondarenko trigger 0
Ocopy	8016	oxygen-16	from log 12	to log 18	bondarenko trigger 0
Ocopy	8016	oxygen-16	from log 18	to log 1	bondarenko trigger 0
Ocopy	8016	oxygen-16	from log 18	to log 1	bondarenko trigger 0
Ocopy	36083	kr-83	from log 12	to log 1	bondarenko trigger 0
Ocopy	36085	kr-85	from log 12	to log 1	bondarenko trigger 0
Ocopy	38090	sr-90	from log 12	to log 1	bondarenko trigger 0
Ocopy	39089	y-89	from log 12	to log 1	bondarenko trigger 0
Ocopy	40093	zr-93	from log 12	to log 1	bondarenko trigger 0
Ocopy	40094	zr-94	from log 12	to log 1	bondarenko trigger 0
Ocopy	40095	zr-95	from log 12	to log 1	bondarenko trigger 0
Ocopy	40302	zircalloy	from log 12	to log 1	bondarenko trigger 0
Ocopy	41094	nb-94	from log 12	to log 1	bondarenko trigger 0
Ocopy	42095	mo-95	from log 12	to log 1	bondarenko trigger 0
Ocopy	43099	tc-99	from log 12	to log 1	bondarenko trigger 0
Ocopy	44101	ru-101	from log 12	to log 1	bondarenko trigger 0
Ocopy	44106	ru-106	from log 12	to log 1	bondarenko trigger 0
Ocopy	45103	rh-103	from log 12	to log 1	bondarenko trigger 0
Ocopy	45105	rh-105	from log 12	to log 1	bondarenko trigger 0
Ocopy	46105	pd-105	from log 12	to log 1	bondarenko trigger 0
Ocopy	46108	pd-108	from log 12	to log 1	bondarenko trigger 0
Ocopy	47109	silver-109	from log 12	to log 1	bondarenko trigger 0
Ocopy	51124	sb-124	from log 12	to log 1	bondarenko trigger 0
Ocopy	54131	xe-131	from log 12	to log 1	bondarenko trigger 0
Ocopy	54132	xe-132	from log 12	to log 1	bondarenko trigger 0
Ocopy	54135	xenon-135	from log 12	to log 1	bondarenko trigger 0
Ocopy	54136	xe-136	from log 12	to log 1	bondarenko trigger 0
Ocopy	55133	cesium-133	from log 12	to log 1	bondarenko trigger 0
Ocopy	55134	cs-134	from log 12	to log 1	bondarenko trigger 0
Ocopy	55135	cs-135	from log 12	to log 1	bondarenko trigger 0
Ocopy	55137	cs-137	from log 12	to log 1	bondarenko trigger 0
Ocopy	56136	ba-136	from log 12	to log 1	bondarenko trigger 0
Ocopy	57139	la-139	from log 12	to log 1	bondarenko trigger 0
Ocopy	58144	ce-144	from log 12	to log 1	bondarenko trigger 0
Ocopy	59141	pr-141	from log 12	to log 1	bondarenko trigger 0
Ocopy	59143	pr-143	from log 12	to log 1	bondarenko trigger 0
Ocopy	60143	nd-143	from log 12	to log 1	bondarenko trigger 0

INFORMATION ONLY

```
0copy   60145  nd-145          from lag 12 to lag  1   bondarenko trigger 0
0copy   60147  nd-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   61147  pm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   61148  pm-148          from lag 12 to lag  1   bondarenko trigger 0
0copy   62147  sm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy   62149  sm-149          from lag 12 to lag  1   bondarenko trigger 0
0copy   62150  sm-150          from lag 12 to lag  1   bondarenko trigger 0
0copy   62151  sm-151          from lag 12 to lag  1   bondarenko trigger 0
0copy   62152  sm-152          from lag 12 to lag  1   bondarenko trigger 0
0copy   63153  eu-153          from lag 12 to lag  1   bondarenko trigger 0
0copy   63154  eu-154          from lag 12 to lag  1   bondarenko trigger 0
0copy   63155  eu-155          from lag 12 to lag  1   bondarenko trigger 0
0copy   64155  gd-155          from lag 12 to lag  1   bondarenko trigger 0
0copy   92234  u-234 1043 sigo= from lag 12 to lag  1   bondarenko trigger 0
0copy   92235  uranium-235     from lag 12 to lag  1   bondarenko trigger 0
0copy   92236  u-236 1163 sigo= from lag 12 to lag  1   bondarenko trigger 0
0copy   92238  uranium-238     from lag 12 to lag  1   bondarenko trigger 0
0copy   93237  neptunium-237   from lag 12 to lag  1   bondarenko trigger 0
0copy   94238  pu-238 1050 sigo from lag 12 to lag  1   bondarenko trigger 0
0copy   94239  plutonium-239   from lag 12 to lag  1   bondarenko trigger 0
0copy   94240  plutonium-240   from lag 12 to lag  1   bondarenko trigger 0
0copy   94241  plutonium-241   from lag 12 to lag  1   bondarenko trigger 0
0copy   94242  plutonium-242   from lag 12 to lag  1   bondarenko trigger 0
0copy   95241  am-241 1056 sigp from lag 12 to lag  1   bondarenko trigger 0
0copy   95243  am-243 1057 218  from lag 12 to lag  1   bondarenko trigger 0
0copy   96244  curium-244      from lag 12 to lag  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated        9/16/93
              l.m.petrie  -  ornl
        tape id                          4321        number of nuclides              66
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     1
                                  table of contents
      1/v cross sections normalized to 1.0 at 0.0253 ev                    id     999
      1/v cross sections normalized to 1.0 at 0.0253 ev                    id      66
       hydrogen      endf/b-iv mat 1269/thrml002   updated 10/13/89        id    1001
      b-10 1273 218ngp 042375 p-3 293k                                     id    5010
       boron-11      endf/b-iv mat 1160            updated 10/13/89        id    5011
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id    8016
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id       6
       kr-83         mt=102,103,103,105,106,107    updated 10/13/89        id   36083
       kr-85            mt=  102                                           id   36085
       sr-90         mt=102                        updated 10/13/89        id   38090
        y-89         mt=102                        updated 10/13/89        id   39089
       zr-93            mt=  102                                           id   40093
       zr-94         mt=102                        updated 10/13/89        id   40094
       zr-95         mt=102                        updated 10/13/89        id   40095
       zircalloy     endf/b-iv mat 1284            updated 10/13/89        id   40002
       nb-94         mt=102                        updated 10/13/89        id   41094
       mo-95         mt=102                        updated 10/13/89        id   42095
       tc-99         mt=102                        updated 10/13/89        id   43099
       ru-101        mt=102                        updated 10/13/89        id   44101
       ru-106        mt=102                        updated 10/13/89        id   44106
       rh-103        mt=102                        updated 10/13/89        id   45103
       rh-105           mt=  102                                           id   45105
       pd-105        mt=102                        updated 10/13/89        id   46105
       pd-108        mt=102                        updated 10/13/89        id   46108
       silver-109    endf/b-iv mat 1139            updated 10/13/89        id   47109
```

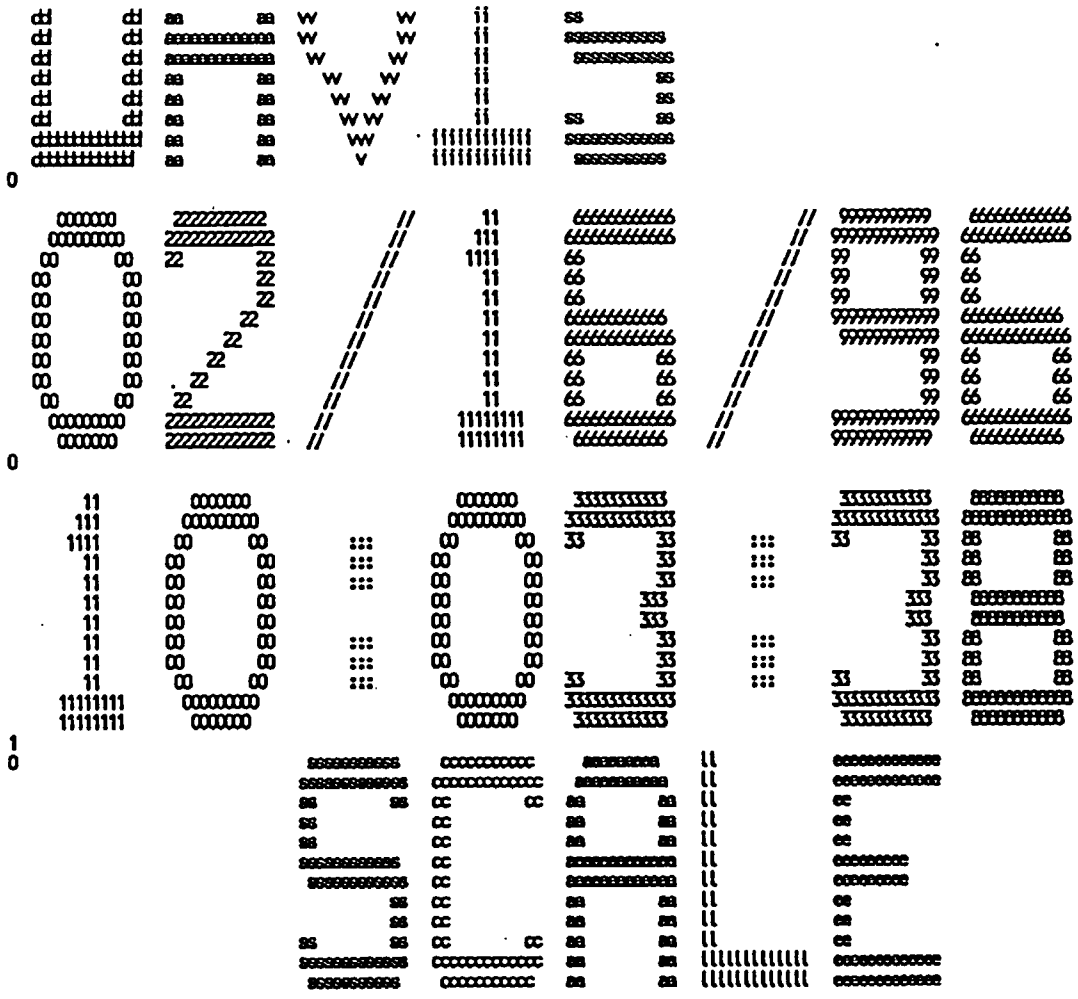
INFORMATION ONLY

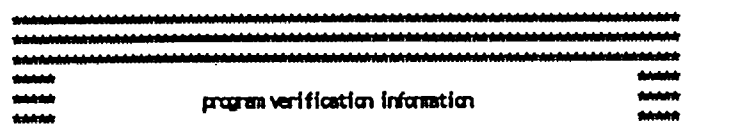
```
sb-124        mt=102                          updated 10/13/89          id   51124
xe-131        mt=102,103,104,105,106          updated 10/13/89          id   54131
xe-132        mt=102,103,104,105,106          updated 10/13/89          id   54132
xenon-135     endf/b-iv mat 1294              updated 10/13/89          id   54135
xe-136          mt=  102, 103, 104, 105, 107                            id   54136
cesium-133    endf/b-iv mat 1141              updated 10/13/89          id   55133
cs-134        mt=102                          updated 10/13/89          id   55134
cs-135          mt=  102                                                id   55135
cs-137        mt=102                          updated 10/13/89          id   55137
ba-136        mt=102                          updated 10/13/89          id   56136
la-139        mt=102                          updated 10/13/89          id   57139
ce-144          mt=  102                                                id   58144
pr-141        mt=102,103,104,105,106,107      updated 10/13/89          id   59141
pr-143        mt=102                          updated 10/13/89          id   59143
nd-143        mt=102                          updated 10/13/89          id   60143
nd-145        mt=102                          updated 10/13/89          id   60145
nd-147        mt=102                          updated 10/13/89          id   60147
pm-147        mt=102                          updated 10/13/89          id   61147
pm-148          mt=  102                                                id   61148
sm-147        endf/b-v fission product        updated 10/13/89          id   62147
sm-149        mt=102,103,107                  updated 10/13/89          id   62149
sm-150        mt=102                          updated 10/13/89          id   62150
sm-151        mt=102,103,104,105,106,107      updated 10/13/89          id   62151
sm-152        mt=102,103,104,105,106,107      updated 10/13/89          id   62152
eu-153        mt=102,103,104,105,106,107      updated 10/13/89          id   63153
eu-154        mt=102,103,104,105,106,107      updated 10/13/89          id   63154
eu-155        mt=102,103,104,105,106,107      updated 10/13/89          id   63155
gd-155        mt=102                          updated 10/13/89          id   64155
u-234 1043 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                     id   92234
uranium-235   endf/b-iv mat 1261              updated 10/13/89          id   92235
u-236 1163 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                     id   92236
uranium-238   endf/b-iv mat 1262              updated 10/13/89          id   92238
neptunium-237 endf/b-iv mat 1263              updated 10/13/89          id   93237
pu-238 1050 sigo=5+4 nsaxlacs p-3 293k f-1/e-m(1.+5)                    id   94238
plutonium-239 endf/b-iv mat 1264              updated 10/13/89          id   94239
plutonium-240 endf/b-iv mat 1265              updated 10/13/89          id   94240
plutonium-241 endf/b-iv mat 1266              updated 10/13/89          id   94241
plutonium-242 endf/b-iv mat 1161              updated 10/13/89          id   94242
am-241 1056 sigo=5+4 nsaxlacs 218ngp p-3 293k                           id   95241
am-243 1057 218 gp wt f-1/e-m 090876 p3 293k                            id   95243
curium-244    endf/b-iv mat 1162              updated 10/13/89          id   96244
0     tape copy used     0 i/o's, and took     .00 seconds
1
```

```
m       m  iiiiiiiiiiii   tttttttttttt    aaaaaaaa    ww        ww  ll
mm      m  iiiiiiiiiiii   tttttttttttt   aaaaaaaaaa   ww        ww  ll
mm      m      ii            tt        aa        aa  ww        ww  ll
mm      m      ii            tt        aa        aa  ww        ww  ll
m  m    m      ii            tt        aa        aa  ww        ww  ll
m   m   m      ii            tt        aaaaaaaaaaaa  ww    w   ww  ll
m    m  m      ii            tt        aaaaaaaaaaaa  ww   www  ww  ll
m     m m      ii            tt        aa        aa  ww  www www  ll
m.     mm      ii            tt        aa        aa  ww ww   ww ww  ll
m      mm      ii            tt        aa        aa  wwww     wwww  ll
m       m  iiiiiiiiiiii      tt        aa        aa  www       www  llllllllllll
m       m  iiiiiiiiiiii      tt        aa        aa  ww        ww  llllllllllll
```

```
dddddddddd    aaaaaaaa    w        w  iiiiiiiiiiii   ssssssssss
dddddddddddd  aaaaaaaaaa  w        w  iiiiiiiiiiii  ssssssssssss
dd      dd  aa        aa  w        w      ii       ss        ss
dd      dd  aa        aa  w        w      ii       ss
```

INFORMATION ONLY





program verification information

INFORMATION ONLY

```
*****                 . code system:    scale  version:    4.2                *****
*****                                                                          *****
*****************************************************************************
*****************************************************************************
*****                                                                          *****
*****                                                                          *****
*****                 program:  c0c002                                         *****
*****                                                                          *****
*****            creation date:  04/27/95                                      *****
*****                                                                          *****
*****                 library:  /neutronics/scale/exe                          *****
*****                                                                          *****
*****                                                                          *****
*****        this is not a   scale  configuration controlled code              *****
*****                                                                          *****
*****                 jobname:  davis                                          *****
*****                                                                          *****
*****        date of execution:  02/16/96                                      *****
*****                                                                          *****
*****        time of execution:  10:03:38                                      *****
*****                                                                          *****
*****                                                                          *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

```
1
0       -1q array has      1 entries.
0        0q array has      9 entries.
0        1q array has     12 entries.
0select 65 nuclides from the master  library on logical  1
        0 nuclides from the working library on logical  2
        0 nuclides from the working library on logical  3
          to create the new working library on logical  4

       61 resonance calculations have been requested
        0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     65 entries.
0        3q array has    915 entries.
0        4q array has     65 entries.
0 general information concerning cross section library
    tape identification number                  4321
    number of nuclides on tape                    66
    number of neutron energy groups               27
    first thermal neutron energy group            15
    number of gamma energy groups                  0
0  direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron bump library
                      based on endf-b version 4 data with endf-b version 5 fission products
                        compiled for nrc      1/27/89
                          last updated       9/16/93
                            l.m.petrie   -   ornl
0 nuclides from xsdrn tape
    1    1/v cross sections normalized to 1.0 at 0.0253 ev                      999
    2     hydrogen        endf/b-iv mat 1269/thrmt002    updated 10/13/89      1001
    3    b-10 1273 218ngp 042375 p-3 293k                                      5010
    4     boron-11        endf/b-iv mat 1160             updated 10/13/89      5011
    5     oxygen-16       endf/b-iv mat 1276             updated 10/13/89      8016
    6     oxygen-16       endf/b-iv mat 1276             updated 10/13/89         6
```

INFORMATION ONLY

```
  7   kr-83        mt=102,103,103,105,106,107   updated 10/13/89        36083
  8   kr-85          mt= 102                                           36085
  9   sr-90        mt=102                       updated 10/13/89        38090
 10    y-89        mt=102                       updated 10/13/89        39089
 11   zr-93          mt= 102                                           40093
 12   zr-94        mt=102                       updated 10/13/89        40094
 13   zr-95        mt=102                       updated 10/13/89        40095
 14   zircalloy    endf/b-iv mat 1284           updated 10/13/89        40302
 15   nb-94        mt=102                       updated 10/13/89        41094
 16   mo-95        mt=102                       updated 10/13/89        42095
 17   tc-99        mt=102                       updated 10/13/89        43099
 18   ru-101       mt=102                       updated 10/13/89        44101
 19   ru-106       mt=102                       updated 10/13/89        44106
 20   rh-103       mt=102                       updated 10/13/89        45103
 21   rh-105         mt= 102                                           45105
 22   pd-105       mt=102                       updated 10/13/89        46105
 23   pd-108       mt=102                       updated 10/13/89        46108
 24   silver-109   endf/b-iv mat 1139           updated 10/13/89        47109
 25   sb-124       mt=102                       updated 10/13/89        51124
 26   xe-131       mt=102,103,104,105,106       updated 10/13/89        54131
 27   xe-132       mt=102,103,104,105,106       updated 10/13/89        54132
 28   xenon-135    endf/b-iv mat 1294           updated 10/13/89        54135
 29   xe-136         mt= 102, 103, 104, 105, 107                       54136
 30   cesium-133   endf/b-iv mat 1141           updated 10/13/89        55133
 31   cs-134       mt=102                       updated 10/13/89        55134
 32   cs-135         mt= 102                                           55135
 33   cs-137       mt=102                       updated 10/13/89        55137
 34   ba-136       mt=102                       updated 10/13/89        56136
 35   la-139       mt=102                       updated 10/13/89        57139
 36   ce-144         mt= 102                                           58144
 37   pr-141       mt=102,103,104,105,106,107   updated 10/13/89        59141
 38   pr-143       mt=102                       updated 10/13/89        59143
 39   nd-143       mt=102                       updated 10/13/89        60143
 40   nd-145       mt=102                       updated 10/13/89        60145
 41   nd-147       mt=102                       updated 10/13/89        60147
 42   pm-147       mt=102                       updated 10/13/89        61147
 43   pm-148         mt= 102                                           61148
 44   sm-147       endf/b-v fission product     updated 10/13/89        62147
 45   sm-149       mt=102,103,107               updated 10/13/89        62149
 46   sm-150       mt=102                       updated 10/13/89        62150
 47   sm-151       mt=102,103,104,105,106,107   updated 10/13/89        62151
 48   sm-152       mt=102,103,104,105,106,107   updated 10/13/89        62152
 49   eu-153       mt=102,103,104,105,106,107   updated 10/13/89        63153
 50   eu-154       mt=102,103,104,105,106,107   updated 10/13/89        63154
 51   eu-155       mt=102,103,104,105,106,107   updated 10/13/89        63155
 52   gd-155       mt=102                       updated 10/13/89        64155
 53   u-234 1043 sigp=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)               92234
 54   uranium-235  endf/b-iv mat 1261           updated 10/13/89        92235
 55   u-236 1163 sigp=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)               92236
 56   uranium-238  endf/b-iv mat 1262           updated 10/13/89        92238
 57   neptunium-237 endf/b-iv mat 1263          updated 10/13/89        93237
 58   pu-238 1050 sigp=5+4 nsxlacs p-3 293k f-1/e-x(1.+5)               94238
 59   plutonium-239 endf/b-iv mat 1264          updated 10/13/89        94239
 60   plutonium-240 endf/b-iv mat 1265          updated 10/13/89        94240
 61   plutonium-241 endf/b-iv mat 1266          updated 10/13/89        94241
 62   plutonium-242 endf/b-iv mat 1161          updated 10/13/89        94242
 63   am-241 1056 sigp=5+4 nsxlacs 218gp p-3 293k                       95241
 64   am-243 1057 218 gp wt f-1/e-x 0.0576 p3 293k                      95243
 65   curium-244   endf/b-iv mat 1162           updated 10/13/89        96244
01/v cross sections normalized to 1.0 at 0.0253 ev                 999   temperature=  975.00
```

INFORMATION ONLY

```
0 hydrogen        endf/b-iv mat 1269/thm1002    updated 10/13/89          1001    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 298k                                         5010    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160            updated 10/13/89          5011    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276            updated 10/13/89          8016    temperature=  975.00
0 oxygen-16       endf/b-iv mat 1276            updated 10/13/89             6    temperature=  607.60
0 kr-83           mt=102,103,103,105,106,107    updated 10/13/89         36083    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202          temperature(kelvin)      =  975.000
0potential scatter sigma  =    7.004          lumped nuclear density   = 1.627899E-06
0spin factor (g)          =  4988.190          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.048973E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          sigma(per absorber atom)= 1.170809E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -2.429425E-03   .000000E+00  -3.070467E-03
  12      2.164846E-02   .000000E+00   9.887995E-03
  13     -5.318041E-01   .000000E+00  -1.595370E-01
  14      4.783252E-05   .000000E+00  -1.723491E-05
0excess resonance integrals
0                resolved
0absorption      1.44660E+02
 fission          .00000E+00
- elapsed time    .00 min.
0 kr-85           mt=  102                                                36085    temperature=  975.00
0 sr-90           mt=102                        updated 10/13/89         38090    temperature=  975.00
0  y-89           mt=102                        updated 10/13/89         39089    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142          temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.644          lumped nuclear density   = 1.447150E-05
0spin factor (g)          =   78.664          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.179971E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          sigma(per absorber atom)= 1.316480E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
   9     -4.184804E-06   .000000E+00  -3.315778E-04
  10     -8.859182E-05   .000000E+00  -2.498568E-04
0excess resonance integrals
0                resolved
0absorption      1.46374E-01
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-93           mt=  102                                                40093    temperature=  975.00
0 zr-94           mt=102                        updated 10/13/89         40094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.100          temperature(kelvin)      =  975.000
0potential scatter sigma  =    3.779          lumped nuclear density   = 2.288412E-05
0spin factor (g)          =  180.853          lump dimension (a-bar)   = 4.681220E-01
```

INFORMATION ONLY

```
0inner radius          =  .0000000E+00        dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 7.4611826E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953             sigma(per absorber atom)= 8.3243536E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  8     -1.463173E-06   .000000E+00  -1.371799E-03
  9     -4.468161E-05   .000000E+00  -3.950986E-03
0excess resonance integrals
0                resolved
0absorption      3.43578E-02
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-95        mt=102                updated 10/13/89          40095    temperature=  975.00
0 zircalloy    endf/b-iv mat 1284    updated 10/13/89          40302    temperature=  650.00
0resonance data for this nuclide
0mass number (a)        =   90.436          temperature(kelvin)      =  650.000
0potential scatter sigma =   6.385          lumped nuclear density   = 4.251602E-02
0spin factor (g)        =   1.079           lump dimension (a-bar)   = 5.461000E-01
0inner radius           = 4.787899E-01      dancoff correction (c)   = 5.036463E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  8     -1.780596E-03   .000000E+00  -1.286907E+00
  9     -5.893373E-02   .000000E+00  -2.695297E+00
 10     -6.999985E-02   .000000E+00  -1.601321E+00
 11     -1.883987E-01   .000000E+00  -7.920912E-01
0excess resonance integrals
0                resolved
0absorption      2.28539E-01
 fission          .00000E+00
- elapsed time    .02 min.
0 rb-94        mt=102                updated 10/13/89          41094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =   93.101          temperature(kelvin)      =  975.000
0potential scatter sigma =   3.779          lumped nuclear density   = 1.197532E-11
0spin factor (g)        = 43808.801         lump dimension (a-bar)   = 4.681220E-01
0inner radius           =  .0000000E+00     dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 1.425666E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  257.953             sigma(per absorber atom)= 1.590599E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
 13     1.043531E-02    .000000E+00   9.253982E-04
 14     9.836712E-03    .000000E+00  -4.064814E-04
0excess resonance integrals
0                resolved
0absorption      9.15001E+01
 fission          .00000E+00
- elapsed time    .02 min.
0 mo-95        mt=102                updated 10/13/89          42095    temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =   94.091          temperature(kelvin)      =  975.000
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0potential scatter sigma =    3.806          lumped nuclear density   = 1.985091E-05
0spin factor (g)         =  607.724          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.602106E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 9.597268E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  10     -4.213186E-03   .000000E+00   -2.519524E-02
  11     -7.851104E-03   .000000E+00   -1.294423E-02
  12     -5.421113E+00   .000000E+00   -6.236665E+00
  13      1.567912E-04   .000000E+00   -2.000911E-05
0excess resonance integrals
0              resolved
0absorption    9.65135E+01
 fission       .00000E+00
- elapsed time   .02 min.
0 tc-99      mt=102                    updated 10/13/89          43099    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   98.150          temperature(kelvin)      =  975.000
0potential scatter sigma =    6.000          lumped nuclear density   = 2.235513E-05
0spin factor (g)         = 4527.940          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 7.624857E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 8.506963E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -2.880046E-02   .000000E+00   -1.360066E-02
  12     -7.652462E-03   .000000E+00   -2.696194E-04
  13     -4.681640E-01   .000000E+00   -2.465346E-02
  14     -9.945614E+00   .000000E+00   -3.170068E-01
  15      1.069754E-02   .000000E+00   -5.383165E-04
  16      4.835994E-03   .000000E+00   -2.802093E-04
  17      2.074365E-04   .000000E+00   -1.191927E-05
0excess resonance integrals
0              resolved
0absorption    3.21540E+02
 fission       .00000E+00
- elapsed time   .03 min.
0 ru-101     mt=102                    updated 10/13/89          44101    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =  100.039          temperature(kelvin)      =  975.000
0potential scatter sigma =    3.965          lumped nuclear density   = 2.053784E-05
0spin factor (g)         = 8785.290          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .000000E+00       dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.314392E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 9.276269E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
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  11      -3.670857E-02     .000000E+00   -3.695435E-03
  12      -1.758472E-01     .000000E+00   -4.277066E-02
  13      -5.516006E-01     .000000E+00   -1.485083E-02
  14       2.369341E-04     .000000E+00   -4.143942E-05
0excess resonance integrals
0                  resolved
0absorption       7.9096 1E+01
 fission           .00000E+00
- elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89          44106   temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89          45103   temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   102.021          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.403          lumped nuclear density    = 1.2443061E-05
0spin factor (g)          =      .500          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4259261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.3725337E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 1.5310909E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
   9      1.220378E-03     .000000E+00    1.838315E-03
  10     -4.532174E-03     .000000E+00   -6.215322E-03
  11     -2.501817E-02     .000000E+00   -2.197417E-02
  12     -4.149507E-04     .000000E+00   -2.594820E-05
  13      .000000E+00      .000000E+00    .000000E+00
  14      .000000E+00      .000000E+00    .000000E+00
  15      2.257050E-01     .000000E+00    3.206996E-03
  16      2.989958E+01     .000000E+00   -7.773024E-02
  17     -1.871487E+02     .000000E+00   -1.709123E-01
  18      8.668073E+01     .000000E+00    2.604877E-01
  19      1.142152E+01     .000000E+00   -1.308896E-03
  20      1.081809E+00     .000000E+00   -2.425990E-03
  21      2.165767E-01     .000000E+00    1.925345E-03
  22      2.583930E-01     .000000E+00    2.928540E-03
  23     -9.878896E-02     .000000E+00    1.798803E-03
0excess resonance integrals
0                  resolved
0absorption       1.1357E+03
 fission           .00000E+00
- elapsed time    .07 min.
0 rh-105        mt=  102                                                45105   temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89          46105   temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)       =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density    = 8.5490719E-06
0spin factor (g)          = 15210.000          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.4259261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.9974053E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 2.2284526E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12     -6.388361E-02     .000000E+00   -1.983383E-03
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  13      -5.664188E-02     .000000E+00   -1.451314E-03
  14       7.759710E-04     .000000E+00   -8.119541E-05
0excess resonance integrals
0                  resolved
0absorption       6.11833E+01
 fission           .00000E+00
- elapsed time     .07 min.
0 pd-108        mt=102                    updated 10/13/89          46108     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density   = 2.5208244E-06
0spin factor (g)          = 21175.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 6.7753055E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 7.5591289E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11       1.169935E-04     .000000E+00   3.530870E-04
  12      -2.278071E+00     .000000E+00  -1.677253E+00
  13       6.742267E-03     .000000E+00   1.870996E-03
  14       8.561006E-02     .000000E+00  -3.209501E-05
  15      -1.841239E-01     .000000E+00   8.088533E-05
  16       2.946561E-04     .000000E+00  -9.256422E-06
0excess resonance integrals
0                  resolved
0absorption       2.11309E+02
 fission           .00000E+00
- elapsed time     .07 min.
0 silver-109    endf/b-iv mat 1139        updated 10/13/89          47109     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density   = 1.7285453E-06
0spin factor (g)          =  1441.870          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 9.8788094E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 1.1021671E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10      -2.004977E-04     .000000E+00  -2.261492E-04
  11      -8.000466E-03     .000000E+00  -5.853405E-03
  12      -7.368214E-01     .000000E+00  -3.566251E-02
  13       7.668183E-01     .000000E+00   3.380727E-02
  14      -1.647573E+01     .000000E+00  -1.531124E+00
0excess resonance integrals
0                  resolved
0absorption       1.38134E+03
 fission           .00000E+00
- elapsed time     .07 min.
0 sb-124        mt=102                    updated 10/13/89          51124     temperature=  975.00
0 xe-131        mt=102,103,104,105,106    updated 10/13/89          54131     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   129.781          temperature(kelvin)      =   975.000
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0potential scatter sigma =    4.301          lumped nuclear density   = 1.016754E-05
0spin factor (g)         =  246.825          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 1.679459E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933          sigma(per absorber atom)= 1.873529E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  9      -3.357824E-06    .000000E+00   -3.102342E-05
 10      -2.273006E-04    .000000E+00   -1.970430E-04
 11      -2.755318E-03    .000000E+00   -2.050894E-03
 12      -5.243095E-02    .000000E+00   -4.881767E-03
 13      -7.580322E+01    .000000E+00   -1.870259E+02
 14       1.050253E-02    .000000E+00    1.471501E-02
0excess resonance integrals
0                 resolved
0absorption      7.4744E+02
 fission          .00000E+00
- elapsed time    .08 min.
0 xe-132        mt=102,103,104,105,106        updated 10/13/89          54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =  130.771          temperature(kelvin)      =  975.000
0potential scatter sigma =    4.301          lumped nuclear density   = 1.986092E-05
0spin factor (g)         =  675.899          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.977539E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933          sigma(per absorber atom)= 9.598412E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  9      -3.071550E-05    .000000E+00   -1.421780E-04
 10      -9.333992E-03    .000000E+00   -1.188144E-01
 11       3.337750E-08    .000000E+00   -9.213736E-07
0excess resonance integrals
0                 resolved
0absorption      9.6840E-01
 fission          .00000E+00
- elapsed time    .08 min.
0 xenon-135     endf/b-iv mat 1254            updated 10/13/89          54135    temperature=  975.00
0 xe-136          mt=  102, 103, 104, 105, 107                          54136    temperature=  975.00
0 cesium-133    endf/b-iv mat 1141            updated 10/13/89          55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =  131.764          temperature(kelvin)      =  975.000
0potential scatter sigma =    7.100          lumped nuclear density   = 2.457102E-05
0spin factor (g)         =  374.437          lump dimension (a-bar)   = 4.681220E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 6.949634E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  238.051          sigma(per absorber atom)= 7.454394E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
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  9     -6.734279E-05     .000000E+00   -4.651886E-04
 10     -3.395013E-03     .000000E+00   -6.490357E-03
 11     -1.260395E-01     .000000E+00   -2.203344E-01
 12     -1.956233E-01     .000000E+00   -2.720966E-02
 13     -3.254609E-01     .000000E+00   -1.770940E-02
 14     -1.403704E+01     .000000E+00   -6.143198E-01
 15      5.619422E-03     .000000E+00   -4.043774E-04
 16      2.777897E-03     .000000E+00   -2.215109E-04
 17      2.352275E-03     .000000E+00   -1.830948E-04
 18      2.215023E-03     .000000E+00   -1.679522E-04
 19      1.317540E-03     .000000E+00   -9.683846E-05
0excess resonance integrals
0                 resolved
0absorption       3.48530E+02
 fission           .00000E+00
- elapsed time     .10 min.
0 cs-134        mt=102                    updated 10/13/89          55134    temperature=  975.00
0 cs-135          mt=  102                                        55135    temperature=  975.00
0 cs-137        mt=102                    updated 10/13/89          55137    temperature=  975.00
0 ba-136        mt=102                    updated 10/13/89          56136    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   134.737          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.835          lumped nuclear density   = 2.665454E-07
0spin factor (g)          =  1247.690          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 6.406401E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 7.147546E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
 10     9.818274E-07     .000000E+00    4.101368E-07
 11    -2.649077E-05     .000000E+00   -2.197988E-05
0excess resonance integrals
0                 resolved
0absorption       1.39468E+00
 fission           .00000E+00
- elapsed time     .10 min.
0 la-139        mt=102                    updated 10/13/89          57139    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   137.713          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.906          lumped nuclear density   = 2.387397E-05
0spin factor (g)          =   145.865          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.426986E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 7.152449E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 7.980098E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  9    -2.480891E-05     .000000E+00   -1.666073E-03
 10    -4.548107E-04     .000000E+00   -2.495017E-02
 11     .000000E+00      .000000E+00    .000000E+00
 12    -8.164303E-02     .000000E+00   -4.928368E-02
0excess resonance integrals
0                 resolved
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Oabsorption      8.05083E+00
 fission          .00000E+00
- elapsed time    .12 min.
0 ce-144          mt= 102                                          58144    temperature=  975.00
0 pr-141         mt=102,103,104,105,106,107    updated 10/13/89     59141    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  139.697          temperature(kelvin)        =  975.000
Opotential scatter sigma  =    4.953          lumped nuclear density     = 2.0845648E-05
Ospin factor (g)          = 1026.500          lump dimension (a-bar)     = 4.6812201E-01
Oinner radius             = .0000000E+00      dancoff correction (c)     = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1   =   15.995             sigma(per absorber atom)= 8.1916236E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2   =  237.933             sigma(per absorber atom)= 9.1392979E+03
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup      res abs        res fiss       res scat
  10     -8.136539E-03   .000000E+00   -2.763613E-01
  11     -1.326334E-01   .000000E+00   -1.763402E+00
  12     -3.073294E-03   .000000E+00   -3.009180E-04
Oexcess resonance integrals
0                resolved
Oabsorption      1.20611E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 pr-143         mt=102                        updated 10/13/89     59143    temperature=  975.00
0 nd-143         mt=102                        updated 10/13/89     60143    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  141.682          temperature(kelvin)        =  975.000
Opotential scatter sigma  =    5.000          lumped nuclear density     = 1.8286541E-05
Ospin factor (g)          = 1984.860          lump dimension (a-bar)     = 4.6812201E-01
Oinner radius             = .0000000E+00      dancoff correction (c)     = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1   =   15.995             sigma(per absorber atom)= 9.3380645E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2   =  237.933             sigma(per absorber atom)= 1.0418368E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup      res abs        res fiss       res scat
  10     -1.801388E-04   .000000E+00   -1.069724E-04
  11     -4.224906E-01   .000000E+00   -4.906454E+00
  12     -2.802144E-01   .000000E+00   -1.378043E-01
Oexcess resonance integrals
0                resolved
Oabsorption      5.06298E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 nd-145         mt=102                        updated 10/13/89     60145    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  143.668          temperature(kelvin)        =  975.000
Opotential scatter sigma  =    5.047          lumped nuclear density     = 1.3633058E-05
Ospin factor (g)          = 1007.250          lump dimension (a-bar)     = 4.6812201E-01
Oinner radius             = .0000000E+00      dancoff correction (c)     = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1   =   15.995             sigma(per absorber atom)= 1.2525414E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2   =  237.933             sigma(per absorber atom)= 1.3974456E+04
Omoderator-2 will be treated by the nordheim integral method.
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0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  10      -5.566130E-03    .000000E+00   -8.732536E-02
  11      -8.355895E-02    .000000E+00   -2.531122E-01
  12      -1.992898E+00    .000000E+00   -1.253301E+01
  13       9.566028E-05    .000000E+00    2.045997E-04
  14      -1.849842E+00    .000000E+00   -4.860695E-02
  15       5.895222E-03    .000000E+00   -4.604220E-04
  16       1.326667E-03    .000000E+00   -1.451281E-04
  17       9.642541E-04    .000000E+00   -1.063525E-04
  18       8.539588E-04    .000000E+00   -9.313388E-05
  19       7.634191E-04    .000000E+00   -8.069647E-05
  20       2.839438E-05    .000000E+00   -2.920866E-06
0excess resonance integrals
0                 resolved
0absorption      2.0530E+02
 fission          .00000E+00
- elapsed time    .13 min.
0 nd-147        mt=102                    updated 10/13/89          60147    temperature=  975.00
0 pm-147        mt=102                    updated 10/13/89          61147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density    = 4.305098E-06
0spin factor (g)          = 21589.500          lump dimension (a-bar)    = 4.681220E-01
0dimer radius             =  .000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 3.966452E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953          sigma(per absorber atom)= 4.425342E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  12      -2.166141E-01    .000000E+00   -6.956160E-02
  13      -5.553136E-02    .000000E+00   -3.134625E-03
  14      -9.633698E+01    .000000E+00   -4.139169E+01
  15       4.126164E-02    .000000E+00    6.974615E-03
  16       1.697905E-02    .000000E+00    1.746685E-03
  17       1.369750E-02    .000000E+00    1.150443E-03
  18       1.253758E-02    .000000E+00    9.649043E-04
  19       6.999389E-04    .000000E+00    5.070706E-05
0excess resonance integrals
0                 resolved
0absorption      1.9973E+03
 fission          .00000E+00
- elapsed time    .13 min.
0 pm-148        mt=  102                                                61148    temperature=  975.00
0 sm-147        endf/b-v fission product  updated 10/13/89              62147    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density    = 1.799994E-06
0spin factor (g)          =      .000          lump dimension (a-bar)    = 4.681220E-01
0dimer radius             =  .000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 9.486676E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   257.953          sigma(per absorber atom)= 1.058417E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
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0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11      2.611994E-01  .000000E+00  1.049366E+00
  12      7.963288E-01  .000000E+00 -1.698698E+00
  13     -4.507339E+00  .000000E+00 -2.825725E+00
  14     -5.416480E-01  .000000E+00 -7.173979E-03
  15      3.110962E-01  .000000E+00 -1.897087E-03
  16      7.287653E-03  .000000E+00 -3.738371E-04
  17      4.281464E-03  .000000E+00 -2.401531E-04
  18      3.510412E-03  .000000E+00 -1.997157E-04
  19      2.910591E-03  .000000E+00 -1.649537E-04
  20      8.434759E-04  .000000E+00 -4.626645E-05
0excess resonance integrals
0                 resolved
0absorption     7.20794E+02
 fission         .0000E+00
- elapsed time    .15 min.
                          thermal scattering matrix number  3 at a temperature of   900.03 was selected.
0 sm-149        mt=102,103,107          updated 10/13/89          62149    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  147.638          temperature(kelvin)       =  975.000
0potential scatter sigma  =    3.260          lumped nuclear density    = 8.911362E-08
0spin factor (g)          = 10407.900          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.916201E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.933          sigma(per absorber atom)= 2.137863E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11      8.546577E-03  .000000E+00  3.071155E-02
  12     -5.576071E-02  .000000E+00 -1.828570E-01
  13      2.269975E-02  .000000E+00  2.764212E-03
  14      5.020254E-04  .000000E+00 -8.204340E-03
0excess resonance integrals
0                 resolved
0absorption     8.04328E+02
 fission         .0000E+00
- elapsed time    .15 min.
0 sm-150        mt=102                  updated 10/13/89          62150    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  148.629          temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.162          lumped nuclear density    = 5.010978E-06
0spin factor (g)          = 4376.420           lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00       dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.407711E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.933          sigma(per absorber atom)= 3.801943E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  10     -1.657741E-03  .000000E+00 -1.602149E-02
  11     -3.778702E-02  .000000E+00 -4.268902E-01
  12     -1.232369E-01  .000000E+00 -3.724020E-02
  13     -8.618197E+00  .000000E+00 -6.782185E+00
  14      1.064539E-04  .000000E+00 -6.370252E-05
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0excess resonance integrals
0                    resolved
0absorption        2.85057E+02
 fission            .00000E+00
- elapsed time     .15 min.
0 sm-151        mt=102,103,104,105,106,107     updated 10/13/89              62151     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  149.623              temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.185              lumped nuclear density    = 4.3263481E-07
0spin factor (g)          = 75574.703              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)    = 3.4289261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995              sigma(per absorber atom)= 3.9469706E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953              sigma(per absorber atom)= 4.4035888E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  14      -2.494378E-01     .000000E+00    -2.305733E-02
  15       1.483919E+01     .000000E+00     7.504057E-02
  16      -2.183372E+01     .000000E+00    -6.208440E-02
  17       1.734993E+02     .000000E+00     8.262178E-01
  18      -3.207909E+02     .000000E+00    -1.785116E+00
  19       6.253349E+01     .000000E+00     3.867444E-01
  20       1.141094E+00     .000000E+00    -1.387528E-04
  21      -7.117627E-02     .000000E+00     1.244099E-02
  22       6.952599E-02     .000000E+00     3.838917E-03
  23      -1.091983E-02     .000000E+00     3.374087E-04
0excess resonance integrals
0                    resolved
0absorption        2.05598E+03
 fission            .00000E+00
- elapsed time     .17 min.
0 sm-152        mt=102,103,104,105,106,107     updated 10/13/89              62152     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  150.615              temperature(kelvin)       =  975.000
0potential scatter sigma  =    5.208              lumped nuclear density    = 2.3631060E-06
0spin factor (g)          =  863.594              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)    = 3.4289261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995              sigma(per absorber atom)= 7.2260695E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953              sigma(per absorber atom)= 8.0520406E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9       2.402629E-06     .000000E+00     1.158623E-04
  10      -1.917727E-03     .000000E+00    -2.963686E-02
  11      -2.752391E-02     .000000E+00    -1.047432E-01
  12      -1.840857E-01     .000000E+00    -5.836282E-01
  13       4.164582E-02     .000000E+00     1.012530E-01
  14      -1.591912E+02     .000000E+00    -3.072400E+02
0excess resonance integrals
0                    resolved
0absorption        2.70562E+03
 fission            .00000E+00
- elapsed time     .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=  975.00
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0resonance data for this nuclide
0mass number (a)          =   151.607          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 1.5306148E-06
0spin factor (g)          = 12265.900          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.1156282E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   257.953          sigma(per absorber atom)= 1.2446952E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  12     -3.047509E-01   .000000E+00  -5.960166E-02
  13     -2.161284E-01   .000000E+00  -8.911429E-03
  14     -1.044091E+00   .000000E+00  -3.930978E-03
  15      6.289871E-01   .000000E+00  -5.131698E-02
  16     -3.304040E+00   .000000E+00   8.154124E-03
  17      1.505573E-01   .000000E+00  -3.437618E-03
  18      7.726830E-02   .000000E+00  -2.231212E-03
  19      5.055434E-02   .000000E+00  -1.541073E-03
  20     -1.253806E-01   .000000E+00  -1.274959E-03
0excess resonance integrals
0                 resolved
0absorption      1.35315E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-154      mt=102,103,104,105,106,107     updated 10/13/89          63154     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   152.601          temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density    = 3.5946826E-07
0spin factor (g)          = 19135.801          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 4.7503416E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   257.953          sigma(per absorber atom)= 5.2999000E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  12     -3.975526E-01   .000000E+00  -6.197735E-02
  13     -3.375991E-01   .000000E+00  -2.584695E-02
  14      2.958449E-01   .000000E+00   1.397187E-02
  15      7.538726E-02   .000000E+00   2.063046E-02
  16      7.086454E+00   .000000E+00   9.177127E-02
  17     -1.446384E+02   .000000E+00  -1.899228E+00
  18      1.132616E+02   .000000E+00   1.855863E+00
  19     -1.014847E+02   .000000E+00   1.187440E+00
0excess resonance integrals
0                 resolved
0absorption      2.13582E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-155      mt=102,103,104,105,106,107     updated 10/13/89          63155     temperature=  975.00
0 gd-155      mt=102                         updated 10/13/89          64155     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   153.592          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.277          lumped nuclear density    = 2.8352998E-09
0spin factor (g)          = 12700.100          lump dimension (a-bar)    = 4.6812201E-01
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0inner radius            =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995              sigma(per absorber atom)= 6.0226324E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933              sigma(per absorber atom)= 6.7195800E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12      -1.439346E+00    .000000E+00    -1.839517E-01
  13       1.540958E+00    .000000E+00     1.984828E-01
  14       2.188145E-01    .000000E+00     9.802756E-03
  15      -3.373439E-01    .000000E+00    -1.646314E-04
  16       1.477357E+00    .000000E+00    -4.148865E-03
  17       1.568662E-01    .000000E+00    -1.479115E-03
  18       9.605145E-02    .000000E+00    -1.078055E-03
  19       6.295369E-02    .000000E+00    -8.026906E-04
  20       1.670850E-02    .000000E+00     1.627252E-04
  21        .000000E+00    .000000E+00      .000000E+00
  22        .000000E+00    .000000E+00      .000000E+00
  23        .000000E+00    .000000E+00      .000000E+00
  24        .000000E+00    .000000E+00      .000000E+00
  25      -2.127942E+03    .000000E+00    -1.622130E+00
  26      -5.205792E+03    .000000E+00     1.961528E+00
  27      -1.660027E+03    .000000E+00     7.392865E-01
0excess resonance integrals
0                resolved
0absorption      3.97015E+04
 fission          .00000E+00
- elapsed time    .20 min.
0u-234 1043 sigo=5+4 res=lacs p-3 293k f-1/e-x(1.+5)                    92234     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   232.029          temperature(kelvin)       =   975.000
0potential scatter sigma =    10.021          lumped nuclear density    = 4.2846223E-06
0spin factor (g)         =  6948.450          lump dimension (a-bar)    = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995              sigma(per absorber atom)= 3.9854086E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.955              sigma(per absorber atom)= 4.4451117E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11      -2.047309E-02    .000000E+00    -5.972541E-02
  12      -1.670759E-01    .000000E+00    -6.992950E-02
  13       7.760423E-04    .000000E+00    -6.473117E-04
  14      -1.645193E+01    .000000E+00    -2.694678E+00
0excess resonance integrals
0                resolved
0absorption      5.84426E+02
 fission          .00000E+00
- elapsed time    .20 min.
0 uranium-235    endf/b-iv mat 1261      updated 10/13/89          92235     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   233.025          temperature(kelvin)       =   975.000
0potential scatter sigma =    11.500          lumped nuclear density    = 3.6445219E-04
0spin factor (g)         = 15171.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
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0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.6853799E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.049              sigma(per absorber atom)= 5.0281970E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  12      -1.548013E+00   -9.642568E-01   -3.629514E-02
  13      -5.519266E+00   -2.750468E+00   -1.197143E-01
  14      -4.442442E+00   -2.737241E+00   -3.041829E-02
0excess resonance integrals
0                  resolved
0absorption       2.14703E+02
 fission          1.27737E+02
- elapsed time     .22 min.
0u-236 1163 sigp=5+4 resxlacs p-3 298k f-1/e=x(1.+5)                    92236     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   234.017          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.995          lumped nuclear density   = 6.1558632E-05
0spin factor (g)          =  6328.490          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.7739358E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.934              sigma(per absorber atom)= 3.0943074E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11      -2.948088E-01    .000000E+00   -7.413376E-01
  12      -1.598138E+00    .000000E+00   -1.081784E+00
  13      -6.908284E-02    .000000E+00   -3.552606E-03
  14      -5.045822E+01    .000000E+00   -4.414418E+00
0excess resonance integrals
0                  resolved
0absorption       2.68511E+02
 fission           .00000E+00
- elapsed time     .22 min.
0 uranium-238    endf/b-iv mat 1262          updated 10/13/89          92238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.006          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density   = 2.1780336E-02
0spin factor (g)          =   656.527          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.8400850E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   235.041              sigma(per absorber atom)= 3.3757189E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
   9      -3.927211E-02    .000000E+00   -4.035205E-01
  10      -1.023942E+00   -1.742067E-05   -6.471695E+00
  11      -9.702673E+00    .000000E+00   -2.688688E+01
  12      -4.303799E+01    .000000E+00   -4.997792E+01
  13      -5.400405E+01    .000000E+00   -1.768848E+01
  14      -1.044813E+02    .000000E+00   -6.058750E+00
0excess resonance integrals
0                  resolved
```

INFORMATION ONLY

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0absorption      1.80663E+01
 fission         5.04115E-04
- elapsed time    .25 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  235.012          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.500          lumped nuclear density    = 4.700886E-06
0spin factor (g)          = 10100.800         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 3.632865E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051          sigma(per absorber atom)= 3.896746E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -6.394980E-02  -2.252332E-06  -7.444753E-03
  12      1.017181E-02  -1.263774E-04   5.530881E-03
  13     -7.820910E-02   8.428399E-05  -3.697707E-03
  14     -1.376659E-01  -1.646240E-05  -2.075727E-03
0excess resonance integrals
0                 resolved
0absorption      2.92875E+02
 fission         1.38520E-01
- elapsed time    .27 min.
0pu-238 1050 sigp=5+4 nsw=lacs p-3 293k f-1/e-s(1.+5)                 94238    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.167          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.890          lumped nuclear density    = 8.098805E-07
0spin factor (g)          = 13130.600         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 2.109988E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051          sigma(per absorber atom)= 2.263503E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs       res fiss      res scat
  11     -5.186100E-03  -8.081063E-04  -4.984089E-03
  12     -3.566360E-03  -4.077103E-04  -1.670922E-03
  13      3.811535E-01   7.427578E-02  -1.213191E-02
  14     -3.829654E-01  -7.001112E-02   8.539177E-03
0excess resonance integrals
0                 resolved
0absorption      8.25002E+01
 fission         9.08183E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          94239    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  236.999          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.200          lumped nuclear density    = 1.165169E-04
0spin factor (g)          = 6635.710          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995          sigma(per absorber atom)= 1.461336E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051          sigma(per absorber atom)= 1.567475E+03
0moderator-2 will be treated by the nordheim integral method.
```

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0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     -2.433271E-01  -9.805850E-02  -7.439817E-02
  12     -2.148567E+00  -8.067330E-01  -2.825401E-01
  13     -7.017735E+00  -4.128114E+00  -1.074359E-01
  14     -2.236326E+00  -1.190446E+00  -1.976972E-02
0excess resonance integrals
0                 resolved
0absorption      3.05723E+02
 fission         1.71805E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89          9240     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  237.992          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density   = 2.560782E-05
0spin factor (g)          =  669.244          lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 6.649317E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 7.132265E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   9     -6.711484E-05  -2.113045E-06  -3.290113E-04
  10     -6.139901E-03  -3.798295E-04  -2.802543E-02
  11     -1.941598E-01  -1.123520E-03  -2.580330E-01
  12     -2.667729E+00  -1.456635E-02  -2.554550E+00
  13     -3.328218E-01  -2.040751E-03  -2.425588E-02
  14      .000000E+00    .000000E+00    .000000E+00
  15      1.726114E-02   3.294365E-06   3.385407E-03
  16      2.701083E+00   5.155134E-04   3.333627E-01
  17      4.039492E+02   7.709546E-02   3.578860E+01
  18     -8.924690E+03  -1.708316E+00  -7.032175E+02
  19      5.111380E+02   9.755294E-02   4.121003E+01
  20     -9.411130E+01  -1.796156E-02   1.798258E+00
0excess resonance integrals
0                 resolved
0absorption      4.12001E+03
 fission         1.79168E+00
- elapsed time    .32 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9241     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.978          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.959          lumped nuclear density   = 1.476239E-05
0spin factor (g)          = 16402.100         lump dimension (a-bar)   = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.156720E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.240734E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  12     -8.927748E-03  -8.586234E-03   5.350622E-04
  13     -9.712595E-01  -7.429292E-01  -2.818558E-02
  14     -9.685243E-01  -6.832704E-01  -2.741366E-03
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  15      1.781677E-02   1.596397E-02   -4.625220E-04
0excess resonance integrals
0                 resolved
0absorption       5.06892E+02
 fission          4.25058E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          94242    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.145          temperature(kelvin)       =  975.000
0potential scatter sigma  =   10.694          lumped nuclear density    = 2.010515E-06
0spin factor (g)          = 6606.710          lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 8.493598E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 9.110468E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  11      -5.444985E-03    .000000E+00   -1.480576E-02
  12      -1.144894E-01    .000000E+00   -2.216890E-01
  13      -2.757552E-04    .000000E+00    9.763985E-07
  14       8.116283E-02    .000000E+00    1.516041E-02
  15      -3.984634E+01    .000000E+00   -3.216101E+00
  16       4.027087E-02    .000000E+00   -3.445925E-03
  17       1.550369E-02    .000000E+00   -1.848117E-03
  18       1.112546E-02    .000000E+00   -1.430697E-03
0excess resonance integrals
0                 resolved
0absorption       1.08609E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp-5+4 res-xlacs 218grp p-3 295k                            95241    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  238.950          temperature(kelvin)       =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density    = 5.159128E-07
0spin factor (g)          = 82058.203         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 3.309853E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051          sigma(per absorber atom)= 3.550253E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss       res scat
  13       4.837694E-01   1.207759E-02   4.451498E-03
  14      -4.743611E-01  -1.142380E-02  -5.411783E-03
0excess resonance integrals
0                 resolved
0absorption       1.93410E+02
 fission          1.07564E+00
- elapsed time    .33 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                              95243    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =  240.940          temperature(kelvin)       =  975.000
0potential scatter sigma  =    9.511          lumped nuclear density    = 2.252088E-07
0spin factor (g)          = 82052.602         lump dimension (a-bar)    = 4.681220E-01
0inner radius             = .0000000E+00      dancoff correction (c)    = 3.426926E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.5834494E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 8.1331713E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  13      -9.115445E-03     .000000E+00     3.664919E-04
  14       1.020618E-02     .000000E+00     5.452318E-05
0excess resonance integrals
0                 resolved
0absorption      1.60134E+02
 fission          .00000E+00
- elapsed time    .33 min.
0 curium-244    endf/b-iv mat 1162          updated 10/13/89          96244    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   242.133          temperature(kelvin)        =   975.000
0potential scatter sigma  =    10.320          lumped nuclear density     = 2.6241885E-03
0spin factor (g)          =  5251.150          lump dimension (a-bar)     = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)     = 3.4269251E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.5071425E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 6.9797635E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs        res fiss        res scat
  11       1.785139E-04    4.906880E-06    1.973946E-04
  12       4.277681E-04    2.202040E-05    4.707649E-05
  13       2.291097E-03    1.158380E-04    6.961012E-04
  14      -4.282206E-02   -2.562004E-03   -1.985917E-02
0excess resonance integrals
0                 resolved
0absorption      6.13745E+02
 fission         3.54127E+01
- elapsed time    .33 min.
- elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:03:38
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron lump library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
        tape id                    4321        number of nuclides              65
        number of neutron groups     27        number of gamma groups           0
        first thermal group          15        logical unit                     4
                              table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id    999
        hydrogen      endf/b-iv mat 1269/thm1002   updated 10/13/89         id   1001
       b-10 1273 218ngp 042375 p-3 293k                                      id   5010
        boron-11      endf/b-iv mat 1160           updated 10/13/89         id   5011
        oxygen-16     endf/b-iv mat 1276           updated 10/13/89         id   8016
        oxygen-16     endf/b-iv mat 1276           updated 10/13/89         id      6
        kr-83         mt=102,103,108,105,106,107   updated 10/13/89         id  36083
        kr-85           mt=  102                                            id  36085
        sr-90         mt=102                       updated 10/13/89         id  38090
         y-89         mt=102                       updated 10/13/89         id  39089
        zr-93           mt=  102                                            id  40093
        zr-94         mt=102                       updated 10/13/89         id  40094
```

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      zr-95          mt=102                      updated 10/13/89          id   40095
      zircalloy      endf/b-iv mat 1284          updated 10/13/89          id   40302
      rb-94          mt=102                      updated 10/13/89          id   41094
      mo-95          mt=102                      updated 10/13/89          id   42095
      tc-99          mt=102                      updated 10/13/89          id   43099
      ru-101         mt=102                      updated 10/13/89          id   44101
      ru-106         mt=102                      updated 10/13/89          id   44106
      rh-103         mt=102                      updated 10/13/89          id   45103
      rh-105           mt=  102                                            id   45105
      pd-105         mt=102                      updated 10/13/89          id   46105
      pd-108         mt=102                      updated 10/13/89          id   46108
      silver-109     endf/b-iv mat 1139          updated 10/13/89          id   47109
      sb-124         mt=102                      updated 10/13/89          id   51124
      xe-131         mt=102,103,104,105,106      updated 10/13/89          id   54131
      xe-132         mt=102,103,104,105,106      updated 10/13/89          id   54132
      xenon-135      endf/b-iv mat 1234          updated 10/13/89          id   54135
      xe-136           mt=  102, 103, 104, 105, 107                        id   54136
      cesium-133     endf/b-iv mat 1141          updated 10/13/89          id   55133
      cs-134         mt=102                      updated 10/13/89          id   55134
      cs-135           mt=  102                                            id   55135
      cs-137         mt=102                      updated 10/13/89          id   55137
      ba-136         mt=102                      updated 10/13/89          id   56136
      la-139         mt=102                      updated 10/13/89          id   57139
      ce-144           mt=  102                                            id   58144
      pr-141         mt=102,103,104,105,106,107  updated 10/13/89          id   59141
      pr-143         mt=102                      updated 10/13/89          id   59143
      nd-143         mt=102                      updated 10/13/89          id   60143
      nd-145         mt=102                      updated 10/13/89          id   60145
      nd-147         mt=102                      updated 10/13/89          id   60147
      pm-147         mt=102                      updated 10/13/89          id   61147
      pm-148           mt=  102                                            id   61148
      sm-147         endf/b-v fission product    updated 10/13/89          id   62147
      sm-149         mt=102,105,107              updated 10/13/89          id   62149
      sm-150         mt=102                      updated 10/13/89          id   62150
      sm-151         mt=102,103,104,105,106,107  updated 10/13/89          id   62151
      sm-152         mt=102,103,104,105,106,107  updated 10/13/89          id   62152
      eu-153         mt=102,103,104,105,106,107  updated 10/13/89          id   63153
      eu-154         mt=102,103,104,105,106,107  updated 10/13/89          id   63154
      eu-155         mt=102,103,104,105,106,107  updated 10/13/89          id   63155
      gd-155         mt=102                      updated 10/13/89          id   64155
     u-234 1043 sigo=5+4 nsaxlacs p-3 293k f-1/e-s(1.+5)                   id   92234
      uranium-235    endf/b-iv mat 1261          updated 10/13/89          id   92235
     u-236 1163 sigo=5+4 nsaxlacs p-3 293k f-1/e-s(1.+5)                   id   92236
      uranium-238    endf/b-iv mat 1262          updated 10/13/89          id   92238
      neptunium-237  endf/b-iv mat 1263          updated 10/13/89          id   93237
     pu-238 1050 sigo=5+4 nsaxlacs p-3 293k f-1/e-s(1.+5)                   id   94238
      plutonium-239  endf/b-iv mat 1264          updated 10/13/89          id   94239
      plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id   94240
      plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id   94241
      plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   94242
     am-241 1056 sigo=5+4 nsaxlacs 218gp p-3 293k                          id   95241
     am-243 1057 218 gp wt f-1/e-s 093576 p3 293k                          id   95243
      curium-244     endf/b-iv mat 1162          updated 10/13/89          id   96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx        xx   ssssssssss   ddddddddddd   rrrrrrrrrr   mm        mm   pppppppppp   mm         mm
  xx        xx   ssssssssssss ddddddddddddd rrrrrrrrrrr mm        mm   pppppppppppp mmm       mmm
    xx    xx     ss        ss dd        dd  rr        rr mmm      mmm  pp        pp  mmmm     mmmm
     xx  xx      ss           dd        dd  rr        rr mm mm  mm mm  pp        pp  mm mm   mm mm
      xx xx      ss           dd        dd  rr        rr mm  mm  mm mm  pp        pp  mm  mm mm mm  mm
       xxx       ssssssssss   dd        dd  rrrrrrrrrrr mm   mm   mm   pppppppppppp  mm   mmm   mm
```

INFORMATION ONLY

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```
ssssssssss    cccccccccc   aa      aa   llllllllllll   eeeeeeeeeee

program verification information
code system:   scale  version:   4.2

program:  c0c001
creation date:  04/27/95
library:  /neutronics/scale/exe

this is not a  scale  configuration controlled code

jobname:  davis
date of execution:  02/16/96
time of execution:  10:04:44

1
                    1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      -1q array has     1 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit   9 requires   12 blocks of length  704 for cross section mixing.
1                   1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                          general problem data

 igeom  1/2/3 = plane/cylinder/sphere      2     isn  quadrature order                    8
 izm    number of zones                    4     isct order of scattering                 3
 im     number of special intervals       24     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            20
 ibr    right boundary condition           3     iom  outer iteration maximum            25
 mxx    number of mixtures                 3     iclc -1/0/n--flat res/sn/cpt             0
 ms     mixing table length               65     ith  0/1 = forward/adjoint               0
 igm    number of energy groups           27     iflu not used(always wgtd)               0
 nng    number of neutron groups          27     iprt -2/-1/0/n=mixture xsec print       -2
 ngg    number of gamma groups             0     idl  0/1/2/3=no/prt nd/pch n/both        53
```

INFORMATION ONLY


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 iftg number of first thermal group      15        ipbt -1/0/1=none/fine/all bal. prt      0
0                                  special options

 ifg  0/1 = none/weighting calculation    1        ipn  0/1/2 diff. coef. param            0
 iqm  volumetric sources (0/n=no/yes)     0        idfm 0/1 = none/density factors 39*     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     53        iai  0/1=none/activities by interval    0
 itmx maximum time (minutes)             10        ifct 0/1=no/yes upscatter scaling       0
 idt1 0/1/2/3=no/xsect/srce/flux--out     0        ipvt 0/1/2=no/k/alpha parametric srch   0
 isx  broad group fluxes                  0        isen outer iteration acceleration       0
 iblm activity data unit                  0        rtbrd band rebaln parameter             0
 jtkl 0/1/2 buckling geometry             0
0                              weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight     -1        ihtf total xsect pan in brd gp tables   3
 igmf number of broad groups             27        rdsf pan g-g or file number             4
 itp  0/10/20/30/40 0/c/e/ac/a            0        nusf table length or max order          4
 ipp  -2/-1/0/n=gted xsect print         -2        mscm extra 1-d x-sect positions         0
 iap  -1/n anisn xsect print             -1
0                              floating point parameters

 eps  overall convergence        1.00000E-04       dy   cyl/pla ht for buckling    .00000E+00
 ptc  point convergence          1.00000E-04       dz   plane depth for buckling   .00000E+00
 xnf  normalization factor       1.00000E+00       vac  void stressing correction   .00000E+00
 ev   eigenvalue guess            .00000E+00       pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00       eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00       xnpm max param mod for search   7.50000E-01
      this case will require      2535 locations for mixing
      this case has been allocated 200000 locations
1                 1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       13q array has     65 entries.
0       14q array has     65 entries.
0       15q array has     65 entries.
0                              data block 2 (mixing table, etc.)
0     nuclides      cccc                          mixing table                          extra
       on tape    identification          mixture   component      atom density       xsect id's
    1     999                                 1       92235       3.64452E-04
    2    1001                                 1       92234       4.28462E-06
    3    5010                                 1       92236       6.15686E-05
    4    5011                                 1       92238       2.17808E-02
    5    8016                                 1        8016       4.55359E-02
    6       6                                 3           6       2.09710E-02
    7   36083                                 1       36083       1.62790E-06
    8   36085                                 1       36085       7.82545E-07
    9   38090                                 1       38090       1.79089E-05
   10   39089                                 1       39089       1.44715E-05
   11   40093                                 1       42095       1.98509E-05
   12   40094                                 1       40093       1.44900E-05
   13   40095                                 1       40094       2.28864E-05
   14   40102                                 1       40095       1.96022E-06
   15   41094                                 1       41094       1.19775E-11
   16   42095                                 1       43099       2.23951E-05
   17   43099                                 1       45103       1.24431E-05
   18   44101                                 1       45105       2.38395E-03
   19   44106                                 1       44101       2.05378E-05
   20   45103                                 1       44106       3.08150E-06
   21   45105                                 1       46105       8.54907E-06
   22   46105                                 1       46108       2.52032E-06
   23   46108                                 1       47109       1.72855E-06
   24   47109                                 1       51124       3.84644E-10
```

INFORMATION ONLY

25	51124	1	54131	1.01675E-05
26	54131	1	54132	1.98610E-05
27	54132	1	54135	6.66399E-09
28	54135	1	54136	3.91142E-05
29	54136	1	55134	1.27988E-05
30	55133	1	55135	1.24307E-05
31	55134	1	55137	2.41337E-05
32	55135	1	56136	2.66545E-07
33	55137	1	57139	2.38740E-05
34	56136	1	59141	2.08456E-05
35	57139	1	59143	3.65349E-07
36	58144	1	58144	6.86967E-06
37	59141	1	60143	1.82864E-05
38	59143	1	60145	1.36331E-05
39	60143	1	61147	4.30510E-06
40	60145	1	61148	1.28358E-08
41	60147	1	60147	1.29256E-07
42	61147	1	62147	1.79999E-06
43	61148	1	62149	8.91136E-08
44	62147	1	62150	5.01098E-06
45	62149	1	62151	4.32635E-07
46	62150	1	62152	2.36311E-06
47	62151	1	64155	2.83530E-09
48	62152	1	63153	1.53061E-06
49	63153	1	63154	3.59468E-07
50	63154	1	63155	1.67707E-07
51	63155	2	40302	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	2.45710E-05
56	92238	1	93237	4.70039E-06
57	93237	1	94238	8.09288E-07
58	94238	1	94239	1.16852E-04
59	94239	1	94240	2.56808E-05
60	94240	1	94241	1.47624E-05
61	94241	1	94242	2.01045E-06
62	94242	1	95241	5.15913E-07
63	95241	1	95243	2.25204E-07
64	95243	1	96244	2.62419E-08
65	96244	1	999	1.00000E-20

- elapsed time .00 min.

0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 1040 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/stu burn high temp

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	

INFORMATION ONLY

7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00
9	1.70000E+04	6.37713E+00	1.13529E+08	9	0	9	1.00000E+00
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00
12	1.00000E+02	1.15129E+01	1.01056E+07	12	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31000E+06	19	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00
21	4.00000E-01	1.70844E+01	8.17974E+05	21	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.85953E+05	23	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00
26	3.00000E-02	1.95347E+01	1.87283E+05	26	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/htu burn high temp

0	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28695E-02
7					5.55953E-02	2.31301E-01	6	1.28695E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	16	0
10					5.22844E-02	-8.21784E-01	16	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70555E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-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

0constants for p(3) scattering

0argl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83236E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83236E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83236E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57236E-02	6.26843E-01	-1.98454E-01	-4.86835E-01

INFORMATION ONLY

10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20198E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20198E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83083E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1

int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.48318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47055E+00	2.21259E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06325E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24903E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63892E-01	4	4.70354E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89116E-02	1.00000E+00		
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		
25	8.13968E-01			5.11431E+00				

- elapsed time .00 min.

1

outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	119	-2.23657E-05	1.01176E+00	-1.25635E-02	1.00000E+00	-4.22462E-03	.00000E+00	.0000
2	185	8.53298E-06	1.01259E+00	-3.16202E-04	-1.25258E-03	-8.13098E-04	.00000E+00	.0000
3	232	3.91929E-06	1.01286E+00	-6.28068E-05	-2.22519E-04	-2.08430E-04	.00000E+00	.0000
4	265	-1.24623E-05	1.01309E+00	-1.67925E-05	-5.70544E-05	-4.65967E-05	.00000E+00	.0000

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1	5.78574E-08	2%	1.00000E+00	1
2	2	1	1	6.59902E-08	2%	1.00000E+00	1
3	3	1	1	5.81588E-08	2%	1.00000E+00	1
4	4	1	1	5.37730E-08	2%	1.00000E+00	1
5	5	1	1	4.50401E-08	2%	1.00000E+00	1
6	6	1	1	2.47275E-08	2%	1.00000E+00	1
7	7	1	1	1.03030E-08	2%	1.00000E+00	1
8	8	1	2%	1.38611E-08	2%	1.00000E+00	1
9	9	1	1	2.17652E-08	2%	1.00000E+00	1
10	10	1	1	1.83300E-08	2%	1.00000E+00	1

11	11	1	1	1.91079E-08	24	1.00000E+00	1
12	12	1	24	4.32918E-09	24	1.00000E+00	1
13	13	1	24	1.11999E-08	24	1.00000E+00	1
14	14	1	24	1.24675E-08	24	1.00000E+00	1
15	15	1	24	4.54743E-05	24	9.99967E-01	1
16	16	1	24	5.61643E-05	24	9.99974E-01	1
17	17	1	18	2.23950E-05	24	9.99947E-01	1
18	18	1	22	2.51828E-05	24	9.99879E-01	2
19	19	1	19	2.14472E-05	24	9.99942E-01	1
20	20	1	24	5.17553E-05	24	9.99955E-01	1
21	21	1	18	3.11258E-05	24	9.99953E-01	1
22	22	1	24	5.35801E-05	24	9.99984E-01	1
23	23	1	24	4.10872E-06	24	1.00000E+00	1
24	24	1	2	1.24446E-05	24	1.00001E+00	1
25	25	1	24	2.19474E-05	24	1.00001E+00	1
26	26	1	21	1.69941E-05	24	1.00008E+00	2
27	27	1	2	6.65707E-06	24	1.00001E+00	2

5 292 -1.38947E-06 1.01298E+00 -3.34742E-06 -1.28063E-05 -1.06925E-05 .00000E+00 .0167

final monitor

lambda 1.01297E+00 production/absorption 1.01297E+00 angular flux on 16

-- elapsed time .02 min.

1 1040 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 int. zone number

int.	zone number	radius	int. midpoint	area	volume	prod density
1	1	.00000E+00	1.29551E-02	.00000E+00	2.10906E-03	2.95670E-03
2	1	2.59102E-02	4.33406E-02	1.62798E-01	9.46318E-03	1.33025E-02
3	1	6.07710E-02	8.75100E-02	3.81835E-01	2.9405E-02	4.12845E-02
4	1	1.14246E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.85931E-01
5	1	2.34061E-01	2.93967E-01	1.47065E+00	2.21259E-01	3.21681E-01
6	1	3.53873E-01	3.80612E-01	2.22545E+00	1.27890E-01	1.90995E-01
7	1	4.07351E-01	4.24781E-01	2.55946E+00	9.30429E-02	1.41781E-01
8	1	4.42212E-01	4.55167E-01	2.77850E+00	7.41004E-02	1.15083E-01
9	2	4.68122E-01	4.68814E-01	2.94130E+00	4.0994E-03	.00000E+00
10	2	4.69507E-01	4.71481E-01	2.95000E+00	1.16988E-02	.00000E+00
11	2	4.73456E-01	4.75431E-01	2.97481E+00	1.17968E-02	.00000E+00
12	2	4.77405E-01	4.78098E-01	2.99962E+00	4.16023E-03	.00000E+00
13	3	4.78790E-01	4.83159E-01	3.00833E+00	2.65268E-02	.00000E+00
14	3	4.87528E-01	4.99987E-01	3.06329E+00	7.82768E-02	.00000E+00
15	3	5.12445E-01	5.24903E-01	3.21979E+00	8.21777E-02	.00000E+00
16	3	5.37362E-01	5.41731E-01	3.37634E+00	2.97427E-02	.00000E+00
17	4	5.46100E-01	5.53513E-01	3.43125E+00	5.15631E-02	.00000E+00
18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19	4	5.80874E-01	5.96175E-01	3.64974E+00	1.14628E-01	.00000E+00
20	4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21	4	6.80034E-01	7.14313E-01	4.27278E+00	3.07700E-01	.00000E+00
22	4	7.48592E-01	7.63893E-01	4.70354E+00	1.46875E-01	.00000E+00
23	4	7.79193E-01	7.89167E-01	4.89583E+00	9.89114E-02	.00000E+00
24	4	7.99141E-01	8.06554E-01	5.02115E+00	7.51357E-02	.00000E+00
25		8.13968E-01		5.11431E+00		

1 1040 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.82381E-01	1.34291E+00	1.68857E+00	1.04443E+00	1.57780E+00	3.03195E+00	2.90620E+00	2.08230E+00
2	1.82446E-01	1.34355E+00	1.68941E+00	1.04485E+00	1.57850E+00	3.03325E+00	2.90686E+00	2.08236E+00
3	1.82389E-01	1.34298E+00	1.68864E+00	1.04447E+00	1.57772E+00	3.03165E+00	2.90584E+00	2.08217E+00
4	1.81984E-01	1.33866E+00	1.68321E+00	1.04117E+00	1.57248E+00	3.02121E+00	2.89756E+00	2.08111E+00
5	1.80850E-01	1.32767E+00	1.66940E+00	1.03282E+00	1.55925E+00	2.99534E+00	2.88408E+00	2.07849E+00
6	1.79713E-01	1.31511E+00	1.65383E+00	1.02348E+00	1.54463E+00	2.96695E+00	2.86721E+00	2.07560E+00
7	1.78740E-01	1.30525E+00	1.64179E+00	1.01635E+00	1.53357E+00	2.94605E+00	2.85485E+00	2.07341E+00
8	1.77771E-01	1.29562E+00	1.63023E+00	1.00960E+00	1.52326E+00	2.92691E+00	2.84365E+00	2.07136E+00
9	1.77241E-01	1.29041E+00	1.62401E+00	1.00601E+00	1.51784E+00	2.91694E+00	2.83787E+00	2.07027E+00

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10.	1.77130E-01	1.28936E+00	1.62277E+00	1.00532E+00	1.51684E+00	2.91516E+00	2.83688E+00	2.07007E+00
11	1.76969E-01	1.28783E+00	1.62097E+00	1.00433E+00	1.51542E+00	2.91262E+00	2.83549E+00	2.06979E+00
12	1.76852E-01	1.28682E+00	1.61980E+00	1.00368E+00	1.51451E+00	2.91100E+00	2.83460E+00	2.06960E+00
13	1.76663E-01	1.28495E+00	1.61757E+00	1.00244E+00	1.51270E+00	2.90757E+00	2.83267E+00	2.06922E+00
14	1.76123E-01	1.27964E+00	1.61103E+00	9.98605E-01	1.50690E+00	2.89632E+00	2.82627E+00	2.06817E+00
15	1.75517E-01	1.27321E+00	1.60265E+00	9.95285E-01	1.49851E+00	2.87971E+00	2.81670E+00	2.06702E+00
16	1.75221E-01	1.26985E+00	1.59758E+00	9.89811E-01	1.49279E+00	2.86817E+00	2.80999E+00	2.06650E+00
17	1.75078E-01	1.26761E+00	1.59446E+00	9.87479E-01	1.48881E+00	2.86022E+00	2.80534E+00	2.06636E+00
18	1.74891E-01	1.26497E+00	1.59046E+00	9.84605E-01	1.48376E+00	2.85026E+00	2.79948E+00	2.06621E+00
19	1.74657E-01	1.26183E+00	1.58583E+00	9.81138E-01	1.47801E+00	2.83912E+00	2.79292E+00	2.06597E+00
20	1.74345E-01	1.25778E+00	1.57993E+00	9.76919E-01	1.47101E+00	2.82529E+00	2.78479E+00	2.06563E+00
21	1.74130E-01	1.25494E+00	1.57578E+00	9.73852E-01	1.46598E+00	2.81548E+00	2.77910E+00	2.06553E+00
22	1.74132E-01	1.25482E+00	1.57546E+00	9.73649E-01	1.46546E+00	2.81447E+00	2.77866E+00	2.06575E+00
23	1.74211E-01	1.25568E+00	1.57661E+00	9.74378E-01	1.46663E+00	2.81676E+00	2.78014E+00	2.06605E+00
24	1.74301E-01	1.25670E+00	1.57798E+00	9.75276E-01	1.46809E+00	2.81961E+00	2.78193E+00	2.06631E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58921E+00	1.44957E+00	1.30922E+00	7.97325E-01	6.70089E-01	5.79053E-01	3.66093E-01	2.00079E-01
2	1.58914E+00	1.44927E+00	1.30903E+00	7.97092E-01	6.69877E-01	5.78762E-01	3.66058E-01	2.00050E-01
3	1.58852E+00	1.44948E+00	1.30948E+00	7.97644E-01	6.70348E-01	5.79495E-01	3.66142E-01	2.00105E-01
4	1.59034E+00	1.45068E+00	1.31210E+00	8.00739E-01	6.73022E-01	5.83560E-01	3.66607E-01	2.00422E-01
5	1.59289E+00	1.45362E+00	1.31854E+00	8.08382E-01	6.79621E-01	5.93649E-01	3.67730E-01	2.01200E-01
6	1.59573E+00	1.45682E+00	1.32559E+00	8.16797E-01	6.86881E-01	6.04828E-01	3.68941E-01	2.02049E-01
7	1.59789E+00	1.45917E+00	1.33078E+00	8.23336E-01	6.92256E-01	6.13181E-01	3.69813E-01	2.02672E-01
8	1.59993E+00	1.46130E+00	1.33550E+00	8.28765E-01	6.97186E-01	6.20889E-01	3.70592E-01	2.03239E-01
9	1.60102E+00	1.46240E+00	1.33795E+00	8.31742E-01	6.99748E-01	6.24898E-01	3.70992E-01	2.03533E-01
10	1.60121E+00	1.46258E+00	1.33834E+00	8.32220E-01	7.00165E-01	6.25534E-01	3.71060E-01	2.03585E-01
11	1.60149E+00	1.46283E+00	1.33890E+00	8.32908E-01	7.00761E-01	6.26443E-01	3.71156E-01	2.03655E-01
12	1.60168E+00	1.46300E+00	1.33926E+00	8.33345E-01	7.01147E-01	6.27032E-01	3.71219E-01	2.03702E-01
13	1.60206E+00	1.46334E+00	1.34001E+00	8.34264E-01	7.01985E-01	6.28253E-01	3.71347E-01	2.03797E-01
14	1.60306E+00	1.46442E+00	1.34257E+00	8.37065E-01	7.04402E-01	6.31994E-01	3.71758E-01	2.04095E-01
15	1.60418E+00	1.46597E+00	1.34571E+00	8.40955E-01	7.07808E-01	6.37174E-01	3.72340E-01	2.04507E-01
16	1.60470E+00	1.46700E+00	1.34791E+00	8.43464E-01	7.09996E-01	6.40507E-01	3.72724E-01	2.04772E-01
17	1.60499E+00	1.46777E+00	1.34958E+00	8.45309E-01	7.11576E-01	6.42987E-01	3.72987E-01	2.04948E-01
18	1.60541E+00	1.46881E+00	1.35180E+00	8.47832E-01	7.13717E-01	6.46249E-01	3.73175E-01	2.05175E-01
19	1.60594E+00	1.47000E+00	1.35436E+00	8.50735E-01	7.16187E-01	6.50067E-01	3.73455E-01	2.05440E-01
20	1.60668E+00	1.47151E+00	1.35761E+00	8.54433E-01	7.19332E-01	6.54930E-01	3.73798E-01	2.05775E-01
21	1.60724E+00	1.47258E+00	1.35993E+00	8.57070E-01	7.21546E-01	6.58373E-01	3.73974E-01	2.05987E-01
22	1.60730E+00	1.47269E+00	1.36015E+00	8.57308E-01	7.21694E-01	6.58641E-01	3.73983E-01	2.05970E-01
23	1.60715E+00	1.47242E+00	1.35957E+00	8.56618E-01	7.21070E-01	6.57712E-01	3.73725E-01	2.05897E-01
24	1.60696E+00	1.47208E+00	1.35884E+00	8.55773E-01	7.20315E-01	6.56577E-01	3.73565E-01	2.05775E-01

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.82863E-02	2.69570E-02	1.13867E-01	4.10013E-01	9.95276E-02	1.57997E-01	6.31219E-01	4.73088E-01
2	7.82533E-02	2.69523E-02	1.13813E-01	4.09905E-01	9.92614E-02	1.57891E-01	6.30820E-01	4.72764E-01
3	7.83247E-02	2.72322E-02	1.13940E-01	4.10122E-01	9.94738E-02	1.58659E-01	6.31851E-01	4.73661E-01
4	7.87325E-02	2.84738E-02	1.14653E-01	4.11368E-01	1.00609E-01	1.61872E-01	6.37561E-01	4.78570E-01
5	7.97463E-02	3.17233E-02	1.16401E-01	4.14425E-01	1.05452E-01	1.70245E-01	6.51725E-01	4.90771E-01
6	8.08692E-02	3.56440E-02	1.18308E-01	4.17763E-01	1.06642E-01	1.79806E-01	6.67412E-01	5.06325E-01
7	8.17081E-02	3.89239E-02	1.19704E-01	4.20212E-01	1.09059E-01	1.87209E-01	6.79125E-01	5.14495E-01
8	8.24852E-02	4.22880E-02	1.20966E-01	4.22441E-01	1.11319E-01	1.94257E-01	6.89285E-01	5.23925E-01
9	8.28897E-02	4.40729E-02	1.21615E-01	4.23596E-01	1.12499E-01	1.97970E-01	6.95551E-01	5.28835E-01
10	8.29525E-02	4.42786E-02	1.21719E-01	4.23788E-01	1.12676E-01	1.98482E-01	6.96413E-01	5.29573E-01
11	8.30460E-02	4.45735E-02	1.21857E-01	4.24060E-01	1.12880E-01	1.99216E-01	6.97641E-01	5.30622E-01
12	8.31065E-02	4.47651E-02	1.21953E-01	4.24237E-01	1.13094E-01	1.99691E-01	6.98433E-01	5.31298E-01
13	8.32302E-02	4.51538E-02	1.22160E-01	4.24598E-01	1.13429E-01	2.00657E-01	7.00053E-01	5.32679E-01
14	8.36166E-02	4.63501E-02	1.22785E-01	4.25725E-01	1.14474E-01	2.03655E-01	7.05094E-01	5.36938E-01
15	8.41472E-02	4.79545E-02	1.23660E-01	4.27285E-01	1.15906E-01	2.07717E-01	7.11953E-01	5.42533E-01
16	8.44875E-02	4.89584E-02	1.24252E-01	4.28278E-01	1.16820E-01	2.10281E-01	7.16346E-01	5.46157E-01
17	8.47383E-02	4.97102E-02	1.24644E-01	4.28969E-01	1.17523E-01	2.12276E-01	7.19791E-01	5.49882E-01
18	8.50828E-02	5.07558E-02	1.25202E-01	4.29897E-01	1.18513E-01	2.15121E-01	7.25068E-01	5.54466E-01
19	8.54797E-02	5.19561E-02	1.25845E-01	4.30982E-01	1.19658E-01	2.18430E-01	7.31367E-01	5.60608E-01

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20	8.59865E-02	5.34785E-02	1.26663E-01	4.32570E-01	1.21128E-01	2.22687E-01	7.39738E-01	5.68903E-01
21	8.63460E-02	5.45636E-02	1.27258E-01	4.33319E-01	1.22187E-01	2.25765E-01	7.46050E-01	5.75376E-01
22	8.63782E-02	5.46656E-02	1.27277E-01	4.33332E-01	1.22296E-01	2.26095E-01	7.46975E-01	5.76605E-01
23	8.62857E-02	5.43984E-02	1.27114E-01	4.33010E-01	1.22089E-01	2.25354E-01	7.45693E-01	5.75577E-01
24	8.61717E-02	5.40651E-02	1.26918E-01	4.32637E-01	1.21716E-01	2.24422E-01	7.44007E-01	5.74114E-01

0 int. grp. 25 grp. 26 grp. 27

1	1.97805E-01	1.20966E-01	1.60694E-02
2	1.97673E-01	1.20879E-01	1.60684E-02
3	1.98139E-01	1.21327E-01	1.62073E-02
4	2.00612E-01	1.23589E-01	1.69403E-02
5	2.05762E-01	1.29239E-01	1.84460E-02
6	2.13626E-01	1.35609E-01	2.03164E-02
7	2.18803E-01	1.40479E-01	2.18147E-02
8	2.23634E-01	1.45084E-01	2.32969E-02
9	2.26160E-01	1.47501E-01	2.40885E-02
10	2.26528E-01	1.47831E-01	2.41809E-02
11	2.27051E-01	1.48259E-01	2.43123E-02
12	2.27389E-01	1.48600E-01	2.43969E-02
13	2.28079E-01	1.49212E-01	2.45689E-02
14	2.30159E-01	1.51057E-01	2.50764E-02
15	2.32871E-01	1.53420E-01	2.57044E-02
16	2.34495E-01	1.54804E-01	2.60551E-02
17	2.36123E-01	1.56460E-01	2.66003E-02
18	2.38822E-01	1.59353E-01	2.75966E-02
19	2.42120E-01	1.62871E-01	2.87664E-02
20	2.46627E-01	1.67670E-01	3.03020E-02
21	2.50227E-01	1.71590E-01	3.15666E-02
22	2.51013E-01	1.72598E-01	3.19426E-02
23	2.50564E-01	1.72255E-01	3.18991E-02
24	2.49827E-01	1.71622E-01	3.17584E-02

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.31854E-02	.00000E+00	1.25920E-02	1.08272E-02	3.28173E-03	1.14174E-02	9.98839E-01
2	.00000E+00	1.94563E-01	2.39775E-03	1.68290E-01	6.70948E-02	1.36782E-02	1.16197E-01	1.00004E+00
3	.00000E+00	2.19975E-01	2.65706E-02	1.61584E-01	8.15227E-02	1.55117E-02	1.45510E-01	1.00000E+00
4	.00000E+00	1.23748E-01	3.92102E-02	1.05664E-01	6.79576E-02	7.37861E-03	8.76398E-02	1.00001E+00
5	.00000E+00	1.63943E-01	6.82620E-02	2.60008E-01	9.47533E-02	4.37817E-03	1.33075E-01	9.99992E-01
6	.00000E+00	1.76773E-01	1.35034E-01	6.53824E-01	5.43663E-02	6.84980E-03	2.50581E-01	1.00008E+00
7	.00000E+00	8.73119E-02	9.85313E-02	7.44390E-01	3.63357E-02	7.33603E-03	1.42170E-01	1.00001E+00
8	.00000E+00	1.34466E-02	4.25851E-02	6.30482E-01	2.15198E-02	1.36461E-02	2.08633E-02	1.00005E+00
9	.00000E+00	9.75775E-04	2.17433E-02	5.35903E-01	2.07200E-02	2.26987E-02	-2.06997E-02	9.99989E-01
10	.00000E+00	7.24738E-05	2.07420E-02	4.63053E-01	1.07345E-02	3.52242E-02	-2.51446E-02	1.00001E+00
11	.00000E+00	5.70172E-06	1.07355E-02	4.25674E-01	8.17623E-03	5.77065E-02	-5.51421E-02	1.00001E+00
12	.00000E+00	4.00535E-07	8.17628E-03	2.41088E-01	9.39423E-03	6.42022E-02	-6.54166E-02	9.99958E-01
13	.00000E+00	6.36013E-08	9.39424E-03	1.80290E-01	6.15279E-03	6.02052E-02	-5.69640E-02	1.00000E+00
14	.00000E+00	1.26041E-08	6.15280E-03	1.52071E-01	7.32639E-03	8.58541E-02	-8.70078E-02	1.00000E+00
15	.00000E+00	1.42440E-09	7.41172E-03	8.37812E-02	8.80050E-03	7.59718E-03	-9.07206E-03	1.00525E+00
16	.00000E+00	4.18253E-10	8.95337E-03	4.19522E-02	9.42420E-03	6.31422E-03	-6.84555E-03	1.00884E+00
17	.00000E+00	1.34698E-10	7.50465E-03	1.39004E-02	7.06917E-03	9.38862E-03	-8.97564E-03	1.00149E+00
18	.00000E+00	9.64398E-11	6.83582E-03	7.55428E-03	3.41334E-03	3.01750E-02	-2.67613E-02	1.00026E+00
19	.00000E+00	1.36345E-10	5.69446E-03	2.23547E-02	8.17551E-03	1.21377E-02	-1.46440E-02	1.00124E+00
20	.00000E+00	2.21711E-10	9.23074E-03	9.78938E-02	9.27267E-03	2.63381E-02	-2.64888E-02	1.00349E+00
21	.00000E+00	3.24514E-11	8.61734E-03	1.95256E-02	7.60778E-03	2.56944E-02	-2.47098E-02	1.00074E+00
22	.00000E+00	3.76510E-11	1.11111E-02	3.68291E-02	8.31380E-03	7.35241E-02	-7.07850E-02	1.00047E+00
23	.00000E+00	3.59985E-11	1.32075E-02	1.53627E-01	1.69174E-02	1.20497E-01	-1.24354E-01	1.00107E+00
24	.00000E+00	9.79834E-12	2.07954E-02	1.08285E-01	2.09913E-02	1.07955E-01	-1.08266E-01	1.00087E+00
25	.00000E+00	2.86831E-12	1.79975E-02	4.12148E-02	1.36521E-02	5.83534E-02	-5.40646E-02	1.00066E+00
26	.00000E+00	2.01128E-12	8.89672E-03	2.88258E-02	6.16425E-03	5.23895E-02	-4.98861E-02	1.00050E+00
27	.00000E+00	4.79258E-13	1.95224E-03	4.33982E-03	1.06015E-03	1.47001E-02	-1.38326E-02	1.00029E+00

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28	.00000E+00	1.00000E+00	6.17724E-01	5.39535E+00	6.17724E-01	9.43000E-01	5.86340E-02	1.00043E+00
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*dr**2	total flux
1	1.77270E-01	1.14174E-02	1.82319E-01	.00000E+00	2.31132E-03	2.68495E-03	.00000E+00	1.24165E-01
2	1.29068E+00	1.16197E-01	1.34229E+00	.00000E+00	1.68906E-05	1.18944E-02	.00000E+00	9.10031E-01
3	1.62634E+00	1.45510E-01	1.68778E+00	.00000E+00	.00000E+00	1.44862E-02	.00000E+00	1.14443E+00
4	1.00619E+00	8.76398E-02	1.04395E+00	.00000E+00	.00000E+00	6.23336E-03	.00000E+00	7.08168E-01
5	1.51810E+00	1.33075E-01	1.57709E+00	.00000E+00	.00000E+00	1.77900E-03	.00000E+00	1.06904E+00
6	2.91742E+00	2.50681E-01	3.03060E+00	.00000E+00	.00000E+00	1.46332E-03	.00000E+00	2.05374E+00
7	2.83813E+00	1.42170E-01	2.90547E+00	.00000E+00	.00000E+00	1.36962E-03	.00000E+00	1.98058E+00
8	2.07052E+00	2.08633E-02	2.08220E+00	.00000E+00	.00000E+00	1.36758E-03	.00000E+00	1.43005E+00
9	1.60097E+00	-2.06991E-02	1.58981E+00	.00000E+00	.00000E+00	1.78092E-03	.00000E+00	1.09748E+00
10	1.46235E+00	-2.51446E-02	1.44945E+00	.00000E+00	.00000E+00	3.79531E-03	.00000E+00	1.00167E+00
11	1.33784E+00	-5.51421E-02	1.30947E+00	.00000E+00	.00000E+00	8.20207E-03	.00000E+00	9.09815E-01
12	8.31615E-01	-6.54166E-02	7.97617E-01	.00000E+00	.00000E+00	1.08675E-02	.00000E+00	5.59027E-01
13	6.99638E-01	-5.69640E-02	6.70351E-01	.00000E+00	.00000E+00	1.27581E-02	.00000E+00	4.70036E-01
14	6.24730E-01	-8.70078E-02	5.79425E-01	.00000E+00	.00000E+00	7.86777E-03	.00000E+00	4.12048E-01
15	3.70981E-01	-9.07206E-03	3.66144E-01	.00000E+00	.00000E+00	1.78316E-03	.00000E+00	2.53509E-01
16	2.03522E-01	-6.84555E-03	2.00115E-01	.00000E+00	.00000E+00	1.26621E-03	.00000E+00	1.38764E-01
17	8.28729E-02	-8.97564E-03	7.85298E-02	.00000E+00	.00000E+00	1.37635E-03	.00000E+00	5.52578E-02
18	4.40207E-02	-2.67613E-02	2.69833E-02	.00000E+00	.00000E+00	8.73139E-04	.00000E+00	2.31790E-02
19	1.21593E-01	-1.46440E-02	1.13940E-01	.00000E+00	.00000E+00	2.18628E-03	.00000E+00	8.06934E-02
20	4.23557E-01	-2.64688E-02	4.10153E-01	.00000E+00	.00000E+00	1.44888E-02	.00000E+00	2.86288E-01
21	1.12458E-01	-2.47096E-02	9.94272E-02	.00000E+00	.00000E+00	1.53466E-02	.00000E+00	7.21953E-02
22	1.97834E-01	-7.07850E-02	1.58213E-01	.00000E+00	.00000E+00	4.39663E-02	.00000E+00	1.20200E-01
23	6.95310E-01	-1.24354E-01	6.31728E-01	.00000E+00	.00000E+00	7.19866E-02	.00000E+00	4.53379E-01
24	5.28525E-01	-1.08266E-01	4.73507E-01	.00000E+00	.00000E+00	6.39583E-02	.00000E+00	3.41955E-01
25	2.26057E-01	-5.40646E-02	1.98004E-01	.00000E+00	.00000E+00	3.61555E-02	.00000E+00	1.44427E-01
26	1.47403E-01	-4.96861E-02	1.21120E-01	.00000E+00	.00000E+00	3.31709E-02	.00000E+00	9.05579E-02
27	2.40535E-02	-1.38326E-02	1.60978E-02	.00000E+00	.00000E+00	9.39859E-03	.00000E+00	1.33072E-02
28	2.31779E+01	5.86341E-02	2.31411E+01	.00000E+00	2.32821E-03	3.83485E-01	.00000E+00	1.59444E+01

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-08	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.21541E-08	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.09782E-08	1.00000E+00
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.65661E-08	1.00000E+00
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.35276E-08	9.99999E-01
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.32851E-08	9.99997E-01
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.11759E-08	9.99999E-01
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.86265E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.11759E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	9.31323E-10	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.33762E-07	1.00001E+00

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0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*df**2	total flux
1	1.76835E-01	1.14174E-02	1.77270E-01	1.14174E-02	.00000E+00	.00000E+00	.00000E+00	5.61870E-03
2	1.28657E+00	1.16197E-01	1.29068E+00	1.16197E-01	.00000E+00	.00000E+00	.00000E+00	4.08957E-02
3	1.61950E+00	1.45510E-01	1.62634E+00	1.45510E-01	.00000E+00	.00000E+00	.00000E+00	5.14705E-02
4	1.00852E+00	8.76397E-02	1.00619E+00	8.76398E-02	.00000E+00	.00000E+00	.00000E+00	3.18883E-02
5	1.51428E+00	1.33075E-01	1.51810E+00	1.33075E-01	.00000E+00	.00000E+00	.00000E+00	4.81149E-02
6	2.91059E+00	2.50581E-01	2.91742E+00	2.50581E-01	.00000E+00	.00000E+00	.00000E+00	9.24733E-02
7	2.83438E+00	1.42170E-01	2.83813E+00	1.42170E-01	.00000E+00	.00000E+00	.00000E+00	9.00073E-02
8	2.06955E+00	2.08632E-02	2.07052E+00	2.08633E-02	.00000E+00	.00000E+00	.00000E+00	6.56897E-02
9	1.60173E+00	-2.06992E-02	1.60097E+00	-2.06991E-02	.00000E+00	.00000E+00	.00000E+00	5.08195E-02
10	1.46304E+00	-2.51446E-02	1.46255E+00	-2.51446E-02	.00000E+00	.00000E+00	.00000E+00	4.64195E-02
11	1.33936E+00	-5.51421E-02	1.33784E+00	-5.51421E-02	.00000E+00	.00000E+00	.00000E+00	4.24815E-02
12	8.33455E-01	-6.54166E-02	8.31615E-01	-6.54166E-02	.00000E+00	.00000E+00	.00000E+00	2.64215E-02
13	7.01244E-01	-5.69640E-02	6.99638E-01	-5.69640E-02	.00000E+00	.00000E+00	.00000E+00	2.22285E-02
14	6.27179E-01	-8.70078E-02	6.24730E-01	-8.70078E-02	.00000E+00	.00000E+00	.00000E+00	1.98658E-02
15	3.71241E-01	-9.07204E-03	3.70981E-01	-9.07204E-03	.00000E+00	.00000E+00	.00000E+00	1.17772E-02
16	2.03716E-01	-6.84555E-03	2.03522E-01	-6.84555E-03	.00000E+00	.00000E+00	.00000E+00	6.46190E-03
17	8.31248E-02	-8.97564E-03	8.28729E-02	-8.97564E-03	.00000E+00	.00000E+00	.00000E+00	2.63399E-03
18	4.48153E-02	-2.67613E-02	4.40207E-02	-2.67613E-02	.00000E+00	.00000E+00	.00000E+00	1.40985E-03
19	1.21993E-01	-1.46440E-02	1.21593E-01	-1.46440E-02	.00000E+00	.00000E+00	.00000E+00	3.86510E-03
20	4.26294E-01	-2.64688E-02	4.25557E-01	-2.64688E-02	.00000E+00	.00000E+00	.00000E+00	1.34533E-02
21	1.13141E-01	-2.47096E-02	1.12658E-01	-2.47096E-02	.00000E+00	.00000E+00	.00000E+00	3.57981E-03
22	1.99810E-01	-7.07650E-02	1.97834E-01	-7.07650E-02	.00000E+00	.00000E+00	.00000E+00	6.31047E-03
23	6.98619E-01	-1.26354E-01	6.95310E-01	-1.26354E-01	.00000E+00	.00000E+00	.00000E+00	2.21202E-02
24	5.31452E-01	-1.08266E-01	5.28625E-01	-1.08266E-01	.00000E+00	.00000E+00	.00000E+00	1.68227E-02
25	2.27468E-01	-5.40646E-02	2.26057E-01	-5.40646E-02	.00000E+00	.00000E+00	.00000E+00	7.19714E-03
26	1.48671E-01	-4.96861E-02	1.47409E-01	-4.96861E-02	.00000E+00	.00000E+00	.00000E+00	4.69882E-03
27	2.44175E-02	-1.38526E-02	2.40655E-02	-1.38526E-02	.00000E+00	.00000E+00	.00000E+00	7.69458E-04
28	2.31740E+01	5.86336E-02	2.31779E+01	5.86341E-02	.00000E+00	.00000E+00	.00000E+00	7.35493E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.89747E-03	2.92165E-03	1.49722E-05	-2.85240E-03	1.00001E+00
2	.00000E+00	.00000E+00	5.10259E-04	2.62155E-02	1.88109E-02	5.20813E-05	-1.83530E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.66971E-03	5.03761E-02	1.59284E-02	1.37782E-04	-1.33780E-02	9.99995E-01
4	.00000E+00	.00000E+00	5.17995E-03	4.22153E-02	5.46597E-03	1.03634E-04	-3.89208E-04	9.99995E-01
5	.00000E+00	.00000E+00	1.11564E-02	8.17470E-02	5.16988E-03	1.52258E-04	5.85398E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85975E-02	2.35127E-01	3.21249E-03	3.20176E-04	1.50649E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.23587E-02	2.35259E-01	1.18253E-03	3.44858E-04	1.08314E-02	9.99998E-01
8	.00000E+00	.00000E+00	2.16700E-03	1.58680E-01	7.64071E-03	2.95102E-04	-5.76854E-03	1.00003E+00
9	.00000E+00	.00000E+00	7.67421E-03	1.05330E-01	8.78040E-04	1.11068E-03	5.68567E-03	9.99998E-01
10	.00000E+00	.00000E+00	8.79224E-04	8.57581E-02	8.50869E-04	8.37479E-04	-8.09178E-04	1.00000E+00
11	.00000E+00	.00000E+00	8.50751E-04	7.72845E-02	8.72815E-04	1.34101E-03	-1.36291E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.72821E-04	4.69085E-02	8.72719E-04	4.17641E-05	-4.17754E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.72720E-04	3.94952E-02	8.05675E-04	5.99651E-05	7.15254E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.05676E-04	3.55857E-02	6.70617E-04	9.47841E-05	4.02625E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.13864E-04	2.04299E-02	8.36128E-04	8.20439E-05	-2.05717E-04	9.99941E-01
16	.00000E+00	.00000E+00	9.30922E-04	1.07411E-02	9.30516E-04	5.06144E-05	-4.98118E-05	9.99946E-01
17	.00000E+00	.00000E+00	9.80395E-04	3.86579E-03	9.46652E-04	2.32333E-05	1.05482E-05	9.99998E-01
18	.00000E+00	.00000E+00	9.90550E-04	2.03695E-03	6.57734E-04	1.39492E-05	3.18820E-04	1.00000E+00
19	.00000E+00	.00000E+00	7.12318E-04	6.13518E-03	9.05190E-04	3.97476E-05	-2.32544E-04	9.99995E-01
20	.00000E+00	.00000E+00	1.07861E-03	2.33730E-02	9.93670E-04	1.73780E-04	-8.82149E-05	9.99970E-01
21	.00000E+00	.00000E+00	1.21549E-03	5.31273E-03	1.26902E-03	5.85300E-05	-1.11971E-04	9.99997E-01
22	.00000E+00	.00000E+00	1.60204E-03	1.03677E-02	1.38561E-03	1.20802E-04	9.59337E-05	9.99996E-01
23	.00000E+00	.00000E+00	2.08594E-03	3.77100E-02	2.78655E-03	5.71084E-04	-1.25364E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.43304E-03	2.71211E-02	3.72196E-03	6.31776E-04	-9.20986E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.36262E-03	1.05188E-02	2.70740E-03	3.57771E-04	2.97349E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.40900E-03	7.68174E-03	1.01516E-03	3.35432E-04	5.84386E-05	9.99999E-01
27	.00000E+00	.00000E+00	2.94362E-04	1.44954E-03	7.46656E-07	1.06021E-04	1.87989E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.34214E-02	1.39060E+00	8.34214E-02	7.47136E-03	-7.36431E-03	9.99977E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*df**2	total flux

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1	1.75162E-01	8.58500E-03	1.76835E-01	1.14174E-02	1.04387E-04	.00000E+00	.00000E+00	3.81077E-02
2	1.26884E+00	9.78441E-02	1.28657E+00	1.16197E-01	.00000E+00	.00000E+00	.00000E+00	2.76644E-01
3	1.59635E+00	1.32132E-01	1.61950E+00	1.45510E-01	.00000E+00	.00000E+00	.00000E+00	3.48232E-01
4	9.88902E-01	8.72508E-02	1.00352E+00	8.76397E-02	.00000E+00	.00000E+00	.00000E+00	2.15825E-01
5	1.49125E+00	1.38909E-01	1.51428E+00	1.33075E-01	.00000E+00	.00000E+00	.00000E+00	3.25626E-01
6	2.86602E+00	2.65664E-01	2.91059E+00	2.50581E-01	.00000E+00	.00000E+00	.00000E+00	6.25798E-01
7	2.80816E+00	1.53002E-01	2.83438E+00	1.42170E-01	.00000E+00	.00000E+00	.00000E+00	6.11420E-01
8	2.06641E+00	1.50939E-02	2.08655E+00	2.08632E-02	.00000E+00	.00000E+00	.00000E+00	4.48105E-01
9	1.60480E+00	-1.50135E-02	1.60173E+00	-2.06992E-02	.00000E+00	.00000E+00	.00000E+00	3.47534E-01
10	1.46727E+00	-2.59538E-02	1.46304E+00	-2.51446E-02	.00000E+00	.00000E+00	.00000E+00	3.17550E-01
11	1.34846E+00	-5.65051E-02	1.33956E+00	-5.51421E-02	.00000E+00	.00000E+00	.00000E+00	2.91301E-01
12	8.44113E-01	-6.54584E-02	8.33455E-01	-6.54166E-02	.00000E+00	.00000E+00	.00000E+00	1.81847E-01
13	7.10562E-01	-5.69569E-02	7.01244E-01	-5.69640E-02	.00000E+00	.00000E+00	.00000E+00	1.53041E-01
14	6.41366E-01	-8.69675E-02	6.27179E-01	-8.70078E-02	.00000E+00	.00000E+00	.00000E+00	1.37547E-01
15	3.72852E-01	-9.27576E-03	3.71241E-01	-9.07204E-03	.00000E+00	.00000E+00	.00000E+00	8.06345E-02
16	2.04843E-01	-6.89536E-03	2.03716E-01	-6.84555E-03	.00000E+00	.00000E+00	.00000E+00	4.42783E-02
17	8.45783E-02	-8.96509E-03	8.31248E-02	-8.97564E-03	.00000E+00	.00000E+00	.00000E+00	1.81810E-02
18	4.92158E-02	-2.64424E-02	4.48153E-02	-2.67613E-02	.00000E+00	.00000E+00	.00000E+00	1.02223E-02
19	1.24387E-01	-1.48766E-02	1.21993E-01	-1.46440E-02	.00000E+00	.00000E+00	.00000E+00	2.67089E-02
20	4.28547E-01	-2.65570E-02	4.24294E-01	-2.64688E-02	.00000E+00	.00000E+00	.00000E+00	9.24392E-02
21	1.17061E-01	-2.48216E-02	1.13141E-01	-2.47092E-02	.00000E+00	.00000E+00	.00000E+00	2.49690E-02
22	2.10934E-01	-7.06690E-02	1.99810E-01	-7.07850E-02	.00000E+00	.00000E+00	.00000E+00	4.45882E-02
23	7.17324E-01	-1.25608E-01	6.98619E-01	-1.24354E-01	.00000E+00	.00000E+00	.00000E+00	1.53571E-01
24	5.47018E-01	-1.09187E-01	5.31452E-01	-1.08266E-01	.00000E+00	.00000E+00	.00000E+00	1.16997E-01
25	2.34880E-01	-5.37672E-02	2.27468E-01	-5.40544E-02	.00000E+00	.00000E+00	.00000E+00	5.01775E-02
26	1.55127E-01	-4.96277E-02	1.48571E-01	-4.96861E-02	.00000E+00	.00000E+00	.00000E+00	3.29944E-02
27	2.61341E-02	-1.36450E-02	2.44175E-02	-1.38326E-02	.00000E+00	.00000E+00	.00000E+00	5.50192E-03
28	2.31498E+01	5.12699E-02	2.31740E+01	5.86334E-02	1.04387E-04	.00000E+00	.00000E+00	5.01984E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.15830E-03	8.15102E-03	4.34413E-04	-8.58500E-03	9.99950E-01
2	.00000E+00	.00000E+00	4.67689E-03	7.71794E-02	1.01439E-01	1.08683E-03	-9.78441E-02	9.99961E-01
3	.00000E+00	.00000E+00	4.81474E-02	6.92896E-02	1.80278E-01	5.44607E-06	-1.32132E-01	9.99978E-01
4	.00000E+00	.00000E+00	7.06872E-02	4.59665E-02	1.57986E-01	3.23892E-06	-8.72508E-02	9.99988E-01
5	.00000E+00	.00000E+00	1.30658E-01	1.48682E-01	2.69367E-01	3.77982E-06	-1.38905E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.75673E-01	4.55453E-01	5.61308E-01	1.14811E-05	-2.66646E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.53301E-01	7.95434E-01	7.06287E-01	2.53598E-05	-1.53002E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35840E-01	1.00751E+00	7.50953E-01	4.70897E-05	-1.50257E-02	9.99912E-01
9	.00000E+00	.00000E+00	7.41206E-01	9.16999E-01	7.26178E-01	9.60052E-05	1.50135E-02	9.99889E-01
10	.00000E+00	.00000E+00	7.22858E-01	8.66081E-01	6.96747E-01	2.11842E-04	2.59538E-02	9.99896E-01
11	.00000E+00	.00000E+00	7.01622E-01	8.07529E-01	6.44700E-01	4.58675E-04	5.65050E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.61142E-01	4.20778E-01	4.95097E-01	5.98718E-04	6.54384E-02	9.99976E-01
13	.00000E+00	.00000E+00	4.91056E-01	3.37808E-01	4.33217E-01	8.97295E-04	5.69569E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70578E-01	3.19919E-01	3.82167E-01	1.44786E-03	8.69675E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50024E-01	1.27829E-01	2.39475E-01	1.27366E-03	9.27523E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.65622E-01	5.35826E-02	1.57859E-01	8.67361E-04	6.89527E-03	9.99997E-01
17	.00000E+00	.00000E+00	8.49381E-02	1.45222E-02	7.55586E-02	4.05641E-04	8.96078E-03	1.00004E+00
18	.00000E+00	.00000E+00	7.48727E-02	8.81425E-03	4.81629E-02	2.69683E-04	2.64344E-02	1.00003E+00
19	.00000E+00	.00000E+00	1.20894E-01	3.17342E-02	1.05329E-01	6.95580E-04	1.48701E-02	1.00004E+00
20	.00000E+00	.00000E+00	2.95333E-01	2.33311E-01	2.63790E-01	2.98487E-03	2.65563E-02	1.00001E+00
21	.00000E+00	.00000E+00	1.35923E-01	4.23052E-02	1.10055E-01	1.04823E-03	2.48134E-02	1.00004E+00
22	.00000E+00	.00000E+00	2.55156E-01	1.17117E-01	1.82259E-01	2.22618E-03	7.05708E-02	9.99999E-01
23	.00000E+00	.00000E+00	5.96057E-01	7.01015E-01	4.60332E-01	1.01054E-02	1.25608E-01	1.00001E+00
24	.00000E+00	.00000E+00	6.04357E-01	6.26780E-01	4.83801E-01	1.13627E-02	1.09190E-01	1.00000E+00
25	.00000E+00	.00000E+00	3.90581E-01	2.56743E-01	3.30301E-01	6.51192E-03	5.37661E-02	1.00001E+00
26	.00000E+00	.00000E+00	3.08656E-01	2.73811E-01	2.52900E-01	6.32557E-03	4.96356E-02	9.99981E-01
27	.00000E+00	.00000E+00	1.02984E-01	5.72154E-02	8.71618E-02	2.17708E-03	1.36453E-02	9.99998E-01
28	.00000E+00	.00000E+00	8.89081E+00	8.81445E+00	8.89081E+00	5.15827E-02	-5.12840E-02	9.99967E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rch rate	fiss rate	flux*bdy**2	total flux
1	1.74348E-01	3.18745E-09	1.75162E-01	8.58500E-03	4.50774E-10	.00000E+00	.00000E+00	1.99543E-01

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2	1.2572E+00	-1.0728E-08	1.2688E+00	9.7844E-02	.00000E+00	.00000E+00	.00000E+00	1.4394E+00
3	1.5786E+00	-1.8210E-07	1.5963E+00	1.3213E-01	.00000E+00	.00000E+00	.00000E+00	1.8080E+00
4	9.7574E-01	-1.6966E-08	9.8890E-01	8.7250E-02	.00000E+00	.00000E+00	.00000E+00	1.1179E+00
5	1.4686E+00	-6.8763E-10	1.4912E+00	1.3890E-01	.00000E+00	.00000E+00	.00000E+00	1.6852E+00
6	2.8211E+00	1.0463E-07	2.8650E+00	2.6564E-01	.00000E+00	.00000E+00	.00000E+00	3.2329E+00
7	2.7828E+00	-5.7264E-08	2.8081E+00	1.5300E-01	.00000E+00	.00000E+00	.00000E+00	3.1870E+00
8	2.0664E+00	1.4557E-07	2.0664E+00	1.5093E-02	.00000E+00	.00000E+00	.00000E+00	2.3643E+00
9	1.6068E+00	-2.2519E-08	1.6048E+00	-1.5013E-02	.00000E+00	.00000E+00	.00000E+00	1.8398E+00
10	1.4719E+00	4.3291E-08	1.4672E+00	-2.5953E-02	.00000E+00	.00000E+00	.00000E+00	1.6842E+00
11	1.3584E+00	-1.1498E-08	1.3484E+00	-5.6505E-02	.00000E+00	.00000E+00	.00000E+00	1.5540E+00
12	8.5533E-01	1.0942E-08	8.4413E-01	-6.5458E-02	.00000E+00	.00000E+00	.00000E+00	9.7815E-01
13	7.1992E-01	-4.6042E-09	7.1056E-01	-5.6956E-02	.00000E+00	.00000E+00	.00000E+00	8.2341E-01
14	6.5598E-01	8.0782E-09	6.4136E-01	-8.6967E-02	.00000E+00	.00000E+00	.00000E+00	7.4479E-01
15	3.7349E-01	-5.2741E-07	3.7283E-01	-9.2578E-03	.00000E+00	.00000E+00	.00000E+00	4.2774E-01
16	2.0572E-01	-8.8799E-08	2.0483E-01	-6.8953E-03	.00000E+00	.00000E+00	.00000E+00	2.3549E-01
17	8.6115E-02	-4.3085E-06	8.4578E-02	-8.9650E-03	.00000E+00	.00000E+00	.00000E+00	9.8439E-02
18	5.3895E-02	-6.0526E-06	4.9215E-02	-2.6442E-02	.00000E+00	.00000E+00	.00000E+00	6.1289E-02
19	1.2682E-01	-6.4094E-06	1.2438E-01	-1.4876E-02	.00000E+00	.00000E+00	.00000E+00	1.4479E-01
20	4.3245E-01	-6.4740E-07	4.2854E-01	-2.6557E-02	.00000E+00	.00000E+00	.00000E+00	4.9450E-01
21	1.2155E-01	-8.1802E-06	1.1706E-01	-2.4821E-02	.00000E+00	.00000E+00	.00000E+00	1.3972E-01
22	2.2952E-01	1.6042E-06	2.1034E-01	-7.0669E-02	.00000E+00	.00000E+00	.00000E+00	2.5514E-01
23	7.4309E-01	-1.1648E-07	7.1732E-01	-1.2560E-01	.00000E+00	.00000E+00	.00000E+00	8.4753E-01
24	5.7330E-01	3.0304E-06	5.4701E-01	-1.0918E-01	.00000E+00	.00000E+00	.00000E+00	6.5231E-01
25	2.4942E-01	-1.1306E-06	2.3480E-01	-5.3767E-02	.00000E+00	.00000E+00	.00000E+00	2.8337E-01
26	1.7125E-01	7.8956E-06	1.5512E-01	-4.9627E-02	.00000E+00	.00000E+00	.00000E+00	1.9862E-01
27	3.1672E-02	3.1020E-07	2.6134E-02	-1.3445E-02	.00000E+00	.00000E+00	.00000E+00	3.5018E-02
28	2.3186E+01	-1.4726E-05	2.3149E+01	5.1269E-02	4.5077E-10	.00000E+00	.00000E+00	2.6528E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.3185E-02	.00000E+00	2.3047E-02	2.1899E-02	3.7311E-03	3.1874E-09	9.9883E-01
2	.00000E+00	1.9563E-01	7.5849E-03	2.7168E-01	1.8734E-01	1.4817E-02	-1.0728E-08	1.0002E+00
3	.00000E+00	2.1597E-01	7.7405E-02	2.8125E-01	2.7772E-01	1.5654E-02	-1.8210E-07	9.9998E-01
4	.00000E+00	1.2374E-01	1.1507E-01	1.9884E-01	2.3134E-01	7.4854E-03	-1.6966E-08	1.0000E+00
5	.00000E+00	1.6394E-01	2.0987E-01	4.9043E-01	3.6929E-01	4.5342E-03	-6.8763E-10	9.9998E-01
6	.00000E+00	1.7673E-01	4.2805E-01	1.3444E+00	5.9887E-01	7.1814E-03	1.0463E-07	1.0001E+00
7	.00000E+00	8.7319E-02	6.6419E-01	1.7750E+00	7.4380E-01	7.7062E-03	-5.7264E-08	9.9990E-01
8	.00000E+00	1.3466E-02	7.8057E-01	1.7906E+00	7.8014E-01	1.3988E-02	1.4557E-07	9.9990E-01
9	.00000E+00	9.7577E-04	7.7052E-01	1.5582E+00	7.4778E-01	2.3905E-02	-2.2519E-08	9.9988E-01
10	.00000E+00	7.2473E-05	7.4459E-01	1.4157E+00	7.0833E-01	3.6273E-02	4.3291E-08	9.9990E-01
11	.00000E+00	5.7017E-06	7.1320E-01	1.3104E+00	6.5374E-01	5.9506E-02	-1.1498E-08	9.9994E-01
12	.00000E+00	4.0535E-07	5.7019E-01	7.0872E-01	5.0536E-01	6.4827E-02	1.0942E-08	9.9997E-01
13	.00000E+00	6.3601E-08	5.0132E-01	5.5759E-01	4.4017E-01	6.1162E-02	-4.6042E-09	9.9997E-01
14	.00000E+00	1.2604E-08	4.7753E-01	5.0757E-01	3.9016E-01	8.7376E-02	8.0782E-09	9.9998E-01
15	.00000E+00	1.4244E-09	2.5814E-01	2.3204E-01	2.4911E-01	8.9528E-03	-5.2741E-07	1.0003E+00
16	.00000E+00	4.1825E-10	1.7550E-01	1.0627E-01	1.6824E-01	7.2321E-03	-8.8799E-08	1.0003E+00
17	.00000E+00	1.3469E-10	9.3413E-02	3.2268E-02	8.3574E-02	9.8155E-03	-4.3085E-06	1.0002E+00
18	.00000E+00	9.6439E-11	8.2699E-02	1.8405E-02	5.2234E-02	3.0458E-02	-6.0526E-06	1.0001E+00
19	.00000E+00	1.3634E-10	1.2730E-01	6.0223E-02	1.1404E-01	1.2873E-02	-6.4094E-06	1.0002E+00
20	.00000E+00	2.2171E-10	3.0343E-01	3.5457E-01	2.7405E-01	2.9496E-02	-6.4740E-07	1.0003E+00
21	.00000E+00	3.2614E-11	1.4575E-01	6.7143E-02	1.1885E-01	2.6801E-02	-8.1802E-06	1.0002E+00
22	.00000E+00	3.7651E-11	2.6789E-01	1.6634E-01	1.9159E-01	7.5871E-02	1.6042E-06	1.0001E+00
23	.00000E+00	3.5998E-11	6.1135E-01	8.9252E-01	4.8002E-01	1.3117E-01	-1.1648E-07	1.0002E+00
24	.00000E+00	9.7983E-12	6.2858E-01	7.6216E-01	5.0851E-01	1.1995E-01	3.0304E-06	1.0001E+00
25	.00000E+00	2.8883E-12	4.1194E-01	3.0847E-01	3.4666E-01	6.5232E-02	-1.1306E-06	1.0001E+00
26	.00000E+00	2.0112E-12	3.1916E-01	3.1052E-01	2.6008E-01	5.9505E-02	7.8956E-06	1.0000E+00
27	.00000E+00	4.7928E-13	1.0521E-01	6.3004E-02	8.8222E-02	1.6983E-02	3.1020E-07	1.0000E+00
28	.00000E+00	1.0000E+00	9.5919E+00	1.5600E+01	9.5919E+00	1.0020E+00	-1.4631E-05	1.0000E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.7434E-01	3.1874E-09	1.8251E-01	.00000E+00	2.4157E-03	2.6849E-03	.00000E+00	3.6735E-01
2	1.2572E+00	-1.0728E-08	1.3422E+00	.00000E+00	1.6850E-05	1.1894E-02	.00000E+00	2.6704E+00

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3	1.5786E+00	-1.82101E-07	1.6877E+00	.00000E+00	.00000E+00	1.4486E-02	.00000E+00	3.3522E+00
4	9.7574E-01	-1.6966E-03	1.0439E+00	.00000E+00	.00000E+00	6.2333E-03	.00000E+00	2.0738E+00
5	1.4686E+00	-6.8763E-10	1.5770E+00	.00000E+00	.00000E+00	1.7790E-03	.00000E+00	3.1260E+00
6	2.8211E+00	1.0463E-07	3.0306E+00	.00000E+00	.00000E+00	1.4633E-03	.00000E+00	6.0049E+00
7	2.7828E+00	-5.7264E-03	2.9054E+00	.00000E+00	.00000E+00	1.3696E-03	.00000E+00	5.8690E+00
8	2.0664E+00	1.4557E-07	2.0822E+00	.00000E+00	.00000E+00	1.3575E-03	.00000E+00	4.3082E+00
9	1.6068E+00	-2.2519E-03	1.5893E+00	.00000E+00	.00000E+00	1.7809E-03	.00000E+00	3.3348E+00
10	1.4719E+00	4.3291E-03	1.4494E+00	.00000E+00	.00000E+00	3.7953E-03	.00000E+00	3.0499E+00
11	1.3584E+00	-1.1498E-03	1.3094E+00	.00000E+00	.00000E+00	8.2020E-03	.00000E+00	2.7976E+00
12	8.5533E-01	1.0942E-03	7.9761E-01	.00000E+00	.00000E+00	1.0857E-02	.00000E+00	1.7454E+00
13	7.1992E-01	-4.6042E-09	6.7035E-01	.00000E+00	.00000E+00	1.2758E-02	.00000E+00	1.4687E+00
14	6.5598E-01	8.0782E-09	5.7942E-01	.00000E+00	.00000E+00	7.8677E-03	.00000E+00	1.3192E+00
15	3.7349E-01	-5.2741E-07	3.6614E-01	.00000E+00	.00000E+00	1.7831E-03	.00000E+00	7.7366E-01
16	2.0572E-01	-8.8799E-03	2.0011E-01	.00000E+00	.00000E+00	1.2662E-03	.00000E+00	4.2500E-01
17	8.6115E-02	-4.3085E-06	7.8329E-02	.00000E+00	.00000E+00	1.3763E-03	.00000E+00	1.7449E-01
18	5.3895E-02	-6.0526E-06	2.6983E-02	.00000E+00	.00000E+00	8.7313E-04	.00000E+00	9.6099E-02
19	1.2682E-01	-6.4094E-06	1.1394E-01	.00000E+00	.00000E+00	2.1852E-03	.00000E+00	2.5626E-01
20	4.3267E-01	-6.4740E-07	4.1015E-01	.00000E+00	.00000E+00	1.4488E-02	.00000E+00	8.8705E-01
21	1.2155E-01	-8.1802E-06	9.9427E-02	.00000E+00	.00000E+00	1.5346E-02	.00000E+00	2.3947E-01
22	2.2398E-01	1.6004E-06	1.5821E-01	.00000E+00	.00000E+00	4.3966E-02	.00000E+00	4.2624E-01
23	7.4309E-01	-1.1648E-07	6.3172E-01	.00000E+00	.00000E+00	7.1986E-02	.00000E+00	1.4766E+00
24	5.7330E-01	3.0030E-06	4.7350E-01	.00000E+00	.00000E+00	6.3958E-02	.00000E+00	1.1280E+00
25	2.4942E-01	-1.1306E-06	1.9800E-01	.00000E+00	.00000E+00	3.6155E-02	.00000E+00	4.8439E-01
26	1.7125E-01	7.8956E-06	1.2112E-01	.00000E+00	.00000E+00	3.3170E-02	.00000E+00	3.2149E-01
27	3.1672E-02	3.1020E-07	1.6097E-02	.00000E+00	.00000E+00	9.3989E-03	.00000E+00	5.4597E-02
28	2.3186E+01	-1.4726E-05	2.3141E+01	.00000E+00	2.4326E-03	3.8248E-01	.00000E+00	4.8228E+01

- elapsed time .02 min.

0direct access unit 9 requires 516 blocks of length 1456 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.4142E-03	2.5050E-02	3.1547E-02	1.9044E-02	2.9098E-02	5.5653E-02	3.1628E-02	4.6977E-03
2	3.8388E-03	3.9068E-02	4.8914E-02	2.9610E-02	4.4734E-02	8.4265E-02	4.7920E-02	7.0133E-03
3	3.1186E-03	3.3234E-02	4.3185E-02	2.7172E-02	4.2234E-02	8.0144E-02	4.5817E-02	5.6104E-03
4	1.0785E-03	1.2261E-02	1.6535E-02	1.0329E-02	1.7389E-02	3.3288E-02	1.9230E-02	2.0163E-03
5	1.7827E-03	1.9932E-02	2.4779E-02	1.5586E-02	2.4253E-02	4.6291E-02	2.6534E-02	3.3410E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.6330E-03	5.6348E-03	1.2524E-02	1.4563E-02	1.2685E-02	1.9246E-02	2.0511E-03	1.5310E-03
2	6.9583E-03	8.4526E-03	1.8536E-02	2.1990E-02	1.9149E-02	2.9248E-02	3.0496E-03	2.3011E-03
3	5.5714E-03	7.9352E-03	1.7339E-02	2.0332E-02	1.7698E-02	2.7029E-02	2.8499E-03	2.1345E-03
4	1.8599E-03	3.2303E-03	7.0299E-03	8.1650E-03	7.1423E-03	1.0866E-02	1.2856E-03	8.8453E-04
5	3.2336E-03	4.5951E-03	1.0037E-02	1.1759E-02	1.0257E-02	1.5601E-02	1.7011E-03	1.2501E-03

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.9856E-03	5.3394E-03	3.2942E-03	5.9274E-03	5.3956E-03	1.5163E-02	2.7652E-02	2.3800E-02
2	3.0171E-03	8.9956E-03	4.9225E-03	8.8974E-03	8.3069E-03	2.3788E-02	4.1805E-02	3.6395E-02
3	2.7871E-03	8.2656E-03	4.5860E-03	8.2578E-03	7.6297E-03	2.1973E-02	3.8529E-02	3.3780E-02
4	1.1165E-03	3.2619E-03	1.8718E-03	3.3839E-03	3.0895E-03	8.7957E-03	1.5938E-02	1.3841E-02
5	1.6071E-03	4.5574E-03	2.6714E-03	4.8148E-03	4.4112E-03	1.2501E-02	2.2543E-02	1.9555E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.1852E-02	1.0728E-02	2.8563E-03	3.8543E-01
2	1.8174E-02	1.6703E-02	4.6005E-03	5.9059E-01
3	1.6754E-02	1.5429E-02	4.2697E-03	5.4410E-01
4	6.7994E-03	6.1620E-03	1.5605E-03	2.1895E-01
5	9.6740E-03	8.7980E-03	2.3208E-03	3.1353E-01

1 1040 d, sas2h: babcock wilcox 15x15, 3.00w/o, 20gwd/mtu burn high temp

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.8056E-01	1.3218E+00	1.6625E+00	1.0286E+00	1.5528E+00	2.9831E+00	2.8769E+00	2.0772E+00
2	1.7704E-01	1.2885E+00	1.6218E+00	1.0042E+00	1.5161E+00	2.9139E+00	2.8561E+00	2.0692E+00
3	1.7585E-01	1.2764E+00	1.6088E+00	9.9585E-01	1.5024E+00	2.8875E+00	2.8211E+00	2.0676E+00

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4	1.7434E-01	1.2576E+00	1.5797E+00	9.7674E-01	1.4706E+00	2.8246E+00	2.7865E+00	2.0558E+00
5	1.7652E-01	1.2813E+00	1.6105E+00	9.9652E-01	1.5018E+00	2.8850E+00	2.8196E+00	2.0698E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.5941E+00	1.4549E+00	1.3265E+00	8.1201E-01	6.8275E-01	5.9652E-01	3.6823E-01	2.0156E-01
2	1.6013E+00	1.4627E+00	1.3386E+00	8.3256E-01	7.0046E-01	6.2598E-01	3.7110E-01	2.0361E-01
3	1.6035E+00	1.4652E+00	1.3441E+00	8.3907E-01	7.0615E-01	6.3466E-01	3.7206E-01	2.0430E-01
4	1.6057E+00	1.4715E+00	1.3577E+00	8.5452E-01	7.1943E-01	6.5511E-01	3.7372E-01	2.0575E-01
5	1.6021E+00	1.4652E+00	1.3440E+00	8.3855E-01	7.0627E-01	6.3382E-01	3.7169E-01	2.0418E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.0235E-02	3.3668E-02	1.1721E-01	4.1584E-01	1.0486E-01	1.7459E-01	6.5855E-01	4.9570E-01
2	8.2999E-02	4.4425E-02	1.2179E-01	4.2392E-01	1.1280E-01	1.9884E-01	6.9702E-01	5.3009E-01
3	8.3890E-02	4.7170E-02	1.2329E-01	4.2629E-01	1.1521E-01	2.0573E-01	7.0360E-01	5.3984E-01
4	8.6007E-02	5.3548E-02	1.2668E-01	4.3275E-01	1.2120E-01	2.2292E-01	7.4050E-01	5.6993E-01
5	8.3832E-02	4.6169E-02	1.2312E-01	4.2617E-01	1.1505E-01	2.0478E-01	7.0945E-01	5.4197E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.0978E-01	1.3209E-01	1.9829E-02
2	2.2678E-01	1.4806E-01	2.4246E-02
3	2.3152E-01	1.5224E-01	2.5386E-02
4	2.4729E-01	1.6650E-01	3.0596E-02
5	2.3284E-01	1.5445E-01	2.6230E-02

Oflux disadvantage factors (zone average/cell average-flux)

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.0216E+00	1.0316E+00	1.0321E+00	1.0324E+00	1.0339E+00	1.0340E+00	1.0202E+00	1.0085E+00
2	1.0029E+00	1.0066E+00	1.0070E+00	1.0083E+00	1.0095E+00	1.0100E+00	1.0088E+00	1.0000E+00
3	9.9606E-01	9.9620E-01	9.9768E-01	9.9952E-01	1.0004E+00	1.0008E+00	1.0005E+00	9.9893E-01
4	9.8762E-01	9.8153E-01	9.8088E-01	9.8084E-01	9.7904E-01	9.7909E-01	9.8753E-01	9.9805E-01
5	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.9499E-01	9.9296E-01	9.8324E-01	9.6854E-01	9.6758E-01	9.4308E-01	9.9069E-01	9.8714E-01
2	9.9943E-01	9.9823E-01	9.9594E-01	9.9396E-01	9.9268E-01	9.8764E-01	9.9842E-01	9.9722E-01
3	1.0008E+00	9.9995E-01	1.0003E+00	1.0006E+00	1.0007E+00	1.0013E+00	1.0009E+00	1.0005E+00
4	1.0028E+00	1.0042E+00	1.0101E+00	1.0191E+00	1.0195E+00	1.0336E+00	1.0054E+00	1.0076E+00
5	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.5709E-01	7.2937E-01	9.5201E-01	9.7577E-01	9.1149E-01	8.5287E-01	9.2851E-01	9.1647E-01
2	9.9006E-01	9.6222E-01	9.8923E-01	9.9476E-01	9.8048E-01	9.7100E-01	9.8253E-01	9.7807E-01
3	1.0006E+00	1.0216E+00	1.0009E+00	1.0008E+00	1.0014E+00	1.0046E+00	9.9865E-01	9.9606E-01
4	1.0259E+00	1.1598E+00	1.0298E+00	1.0145E+00	1.0535E+00	1.0869E+00	1.0438E+00	1.0515E+00
5	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00	1.0000E+00

Ozone	grp. 25	grp. 26	grp. 27
1	9.0063E-01	8.5520E-01	7.3690E-01
2	9.7361E-01	9.5860E-01	9.2635E-01
3	9.9895E-01	9.8566E-01	9.6783E-01
4	1.0616E+00	1.0909E+00	1.1664E+00
5	1.0000E+00	1.0000E+00	1.0000E+00

Ocell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.4142E-03	2.5060E-02	3.1547E-02	1.9048E-02	2.9098E-02	5.5530E-02	3.1628E-02	4.6972E-03
2	3.8380E-03	3.9060E-02	4.8914E-02	2.9610E-02	4.4734E-02	8.4253E-02	4.7792E-02	7.0133E-03
3	3.1186E-03	3.3234E-02	4.3185E-02	2.7172E-02	4.2233E-02	8.0144E-02	4.5817E-02	5.6104E-03
4	1.0765E-03	1.2261E-02	1.6533E-02	1.0259E-02	1.7389E-02	3.3288E-02	1.9230E-02	2.0163E-03
5	1.7827E-03	1.9035E-02	2.4779E-02	1.5865E-02	2.4253E-02	4.6291E-02	2.6534E-02	3.3410E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.6330E-03	5.6348E-03	1.2523E-02	1.2563E-02	1.2850E-02	1.9246E-02	2.0511E-03	1.5310E-03
2	6.9583E-03	8.4526E-03	1.8536E-02	2.1990E-02	1.9140E-02	2.9048E-02	3.0426E-03	2.3018E-03
3	5.5714E-03	7.9552E-03	1.7539E-02	2.0332E-02	1.7688E-02	2.7025E-02	2.8499E-03	2.1357E-03
4	1.8579E-03	3.2303E-03	7.0439E-03	8.1650E-03	7.1430E-03	1.0866E-02	1.2356E-03	8.8530E-04
5	3.2534E-03	4.5514E-03	1.0387E-02	1.1759E-02	1.0257E-02	1.5601E-02	1.7011E-03	1.2501E-03

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Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.98569E-03	5.33941E-03	3.29442E-03	5.92742E-03	5.39561E-03	1.51634E-02	2.74520E-02	2.38003E-02
2	3.01714E-03	8.99564E-03	4.92252E-03	8.89714E-03	8.30597E-03	2.37884E-02	4.18037E-02	3.63958E-02
3	2.78715E-03	8.26565E-03	4.58600E-03	8.23783E-03	7.68397E-03	2.19730E-02	3.88258E-02	3.37803E-02
4	1.11695E-03	3.26190E-03	1.87186E-03	3.38396E-03	3.08957E-03	8.79571E-03	1.59383E-02	1.38418E-02
5	1.60716E-03	4.55747E-03	2.67149E-03	4.81468E-03	4.41125E-03	1.25014E-02	2.25243E-02	1.95555E-02

Ozone	grp. 25	grp. 26	grp. 27
1	1.18321E-02	1.07284E-02	2.85652E-03
2	1.81747E-02	1.67030E-02	4.65005E-03
3	1.67546E-02	1.54259E-02	4.26991E-03
4	6.79941E-03	6.16203E-03	1.56605E-03
5	9.67400E-03	8.79807E-03	2.32082E-03

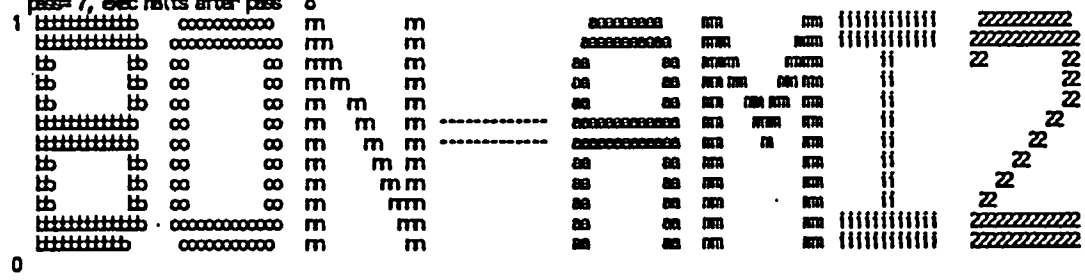
Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

- elapsed time .03 min.

0requested parm=halt8,skipcellwt,skipshipdata

pass= 7, exec halts after pass 8

1



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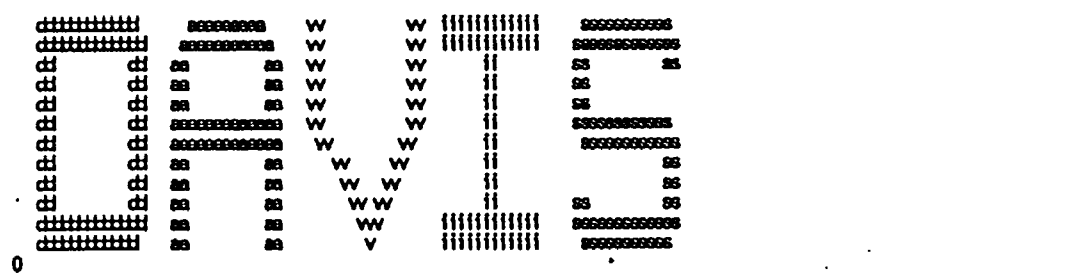

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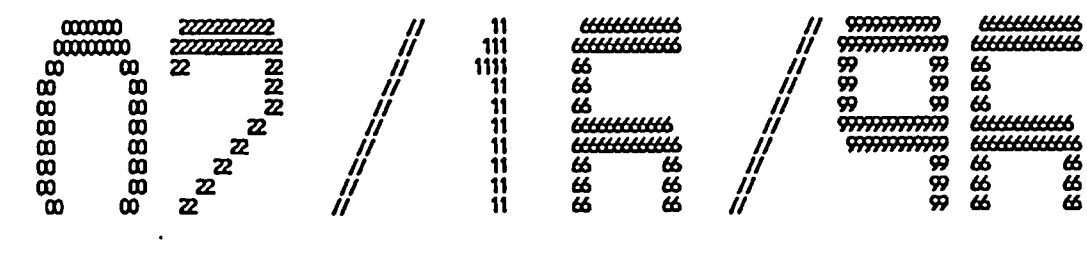
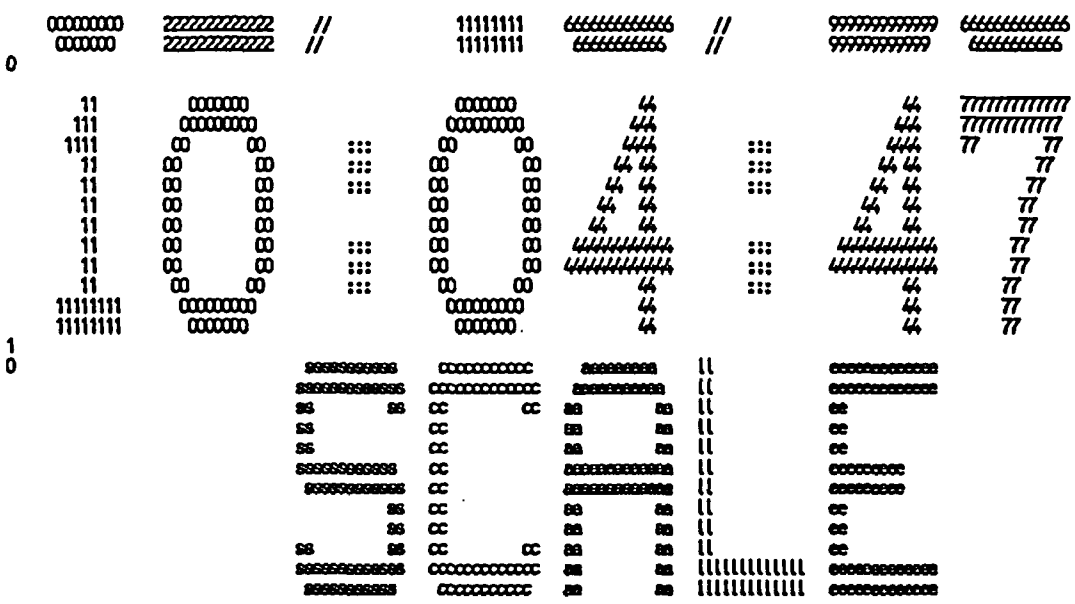


INFORMATION ONLY



```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                program verification information        *****
*****                                                       *****
*****          code system:   scale  version:   4.2         *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****            program:  c0c008                           *****
*****                                                       *****
*****      creation date:  04/27/95                         *****
*****                                                       *****
*****            library:  /nautronics/scale/exe            *****
*****                                                       *****
*****                                                       *****
*****  this is not a  scale  configuration controlled code  *****
*****                                                       *****
*****            jobname:  davis                            *****
*****                                                       *****
*****  date of execution:  02/16/96                         *****
*****                                                       *****
*****  time of execution:  10:04:47                         *****
```

INFORMATION ONLY

```
                    *****                                                    *****
                    *****                                                    *****
                    ************************************************************
                    ************************************************************
                    ************************************************************
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has      6 entries.
0        2q array has      2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       70
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0isaopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0        3q array has     70 entries.
0        4q array has     70 entries.
0        5q array has     70 entries.
0        6q array has      4 entries.
0        7q array has      4 entries.
0        8q array has      4 entries.
0        9q array has      4 entries.
0       10q array has     70 entries.
0       11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
    1        3     8016    2.09710E-02             201
    2        3     1001    4.19420E-02             202
    3        3     5010    3.81515E-06             203
    4        3     5011    1.54884E-05             204
    5        2    40302    4.25156E-02             205
    6        1    92235    1.20544E-04          200006
    7        1    92234    1.41715E-06          200007
    8        1    92236    2.03607E-05          200008
    9        1    92238    7.20391E-05          200009
   10        1     8016    1.50611E-02          200010
   11        1     8016    1.15315E-02          200011
   12        1    36083    5.38432E-07          200012
   13        1    36085    2.58829E-07          200013
   14        1    38090    5.92341E-06          200014
   15        1    39089    4.78649E-06          200015
   16        1    42095    6.56675E-06          200016
   17        1    40093    4.79260E-06          200017
   18        1    40094    7.56974E-06          200018
   19        1    40095    6.48349E-07          200019
   20        1    41094    3.96160E-12          200020
   21        1    43099    7.40725E-06          200021
   22        1    45103    4.11558E-06          200022
   23        1    45105    7.86511E-09          200023
   24        1    44101    6.79295E-06          200024
   25        1    44106    1.01922E-06          200025
```

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  26     1      46105   2.82763E-06          200026
  27     1      46108   8.33604E-07          200027
  28     1      47109   5.71721E-07          200028
  29     1      51124   1.27225E-10          200029
  30     1      54131   3.36294E-06          200030
  31     1      54132   6.56907E-06          200031
  32     1      54135   2.20413E-09          200032
  33     1      54136   1.29871E-05          200033
  34     1      55134   4.23324E-07          200034
  35     1      55135   4.11148E-06          200035
  36     1      55137   7.98225E-06          200036
  37     1      56136   8.81606E-08          200037
  38     1      57139   7.89638E-06          200038
  39     1      59141   6.89478E-06          200039
  40     1      59143   1.20840E-07          200040
  41     1      58144   2.27216E-06          200041.
  42     1      60143   6.04828E-06          200042
  43     1      60145   4.50917E-06          200043
  44     1      61147   1.42592E-06          200044
  45     1      61148   4.26549E-09          200045
  46     1      60147   4.27517E-08          200046
  47     1      62147   5.95353E-07          200047
  48     1      62149   2.94746E-08          200048
  49     1      62150   1.65740E-06          200049
  50     1      62151   1.43095E-07          200050
  51     1      62152   7.81604E-07          200051
  52     1      64155   9.37783E-10          200052
  53     1      63153   5.06255E-07          200053
  54     1      63154   1.18895E-07          200054
  55     1      63155   5.54695E-08          200055
  56     1      40302   4.42681E-03          200056
  57     1       1001   2.30630E-02          200057
  58     1       5010   2.09787E-06          200058
  59     1       5011   8.51673E-06          200059
  60     1      55133   8.12694E-06          200060
  61     1      92237   1.55467E-06          200061
  62     1      92238   2.67674E-07          200062
  63     1      94239   3.86490E-05          200063
  64     1      94240   8.49899E-06          200064
  65     1      94241   4.88270E-06          200065
  66     1      94242   6.64962E-07          200066
  67     1      95241   1.70640E-07          200067
  68     1      95243   7.44868E-08          200068
  69     1      96244   8.67958E-09          200069
  70     1        999   3.30753E-21          200070
0geometry and material description
0zone  mixture  outer dimension  temperature     extra xs   type (0/1--fuel/mod)
   1      3       6.32460E-01   6.07600E+02   7.90564E-01          0
   2      2       6.73100E-01   6.50000E+02   1.29052E+01          0
   3      3       8.14000E-01   6.07600E+02   3.54862E+00          0
   4      1       2.95100E+00   9.75000E+02   2.32883E-01          0
     8057 locations of   200000 available are required to make a new master containing the self-shielded values
0no nuclides in your problem have bondarenko factor data**tonsmi will copy from logical 12 to logical  1
0copy      999  1/v cross sectio from log 12 to log  1    bondarenko trigger 0
0copy     1001  hydrogen         from log 12 to log 18    bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1    bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1    bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 12 to log 18    bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1    bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1    bondarenko trigger 0
```

INFORMATION ONLY

0copy	5011	boron-11	from	log	12	to	log	18	bondarenko trigger 0
0copy	5011	boron-11	from	log	18	to	log	1	bondarenko trigger 0
0copy	5011	boron-11	from	log	18	to	log	1	bondarenko trigger 0
0copy	8016	oxygen-16	from	log	12	to	log	18	bondarenko trigger 0
0copy	8016	oxygen-16	from	log	18	to	log	1	bondarenko trigger 0
0copy	8016	oxygen-16	from	log	18	to	log	1	bondarenko trigger 0
0copy	8016	oxygen-16	from	log	18	to	log	1	bondarenko trigger 0
0copy	36083	kr-83	from	log	12	to	log	1	bondarenko trigger 0
0copy	36085	kr-85	from	log	12	to	log	1	bondarenko trigger 0
0copy	38090	sr-90	from	log	12	to	log	1	bondarenko trigger 0
0copy	39089	y-89	from	log	12	to	log	1	bondarenko trigger 0
0copy	40093	zr-93	from	log	12	to	log	1	bondarenko trigger 0
0copy	40094	zr-94	from	log	12	to	log	1	bondarenko trigger 0
0copy	40095	zr-95	from	log	12	to	log	1	bondarenko trigger 0
0copy	40302	zircalloy	from	log	12	to	log	18	bondarenko trigger 0
0copy	40302	zircalloy	from	log	18	to	log	1	bondarenko trigger 0
0copy	40302	zircalloy	from	log	18	to	log	1	bondarenko trigger 0
0copy	41094	nb-94	from	log	12	to	log	1	bondarenko trigger 0
0copy	42095	mo-95	from	log	12	to	log	1	bondarenko trigger 0
0copy	43099	tc-99	from	log	12	to	log	1	bondarenko trigger 0
0copy	44101	ru-101	from	log	12	to	log	1	bondarenko trigger 0
0copy	44106	ru-106	from	log	12	to	log	1	bondarenko trigger 0
0copy	45103	rh-103	from	log	12	to	log	1	bondarenko trigger 0
0copy	45105	rh-105	from	log	12	to	log	1	bondarenko trigger 0
0copy	46105	pd-105	from	log	12	to	log	1	bondarenko trigger 0
0copy	46108	pd-108	from	log	12	to	log	1	bondarenko trigger 0
0copy	47109	silver-109	from	log	12	to	log	1	bondarenko trigger 0
0copy	51124	sb-124	from	log	12	to	log	1	bondarenko trigger 0
0copy	54131	xe-131	from	log	12	to	log	1	bondarenko trigger 0
0copy	54132	xe-132	from	log	12	to	log	1	bondarenko trigger 0
0copy	54135	xenon-135	from	log	12	to	log	1	bondarenko trigger 0
0copy	54136	xe-136	from	log	12	to	log	1	bondarenko trigger 0
0copy	55133	cesium-133	from	log	12	to	log	1	bondarenko trigger 0
0copy	55134	cs-134	from	log	12	to	log	1	bondarenko trigger 0
0copy	55135	cs-135	from	log	12	to	log	1	bondarenko trigger 0
0copy	55137	cs-137	from	log	12	to	log	1	bondarenko trigger 0
0copy	56136	ba-136	from	log	12	to	log	1	bondarenko trigger 0
0copy	57139	la-139	from	log	12	to	log	1	bondarenko trigger 0
0copy	58144	ce-144	from	log	12	to	log	1	bondarenko trigger 0
0copy	59141	pr-141	from	log	12	to	log	1	bondarenko trigger 0
0copy	59143	pr-143	from	log	12	to	log	1	bondarenko trigger 0
0copy	60143	nd-143	from	log	12	to	log	1	bondarenko trigger 0
0copy	60145	nd-145	from	log	12	to	log	1	bondarenko trigger 0
0copy	60147	nd-147	from	log	12	to	log	1	bondarenko trigger 0
0copy	61147	pm-147	from	log	12	to	log	1	bondarenko trigger 0
0copy	61148	pm-148	from	log	12	to	log	1	bondarenko trigger 0
0copy	62147	sm-147	from	log	12	to	log	1	bondarenko trigger 0
0copy	62149	sm-149	from	log	12	to	log	1	bondarenko trigger 0
0copy	62150	sm-150	from	log	12	to	log	1	bondarenko trigger 0
0copy	62151	sm-151	from	log	12	to	log	1	bondarenko trigger 0
0copy	62152	sm-152	from	log	12	to	log	1	bondarenko trigger 0
0copy	63153	eu-153	from	log	12	to	log	1	bondarenko trigger 0
0copy	63154	eu-154	from	log	12	to	log	1	bondarenko trigger 0
0copy	63155	eu-155	from	log	12	to	log	1	bondarenko trigger 0
0copy	64155	gd-155	from	log	12	to	log	1	bondarenko trigger 0
0copy	92234	u-234 1043 sigs=	from	log	12	to	log	1	bondarenko trigger 0
0copy	92235	uranium-235	from	log	12	to	log	1	bondarenko trigger 0
0copy	92236	u-236 1163 sigs=	from	log	12	to	log	1	bondarenko trigger 0
0copy	92238	uranium-238	from	log	12	to	log	1	bondarenko trigger 0
0copy	93237	neptunium-237	from	log	12	to	log	1	bondarenko trigger 0

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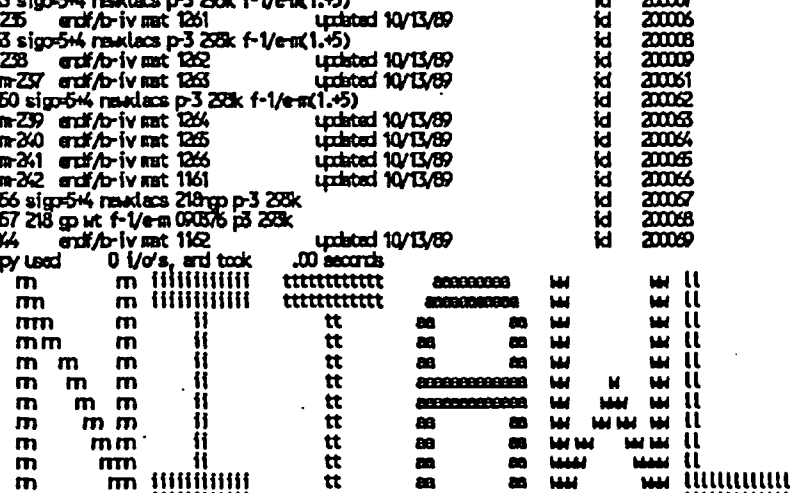
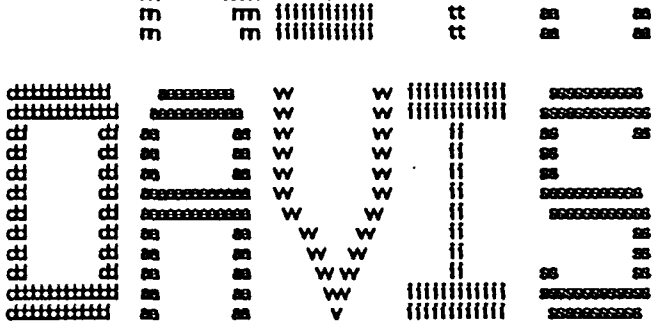
```
0copy    94238  pu-238 1050 sigp from lcg 12 to lcg  1    bondarenko trigger 0
0copy    94239   plutonium-239   from lcg 12 to lcg  1    bondarenko trigger 0
0copy    94240   plutonium-240   from lcg 12 to lcg  1    bondarenko trigger 0
0copy    94241   plutonium-241   from lcg 12 to lcg  1    bondarenko trigger 0
0copy    94242   plutonium-242   from lcg 12 to lcg  1    bondarenko trigger 0
0copy    95241  am-241 1056 sigp from lcg 12 to lcg  1    bondarenko trigger 0
0copy    95243  am-243 1057 218  from lcg 12 to lcg  1    bondarenko trigger 0
0copy    96244   curium-244      from lcg 12 to lcg  1    bondarenko trigger 0
1     scale 4.2 - 27 group neutron bump library
        based on endf-b version 4 data with endf-b version 5 fission products
           compiled for nrc     1/27/89
              last updated      9/16/93
                l.m.petrie  -   ornl
         tape id                        4321        number of nuclides          70
         number of neutron groups         27        number of gamma groups       0
         first thermal group              15        logical unit                 1
                              table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id  200070
        hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89        id     202
        hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89        id  200057
       b-10 1273 218grp 042375 p-3 293k                                     id     203
       b-10 1273 218grp 042375 p-3 293k                                     id  200058
        boron-11      endf/b-iv mat 1160            updated 10/13/89        id     204
        boron-11      endf/b-iv mat 1160            updated 10/13/89        id  200059
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id     201
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id  200010
        oxygen-16     endf/b-iv mat 1276            updated 10/13/89        id  200011
        kr-83         mt=102,103,103,105,106,107    updated 10/13/89        id  200012
        kr-85           mt=  102                                            id  200013
        sr-90         mt=102                        updated 10/13/89        id  200014
         y-89         mt=102                        updated 10/13/89        id  200015
        zr-93           mt=  102                                            id  200017
        zr-94         mt=102                        updated 10/13/89        id  200018
        zr-95         mt=102                        updated 10/13/89        id  200019
        zircalloy     endf/b-iv mat 1284            updated 10/13/89        id     205
        zircalloy     endf/b-iv mat 1284            updated 10/13/89        id  200056
        nb-94         mt=102                        updated 10/13/89        id  200020
        mo-95         mt=102                        updated 10/13/89        id  200016
        tc-99         mt=102                        updated 10/13/89        id  200021
        ru-101        mt=102                        updated 10/13/89        id  200024
        ru-106        mt=102                        updated 10/13/89        id  200025
        rh-103        mt=102                        updated 10/13/89        id  200022
        rh-105          mt=  102                                            id  200023
        pd-105        mt=102                        updated 10/13/89        id  200026
        pd-108        mt=102                        updated 10/13/89        id  200027
        silver-109    endf/b-iv mat 1139            updated 10/13/89        id  200028
        sb-124        mt=102                        updated 10/13/89        id  200029
        xe-131        mt=102,103,104,105,106        updated 10/13/89        id  200030
        xe-132        mt=102,103,104,105,106        updated 10/13/89        id  200031
        xenon-135     endf/b-iv mat 1294            updated 10/13/89        id  200032
        xe-136          mt=  102, 103, 104, 105, 107                        id  200033
        cesium-133    endf/b-iv mat 1141            updated 10/13/89        id  200060
        cs-134        mt=102                        updated 10/13/89        id  200034
        cs-135          mt=  102                                            id  200035
        cs-137        mt=102                        updated 10/13/89        id  200036
        ba-136        mt=102                        updated 10/13/89        id  200037
        la-139        mt=102                        updated 10/13/89        id  200038
        ce-144          mt=  102                                            id  200041
        pr-141        mt=102,103,104,105,106,107    updated 10/13/89        id  200039
        pr-143        mt=102                        updated 10/13/89        id  200040
```

INFORMATION ONLY

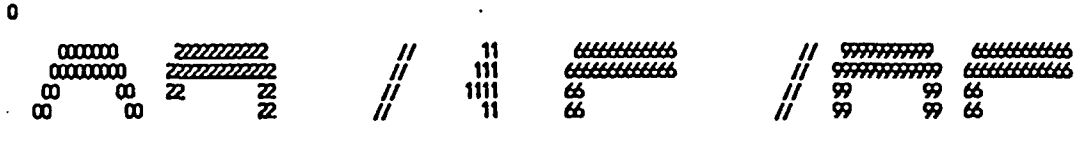
```
     nd-143        mt=102                      updated 10/13/89          id   20042
     nd-145        mt=102                      updated 10/13/89          id   20043
     nd-147        mt=102                      updated 10/13/89          id   20046
     pm-147        mt=102                      updated 10/13/89          id   20044
     pm-148          mt=  102                                            id   20045
     sm-147        endf/b-v fission product    updated 10/13/89          id   20047
     sm-149        mt=102,103,107              updated 10/13/89          id   20048
     sm-150        mt=102                      updated 10/13/89          id   20049
     sm-151        mt=102,103,104,105,106,107  updated 10/13/89          id   20050
     sm-152        mt=102,103,104,105,106,107  updated 10/13/89          id   20051
     eu-153        mt=102,103,104,105,106,107  updated 10/13/89          id   20053
     eu-154        mt=102,103,104,105,106,107  updated 10/13/89          id   20054
     eu-155        mt=102,103,104,105,106,107  updated 10/13/89          id   20055
     gd-155        mt=102                      updated 10/13/89          id   20052
    u-234 1043 sigo=5+4 nsw.lacs p-3 293k f-1/e-m(1.+5)                  id   20007
     uranium-235   endf/b-iv mat 1261          updated 10/13/89          id   20006
    u-236 1163 sigo=5+4 nsw.lacs p-3 293k f-1/e-m(1.+5)                  id   20008
     uranium-238   endf/b-iv mat 1262          updated 10/13/89          id   20009
     neptunium-237 endf/b-iv mat 1263          updated 10/13/89          id   20061
    pu-238 1050 sigo=5+4 nsw.lacs p-3 293k f-1/e-m(1.+5)                 id   20062
     plutonium-239 endf/b-iv mat 1264          updated 10/13/89          id   20063
     plutonium-240 endf/b-iv mat 1265          updated 10/13/89          id   20064
     plutonium-241 endf/b-iv mat 1266          updated 10/13/89          id   20065
     plutonium-242 endf/b-iv mat 1161          updated 10/13/89          id   20066
    am-241 1056 sigo=5+4 nsw.lacs 218ngp p-3 293k                        id   20067
    am-243 1057 218 gp wt f-1/e-m 09076 p3 293k                          id   20068
     curium-244    endf/b-iv mat 1162          updated 10/13/89          id   20069
0      tape copy used      0 i/o's, and took     .00 seconds
1
```



```
0
```



```
0
```



INFORMATION ONLY

```
00      00        22      //      11   66            //   99      99  66
00      00       22       //      11   666666666666    //   999999999999  666666666666
00      00      22        //      11   666666666666    //    999999999999  666666666666
00      00     22         //      11   66      66      //          99  66      66
00      00    22          //      11   66      66      //          99  66      66
 00    00    22           //      11   66      66      //          99  66      66
  00000000   2222222222222 //   11111111  666666666666  //   999999999999  666666666666
   000000    2222222222222 //   11111111   666666666666 //    99999999999   666666666666
0

    11      000000                000000        44                44    88888888888
   111     00000000              00000000      444               444    8888888888888
  1111    00      00     :::    00      00    4444              4444    88      88
   11     00      00     :::    00      00   44 44             44 44    88      88
   11     00      00     :::    00      00  44  44            44  44    88      88
   11     00      00            00      00 44   44           44   44    88888888888
   11     00      00            00      00 44   44           44   44    88888888888
   11     00      00     :::    00      00 44444444444       44444444444 88      88
   11     00      00     :::    00      00 44444444444       44444444444 88      88
   11      00    00      :::     00    00        44                44    88      88
 11111111  00000000              00000000        44                44    8888888888888
 11111111   000000                000000         44                44    88888888888
1
0                    ssssssssss   cccccccccc    aaaaaaaa   ll          eeeeeeeeeeee
                    ssssssssssss cccccccccccc  aaaaaaaaaa ll          eeeeeeeeeeee
                    ss      ss   cc      cc    aa      aa ll          ee
                    ss           cc            aa      aa ll          ee
                    ss           cc            aa      aa ll          ee
                    ssssssssss   cc            aaaaaaaaaaaa ll        eeeeeeee
                     ssssssssss  cc            aaaaaaaaaaaa ll        eeeeeeee
                            ss   cc            aa      aa ll          ee
                            ss   cc            aa      aa ll          ee
                    ss      ss   cc      cc    aa      aa ll          ee
                    ssssssssssss cccccccccccc  aa      aa llllllllllll eeeeeeeeeeee
                     ssssssssss   cccccccccc   aa      aa llllllllllll eeeeeeeeeeee
```

program verification information

code system: scale version: 4.2

program: c0c002

creation date: 04/27/95

library: /neutronics/scale/exe

this is not a scale configuration controlled code

INFORMATION ONLY

```
                    *****                                                    *****
                    *****          jobname:  davis                           *****
                    *****                                                    *****
                    *****   date of execution:  02/16/96                     *****
                    *****                                                    *****
                    *****   time of execution:  10:04:48                     *****
                    *****                                                    *****
                    *****                                                    *****
                    ************************************************************
                    ************************************************************
                    ************************************************************
1
0       -1q array has      1 entries.
0        0q array has      4 entries.
0        1q array has     12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

         1 resonance calculations have been requested
         0 output option for anpx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has     70 entries.
0        3q array has     15 entries.
0        4q array has      5 entries.
0 general information concerning cross section library
    tape identification number              4349
    number of nuclides on tape                65
    number of neutron energy groups           27
    first thermal neutron energy group        15
    number of gamma energy groups              0
0  direct access unit number  9 requires  72 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                         compiled for nrc      1/27/89
                            last updated      9/16/93
                               l.m.petrie  -   ornl
-  work tape   4349

 xsdrn weighted tape--parent case entitled-- 1040 d, sas2h: babcock wilcox 15x15,
  3.00wt%, 20gd/mtu burn high temp


0 nuclides from xsdrn tape
    1    hydrogen        endf/b-iv mat 1269/thrmt002    updated 10/13/89          202
    2   b-10 1273 218ngp 04237.5 p-3 293k                                          203
    3    boron-11        endf/b-iv mat 1160             updated 10/13/89          204
    4    oxygen-16       endf/b-iv mat 1276             updated 10/13/89          201
    5    zircalloy       endf/b-iv mat 1284             updated 10/13/89          205
0 nuclides from  work tape
    6   1/v cross sections normalized to 1.0 at 0.0253 ev                          999
    7    hydrogen        endf/b-iv mat 1269/thrmt002    updated 10/13/89         1001
    8   b-10 1273 218ngp 04237.5 p-3 293k                                         5010
    9    boron-11        endf/b-iv mat 1160             updated 10/13/89         5011
   10    oxygen-16       endf/b-iv mat 1276             updated 10/13/89         8016
   11    oxygen-16       endf/b-iv mat 1276             updated 10/13/89            6
   12    kr-83           mt=102,103,103,105,106,107     updated 10/13/89        36083
```

INFORMATION ONLY

```
 13   kr-85          mt=  102                                          36085
 14   sr-90          mt=102                      updated 10/13/89      38090
 15    y-89          mt=102                      updated 10/13/89      39089
 16   zr-93          mt=  102                                          40093
 17   zr-94          mt=102                      updated 10/13/89      40094
 18   zr-95          mt=102                      updated 10/13/89      40095
 19   zircalloy      endf/b-iv mat 1284          updated 10/13/89      40802
 20   rb-94          mt=102                      updated 10/13/89      41094
 21   mo-95          mt=102                      updated 10/13/89      42095
 22   tc-99          mt=102                      updated 10/13/89      43099
 23   ru-101         mt=102                      updated 10/13/89      44101
 24   ru-106         mt=102                      updated 10/13/89      44106
 25   rh-103         mt=102                      updated 10/13/89      45103
 26   rh-105         mt=  102                                          45105
 27   pd-105         mt=102                      updated 10/13/89      46105
 28   pd-108         mt=102                      updated 10/13/89      46108
 29   silver-109     endf/b-iv mat 1139          updated 10/13/89      47109
 30   sb-124         mt=102                      updated 10/13/89      51124
 31   xe-131         mt=102,103,104,105,106      updated 10/13/89      54131
 32   xe-132         mt=102,103,104,105,106      updated 10/13/89      54132
 33   xenon-135      endf/b-iv mat 1294          updated 10/13/89      54135
 34   xe-136         mt=  102, 103, 104, 105, 107                      54136
 35   cesium-133     endf/b-iv mat 1141          updated 10/13/89      55133
 36   cs-134         mt=102                      updated 10/13/89      55134
 37   cs-135         mt=  102                                          55135
 38   cs-137         mt=102                      updated 10/13/89      55137
 39   ba-136         mt=102                      updated 10/13/89      56136
 40   la-139         mt=102                      updated 10/13/89      57139
 41   ce-144         mt=  102                                          58144
 42   pr-141         mt=102,103,104,105,106,107  updated 10/13/89      59141
 43   pr-143         mt=102                      updated 10/13/89      59143
 44   nd-143         mt=102                      updated 10/13/89      60143
 45   nd-145         mt=102                      updated 10/13/89      60145
 46   nd-147         mt=102                      updated 10/13/89      60147
 47   pm-147         mt=102                      updated 10/13/89      61147
 48   pm-148         mt=  102                                          61148
 49   sm-147         endf/b-v fission product    updated 10/13/89      62147
 50   sm-149         mt=102,103,107              updated 10/13/89      62149
 51   sm-150         mt=102                      updated 10/13/89      62150
 52   sm-151         mt=102,103,104,105,106,107  updated 10/13/89      62151
 53   sm-152         mt=102,103,104,105,106,107  updated 10/13/89      62152
 54   eu-153         mt=102,103,104,105,106,107  updated 10/13/89      63153
 55   eu-154         mt=102,103,104,105,106,107  updated 10/13/89      63154
 56   eu-155         mt=102,103,104,105,106,107  updated 10/13/89      63155
 57   gd-155         mt=102                      updated 10/13/89      64155
 58   u-234 1043 sigp=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)               92234
 59   uranium-235    endf/b-iv mat 1261          updated 10/13/89      92235
 60   u-236 1163 sigp=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)               92236
 61   uranium-238    endf/b-iv mat 1262          updated 10/13/89      92238
 62   neptunium-237  endf/b-iv mat 1263          updated 10/13/89      93237
 63   pu-238 1050 sigp=5+4 nsxlacs p-3 293k f-1/e-n(1.+5)               94238
 64   plutonium-239  endf/b-iv mat 1264          updated 10/13/89      94239
 65   plutonium-240  endf/b-iv mat 1265          updated 10/13/89      94240
 66   plutonium-241  endf/b-iv mat 1266          updated 10/13/89      94241
 67   plutonium-242  endf/b-iv mat 1161          updated 10/13/89      94242
 68   am-241 1056 sigp=5+4 nsxlacs 218ngp p-3 293k                     95241
 69   am-243 1057 218 gp wt f-1/e-n 09076 p3 293k                      95243
 70   curium-244     endf/b-iv mat 1162          updated 10/13/89      96244
0 hydrogen      endf/b-iv mat 1269/thm1002    updated 10/13/89      202    temperature=  607.60
                    thermal scattering matrix number  2 at a temperature of   550.00 was selected.
```

```
0b-10 1273 218rgp 042375 p-3 293k                                    203    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11      endf/b-iv mat 1160          updated 10/13/89          204    temperature=  607.60
                          thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276          updated 10/13/89          201    temperature=  607.60
0 zircalloy     endf/b-iv mat 1284          updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436          temperature(kelvin)       =  650.000
0potential scatter sigma  =    6.386          lumped nuclear density   = 4.251560E-02
0spin factor (g)          =    1.079          lump dimension (a-bar)   = 6.730999E-01
0inner radius             = 6.324600E-01      dancoff correction (c)   = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs      res fiss      res scat
   8     -1.156752E-03  .000000E+00  -7.806083E-01
   9     -4.625978E-02  .000000E+00  -2.073270E+00
  10     -5.962280E-02  .000000E+00  -1.351984E+00
  11     -1.761672E-01  .000000E+00  -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption      2.9840E-01
 fission          .0000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:04:48
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled-- 1040 d, ss2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

        tape id                        8670        number of nuclides              70
        number of neutron groups         27        number of gamma groups           0
        first thermal group              15        logical unit                     4
                              table of contents
       hydrogen      endf/b-iv mat 1269/thm#1002   updated 10/13/89          id    202
      b-10 1273 218rgp 042375 p-3 293k                                       id    203
       boron-11      endf/b-iv mat 1160            updated 10/13/89          id    204
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id    201
       zircalloy     endf/b-iv mat 1284            updated 10/13/89          id    205
      1/v cross sections normalized to 1.0 at 0.0253 ev                      id    999
       hydrogen      endf/b-iv mat 1269/thm#1002   updated 10/13/89          id   1001
      b-10 1273 218rgp 042375 p-3 293k                                       id   5010
       boron-11      endf/b-iv mat 1160            updated 10/13/89          id   5011
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id   8016
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id      6
       kr-83         mt=102,103,103,105,106,107    updated 10/13/89          id  36083
       kr-85           mt=  102                                             id  36085
       sr-90         mt=102                        updated 10/13/89          id  38090
        y-89         mt=102                        updated 10/13/89          id  39089
       zr-93           mt=  102                                             id  40093
       zr-94         mt=102                        updated 10/13/89          id  40094
       zr-95         mt=102                        updated 10/13/89          id  40095
       zircalloy     endf/b-iv mat 1284            updated 10/13/89          id  40802
       nb-94         mt=102                        updated 10/13/89          id  41094
       mo-95         mt=102                        updated 10/13/89          id  42095
       tc-99         mt=102                        updated 10/13/89          id  43099
       ru-101        mt=102                        updated 10/13/89          id  44101
       ru-106        mt=102                        updated 10/13/89          id  44106
       rh-103        mt=102                        updated 10/13/89          id  45103
       rh-105          mt=  102                                             id  45105
```

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```
      pd-105        mt=102                      updated 10/13/89          id   46105
      pd-108        mt=102                      updated 10/13/89          id   46108
      silver-109    endf/b-iv mat 1139          updated 10/13/89          id   47109
      sb-124        mt=102                      updated 10/13/89          id   51124
      xe-131        mt=102,103,104,105,106      updated 10/13/89          id   54131
      xe-132        mt=102,103,104,105,106      updated 10/13/89          id   54132
      xenon-135     endf/b-iv mat 1294          updated 10/13/89          id   54135
      xe-136          mt=  102, 103, 104, 105, 107                      id   54136
      cesium-133    endf/b-iv mat 1141          updated 10/13/89          id   55133
      cs-134        mt=102                      updated 10/13/89          id   55134
      cs-135          mt=  102                                          id   55135
      cs-137        mt=102                      updated 10/13/89          id   55137
      ba-136        mt=102                      updated 10/13/89          id   56136
      la-139        mt=102                      updated 10/13/89          id   57139
      ce-144          mt=  102                                          id   58144
      pr-141        mt=102,103,104,105,106,107  updated 10/13/89          id   59141
      pr-143        mt=102                      updated 10/13/89          id   59143
      nd-143        mt=102                      updated 10/13/89          id   60143
      nd-145        mt=102                      updated 10/13/89          id   60145
      nd-147        mt=102                      updated 10/13/89          id   60147
      pm-147        mt=102                      updated 10/13/89          id   61147
      pm-148          mt=  102                                          id   61148
      sm-147        endf/b-v fission product    updated 10/13/89          id   62147
      sm-149        mt=102,103,107              updated 10/13/89          id   62149
      sm-150        mt=102                      updated 10/13/89          id   62150
      sm-151        mt=102,103,104,105,106,107  updated 10/13/89          id   62151
      sm-152        mt=102,103,104,105,106,107  updated 10/13/89          id   62152
      eu-153        mt=102,103,104,105,106,107  updated 10/13/89          id   63153
      eu-154        mt=102,103,104,105,106,107  updated 10/13/89          id   63154
      eu-155        mt=102,103,104,105,106,107  updated 10/13/89          id   63155
      gd-155        mt=102                      updated 10/13/89          id   64155
     u-234 1043 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92234
      uranium-235   endf/b-iv mat 1261          updated 10/13/89          id   92235
     u-236 1163 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                   id   92236
      uranium-238   endf/b-iv mat 1262          updated 10/13/89          id   92238
      neptunium-237 endf/b-iv mat 1263          updated 10/13/89          id   93237
     pu-238 1050 sigp=5+4 nsxlacs p-3 293k f-1/e-m(1.+5)                  id   94238
      plutonium-239 endf/b-iv mat 1264          updated 10/13/89          id   94239
      plutonium-240 endf/b-iv mat 1265          updated 10/13/89          id   94240
      plutonium-241 endf/b-iv mat 1266          updated 10/13/89          id   94241
      plutonium-242 endf/b-iv mat 1161          updated 10/13/89          id   94242
     am-241 1056 sigp=5+4 nsxlacs 218ngp p-3 293k                         id   95241
     am-243 1057 218 gp wt f-1/e-m 0.90376 p3 293k                        id   95243
      curium-244    endf/b-iv mat 1162          updated 10/13/89          id   96244
0       tape copy used     0 i/o's, and took     .00 seconds
1 xx        xx   ssssssssss   ddddddddddd   rrrrrrrrrr   m        m   pppppppppp   mm        mm
  xx        xx   ssssssssssss ddddddddddddd rrrrrrrrrr   mm       m   pppppppppppp mmm       mmm
    xx    xx     ss        ss dd        dd   rr       rr  mmm      m   pp        pp  mmmm     mmmm
     xx  xx      ss           dd        dd   rr       rr  mmm m    m   pp        pp  mm mm   mm mm
      xx xx      ss           dd        dd   rr       rr  m  m     m   pp        pp  mm  mm mm  mm
       xxx       ssssssssss   dd        dd   rrrrrrrrrr  m   m    m   pppppppppp    mm   mmm   mm
       xxx        ssssssssss  dd        dd   rrrrrrrrrr  m    m   m   pppppppppp    mm    m    mm
      xx xx            ss     dd        dd   rr     rr   m     m m   pp            mm         mm
     xx   xx           ss     dd        dd   rr      rr  m      mm   pp            mm         mm
    xx     xx   ss     ss     dd        dd   rr       rr m       mm  pp            mm         mm
   xx        xx  ssssssssssss dddddddddddd  rr        rr m        m  pp            mm         mm
  xx          xx  ssssssssss  ddddddddddd   rr        rr m        m  pp            mm         mm
0

  ddddddddddd     eeeeeeeeee    w        w  fffffffffffff    ssssssssss
```

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```
*****                                                          *****
*****              program verification information             *****
*****                                                          *****
*****              code system:   scale  version:   4.2        *****
*****                                                          *****
*****************************************************************
*****************************************************************
*****                                                          *****
*****                                                          *****
*****              program:  c0c001                            *****
*****                                                          *****
*****         creation date:  04/27/95                         *****
*****                                                          *****
*****              library:  /nautronics/scale/exe             *****
*****                                                          *****
*****                                                          *****
*****    this is not a   scale  configuration controlled code  *****
*****                                                          *****
*****              jobname:  davis                             *****
*****                                                          *****
*****    date of execution:  02/16/96                          *****
*****                                                          *****
*****    time of execution:  10:04:49                          *****
*****                                                          *****
*****                                                          *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
1
                    1040 d, second part of sas2h pass to make library
0       -1q array has     1 entries.
0        0q array has    11 entries.
0        1q array has    15 entries.
0        2q array has    10 entries.
0        3q array has    12 entries.
0        4q array has     9 entries.
0        5q array has    12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                    1040 d, second part of sas2h pass to make library
0general problem description data block
0                              general problem data

 ige  1/2/3 = plane/cylinder/sphere      2      ign  quadrature order                    8
 izn  number of zones                    4      ict  order of scattering                 3
 im   number of spacial intervals       28      iev  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      iin  inner iteration maximum            20
 ibr  right boundary condition           3      ion  outer iteration maximum            25
 mix  number of mixtures                 3      iclc -1/0/n--flat res/sn/cpt             0
 nx   mixing table length               70      ith  0/1 = forward/adjoint               0
 ign  number of energy groups           27      iflu not used(always ugtd)               0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print       -2
 ngg  number of gamma groups             0      idl  0/1/2/3=no/prt nd/pch n/both       14
 iftg number of first thermal group     15      ipbt -1/0/1=none/fine/all bal. prt       0
0                              special options

 ifg  0/1 = none/weighting calculation   1      ipn  0/1/2 diff. coef. param             0
 iqn  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 33*      0
 ipm  boundary sources (0/n=no/yes)      0      isz  0/n = none/n activities by zone     0
 ifn  0/1/2 = input 33*/34*/use last    14      isi  0/1=none/activities by interval     0
 itmx maximum time (minutes)            10      ifct 0/1=no/yes upscatter scaling        0
```

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```
 idt1 0/1/2/3=no/xsect/srce/flux--out      0        ipvt 0/1/2=no/k/alpha parametric srch    0
 isx  broad group fluxes                   0        isen outer iteration acceleration        0
 ibln activity data unit                   0        nbnd band rebaln parameter               0
 jbkl 0/1/2 buckling geometry              0
0                                   weighting data (ifg=1)

 icon -1/0/1=cell/zone/region weight      -1        ihtf total xsect pen in brd gp tables    3
 igmf number of broad groups               3        ndsf pen g-g or file number              4
 itp  0/10/20/30/40 0/c/e/ec/a             0        nusf table length or max order           6
 ipp  -2/-1/0/n=gted xsect print          -2        nscm extra 1-d x-sect positions          0
 iap  -1/n anisn xsect print              -1
0                                   floating point parameters

 eps  overall convergence        1.00000E-04        dy  cyl/pla ht for buckling     .00000E+00
 ptc  point convergence          1.00000E-04        dz  plane depth for buckling  2.00000E+02
 xnf  normalization factor       1.00000E+00        vac  void streaming correction  .00000E+00
 ev   eigenvalue guess            .00000E+00        pv  ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier         .00000E+00        eql  ev change eps for search  1.00000E-03
 bf   buckling factor=1.420892   1.42089E+00        xrpn new param mod for search  7.50000E-01
      this case will require      2611 locations for mixing
      this case has been allocated 200000 locations
1                        1040 d, second part of sas2h pass to make library
0        13q array has      70 entries.
0        14q array has      70 entries.
0        15q array has      70 entries.
0                                   data block 2 (mixing table, etc.)
0     nuclides        cccc                          mixing table                                  extra
       on tape     identification              mixture  component     atom density             xsect id's
    1     202                                     3        201        2.09710E-02
    2     203                                     3        202        4.19420E-02
    3     204                                     3        203        3.81515E-06
    4     201                                     3        204        1.54884E-05
    5     205                                     2        205        4.25156E-02
    6     999                                     1      92235        1.20544E-04
    7    1001                                     1      92234        1.41715E-06
    8    5010                                     1      92236        2.03607E-05
    9    5011                                     1      92238        7.20391E-03
   10    8016                                     1       8016        1.50611E-02
   11       6                                     1          6        1.15315E-02
   12   36083                                     1      36083        5.38432E-07
   13   36085                                     1      36085        2.58829E-07
   14   38090                                     1      38090        5.92341E-06
   15   39089                                     1      39089        4.78649E-06
   16   40093                                     1      42095        6.56575E-06
   17   40094                                     1      40093        4.79260E-06
   18   40095                                     1      40094        7.56974E-06
   19   40302                                     1      40095        6.48349E-07
   20   41094                                     1      41094        3.96140E-12
   21   42095                                     1      43099        7.40725E-06
   22   43099                                     1      45103        4.11558E-06
   23   44101                                     1      45105        7.88511E-09
   24   44106                                     1      44101        6.79255E-06
   25   45103                                     1      44106        1.01922E-06
   26   45105                                     1      46105        2.82763E-06
   27   46105                                     1      46108        8.33604E-07
   28   46108                                     1      47109        5.71721E-07
   29   47109                                     1      51124        1.27223E-10
   30   51124                                     1      54131        3.36294E-06
   31   54131                                     1      54132        6.56907E-06
   32   54132                                     1      54135        2.20413E-09
```

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```
   33  54135                                  1      54136    1.28571E-05
   34  54136                                  1      55134    4.23324E-07
   35  55133                                  1      55135    4.11148E-06
   36  55134                                  1      55137    7.98225E-06
   37  55135                                  1      56136    8.81605E-08
   38  55137                                  1      57139    7.88638E-06
   39  56136                                  1      59141    6.89478E-06
   40  57139                                  1      59143    1.20840E-07
   41  58144                                  1      58144    2.27216E-06
   42  59141                                  1      60143    6.04828E-06
   43  59143                                  1      60145    4.50917E-06
   44  60143                                  1      61147    1.42390E-06
   45  60145                                  1      61148    4.28549E-09
   46  60147                                  1      60147    4.27517E-08
   47  61147                                  1      62147    5.95353E-07
   48  61148                                  1      62149    2.94746E-08
   49  62147                                  1      62150    1.65740E-06
   50  62149                                  1      62151    1.43095E-07
   51  62150                                  1      62152    7.81604E-07
   52  62151                                  1      64155    9.37785E-10
   53  62152                                  1      63153    5.06255E-07
   54  63153                                  1      63154    1.18895E-07
   55  63154                                  1      63155    5.54695E-08
   56  63155                                  1      40302    4.42861E-08
   57  64155                                  1       1001    2.30630E-02
   58  92234                                  1       5010    2.09787E-06
   59  92235                                  1       5011    8.51673E-06
   60  92236                                  1      55133    8.12694E-06
   61  92238                                  1      93237    1.55467E-06
   62  93237                                  1      94238    2.67674E-07
   63  94238                                  1      94239    3.86470E-05
   64  94239                                  1      94240    8.48599E-06
   65  94240                                  1      94241    4.88270E-06
   66  94241                                  1      94242    6.64962E-07
   67  94242                                  1      95241    1.70640E-07
   68  95241                                  1      95243    7.44868E-08
   69  95243                                  1      96244    8.67958E-09
   70  96244                                  1        999    3.30753E-21
- elapsed time    .00 min.
0  24259 locations will be used
0      35q array has     29 entries.
0      36q array has     28 entries.
0      39q array has      4 entries.
0      40q array has      4 entries.
0      47q array has     27 entries.
0      51q array has     27 entries.
1                    1040 d, second part of sas2h pass to make library
                          neutron group parameters
0  gp   energy     lethargy   weighted   broad gp   calc    group    right    left
       boundaries  boundaries  velocities  numbers   type    band     albedo   albedo
    1  2.00000E+07 -6.93147E-01 4.60581E+09   1       0       1     1.00000E+00
    2  6.43400E+06 4.40989E-01 2.85737E+09   1       0       2     1.00000E+00
    3  3.00000E+06 1.20397E+00 2.12201E+09   1       0       3     1.00000E+00
    4  1.85000E+06 1.68740E+00 1.75673E+09   1       0       4     1.00000E+00
    5  1.40000E+06 1.96611E+00 1.46535E+09   1       0       5     1.00000E+00
    6  9.00000E+05 2.40795E+00 1.06620E+09   2       0       6     1.00000E+00
    7  4.00000E+05 3.21888E+00 6.07557E+08   2       0       7     1.00000E+00
    8  1.00000E+05 4.60517E+00 2.72415E+08   2       0       8     1.00000E+00
    9  1.70000E+04 6.37713E+00 1.13526E+08   2       0       9     1.00000E+00
   10  3.00000E+03 8.11173E+00 4.82126E+07   2       0      10     1.00000E+00
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11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00
12	1.00000E+02	1.15125E+01	1.01036E+07	2	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69599E+06	2	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00
15	3.04999E+00	1.50080E+01	2.10601E+06	2	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70622E+06	2	0	16	1.00000E+00
17	1.29999E+00	1.58667E+01	1.52545E+06	2	0	17	1.00000E+00
18	1.12999E+00	1.59999E+01	1.42867E+06	2	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05898E+05	2	0	20	1.00000E+00
21	4.00000E-01	1.70844E+01	8.17977E+05	3	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86953E+05	3	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	3	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 1040 d, second part of sas2h pass to make library

0

	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	3	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28598E-02
7					5.55953E-02	2.31301E-01	6	1.28598E-02
8					5.55953E-02	5.58410E-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	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20199E-01	13	-1.15128E-02
13					5.22844E-02	2.20199E-01	12	1.15128E-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	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70655E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70655E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98356E-01	-4.86885E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20199E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20199E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01

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14	6.01588E-01	-8.57235E-02	.00000E+00	1.40530E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83082E-01	-4.49528E-01	8.36885E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76834E-02	4.17254E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76834E-02	-4.17254E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46403E-02			
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60386E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10577E+00	4	6.34088E+00	1.35731E+00			
19	1.20236E+00	1.30195E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00			
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			
29	2.96100E+00			1.86045E+01				

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	158	-1.38670E-05	1.01990E+00	-2.16600E-02	1.00000E+00	-6.74411E-03	.00000E+00	.0000
2	233	-3.84269E-07	1.02189E+00	-5.59663E-04	-2.64721E-03	-1.18196E-03	.00000E+00	.0000
3	290	-1.95462E-06	1.02227E+00	-9.94730E-05	-4.33469E-04	-2.89140E-04	.00000E+00	.0167
4	331	3.72296E-06	1.02230E+00	-2.39066E-05	-1.07205E-04	-6.81095E-05	.00000E+00	.0167

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	5.45690E-07	28	1.00000E+00	1
2	2	1	17	6.50441E-07	28	1.00000E+00	1
3	3	1	17	6.09149E-07	28	1.00000E+00	1
4	4	1	17	5.95387E-07	28	1.00000E+00	1
5	5	1	17	6.33868E-07	28	1.00000E+00	1
6	6	1	17	4.42394E-07	28	1.00000E+00	1
7	7	1	24	1.34014E-06	28	9.99999E-01	2
8	8	1	28	2.25154E-07	28	1.00000E+00	2
9	9	1	27	1.43450E-05	28	1.00001E+00	3
10	10	1	26	1.70372E-06	28	9.99999E-01	3

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11	11	1	26	3.75121E-06	28	9.99996E-01	3
12	12	1	25	1.61102E-06	28	9.99999E-01	3
13	13	1	26	3.67547E-06	28	1.00000E+00	3
14	14	1	28	2.95231E-07	28	1.00000E+00	3
15	15	1	2	6.39406E-05	28	9.99929E-01	2
16	16	1	2	7.64618E-05	28	9.99938E-01	2
17	17	1	2	9.14770E-05	28	9.99858E-01	3
18	18	2	28	3.36478E-05	28	1.00001E+00	3
19	19	2	2	4.54975E-06	28	1.00000E+00	3
20	20	1	2	6.84650E-05	28	9.99872E-01	3
21	21	2	28	3.42746E-05	28	1.00001E+00	3
22	22	1	6	5.43675E-05	28	9.99950E-01	3
23	23	1	27	7.16428E-06	28	1.00001E+00	4
24	24	1	28	2.38330E-05	9	1.00002E+00	4
25	25	1	26	3.35758E-05	8	1.00001E+00	5
26	26	1	28	1.49048E-05	6	1.00001E+00	6
27	27	1	1	1.15270E-05	5	1.00001E+00	8

5 361 -2.95269E-06 1.02239E+00 -5.86852E-06 -2.53599E-05 -1.54551E-05 .00000E+00 .0167

final monitor

lambda 1.02236E+00 production/absorption 1.03575E+00 angular flux on 16

- elapsed time .02 min.

1 1040 d, second part of sas2h pass to make library

0 int.	zone number	radius	int. midpoint	area	volume	prod density
1	1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3	1	7.90575E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1	3.16230E-01	3.55759E-01	1.98692E+00	1.76717E-01	.00000E+00
7	1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1	5.53403E-01	5.73167E-01	3.47713E+00	1.42365E-01	.00000E+00
10	1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2	6.52780E-01	6.62940E-01	4.10154E+00	8.46408E-02	.00000E+00
13	3	6.73100E-01	6.96583E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.33536E-02
17	4	9.11591E-01	9.60386E-01	5.72769E+00	5.88891E-01	2.54094E-02
18	4	1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	5.73426E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.60501E-02
20	4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	7.48427E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	8.36843E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+00	9.25790E-02
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.01536E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.10567E-01
25	4	2.37545E+00	2.47306E+00	1.49254E+01	3.03285E+00	1.19698E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.28942E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	6.79867E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.03808E-02
29		2.96100E+00		1.86045E+01		

1 1040 d, second part of sas2h pass to make library

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.30631E-02	9.11126E-02	1.12710E-01	6.90754E-02	1.02786E-01	1.92805E-01	1.95104E-01	1.47083E-01
2	1.30578E-02	9.10612E-02	1.12645E-01	6.90372E-02	1.02733E-01	1.92719E-01	1.95066E-01	1.47028E-01
3	1.30588E-02	9.10743E-02	1.12667E-01	6.90552E-02	1.02767E-01	1.92789E-01	1.95117E-01	1.47039E-01
4	1.30653E-02	9.11553E-02	1.12780E-01	6.91336E-02	1.02897E-01	1.93031E-01	1.95273E-01	1.47068E-01
5	1.30777E-02	9.12977E-02	1.12975E-01	6.92665E-02	1.03113E-01	1.93430E-01	1.95521E-01	1.47112E-01

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6	1.30946E-02	9.14936E-02	1.13265E-01	6.94499E-02	1.03410E-01	1.93978E-01	1.95865E-01	1.47168E-01
7	1.31160E-02	9.17443E-02	1.13591E-01	6.96879E-02	1.03798E-01	1.94694E-01	1.94300E-01	1.47238E-01
8	1.31417E-02	9.20575E-02	1.14031E-01	6.99953E-02	1.04303E-01	1.95629E-01	1.94877E-01	1.47321E-01
9	1.31634E-02	9.23330E-02	1.14426E-01	7.02773E-02	1.04771E-01	1.96496E-01	1.95411E-01	1.47391E-01
10	1.31782E-02	9.25489E-02	1.14755E-01	7.05256E-02	1.05192E-01	1.97282E-01	1.95898E-01	1.47439E-01
11	1.31906E-02	9.27279E-02	1.15031E-01	7.07340E-02	1.05545E-01	1.97957E-01	1.96315E-01	1.47484E-01
12	1.32041E-02	9.28611E-02	1.15205E-01	7.08424E-02	1.05715E-01	1.98294E-01	1.96518E-01	1.47528E-01
13	1.32524E-02	9.31038E-02	1.15475E-01	7.09799E-02	1.05904E-01	1.98632E-01	1.96709E-01	1.47596E-01
14	1.32739E-02	9.34906E-02	1.15980E-01	7.12552E-02	1.06278E-01	1.99290E-01	1.97088E-01	1.47688E-01
15	1.33228E-02	9.39882E-02	1.16655E-01	7.16218E-02	1.06874E-01	2.00361E-01	1.97715E-01	1.47790E-01
16	1.33988E-02	9.47851E-02	1.17573E-01	7.22669E-02	1.07888E-01	2.02200E-01	1.98805E-01	1.47960E-01
17	1.34738E-02	9.55779E-02	1.18590E-01	7.29151E-02	1.08917E-01	2.04091E-01	1.99946E-01	1.48157E-01
18	1.35332E-02	9.62197E-02	1.19424E-01	7.34603E-02	1.09782E-01	2.05724E-01	2.00960E-01	1.48361E-01
19	1.35850E-02	9.67892E-02	1.20172E-01	7.39342E-02	1.10571E-01	2.07248E-01	2.01925E-01	1.48573E-01
20	1.36154E-02	9.71309E-02	1.20628E-01	7.42524E-02	1.11054E-01	2.08229E-01	2.02562E-01	1.48728E-01
21	1.36343E-02	9.73508E-02	1.20927E-01	7.44284E-02	1.11350E-01	2.08869E-01	2.03006E-01	1.48894E-01
22	1.36464E-02	9.74933E-02	1.21125E-01	7.45592E-02	1.11613E-01	2.09362E-01	2.03319E-01	1.48931E-01
23	1.36540E-02	9.75851E-02	1.21254E-01	7.46450E-02	1.11760E-01	2.09678E-01	2.03536E-01	1.48995E-01
24	1.36584E-02	9.76397E-02	1.21332E-01	7.46975E-02	1.11851E-01	2.09879E-01	2.03678E-01	1.49035E-01
25	1.36608E-02	9.76647E-02	1.21369E-01	7.47225E-02	1.11895E-01	2.09982E-01	2.03749E-01	1.49056E-01
26	1.36598E-02	9.76614E-02	1.21367E-01	7.47212E-02	1.11895E-01	2.09990E-01	2.03756E-01	1.49057E-01
27	1.36581E-02	9.76412E-02	1.21341E-01	7.47037E-02	1.11866E-01	2.09935E-01	2.03719E-01	1.49043E-01
28	1.36555E-02	9.76115E-02	1.21301E-01	7.46772E-02	1.11822E-01	2.09844E-01	2.03656E-01	1.49023E-01
0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15991E-01	1.07237E-01	1.01035E-01	6.55136E-02	5.59119E-02	5.31478E-02	2.89329E-02	1.59856E-02
2	1.15991E-01	1.07239E-01	1.01039E-01	6.55185E-02	5.59168E-02	5.31550E-02	2.89353E-02	1.59868E-02
3	1.15988E-01	1.07230E-01	1.01019E-01	6.54946E-02	5.58941E-02	5.31213E-02	2.89285E-02	1.59829E-02
4	1.15985E-01	1.07209E-01	1.00970E-01	6.54371E-02	5.58395E-02	5.30403E-02	2.89120E-02	1.59735E-02
5	1.15979E-01	1.07176E-01	1.00895E-01	6.53478E-02	5.57566E-02	5.29168E-02	2.88873E-02	1.59594E-02
6	1.15969E-01	1.07132E-01	1.00798E-01	6.52301E-02	5.56444E-02	5.27494E-02	2.88548E-02	1.59406E-02
7	1.15958E-01	1.07074E-01	1.00658E-01	6.50737E-02	5.54981E-02	5.25305E-02	2.88134E-02	1.59165E-02
8	1.15945E-01	1.06996E-01	1.00480E-01	6.48577E-02	5.53064E-02	5.22426E-02	2.87618E-02	1.58856E-02
9	1.15928E-01	1.06902E-01	1.00313E-01	6.46753E-02	5.51283E-02	5.19744E-02	2.87152E-02	1.58573E-02
10	1.15906E-01	1.06853E-01	1.00158E-01	6.45008E-02	5.49672E-02	5.17308E-02	2.86745E-02	1.58320E-02
11	1.15942E-01	1.06799E-01	1.00036E-01	6.43630E-02	5.48394E-02	5.15385E-02	2.86389E-02	1.58108E-02
12	1.15928E-01	1.06779E-01	9.99898E-02	6.43094E-02	5.47870E-02	5.14616E-02	2.86194E-02	1.58008E-02
13	1.15893E-01	1.06753E-01	9.99274E-02	6.42270E-02	5.47117E-02	5.13468E-02	2.86027E-02	1.57901E-02
14	1.15823E-01	1.06690E-01	9.97850E-02	6.40486E-02	5.45524E-02	5.11008E-02	2.85751E-02	1.57695E-02
15	1.15748E-01	1.06587E-01	9.95517E-02	6.37679E-02	5.43054E-02	5.07145E-02	2.85339E-02	1.57373E-02
16	1.15644E-01	1.06416E-01	9.91649E-02	6.33054E-02	5.38918E-02	5.00737E-02	2.84578E-02	1.56829E-02
17	1.15551E-01	1.06248E-01	9.87784E-02	6.28631E-02	5.34749E-02	4.94256E-02	2.83675E-02	1.56230E-02
18	1.15485E-01	1.06105E-01	9.84475E-02	6.24484E-02	5.31108E-02	4.88787E-02	2.82707E-02	1.55654E-02
19	1.15433E-01	1.05973E-01	9.81398E-02	6.20809E-02	5.27655E-02	4.83651E-02	2.81684E-02	1.55071E-02
20	1.15409E-01	1.05890E-01	9.79408E-02	6.18437E-02	5.25383E-02	4.80328E-02	2.80916E-02	1.54651E-02
21	1.15397E-01	1.05833E-01	9.78018E-02	6.16789E-02	5.25780E-02	4.78013E-02	2.80332E-02	1.54339E-02
22	1.15391E-01	1.05798E-01	9.77081E-02	6.15616E-02	5.22627E-02	4.76362E-02	2.79888E-02	1.54106E-02
23	1.15388E-01	1.05765E-01	9.76331E-02	6.14782E-02	5.21800E-02	4.75187E-02	2.79560E-02	1.53835E-02
24	1.15388E-01	1.05746E-01	9.75854E-02	6.14214E-02	5.21259E-02	4.74357E-02	2.79334E-02	1.53818E-02
25	1.15384E-01	1.05734E-01	9.75569E-02	6.13876E-02	5.20700E-02	4.73912E-02	2.79210E-02	1.53752E-02
26	1.15381E-01	1.05730E-01	9.75478E-02	6.13767E-02	5.20800E-02	4.73765E-02	2.79191E-02	1.53741E-02
27	1.15379E-01	1.05732E-01	9.75531E-02	6.13834E-02	5.20887E-02	4.73857E-02	2.79264E-02	1.53769E-02
28	1.15378E-01	1.05738E-01	9.75685E-02	6.14018E-02	5.21083E-02	4.74137E-02	2.79347E-02	1.53820E-02
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	6.94169E-03	5.15677E-03	1.04522E-02	3.48803E-02	1.07715E-02	2.19647E-02	7.43973E-02	6.11483E-02
2	6.94248E-03	5.15838E-03	1.04537E-02	3.48831E-02	1.07726E-02	2.19666E-02	7.43925E-02	6.11342E-02
3	6.93900E-03	5.14951E-03	1.04471E-02	3.48684E-02	1.07613E-02	2.19309E-02	7.42767E-02	6.10113E-02
4	6.93057E-03	5.12816E-03	1.04314E-02	3.48337E-02	1.07353E-02	2.18498E-02	7.40220E-02	6.07472E-02
5	6.91774E-03	5.09532E-03	1.04077E-02	3.47818E-02	1.06961E-02	2.17278E-02	7.36443E-02	6.03563E-02
6	6.90032E-03	5.05206E-03	1.03756E-02	3.47125E-02	1.06429E-02	2.15630E-02	7.31411E-02	5.98358E-02
7	6.87751E-03	4.99051E-03	1.03339E-02	3.46233E-02	1.05755E-02	2.13482E-02	7.24998E-02	5.91743E-02

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8	6.84746E-03	4.91067E-03	1.02795E-02	3.45086E-02	1.04822E-02	2.10676E-02	7.16824E-02	5.83441E-02
9	6.81942E-03	4.83539E-03	1.02291E-02	3.44036E-02	1.03997E-02	2.08076E-02	7.09605E-02	5.76034E-02
10	6.79384E-03	4.76615E-03	1.01835E-02	3.43099E-02	1.03194E-02	2.05725E-02	7.03268E-02	5.69669E-02
11	6.77361E-03	4.71321E-03	1.01471E-02	3.42345E-02	1.02598E-02	2.03954E-02	6.98653E-02	5.65257E-02
12	6.76557E-03	4.69444E-03	1.01321E-02	3.42020E-02	1.02390E-02	2.03362E-02	6.97226E-02	5.64109E-02
13	6.75365E-03	4.69958E-03	1.01120E-02	3.41611E-02	1.02047E-02	2.02276E-02	6.94480E-02	5.61308E-02
14	6.72790E-03	4.58115E-03	1.00698E-02	3.40782E-02	1.01267E-02	1.99813E-02	6.88386E-02	5.54928E-02
15	6.68714E-03	4.45700E-03	1.00032E-02	3.39507E-02	1.00025E-02	1.95979E-02	6.79478E-02	5.45820E-02
16	6.61995E-03	4.23675E-03	9.89262E-03	3.37396E-02	9.79978E-03	1.89639E-02	6.65751E-02	5.32303E-02
17	6.55290E-03	4.01852E-03	9.77843E-03	3.35165E-02	9.59862E-03	1.83353E-02	6.51780E-02	5.18793E-02
18	6.49577E-03	3.85638E-03	9.67505E-03	3.33034E-02	9.42917E-03	1.78142E-02	6.38943E-02	5.05816E-02
19	6.44216E-03	3.71947E-03	9.57562E-03	3.30901E-02	9.27190E-03	1.73356E-02	6.25040E-02	4.92716E-02
20	6.40747E-03	3.64195E-03	9.50892E-03	3.29398E-02	9.17041E-03	1.70308E-02	6.15494E-02	4.83350E-02
21	6.38321E-03	3.59261E-03	9.46147E-03	3.28287E-02	9.09941E-03	1.68178E-02	6.08343E-02	4.76327E-02
22	6.36584E-03	3.55988E-03	9.42710E-03	3.27459E-02	9.04842E-03	1.66657E-02	6.02929E-02	4.71011E-02
23	6.35348E-03	3.53776E-03	9.40340E-03	3.26851E-02	9.01177E-03	1.65563E-02	5.98869E-02	4.67023E-02
24	6.34510E-03	3.52311E-03	9.38544E-03	3.26429E-02	8.98642E-03	1.64800E-02	5.95986E-02	4.64128E-02
25	6.34021E-03	3.51411E-03	9.37535E-03	3.26178E-02	8.97069E-03	1.64315E-02	5.94000E-02	4.62181E-02
26	6.33885E-03	3.51021E-03	9.37219E-03	3.26092E-02	8.96424E-03	1.64095E-02	5.93053E-02	4.61142E-02
27	6.33966E-03	3.51041E-03	9.37432E-03	3.26153E-02	8.96549E-03	1.64098E-02	5.92958E-02	4.60909E-02
28	6.34271E-03	3.51357E-03	9.37994E-03	3.26301E-02	8.97200E-03	1.64256E-02	5.93455E-02	4.61238E-02

0 int.

	grp. 25	grp. 26	grp. 27
1	2.76841E-02	1.99825E-02	3.79587E-03
2	2.76737E-02	1.99707E-02	3.79306E-03
3	2.76081E-02	1.99133E-02	3.78129E-03
4	2.74687E-02	1.97921E-02	3.75634E-03
5	2.72622E-02	1.96114E-02	3.71861E-03
6	2.69858E-02	1.93684E-02	3.66698E-03
7	2.66370E-02	1.90571E-02	3.59948E-03
8	2.62000E-02	1.86651E-02	3.51247E-03
9	2.58125E-02	1.83140E-02	3.43384E-03
10	2.54844E-02	1.80181E-02	3.36633E-03
11	2.52650E-02	1.78264E-02	3.32550E-03
12	2.52179E-02	1.77973E-02	3.32276E-03
13	2.50619E-02	1.76540E-02	3.28428E-03
14	2.47068E-02	1.73142E-02	3.19161E-03
15	2.42130E-02	1.68350E-02	3.05401E-03
16	2.34987E-02	1.61513E-02	2.85330E-03
17	2.27967E-02	1.55051E-02	2.68047E-03
18	2.21265E-02	1.49207E-02	2.54960E-03
19	2.14546E-02	1.43525E-02	2.43131E-03
20	2.07787E-02	1.39678E-02	2.35915E-03
21	2.02524E-02	1.36921E-02	2.31045E-03
22	2.03660E-02	1.34919E-02	2.27665E-03
23	2.01658E-02	1.33463E-02	2.25264E-03
24	2.00215E-02	1.32439E-02	2.23593E-03
25	1.99253E-02	1.31734E-02	2.22483E-03
26	1.98715E-02	1.31333E-02	2.21844E-03
27	1.98555E-02	1.31191E-02	2.21603E-03
28	1.98661E-02	1.31221E-02	2.21593E-03

- elapsed time .02 min.

1fine group summary for zone 1 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.08807E-04	6.73448E-04	5.60754E-05	-7.29488E-04	9.99752E-01
2	.00000E+00	.00000E+00	3.86411E-04	6.18527E-03	8.12940E-03	1.76752E-04	-7.91942E-03	9.99961E-01
3	.00000E+00	.00000E+00	3.86166E-03	5.47456E-03	1.42437E-02	9.29477E-05	-1.04747E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.60190E-03	3.60437E-03	1.29842E-02	4.20527E-05	-6.82427E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02841E-02	1.15346E-02	2.08972E-02	4.97074E-05	-1.06226E-02	9.99991E-01
6	.00000E+00	.00000E+00	2.15307E-02	3.45064E-02	4.10111E-02	8.43132E-05	-1.95646E-02	9.99998E-01
7	.00000E+00	.00000E+00	4.22615E-02	6.09831E-02	5.41484E-02	6.12344E-05	-1.19475E-02	9.99989E-01

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8	.00000E+00	.00000E+00	5.63771E-02	7.83791E-02	5.87701E-02	3.64181E-05	-2.42632E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.78094E-02	7.26623E-02	5.75418E-02	2.92561E-05	2.44917E-04	9.99865E-01
10	.00000E+00	.00000E+00	5.71180E-02	6.92491E-02	5.56520E-02	3.61033E-05	1.43595E-03	9.99875E-01
11	.00000E+00	.00000E+00	5.59294E-02	6.57025E-02	5.26543E-02	5.52482E-05	3.42329E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54778E-02	3.51525E-02	4.13612E-02	6.05469E-05	4.05705E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.06273E-02	2.85889E-02	3.66633E-02	8.46895E-05	3.88059E-03	9.99968E-01
14	.00000E+00	.00000E+00	3.95045E-02	2.81294E-02	3.34026E-02	1.35753E-04	5.76459E-03	9.99988E-01
15	.00000E+00	.00000E+00	2.16405E-02	1.08173E-02	2.02651E-02	1.12237E-04	1.26324E-03	9.99998E-01
16	.00000E+00	.00000E+00	1.41888E-02	4.54909E-03	1.34020E-02	7.58638E-05	7.10851E-04	1.00000E+00
17	.00000E+00	.00000E+00	7.27320E-03	1.27368E-03	6.62690E-03	3.64606E-05	6.09795E-04	1.00001E+00
18	.00000E+00	.00000E+00	6.43510E-03	8.98264E-04	4.90830E-03	2.81071E-05	1.49873E-03	9.99994E-01
19	.00000E+00	.00000E+00	1.05953E-02	2.83870E-03	9.42141E-03	6.35785E-05	-1.10845E-03	9.99990E-01
20	.00000E+00	.00000E+00	2.58651E-02	2.04984E-02	2.31765E-02	2.67345E-04	2.42108E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.23161E-02	4.04375E-03	1.05197E-02	1.01411E-04	1.69514E-03	9.99988E-01
22	.00000E+00	.00000E+00	2.42796E-02	1.22770E-02	1.91057E-02	2.35809E-04	4.95791E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.26124E-02	7.51956E-02	4.95789E-02	1.09158E-03	1.21405E-02	1.00002E+00
24	.00000E+00	.00000E+00	6.67371E-02	7.12650E-02	5.50100E-02	1.29652E-03	1.04293E-02	1.00002E+00
25	.00000E+00	.00000E+00	4.44466E-02	3.02755E-02	3.89493E-02	7.69476E-04	4.74715E-03	1.00001E+00
26	.00000E+00	.00000E+00	3.55386E-02	3.38625E-02	3.12828E-02	7.85284E-04	3.47208E-03	1.00001E+00
27	.00000E+00	.00000E+00	1.20651E-02	7.35278E-03	1.12012E-02	2.79875E-04	5.84006E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.80781E-01	7.75815E-01	7.80781E-01	6.14270E-03	-6.12034E-03	9.99972E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.31853E-02	-7.29488E-04	1.30674E-02	.00000E+00	3.72434E-11	.00000E+00	2.01837E-05	1.64865E-02
2	9.26630E-02	-7.91942E-03	9.11561E-02	.00000E+00	.00000E+00	.00000E+00	8.96523E-05	1.15361E-01
3	1.14985E-01	-1.04747E-02	1.12766E-01	.00000E+00	.00000E+00	.00000E+00	9.25174E-05	1.42855E-01
4	7.06657E-02	-6.83427E-03	6.91094E-02	.00000E+00	.00000E+00	.00000E+00	4.18087E-05	8.78592E-02
5	1.05432E-01	-1.06626E-02	1.02834E-01	.00000E+00	.00000E+00	.00000E+00	4.94142E-05	1.30585E-01
6	1.97731E-01	-1.95646E-02	1.92888E-01	.00000E+00	.00000E+00	.00000E+00	8.34434E-05	2.44938E-01
7	1.96177E-01	-1.19475E-02	1.95146E-01	.00000E+00	.00000E+00	.00000E+00	5.92508E-05	2.44337E-01
8	1.47464E-01	-2.42632E-03	1.47040E-01	.00000E+00	.00000E+00	.00000E+00	3.27367E-05	1.85039E-01
9	1.15985E-01	2.44917E-04	1.15990E-01	.00000E+00	.00000E+00	.00000E+00	2.16887E-05	1.45719E-01
10	1.06813E-01	1.43595E-03	1.07234E-01	.00000E+00	.00000E+00	.00000E+00	1.91827E-05	1.34530E-01
11	1.00069E-01	3.42526E-03	1.01028E-01	.00000E+00	.00000E+00	.00000E+00	1.79574E-05	1.26438E-01
12	6.44000E-02	4.05705E-03	6.55046E-02	.00000E+00	.00000E+00	.00000E+00	1.05291E-05	8.17133E-02
13	5.48750E-02	3.88059E-03	5.59031E-02	.00000E+00	.00000E+00	.00000E+00	8.75085E-06	6.98860E-02
14	5.15911E-02	5.76659E-03	5.31350E-02	.00000E+00	.00000E+00	.00000E+00	8.44713E-06	6.59272E-02
15	2.86524E-02	1.26324E-03	2.89505E-02	.00000E+00	.00000E+00	.00000E+00	4.45646E-06	3.61966E-02
16	1.58175E-02	7.10851E-04	1.59863E-02	.00000E+00	.00000E+00	.00000E+00	2.22619E-06	1.99934E-02
17	6.77923E-03	6.09795E-04	6.94042E-03	.00000E+00	.00000E+00	.00000E+00	8.83672E-07	8.63365E-03
18	4.72622E-03	1.49873E-03	5.15355E-03	.00000E+00	.00000E+00	.00000E+00	6.23650E-07	6.24587E-03
19	1.01572E-02	1.10845E-03	1.04495E-02	.00000E+00	.00000E+00	.00000E+00	1.35714E-06	1.29705E-02
20	3.42582E-02	2.42108E-03	3.48768E-02	.00000E+00	.00000E+00	.00000E+00	5.03612E-06	4.34790E-02
21	1.02744E-02	1.69514E-03	1.07680E-02	.00000E+00	.00000E+00	.00000E+00	1.21584E-06	1.32601E-02
22	2.04379E-02	4.95791E-03	2.19562E-02	.00000E+00	.00000E+00	.00000E+00	2.44508E-06	2.67465E-02
23	6.99665E-02	1.21405E-02	7.43764E-02	.00000E+00	.00000E+00	.00000E+00	7.48844E-06	9.09125E-02
24	5.66064E-02	1.04293E-02	6.11340E-02	.00000E+00	.00000E+00	.00000E+00	4.54638E-06	7.41708E-02
25	2.53000E-02	4.74715E-03	2.76795E-02	.00000E+00	.00000E+00	.00000E+00	1.58049E-06	3.33762E-02
26	1.78504E-02	3.47208E-03	1.99808E-02	.00000E+00	.00000E+00	.00000E+00	8.34278E-07	2.38563E-02
27	3.32885E-03	5.84006E-04	3.79604E-03	.00000E+00	.00000E+00	.00000E+00	9.83253E-08	4.50026E-03
28	1.73609E+00	-6.12034E-03	1.74283E+00	.00000E+00	3.72434E-11	.00000E+00	5.88445E-04	2.18562E+00

1fine group summary for zone 2 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.24985E-04	1.68657E-04	2.53012E-06	-1.65172E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.94556E-05	1.46578E-03	1.05178E-03	1.41177E-05	-1.03644E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.51427E-04	2.77590E-03	8.77709E-04	2.03125E-05	-7.46537E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.88326E-04	2.30800E-03	2.98856E-04	1.31156E-05	-2.35979E-05	9.99996E-01
5	.00000E+00	.00000E+00	6.19828E-04	4.42034E-03	2.79546E-04	1.66779E-05	3.25387E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02631E-03	1.24084E-02	1.69533E-04	2.70751E-05	8.29713E-04	9.99999E-01
7	.00000E+00	.00000E+00	6.74531E-04	1.25978E-02	6.33222E-05	2.68222E-05	5.86320E-04	9.99999E-01
8	.00000E+00	.00000E+00	1.17649E-04	9.21165E-03	4.43556E-04	2.21210E-05	-3.48074E-04	1.00002E+00

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9	.00000E+00	.00000E+00	4.45404E-04	6.36399E-03	5.30509E-05	7.67624E-05	3.15607E-04	9.99976E-01
10	.00000E+00	.00000E+00	5.31162E-05	4.99400E-03	4.95492E-05	5.94116E-05	-5.58461E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.95526E-05	4.46284E-03	5.04012E-05	9.01826E-05	-9.10230E-05	9.99998E-01
12	.00000E+00	.00000E+00	5.04015E-05	2.76630E-03	5.14660E-05	5.68334E-06	-6.75069E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.14661E-05	2.35786E-03	4.80988E-05	6.31783E-06	-2.94857E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80988E-05	2.22089E-03	4.18529E-05	8.48148E-06	-2.23611E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.44262E-05	1.20907E-03	4.94833E-05	6.26148E-06	-1.12508E-05	9.99948E-01
16	.00000E+00	.00000E+00	5.53466E-05	6.39105E-04	5.53466E-05	3.78787E-06	-3.74473E-06	9.99942E-01
17	.00000E+00	.00000E+00	5.99443E-05	2.38686E-04	5.87533E-05	1.77427E-06	-5.64052E-07	9.99971E-01
18	.00000E+00	.00000E+00	6.16488E-05	1.56226E-04	5.04447E-05	1.30066E-06	9.90450E-06	9.99999E-01
19	.00000E+00	.00000E+00	5.24101E-05	3.88225E-04	5.72797E-05	3.01254E-06	-7.88085E-06	9.99999E-01
20	.00000E+00	.00000E+00	6.98617E-05	1.44214E-03	6.13114E-05	1.23987E-05	-3.75649E-06	9.99963E-01
21	.00000E+00	.00000E+00	8.02968E-05	3.63502E-04	8.68274E-05	4.50589E-06	-1.10528E-05	9.99998E-01
22	.00000E+00	.00000E+00	1.14353E-04	7.89522E-04	1.05490E-04	1.01916E-05	-1.28942E-06	9.99998E-01
23	.00000E+00	.00000E+00	1.63415E-04	2.85667E-03	2.09727E-04	4.66582E-05	-9.29758E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.70704E-04	2.18185E-03	2.99428E-04	5.35567E-05	-8.25066E-05	1.00000E+00
25	.00000E+00	.00000E+00	2.77361E-04	8.81998E-04	2.27013E-04	3.12126E-05	1.91191E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.18124E-04	6.91231E-04	9.13480E-05	3.10508E-05	-4.26173E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.66874E-05	1.45979E-04	7.52139E-08	1.08304E-05	1.55798E-05	1.00000E+00
28	.00000E+00	.00000E+00	4.99988E-03	8.05625E-02	4.99988E-03	6.05334E-04	-6.00056E-04	9.99976E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.32122E-02	-8.94660E-04	1.31853E-02	-7.29488E-04	6.02595E-06	.00000E+00	1.66582E-06	2.19984E-03
2	9.29294E-02	-8.95586E-03	9.26630E-02	-7.91942E-03	.00000E+00	.00000E+00	1.12058E-05	1.54678E-02
3	1.15283E-01	-1.12212E-02	1.14985E-01	-1.06747E-02	.00000E+00	.00000E+00	1.27209E-05	1.91888E-02
4	7.08824E-02	-6.84786E-03	7.06657E-02	-6.82427E-03	.00000E+00	.00000E+00	7.44974E-06	1.17998E-02
5	1.05770E-01	-1.03392E-02	1.05432E-01	-1.06626E-02	.00000E+00	.00000E+00	8.64313E-06	1.76073E-02
6	1.98404E-01	-1.87349E-02	1.97731E-01	-1.95646E-02	.00000E+00	.00000E+00	1.01784E-05	3.30253E-02
7	1.96582E-01	-1.13632E-02	1.96177E-01	-1.19475E-02	.00000E+00	.00000E+00	8.35573E-06	3.27408E-02
8	1.47551E-01	-2.77239E-03	1.47464E-01	-2.42632E-03	.00000E+00	.00000E+00	5.27678E-06	2.45873E-02
9	1.15980E-01	5.60524E-04	1.15989E-01	2.44917E-04	.00000E+00	.00000E+00	4.58694E-06	1.93256E-02
10	1.06774E-01	1.38010E-03	1.06813E-01	1.43595E-03	.00000E+00	.00000E+00	4.91625E-06	1.78002E-02
11	9.99771E-02	3.33223E-03	1.00069E-01	3.42326E-03	.00000E+00	.00000E+00	4.77306E-06	1.66707E-02
12	6.42927E-02	4.05029E-03	6.44000E-02	4.05705E-03	.00000E+00	.00000E+00	3.22043E-06	1.07239E-02
13	5.47702E-02	3.87764E-03	5.48750E-02	3.88059E-03	.00000E+00	.00000E+00	2.73792E-06	9.13666E-03
14	5.14373E-02	5.76435E-03	5.15911E-02	5.76657E-03	.00000E+00	.00000E+00	2.56605E-06	8.58626E-03
15	2.86134E-02	1.25199E-03	2.86524E-02	1.26324E-03	.00000E+00	.00000E+00	1.40600E-06	4.77207E-03
16	1.57978E-02	7.07106E-04	1.58179E-02	7.10851E-04	.00000E+00	.00000E+00	7.76270E-07	2.63460E-03
17	6.76315E-03	6.09231E-04	6.77923E-03	6.09795E-04	.00000E+00	.00000E+00	3.32313E-07	1.12839E-03
18	4.68868E-03	1.50864E-03	4.72622E-03	1.49873E-03	.00000E+00	.00000E+00	2.30829E-07	7.84039E-04
19	1.01271E-02	1.10057E-03	1.01572E-02	1.10845E-03	.00000E+00	.00000E+00	4.97368E-07	1.69012E-03
20	3.41952E-02	2.41728E-03	3.42582E-02	2.42108E-03	.00000E+00	.00000E+00	1.67613E-06	5.70367E-03
21	1.02328E-02	1.68411E-03	1.02744E-02	1.69514E-03	.00000E+00	.00000E+00	5.01214E-07	1.70840E-03
22	2.03196E-02	4.93662E-03	2.04379E-02	4.95791E-03	.00000E+00	.00000E+00	9.94632E-07	3.39463E-03
23	6.96812E-02	1.20476E-02	6.99665E-02	1.21406E-02	.00000E+00	.00000E+00	3.39660E-06	1.16335E-02
24	5.63807E-02	1.03470E-02	5.66054E-02	1.04298E-02	.00000E+00	.00000E+00	2.75136E-06	9.41220E-03
25	2.52058E-02	4.78627E-03	2.53000E-02	4.74775E-03	.00000E+00	.00000E+00	1.21369E-06	4.20734E-03
26	1.77922E-02	3.46782E-03	1.78504E-02	3.47208E-03	.00000E+00	.00000E+00	8.47439E-07	2.98896E-03
27	3.32287E-03	5.99589E-04	3.32839E-03	5.84006E-04	.00000E+00	.00000E+00	1.53309E-07	5.54084E-04
28	1.73691E+00	-6.72040E-03	1.73609E+00	-6.12088E-03	6.02595E-06	.00000E+00	1.08064E-04	2.89449E-01

1fine group summary for zone 3 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.69753E-04	3.57040E-04	2.97268E-05	-3.85751E-04	9.99985E-01
2	.00000E+00	.00000E+00	2.04862E-04	3.30162E-03	4.33957E-03	9.43482E-05	-4.22868E-03	9.99987E-01
3	.00000E+00	.00000E+00	2.06094E-03	2.98649E-03	7.61417E-03	4.98864E-05	-5.60274E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.99555E-03	1.92964E-03	6.63005E-03	2.25188E-05	-3.65894E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.50080E-03	6.18498E-03	1.12053E-02	2.66537E-05	-5.73107E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.15329E-02	1.84974E-02	2.19843E-02	4.51967E-05	-1.04966E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26490E-02	3.23973E-02	2.87664E-02	3.25309E-05	-6.14968E-03	9.99998E-01
8	.00000E+00	.00000E+00	3.00023E-02	4.11818E-02	3.08789E-02	1.91347E-05	-8.92988E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04364E-02	3.80164E-02	3.01055E-02	1.53275E-05	3.19239E-04	9.99888E-01

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10	.00000E+00	.00000E+00	2.99169E-02	3.61453E-02	2.90481E-02	1.88445E-05	8.52902E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.92117E-02	3.41197E-02	2.72399E-02	2.86907E-05	1.94490E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36427E-02	1.81249E-02	2.13262E-02	3.12186E-05	2.28573E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.10027E-02	1.47218E-02	1.88797E-02	4.36105E-05	2.08009E-03	9.99973E-01
14	.00000E+00	.00000E+00	2.05710E-02	1.43356E-02	1.71248E-02	6.91833E-05	3.17721E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10725E-02	5.62012E-03	1.05287E-02	5.83130E-05	4.85421E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.31027E-03	2.36113E-03	6.95609E-03	3.95758E-05	3.14775E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.75166E-03	6.52729E-04	3.39612E-03	1.86651E-05	3.36829E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.31651E-03	4.31850E-04	2.35972E-03	1.35128E-05	9.43299E-04	9.99997E-01
19	.00000E+00	.00000E+00	5.41422E-03	1.44921E-03	4.80979E-03	3.26579E-05	5.72027E-04	9.99992E-01
20	.00000E+00	.00000E+00	1.32184E-02	1.05701E-02	1.19509E-02	1.37856E-04	1.12952E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.28064E-03	2.02858E-03	5.27818E-03	5.08822E-05	9.51661E-04	9.99990E-01
22	.00000E+00	.00000E+00	1.22782E-02	6.01960E-03	9.36780E-03	1.15620E-04	2.79469E-03	1.00000E+00
23	.00000E+00	.00000E+00	3.09778E-02	3.74119E-02	2.45674E-02	5.43090E-04	5.86650E-03	1.00001E+00
24	.00000E+00	.00000E+00	3.27886E-02	3.50198E-02	2.70321E-02	6.37115E-04	5.11886E-03	1.00001E+00
25	.00000E+00	.00000E+00	2.17112E-02	1.47145E-02	1.85501E-02	3.73979E-04	2.40684E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.72806E-02	1.61215E-02	1.48904E-02	3.72836E-04	2.01724E-03	1.00001E+00
27	.00000E+00	.00000E+00	5.85787E-03	3.41129E-03	5.19675E-03	1.29847E-04	5.11274E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.00764E-01	3.97965E-01	4.00764E-01	3.05024E-03	-3.03835E-03	9.99971E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.33503E-02	-1.28141E-03	1.32122E-02	-8.94660E-04	1.97453E-11	.00000E+00	1.07007E-05	8.74062E-03
2	9.42734E-02	-1.31845E-02	9.29294E-02	-8.95586E-03	.00000E+00	.00000E+00	4.78553E-05	6.15782E-02
3	1.16919E-01	-1.68840E-02	1.15283E-01	-1.12212E-02	.00000E+00	.00000E+00	4.94563E-05	7.63680E-02
4	7.18507E-02	-1.05068E-02	7.08824E-02	-6.84786E-03	.00000E+00	.00000E+00	2.23828E-05	4.69294E-02
5	1.07230E-01	-1.60703E-02	1.05770E-01	-1.03592E-02	.00000E+00	.00000E+00	2.64964E-05	7.00213E-02
6	2.01003E-01	-2.92315E-02	1.98404E-01	-1.87346E-02	.00000E+00	.00000E+00	4.47304E-05	1.31301E-01
7	1.98091E-01	-1.75129E-02	1.96582E-01	-1.13632E-02	.00000E+00	.00000E+00	3.14980E-05	1.29804E-01
8	1.47844E-01	-3.66538E-03	1.47551E-01	-2.77229E-03	.00000E+00	.00000E+00	1.72005E-05	9.72229E-02
9	1.15706E-01	8.79825E-04	1.15950E-01	5.60524E-04	.00000E+00	.00000E+00	1.13474E-05	7.62395E-02
10	1.06524E-01	2.23300E-03	1.05774E-01	1.38010E-03	.00000E+00	.00000E+00	1.00125E-05	7.02195E-02
11	9.94111E-02	5.27714E-03	9.99771E-02	3.33225E-03	.00000E+00	.00000E+00	9.31503E-06	6.56599E-02
12	6.35998E-02	6.33602E-03	6.42927E-02	4.05029E-03	.00000E+00	.00000E+00	5.42889E-06	4.21322E-02
13	5.41550E-02	5.95770E-03	5.47702E-02	3.87764E-03	.00000E+00	.00000E+00	4.50522E-06	3.58846E-02
14	5.04836E-02	8.94156E-03	5.14373E-02	5.76435E-03	.00000E+00	.00000E+00	4.30490E-06	3.35983E-02
15	2.85108E-02	1.73741E-03	2.86134E-02	1.25199E-03	.00000E+00	.00000E+00	2.31536E-06	1.88060E-02
16	1.57187E-02	1.02188E-03	1.57978E-02	7.07105E-04	.00000E+00	.00000E+00	1.15547E-06	1.03772E-02
17	6.66279E-03	9.46053E-04	6.76315E-03	6.09231E-04	.00000E+00	.00000E+00	4.52850E-07	4.42653E-03
18	4.38194E-03	2.45193E-03	4.68868E-03	1.50864E-03	.00000E+00	.00000E+00	2.99826E-07	3.00277E-03
19	9.96347E-03	1.67260E-03	1.01271E-02	1.10057E-03	.00000E+00	.00000E+00	6.92853E-07	6.62169E-03
20	3.38977E-02	3.54679E-03	3.41952E-02	2.41728E-03	.00000E+00	.00000E+00	2.62780E-06	2.24198E-02
21	9.92894E-03	2.63577E-03	1.02328E-02	1.68411E-03	.00000E+00	.00000E+00	6.10040E-07	6.65319E-03
22	1.95691E-02	7.73131E-03	2.05196E-02	4.98662E-03	.00000E+00	.00000E+00	1.19886E-06	1.31142E-02
23	6.74298E-02	1.79141E-02	6.98812E-02	1.20478E-02	.00000E+00	.00000E+00	3.73068E-06	4.52315E-02
24	5.40547E-02	1.54658E-02	5.68807E-02	1.03470E-02	.00000E+00	.00000E+00	2.23410E-06	3.64477E-02
25	2.39285E-02	7.17311E-03	2.52058E-02	4.76627E-03	.00000E+00	.00000E+00	7.68146E-07	1.62214E-02
26	1.65561E-02	5.48506E-03	1.77922E-02	3.46782E-03	.00000E+00	.00000E+00	3.97109E-07	1.13554E-02
27	2.97080E-03	1.11089E-03	3.32869E-03	5.99586E-04	.00000E+00	.00000E+00	4.56166E-08	2.08788E-03
28	1.73379E+00	-9.75886E-03	1.73691E+00	-6.72040E-03	1.97453E-11	.00000E+00	3.11764E-04	1.14246E+00

1fine group summary for zone 4 by group including sum for all groups in line 28

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.34835E-02	.00000E+00	2.17709E-02	2.06866E-02	3.82560E-03	1.28141E-03	9.98906E-01
2	.00000E+00	1.95460E-01	7.16469E-03	2.52150E-01	1.74080E-01	1.53724E-02	1.31865E-02	1.00002E+00
3	.00000E+00	2.16133E-01	7.19728E-02	2.58300E-01	2.55072E-01	1.62135E-02	1.68239E-02	9.99988E-01
4	.00000E+00	1.23637E-01	1.05989E-01	1.77132E-01	2.11398E-01	7.72605E-03	1.05068E-02	9.99999E-01
5	.00000E+00	1.63627E-01	1.92659E-01	4.44990E-01	3.35072E-01	5.14701E-03	1.60702E-02	9.99990E-01
6	.00000E+00	1.75243E-01	3.91730E-01	1.19120E+00	5.30369E-01	8.09429E-03	2.92314E-02	1.00001E+00
7	.00000E+00	8.69766E-02	5.98850E-01	1.56388E+00	6.55305E-01	8.01626E-03	1.75114E-02	9.99991E-01
8	.00000E+00	1.33825E-02	6.89659E-01	1.57564E+00	6.86432E-01	1.30071E-02	3.66520E-03	9.99921E-01
9	.00000E+00	9.71502E-04	6.78514E-01	1.37304E+00	6.58905E-01	2.15359E-02	-8.70875E-04	9.99879E-01
10	.00000E+00	7.21551E-05	6.55689E-01	1.25082E+00	6.25794E-01	3.24757E-02	-2.23398E-03	9.99902E-01

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11	.00000E+00	5.67662E-06	6.29784E-01	1.16619E+00	5.81763E-01	5.33410E-02	-5.27941E-03	9.99945E-01
12	.00000E+00	3.98772E-07	5.06664E-01	6.37355E-01	4.54473E-01	5.85405E-02	-6.33669E-03	9.99976E-01
13	.00000E+00	6.33213E-08	4.49136E-01	5.05960E-01	3.99414E-01	5.56927E-02	-5.95657E-03	9.99968E-01
14	.00000E+00	1.25485E-08	4.31362E-01	4.67818E-01	3.59604E-01	8.07050E-02	-8.94152E-03	9.99989E-01
15	.00000E+00	1.41813E-09	2.36346E-01	2.13907E-01	2.29645E-01	8.36333E-03	-1.74555E-03	1.00035E+00
16	.00000E+00	4.16412E-10	1.61205E-01	9.82015E-02	1.55434E-01	6.73951E-03	-1.02677E-03	1.00036E+00
17	.00000E+00	1.34105E-10	8.60151E-02	3.00828E-02	7.77842E-02	9.15592E-03	-9.50470E-04	1.00029E+00
18	.00000E+00	9.60152E-11	7.63121E-02	1.75281E-02	4.97439E-02	2.90143E-02	-2.45152E-03	1.00007E+00
19	.00000E+00	1.35745E-10	1.17873E-01	5.65410E-02	1.07407E-01	1.21168E-02	-1.67242E-03	1.00018E+00
20	.00000E+00	2.20735E-10	2.82360E-01	3.33729E-01	2.57942E-01	2.78825E-02	-3.56150E-03	1.00034E+00
21	.00000E+00	3.23065E-11	1.38148E-01	6.48419E-02	1.14855E-01	2.59073E-02	-2.63464E-03	1.00014E+00
22	.00000E+00	3.74853E-11	2.60617E-01	1.64582E-01	1.92272E-01	7.60164E-02	-7.73609E-03	1.00016E+00
23	.00000E+00	3.58401E-11	6.20191E-01	9.31170E-01	5.00505E-01	1.37089E-01	-1.79119E-02	1.00025E+00
24	.00000E+00	9.75521E-12	6.55841E-01	8.13847E-01	5.42598E-01	1.28184E-01	-1.54664E-02	1.00019E+00
25	.00000E+00	2.85568E-12	4.35719E-01	3.31625E-01	3.72678E-01	7.01614E-02	-7.17637E-03	1.00013E+00
26	.00000E+00	2.00242E-12	3.38241E-01	3.34190E-01	2.80084E-01	6.36085E-02	-5.48519E-03	1.00010E+00
27	.00000E+00	4.77188E-13	1.11844E-01	6.76414E-02	9.47151E-02	1.82548E-02	-1.11083E-03	1.00004E+00
28	.00000E+00	1.00000E+00	8.92510E+00	1.43444E+01	8.92510E+00	9.92138E-01	9.72608E-03	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dx**2	total flux
1	1.36540E-02	-4.06352E-09	1.33503E-02	-1.28141E-03	2.28188E-03	2.53618E-03	3.01195E-04	3.47079E-01
2	9.75980E-02	-3.14073E-08	9.42736E-02	-1.31845E-02	1.56948E-05	1.10523E-02	1.60436E-03	2.47821E+00
3	1.21277E-01	-5.16775E-08	1.16919E-01	-1.68240E-02	.00000E+00	1.33044E-02	1.88580E-03	3.07873E+00
4	7.46607E-02	-2.17850E-08	7.18607E-02	-1.05068E-02	.00000E+00	5.69588E-03	8.85991E-04	1.89499E+00
5	1.11794E-01	-5.68470E-08	1.07230E-01	-1.60705E-02	.00000E+00	1.61424E-03	1.05291E-03	2.83638E+00
6	2.09787E-01	-1.08258E-07	2.01003E-01	-2.92315E-02	.00000E+00	1.29666E-03	1.73187E-03	5.32064E+00
7	2.03614E-01	-1.49683E-06	1.98091E-01	-1.75129E-02	.00000E+00	1.20666E-03	1.22692E-03	5.17072E+00
8	1.49010E-01	-1.80777E-07	1.47844E-01	-3.66538E-03	.00000E+00	1.19455E-03	6.98720E-04	3.79087E+00
9	1.15376E-01	8.94787E-06	1.15705E-01	8.79825E-04	.00000E+00	1.56926E-03	4.71727E-04	2.93848E+00
10	1.05742E-01	-9.79025E-07	1.06524E-01	2.23300E-03	.00000E+00	3.35125E-03	4.23056E-04	2.69452E+00
11	9.75792E-02	-2.26843E-06	9.94111E-02	5.27714E-03	.00000E+00	7.23890E-03	3.87307E-04	2.48955E+00
12	6.14143E-02	-6.68124E-07	6.35998E-02	6.33602E-03	.00000E+00	9.76411E-03	2.27668E-04	1.56985E+00
13	5.21211E-02	1.12596E-06	5.41550E-02	5.95770E-03	.00000E+00	1.15765E-02	1.94110E-04	1.33271E+00
14	4.74317E-02	3.77205E-08	5.04836E-02	8.94156E-03	.00000E+00	7.25150E-03	1.73654E-04	1.21592E+00
15	2.79425E-02	-8.13845E-06	2.85108E-02	1.73741E-03	.00000E+00	1.66382E-03	1.10066E-04	7.13204E-01
16	1.53859E-02	-4.88588E-06	1.57187E-02	1.02188E-03	.00000E+00	1.17001E-03	5.65876E-05	3.92712E-01
17	6.34546E-03	-4.41698E-06	6.66279E-03	9.44053E-04	.00000E+00	1.28100E-03	2.04740E-05	1.62408E-01
18	3.51579E-03	4.10572E-07	4.38194E-03	2.45195E-03	.00000E+00	8.31515E-04	7.67636E-06	9.15184E-02
19	9.38344E-03	1.79238E-07	9.96347E-03	1.67260E-03	.00000E+00	2.05257E-03	3.10823E-05	2.40598E-01
20	3.26433E-02	-1.47142E-05	3.38777E-02	3.54679E-03	.00000E+00	1.36368E-02	1.20840E-04	8.34871E-01
21	8.97624E-03	1.12438E-06	9.92844E-03	2.63577E-03	.00000E+00	1.48204E-02	2.47962E-05	2.31261E-01
22	1.64378E-02	-4.77990E-06	1.95691E-02	7.73131E-03	.00000E+00	4.40880E-02	4.15552E-05	4.26944E-01
23	5.98809E-02	2.26603E-06	6.74292E-02	1.79141E-02	.00000E+00	7.51179E-02	1.58562E-04	1.54084E+00
24	4.61492E-02	-6.00261E-07	5.40547E-02	1.54658E-02	.00000E+00	6.82952E-02	9.75683E-05	1.20458E+00
25	1.98757E-02	-3.25380E-06	2.39285E-02	7.17311E-03	.00000E+00	3.88690E-02	3.35964E-05	5.21228E-01
26	1.31258E-02	-1.31666E-07	1.65561E-02	5.48506E-03	.00000E+00	3.57222E-02	1.66405E-05	3.46220E-01
27	2.21605E-03	2.86544E-08	2.97080E-03	1.11086E-03	.00000E+00	1.00907E-02	1.71561E-06	5.26150E-02
28	1.72243E+00	-3.26864E-05	1.73379E+00	-9.75886E-03	2.29757E-03	3.86281E-01	1.19206E-02	4.39255E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.34835E-02	.00000E+00	2.27744E-02	2.18857E-02	3.91394E-03	-4.06352E-09	9.98606E-01
2	.00000E+00	1.95460E-01	7.78542E-03	2.63402E-01	1.87601E-01	1.56577E-02	-3.14073E-08	1.00001E+00
3	.00000E+00	2.16133E-01	7.80468E-02	2.69482E-01	2.77807E-01	1.63765E-02	-5.16775E-08	9.99986E-01
4	.00000E+00	1.23637E-01	1.14872E-01	1.84974E-01	2.30706E-01	7.80574E-03	-2.17850E-08	9.99998E-01
5	.00000E+00	1.63627E-01	2.09054E-01	4.67130E-01	3.67454E-01	5.24025E-03	-5.68470E-08	9.99990E-01
6	.00000E+00	1.76243E-01	4.25820E-01	1.25661E+00	5.98804E-01	8.25152E-03	-1.08259E-07	1.00001E+00
7	.00000E+00	8.69766E-02	6.59435E-01	1.69985E+00	7.38283E-01	8.13485E-03	-1.49683E-06	9.99991E-01
8	.00000E+00	1.33878E-02	7.76156E-01	1.70441E+00	7.76525E-01	1.30848E-02	-1.80777E-07	9.99919E-01
9	.00000E+00	9.71502E-04	7.67208E-01	1.49008E+00	7.46605E-01	2.16573E-02	8.94787E-06	9.99880E-01
10	.00000E+00	7.21551E-05	7.42987E-01	1.36120E+00	7.10544E-01	3.25901E-02	-9.79025E-07	9.99901E-01
11	.00000E+00	5.67662E-06	7.14975E-01	1.27047E+00	6.61507E-01	5.35151E-02	-2.26843E-06	9.99944E-01

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12	.00000E+00	3.98772E-07	5.75835E-01	6.93399E-01	5.17212E-01	5.86380E-02	-6.68124E-07	9.99976E-01
13	.00000E+00	6.33213E-08	5.10817E-01	5.51628E-01	4.55005E-01	5.58274E-02	1.12596E-06	9.99967E-01
14	.00000E+00	1.25488E-08	4.91288E-01	5.12504E-01	4.10573E-01	8.09184E-02	3.77208E-08	9.99988E-01
15	.00000E+00	1.41813E-09	2.69104E-01	2.31554E-01	2.60489E-01	8.54015E-03	-8.13845E-06	1.00031E+00
16	.00000E+00	4.16412E-10	1.82759E-01	1.05751E-01	1.75848E-01	6.85833E-03	-4.88588E-06	1.00032E+00
17	.00000E+00	1.34105E-10	9.70999E-02	3.21979E-02	8.78660E-02	9.21284E-03	-4.41693E-06	1.00026E+00
18	.00000E+00	9.60152E-11	8.61253E-02	1.90144E-02	5.70524E-02	2.90572E-02	4.10572E-07	1.00005E+00
19	.00000E+00	1.35745E-10	1.33953E-01	6.12171E-02	1.21695E-01	1.22158E-02	1.79258E-07	1.00016E+00
20	.00000E+00	2.20735E-10	3.21513E-01	3.66239E-01	2.98130E-01	2.83001E-02	-1.47142E-05	1.00030E+00
21	.00000E+00	3.23088E-11	1.56825E-01	7.12781E-02	1.30740E-01	2.60641E-02	1.12438E-06	1.00012E+00
22	.00000E+00	3.74853E-11	2.97289E-01	1.83668E-01	2.20851E-01	7.63980E-02	-4.77990E-06	1.00015E+00
23	.00000E+00	3.58401E-11	7.13944E-01	1.04663E+00	5.75061E-01	1.33720E-01	2.26603E-06	1.00025E+00
24	.00000E+00	9.75521E-12	7.55638E-01	9.22314E-01	6.25338E-01	1.30171E-01	-6.00261E-07	1.00017E+00
25	.00000E+00	2.85568E-12	5.02174E-01	3.77501E-01	4.30784E-01	7.13361E-02	-3.25380E-06	1.00011E+00
26	.00000E+00	2.00242E-12	3.91178E-01	3.84872E-01	3.26348E-01	6.47961E-02	-1.31666E-07	1.00009E+00
27	.00000E+00	4.77188E-13	1.29773E-01	7.85514E-02	1.11113E-01	1.86553E-02	2.85444E-08	1.00004E+00
28	.00000E+00	1.00000E+00	1.01116E+01	1.55987E+01	1.01116E+01	1.00194E+00	-3.26675E-05	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*dv**2	total flux
1	1.36540E-02	-4.06352E-09	1.30674E-02	.00000E+00	2.28790E-03	2.53618E-03	3.33744E-04	3.71505E-01
2	9.75980E-02	-3.14073E-08	9.11561E-02	.00000E+00	1.56948E-05	1.10523E-02	1.75307E-03	2.67062E+00
3	1.21277E-01	-5.16775E-08	1.12766E-01	.00000E+00	.00000E+00	1.33044E-02	1.99049E-03	3.31714E+00
4	7.46607E-02	-2.17850E-08	6.91092E-02	.00000E+00	.00000E+00	5.69588E-03	9.57632E-04	2.04138E+00
5	1.11794E-01	-5.68470E-08	1.02834E-01	.00000E+00	.00000E+00	1.61424E-03	1.11744E-03	3.05460E+00
6	2.09787E-01	-1.08258E-07	1.92888E-01	.00000E+00	.00000E+00	1.29656E-03	1.87022E-03	5.72691E+00
7	2.05616E-01	-1.49683E-06	1.95146E-01	.00000E+00	.00000E+00	1.20666E-03	1.32609E-03	5.57760E+00
8	1.49010E-01	-1.80777E-07	1.47040E-01	.00000E+00	.00000E+00	1.19455E-03	7.53984E-04	4.09772E+00
9	1.15376E-01	8.94787E-06	1.15990E-01	.00000E+00	.00000E+00	1.56926E-03	5.09850E-04	3.17978E+00
10	1.05742E-01	-9.79025E-07	1.07234E-01	.00000E+00	.00000E+00	3.35125E-03	4.63148E-04	2.91709E+00
11	9.75798E-02	-2.26843E-06	1.01028E-01	.00000E+00	.00000E+00	7.29890E-03	4.19533E-04	2.69832E+00
12	6.14143E-02	-6.68124E-07	6.55046E-02	.00000E+00	.00000E+00	9.76411E-03	2.46847E-04	1.70421E+00
13	5.21211E-02	1.12598E-06	5.59031E-02	.00000E+00	.00000E+00	1.15766E-02	2.10105E-04	1.44742E+00
14	4.74317E-02	3.77208E-08	5.31350E-02	.00000E+00	.00000E+00	7.25150E-03	1.87772E-04	1.32403E+00
15	2.79425E-02	-8.13845E-06	2.89305E-02	.00000E+00	.00000E+00	1.64382E-03	1.18263E-04	7.72978E-01
16	1.53859E-02	-4.88588E-06	1.59843E-02	.00000E+00	.00000E+00	1.17001E-03	6.07455E-05	4.25717E-01
17	6.35456E-03	-4.41698E-06	6.94042E-03	.00000E+00	.00000E+00	1.28100E-03	2.21425E-05	1.76589E-01
18	3.51575E-03	4.10572E-07	5.15365E-03	.00000E+00	.00000E+00	8.31515E-04	8.83067E-06	1.01551E-01
19	9.38344E-03	1.79238E-07	1.04493E-02	.00000E+00	.00000E+00	2.05257E-03	3.36297E-05	2.61876E-01
20	3.26433E-02	-1.47142E-05	3.48768E-02	.00000E+00	.00000E+00	1.36368E-02	1.29640E-04	9.06428E-01
21	8.97624E-03	1.12438E-06	1.07880E-02	.00000E+00	.00000E+00	1.48204E-02	2.71253E-05	2.52883E-01
22	1.66378E-02	-4.77990E-06	2.19563E-02	.00000E+00	.00000E+00	4.40380E-02	4.61958E-05	4.70199E-01
23	5.98809E-02	2.26603E-06	7.43764E-02	.00000E+00	.00000E+00	7.51179E-02	1.73188E-04	1.68862E+00
24	4.61448E-02	-6.00261E-07	6.11340E-02	.00000E+00	.00000E+00	6.82952E-02	1.07080E-04	1.32461E+00
25	1.98757E-02	-3.25380E-06	2.76795E-02	.00000E+00	.00000E+00	3.88690E-02	3.71587E-05	5.75033E-01
26	1.31258E-02	-1.31666E-07	1.95808E-02	.00000E+00	.00000E+00	3.57222E-02	1.87198E-05	3.84401E-01
27	2.21605E-03	2.85444E-08	3.79604E-03	.00000E+00	.00000E+00	1.00907E-02	2.01286E-06	6.57572E-02
28	1.72243E+00	-3.26684E-05	1.74283E+00	.00000E+00	2.30360E-03	3.86281E-01	1.29259E-02	4.75410E+01

- elapsed time .02 min.

0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.16853E-03	5.09070E-03	5.31188E-03	2.51372E-03	3.18427E-03	5.52368E-03	3.71568E-03	1.74438E-03
2	7.12394E-04	5.02709E-03	5.81083E-03	3.44971E-03	4.30069E-03	6.14865E-03	4.33003E-03	2.14950E-03
3	1.19887E-03	5.51743E-03	5.89598E-03	2.91925E-03	3.86183E-03	6.77437E-03	4.37378E-03	1.82498E-03
4	8.25341E-04	4.33250E-03	4.95393E-03	2.35850E-03	2.83036E-03	4.80085E-03	3.32700E-03	1.79976E-03
5	8.47338E-04	4.39962E-03	4.99795E-03	2.41794E-03	2.88005E-03	4.88868E-03	3.37582E-03	1.79998E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11378E-03	1.01461E-03	1.09514E-03	8.75250E-04	8.00304E-04	1.06257E-03	3.23771E-04	1.70254E-04
2	1.79209E-03	1.95514E-03	2.04391E-03	1.60444E-03	1.43145E-03	1.72953E-03	6.30997E-04	3.50116E-04
3	1.12212E-03	1.05307E-03	1.29135E-03	1.22526E-03	1.13412E-03	1.61667E-03	3.92363E-04	2.16374E-04
4	1.19668E-03	1.09576E-03	1.05083E-03	6.78130E-04	6.01984E-04	6.44863E-04	3.11345E-04	1.61402E-04

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   5 1.19472E-03 1.09624E-03 1.04603E-03 7.05757E-04 6.28769E-04 6.93699E-04 3.15782E-04 1.64261E-04
Ozone  grp. 17    grp. 18    grp. 19    grp. 20    grp. 21    grp. 22    grp. 23    grp. 24
   1 1.12105E-04 2.43534E-04 2.00417E-04 4.96986E-04 2.87952E-04 8.25432E-04 2.10826E-03 1.78516E-03
   2 1.97688E-04 3.77700E-04 3.32593E-04 8.83234E-04 4.56858E-04 1.26564E-03 3.23641E-03 2.75062E-03
   3 1.70829E-04 4.19462E-04 3.02611E-04 6.85905E-04 4.61946E-04 1.34799E-03 3.21262E-03 2.75750E-03
   4 7.30702E-05 8.18574E-05 1.23139E-04 3.84512E-04 1.38982E-04 3.43480E-04 1.04633E-03 8.17017E-04
   5 7.79415E-05 9.90984E-05 1.32221E-04 3.99865E-04 1.55418E-04 3.95066E-04 1.15980E-03 9.19309E-04
Ozone  grp. 25    grp. 26    grp. 27    grp. 28
   1 8.03128E-04 5.66114E-04 8.62278E-05 4.22234E-02
   2 1.25379E-03 9.09085E-04 1.56284E-04 5.52854E-02
   3 1.27264E-03 9.49288E-04 1.77223E-04 5.21736E-02
   4 3.39997E-04 2.06277E-04 2.56439E-05 3.45620E-02
   5 3.88940E-04 2.44704E-04 3.28211E-05 3.54578E-02
1broad group parameters
 grp   upper energy   mid energy    velocity    fiss spec
  1     2.0000E+07    2.6527E+06   1.9701E+09   7.2234E-01
  2     9.0000E+05    1.5164E+05   1.0141E+07   2.7766E-01
  3     4.0000E-01    1.2480E-01   3.6435E+05   1.2072E-10
  4     1.0000E-05
1                    1040 d, second part of sas2h pass to make library
0cell averaged fluxes

Ozone  grp. 1     grp. 2     grp. 3
   1 3.92269E-01 1.13464E+00 2.12328E-01
   2 3.97532E-01 1.13571E+00 2.03251E-01
   3 4.00499E-01 1.13588E+00 1.99177E-01
   4 4.17691E-01 1.13730E+00 1.70043E-01
   5 4.15998E-01 1.13714E+00 1.72869E-01
0flux disadvantage factors (zone average/cell average-flux)

Ozone  grp. 1     grp. 2     grp. 3
   1 9.42959E-01 9.97802E-01 1.22826E+00
   2 9.55611E-01 9.98743E-01 1.17575E+00
   3 9.62742E-01 9.98899E-01 1.15218E+00
   4 1.00407E+00 1.00015E+00 9.83650E-01
   5 1.00000E+00 1.00000E+00 1.00000E+00
0cell averaged currents

Ozone  grp. 1     grp. 2     grp. 3
   1 1.72699E-02 1.84908E-02 6.46326E-03
   2 1.95002E-02 2.59569E-02 1.00284E-02
   3 1.95954E-02 2.26012E-02 1.01790E-02
   4 1.53335E-02 1.63107E-02 2.91772E-03
   5 1.55429E-02 1.66189E-02 3.29605E-03
Ozone     volume     vol. fraction

   1    1.25668E+00    4.56234E-02
   2    1.66687E-01    6.05165E-03
   3    6.58268E-01    2.38987E-02
   4    2.54624E+01    9.24426E-01
   5    2.75440E+01    1.00000E+00
- elapsed time   .02 min.
1  cccccccccc   cccccccccc   ee      ee  ppppppppp   ll          eeeeeeeeeee
  cccccccccccc cccccccccccc  ee      ee  pppppppppp  ll          eeeeeeeeeee
  cc        cc cc        cc  ee      ee  pp      pp  ll          ee
  cc           cc        cc  ee      ee  pp      pp  ll          ee
  cc           cc        cc  ee      ee  pp      pp  ll          ee
  cc           cc        cc  ee      ee  pppppppppp  ll          eeeeeeeee
  cc           cc        cc  ee      ee  ppppppppp   ll          eeeeeeeee
  cc           cc        cc  ee      ee  pp          ll          ee
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